BUFR Table D – *List of common sequences*

F	X	Category of sequences
3	00	BUFR table entries sequences
3	01	Location and identification sequences
3	02	Meteorological sequences common to surface data
3	03	Meteorological sequences common to vertical soundings data
3	04	Meteorological sequences common to satellite observations
3	05	Meteorological or hydrological sequences common to hydrological observations
3	06	Meteorological or oceanographic sequences common to oceanographic observations
3	07	Surface report sequences (land)
3	08	Surface report sequences (sea)
3	09	Vertical sounding sequences (conventional data)
3	10	Vertical sounding sequences (satellite data)
3	11	Single level report sequences (conventional data)
3	12	Single level report sequences (satellite data)
3	13	Sequences common to image data
3	14	Reserved
3	15	Oceanographic report sequences
3	16	Synoptic feature sequences
3	18	Radiological report sequences
3	21	Radar report sequences
3	22	Chemical and aerosol sequences
3	40	Additional satellite report sequences

Notes:

(1) From a conceptual point of view, Table D is *not* necessary:
   (a) The Data description section can fully and completely describe the data using only element descriptors, operator descriptors and the rules of description;
   (b) Such a means of defining the data would involve considerable overheads in terms of the length of the Data description section. Table D is a device to reduce these overheads;
   (c) Each entry within Table D contains a list of descriptors. Each sequence descriptor that references to Table D may be “expanded” by replacing it with the list corresponding to that entry. The process of “expansion” is well defined, provided it results in a set of element descriptors and operator descriptors;
   (d) Descriptors listed in entries to Table D may themselves refer to Table D, provided no circularity results on repeated expansion;
   (e) The initial Table D has been limited to lists of descriptors likely to be used frequently. Every attempt has been made not to produce initial tables that are too comprehensive. *Minor differences of reporting practice can be accommodated by not endeavouring to reduce each observation type to a single descriptor.* Indeed, much more flexibility is retained if the Data description section is envisaged as containing three or four descriptors.

(2) It should be noted that, initially, effort has been concentrated on the requirements for observational data. Extensions to forecast data, time series data, products, etc., follow logically, and can be added at an appropriate future date.

(3) Category 01 contains common sequences of non-meteorological descriptors; categories 02 to 06 contain common sequences of meteorological descriptors; categories 07 to 21 contain sequences which define reports, or major subsets of reports.

(4) Underwater soundings are included, with some minor omissions, to illustrate the facility to describe data of slightly different contents.

(5) Satellite data have been split to maximize the benefits of data compression. Compound combinations may easily be defined using the descriptors available.

(6) Satellite observation data benefit enormously from being split into fragments (1, 2, 3 . . . 7), then applying data compression to many locations within each fragment. Again, BUFR flexibility enables compound forms to be defined if desired.

(7) Categories 48 to 63 are reserved for local use; all other categories are reserved for future development.

(8) Entries 192 to 255 within all categories are reserved for local use.

Category 00 – BUFR table entries sequences

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 00 002	0 00 002	Table A: data category description, line 1	
	0 00 003	Table A: data category description, line 2	
		(F, X, Y of descriptor to be added or defined)	
3 00 003	0 00 010	F descriptor to be added or defined	
	0 00 011	X descriptor to be added or defined	
	0 00 012	Y descriptor to be added or defined	
3 00 004	3 00 003	F, X, Y of descriptor to be added or defined	
	0 00 013	Element name, line 1	
	0 00 014	Element name, line 2	
	0 00 015	Units name	
	0 00 016	Units scale sign	
	0 00 017	Units scale	
	0 00 018	Units reference sign	
	0 00 019	Units reference value	
	0 00 020	Element data width	
3 00 010	3 00 003	F, X, Y of descriptor to be added or defined	
	1 01 000	Delayed replication of 1 descriptor	
	0 31 001	Delayed descriptor replication factor	
	0 00 030	Descriptor defining sequence	
		(Code table definition)	
3 00 015	0 00 030	Descriptor defining sequence	
	1 02 000	Delayed replication of 2 descriptors	
	0 31 002	Extended delayed descriptor replication factor	
	0 00 024	Code figure	
	0 00 025	Code figure meaning	
		(Flag table definition)	
3 00 016	0 00 030	Descriptor defining sequence	
	1 02 000	Delayed replication of 2 descriptors	
	0 31 001	Delayed descriptor replication factor	
	0 00 026	Bit number	
	0 00 027	Bit number meaning	

Notes:

(1) These entries include the facility to update the Table A code figure and data description.

(2) It is better to use different Class 00 descriptors for the defining and defined elements, in the same way as different descriptors correspond to pressure considered as a coordinate and pressure measured at a given point; otherwise special rules would be needed to interpret such message.

Entries 0 00 010 to 0 00 012 define F, X and Y for Tables B and D; entry 0 00 030 is a descriptor used as data and provides the F, X and Y values defining a sequence for Table D entries.

(3) It could be argued that, as only additions are possible, only complete lines should be allowed; but it is conceivable that local areas will require changes as well as additions, so it is better and in any case clearer to provide descriptions for all the fields.

Category 01 – Location and identification sequences

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(WMO block and station numbers)	
3 01 001	0 01 001	WMO block number	
	0 01 002	WMO station number	
3 01 002	0 01 003	WMO Region number/geographical area	
	0 01 004	WMO Region sub-area	
	0 01 005	Buoy/platform identifier	
		(Ship's call sign and motion)	
3 01 003	0 01 011	Ship or mobile land station identifier	Ship's call sign
	0 01 012	Direction of motion of moving observing platform	
	0 01 013	Speed of motion of moving observing platform	
		(Surface station identification)	
3 01 004	0 01 001	WMO block number	
	0 01 002	WMO station number	
	0 01 015	Station or site name	
	0 02 001	Type of station	
		(Originating centre/sub-centre)	
3 01 005	0 01 035	Originating centre	
	0 01 034	Identification of originating/generating sub-centre	
		(Year, month, day)	
3 01 011	0 04 001	Year	
	0 04 002	Month	
	0 04 003	Day	
		(Hour, minute)	
3 01 012	0 04 004	Hour	
	0 04 005	Minute	
		(Hour, minute, second)	
3 01 013	0 04 004	Hour	
	0 04 005	Minute	
	0 04 006	Second	
		(Time period)	
3 01 014	1 02 002	Replicate 2 descriptors 2 times	
	3 01 011	Year, month, day	
	3 01 012	Hour, minute	
		(Latitude/longitude (high accuracy))	
3 01 021	0 05 001	Latitude (high accuracy)	
	0 06 001	Longitude (high accuracy)	

(continued)

(Category 01 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(Latitude/longitude (high accuracy), height of station)	
3 01 022	0 05 001	Latitude (high accuracy)	
	0 06 001	Longitude (high accuracy)	
	0 07 001	Height of station	
		(Latitude/longitude (coarse accuracy))	
3 01 023	0 05 002	Latitude (coarse accuracy)	
	0 06 002	Longitude (coarse accuracy)	
		(Latitude/longitude (coarse accuracy), height of station)	
3 01 024	0 05 002	Latitude (coarse accuracy)	
	0 06 002	Longitude (coarse accuracy)	
	0 07 001	Height of station	
		(Latitude/longitude (coarse accuracy), day/time)	
3 01 025	3 01 023	Latitude/longitude (coarse accuracy)	
	0 04 003	Day	
	3 01 012	Hour, minute	
		(Latitude/longitude (high accuracy), time period (day, hour, minute))	
3 01 026	3 01 021	Latitude/longitude (high accuracy)	
	0 04 003	Day }	Time period in days
	0 04 003	Day }	
	0 04 004	Hour }	Time period in hours
	0 04 004	Hour }	
	0 04 005	Minute }	Time period in minutes
	0 04 005	Minute }	
		(Description of a feature in 3-D or 2-D)	
3 01 027	0 08 007	Dimensional significance	= 0 Point, = 1 Line, = 2 Area, = 3 Volume
	1 01 000	Delayed replication of 1 descriptor	
	0 31 001	Delayed descriptor replication factor (see Note 5)	
	3 01 028	Horizontal section of a feature described as a polygon, circle, line or point	
	0 08 007	Dimensional significance	Set to missing (cancel)
		(Horizontal section of a feature described as a polygon, circle, line or point)	
3 01 028	0 08 040	Flight level significance	
	0 33 042	Type of limit represented by following value	
	0 07 010	Flight level	
	1 01 000	Delayed replication of 1 descriptor	
	0 31 002	Extended delayed descriptor replication factor (see Note 6)	
	3 01 023	Latitude/longitude (coarse accuracy)	
	0 19 007	Effective radius of feature (see Note 7)	
	0 08 040	Flight level significance	Set to missing (cancel)

(continued)

(Category 01 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(Identification)	
3 01 029	0 01 018	Short station or site name	
	0 02 001	Type of station	
	3 01 011	Year, month, day	
		(Identification – with physical location)	
3 01 030	0 01 018	Short station or site name	
	0 02 001	Type of station	
	3 01 011	Year, month, day	
	3 010 24	Latitude/longitude (coarse accuracy), height of station	
		(Identification and type of station, date/time, location (high accuracy), height of station)	
3 01 031	3 01 001	WMO block and station numbers	
	0 02 001	Type of station	
	3 01 011	Year, month, day	
	3 01 012	Hour, minute	
	3 01 022	Latitude/longitude (high accuracy), height of station	
		(Identification and type of station, date/time, location (coarse accuracy), height of station)	
3 01 032	3 01 001	WMO block and station numbers	
	0 02 001	Type of station	
	3 01 011	Year, month, day	
	3 01 012	Hour, minute	
	3 01 024	Latitude/longitude (coarse accuracy), height of station	
		(Buoy/platform – fixed)	
3 01 033	0 01 005	Buoy/platform identifier	
	0 02 001	Type of station	
	3 01 011	Year, month, day	
	3 01 012	Hour, minute	
	3 01 021	Latitude/longitude (high accuracy)	
		(Buoy/platform – fixed)	
3 01 034	0 01 005	Buoy/platform identifier	
	0 02 001	Type of station	
	3 01 011	Year, month, day	
	3 01 012	Hour, minute	
	3 01 023	Latitude/longitude (coarse accuracy)	
		(Buoy/platform – moving) (see Note 4)	
3 01 035	0 01 005	Buoy/platform identifier	
	0 01 012	Direction of motion of moving observing platform	
	0 01 013	Speed of motion of moving observing platform	
	0 02 001	Type of station	
	3 01 011	Year, month, day	
	3 01 012	Hour, minute	
	3 01 023	Latitude/longitude (coarse accuracy)	

(continued)

(Category 01 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(Ship)	
3 01 036	3 01 003	Ship's call sign and motion	
	0 02 001	Type of station	
	3 01 011	Year, month, day	
	3 01 012	Hour, minute	
	3 01 023	Latitude/longitude (coarse accuracy)	
		(Land station for vertical soundings)	
3 01 037	3 01 001	WMO block and station numbers	
	0 02 011	Radiosonde type	
	0 02 012	Radiosonde computational method	
	3 01 011	Year, month, day	
	3 01 012	Hour, minute	
	3 01 022	Latitude/longitude (high accuracy), height of station	
		(Land station for vertical soundings)	
3 01 038	3 01 001	WMO block and station numbers	
	0 02 011	Radiosonde type	
	0 02 012	Radiosonde computational method	
	3 01 011	Year, month, day	
	3 01 012	Hour, minute	
	3 01 024	Latitude/longitude (coarse accuracy), height of station	
		(Ship for vertical soundings)	
3 01 039	3 01 003	Ship's call sign and motion	
	0 02 011	Radiosonde type	
	0 02 012	Radiosonde computational method	
	3 01 011	Year, month, day	
	3 01 012	Hour, minute	
	3 01 023	Latitude/longitude (coarse accuracy)	
		(Ship for vertical soundings)	
3 01 040	3 01 003	Ship's call sign and motion	
	0 02 011	Radiosonde type	
	0 02 012	Radiosonde computational method	
	3 01 011	Year, month, day	
	3 01 012	Hour, minute	
	3 01 024	Latitude/longitude (coarse accuracy), height of station	
		(Satellite identifier, instrument, data-processing technique, date/time)	
3 01 041	0 01 007	Satellite identifier	
	0 02 021	Satellite instrument data used in processing	
	0 02 022	Satellite data-processing technique used	
	3 01 011	Year, month, day	
	3 01 012	Hour, minute	

(continued)

(Category 01 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(Satellite identifier, instrument, data-processing technique, date/time, location)	
3 01 042	3 01 041	Satellite identifier, instrument, data-processing technique, date/time	
	3 01 021	Latitude/longitude (high accuracy)	
		(Satellite identifier, wind computation method, date/time, location)	
3 01 043	0 01 007	Satellite identifier	
	0 02 023	Satellite-derived wind computation method	
	3 01 011	Year, month, day	
	3 01 013	Hour, minute, second	
	3 01 021	Latitude/longitude (high accuracy)	
		(Satellite identifier, humidity computation method, date/time, location)	
3 01 044	0 01 007	Satellite identifier	
	0 02 024	Integrated mean humidity computational method	
	3 01 011	Year, month, day	
	3 01 013	Hour, minute, second	
	3 01 021	Latitude/longitude (high accuracy)	
		(Satellite location and velocity)	
3 01 045	3 01 011	Year, month, day	
	3 01 012	Hour, minute	
	2 01 138	Change data width	16 bits long
	2 02 131	Change scale	Scale: 3
	0 04 006	Second	
	2 01 000	Change data width	Cancel
	2 02 000	Change scale	Cancel
	3 04 030	Location of platform	Relative to the Earth's centre
	3 04 031	Speed of platform	Relative to the Earth's centre
		(Satellite identifier, direction of motion, sensor, model function, software, resolution)	
3 01 046	0 01 007	Satellite identifier	
	0 01 012	Direction of motion of moving observing platform	
	0 02 048	Satellite sensor indicator	
	0 21 119	Wind scatterometer geophysical model function	
	0 25 060	Software identification	
	2 02 124	Change scale	
	0 02 026	Cross-track resolution	
	0 02 027	Along-track resolution	
	2 02 000	Change scale	Cancel
	0 05 040	Orbit number	

(continued)

(Category 01 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(ERS product header)	
3 01 047	0 01 007	Satellite identifier	
	0 25 060	Software identification	
	0 01 033	Identification of originating/generating centre	
	0 01 034	Identification of originating/generating sub-centre	
	0 01 012	Direction of motion of moving observing platform	
	3 01 045	Satellite location and velocity	
	0 02 021	Satellite instrument data used in processing	
	3 01 011	Year, month, day	
	3 01 012	Hour, minute	
	2 01 138	Change data width	16 bits long
	2 02 131	Change scale	Scale: 3
	0 04 006	Second	
	2 01 000	Change data width	Cancel
	2 02 000	Change scale	Cancel
	3 01 023	Latitude/longitude (coarse accuracy)	
		(Radar parameters)	
3 01 048	0 02 104	Antenna polarization	
	0 02 121	Mean frequency	
	0 02 113	Number of azimuth looks	
	0 02 026	Cross-track resolution	
	0 02 027	Along-track resolution	
	0 02 111	Radar incidence angle	
	0 02 140	Satellite radar beam azimuth angle	
	2 02 127	Change scale	Scale: –1
	0 01 013	Speed of motion of moving observing platform	Radar platform velocity
	2 02 126	Change scale	Scale: –2
	0 07 001	Height of station	Radar platform altitude
	2 02 000	Change scale	Cancel
	0 25 010	Clutter treatment	
	0 21 064	Clutter noise estimate	
		(Radar beam data)	
3 01 049	0 02 111	Radar incidence angle	
	0 02 112	Radar look angle	
	0 21 062	Backscatter	
	0 21 063	Radiometric resolution (noise value)	
	0 21 065	Missing packet counter	
		(Flight number, navigational system, date/time, location, phase of flight)	
3 01 051	0 01 006	Aircraft flight number	
	0 02 061	Aircraft navigational system	
	3 01 011	Year, month, day	
	3 01 012	Hour, minute	
	3 01 021	Latitude/longitude (high accuracy)	
	0 08 004	Phase of aircraft flight	

(continued)

(Category 01 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(Identification and type of station, date/time, location (high accuracy), movement)	
3 01 055	0 01 005	Buoy/platform identifier	
	0 02 001	Type of station	
	3 01 011	Year, month, day	
	3 01 012	Hour, minute	
	3 01 021	Latitude/longitude (high accuracy)	
	0 01 012	Direction of motion of moving observing platform	
	0 01 014	Platform drift speed (high precision)	
		(Universal lightning event)	
		Date/time of lightning event	
3 01 058	3 01 011	Year, month, day	
	3 01 012	Hour, minute	
	2 01 152	Change data width	
	2 02 135	Change scale	
	0 04 006	Second	
	2 02 000	Change scale	
	2 01 000	Change data width	
		Horizontal and vertical coordinates of lightning event	
	3 01 021	Latitude/longitude (high accuracy)	
	0 20 111	x-axis error ellipse major component	
	0 20 112	y-axis error ellipse minor component	
	0 20 113	z-axis error ellipse component	
	0 20 114	Angle of x-axis in error ellipse	
	0 20 115	Angle of z-axis in error ellipse	
	0 20 116	Emission height of cloud stroke	
		Emission information	
	0 20 117	Amplitude of lightning strike	
	0 20 118	Lightning detection error	
	0 20 119	Lightning discharge polarity	
	0 25 035	Decision method for polarity	V or A
	0 20 121	Threshold value for polarity decision	
	0 20 122	Threshold value for polarity decision	
	0 20 123	Minimum threshold for detection	
	0 20 124	Lightning stroke or flash	
	0 25 175	Modified residual	
	0 20 023	Other weather phenomena	Cloud to ground or cloud to cloud identification
		Sensor processing	
	0 25 063	Central processor or system identifier	
	2 02 136	Change scale	
	2 01 136	Change data width	
	0 02 121	Mean frequency	Define centre frequency, if used
	2 01 000	Change data width	
	2 02 000	Change scale	

(continued)

(Category 01 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 01 058 *(continued)*	0 25 061	Software identification and version number	
	0 02 184	Type of lightning detection sensor	
	0 02 189	Capability to discriminate lightning strikes	
	0 25 036	Atmospherics location method	
	1 01 000	Delayed replication of 1 descriptor	
	0 31 002	Extended delayed descriptor replication factor	Number of sensors contributing
	3 01 059	Identification of sensor site and instrumentation	
		(Identification of sensor site and instrumentation)	
3 01 059	3 01 021	Latitude/longitude (high accuracy)	Sensor
	0 07 030	Height of station ground above mean sea level	
	0 07 032	Height of sensor above local ground (or deck of marine platform)	Sensor for lightning
		(Radar location(s))	
3 01 062	1 01 000	Delayed replication of 1 descriptor	
	0 31 001	Delayed descriptor replication factor	
	3 01 001	WMO block and station numbers	
		(ACARS identification)	
3 01 065	0 01 006	Aircraft flight number (see Note 1)	
	0 01 008	Aircraft registration number or other identification (see Note 1)	
	0 02 001	Type of station	
	0 02 002	Type of instrumentation for wind measurement	
	0 02 005	Precision of temperature observation	
	0 02 062	Type of aircraft data relay system	
	0 02 070	Original specification of latitude/longitude	
	0 02 065	ACARS ground-receiving station	
		(ACARS location)	
3 01 066	3 01 011	Year, month, day	
	3 01 013	Hour, minute, second	
	3 01 023	Latitude/longitude (coarse accuracy)	
	0 07 004	Pressure	
	0 02 064	Aircraft roll angle quality	
	0 08 004	Phase of aircraft flight	
		(Ozone instrumentation – Brewer spectrophotometer)	
3 01 070	0 02 143	Ozone instrument type	
	0 02 142	Ozone instrument serial number/identification	
	0 02 144	Light source type for Brewer spectrophotometer	
		(Satellite identifier/Generating resolution)	
3 01 071	0 01 007	Satellite identifier	
	0 01 031	Identification of originating/generating centre	
	0 02 020	Satellite classification	
	0 02 028	Segment size at nadir in x-direction	
	0 02 029	Segment size at nadir in y-direction	

(continued)

(Category 01 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(Satellite identification)	
3 01 072	3 01 071	Satellite identifier/Generating resolution	
	3 01 011	Year, month, day	
	3 01 013	Hour, minute, second	
	3 01 021	Latitude/longitude (high accuracy)	
		(Ozone instrumentation – Dobson spectrophotometer)	
3 01 074	0 02 143	Ozone instrument type	
	0 02 142	Ozone instrument serial number/identification	
	0 02 145	Wavelength setting for Dobson instruments	
	0 02 146	Source conditions for Dobson instruments	
		(Sounding identification)	
3 01 075	3 01 001	WMO block and station numbers	
	0 01 015	Station or site name	
	3 01 024	Latitude/longitude (coarse accuracy), height of station	
	0 08 021	Time significance	= 18 Launch time
	3 01 011	Year, month, day	
	3 01 012	Hour, minute	
		(Ozone sounding instrumentation)	
3 01 076	0 02 011	Radiosonde type	
	0 02 143	Ozone instrument type	
	0 02 142	Ozone instrument serial number/identification	
		(National station identification)	
3 01 089	0 01 101	State identifier	
	0 01 102	National station number	
		(Surface station identification; time, horizontal and vertical coordinates)	
3 01 090	3 01 004	Surface station identification	
	3 01 011	Year, month, day	
	3 01 012	Hour, minute	
	3 01 021	Latitude/longitude (high accuracy)	
	0 07 030	Height of station ground above mean sea level	
	0 07 031	Height of barometer above mean sea level	
		(Surface station instrumentation)	
3 01 091	0 02 180	Main present weather detecting system	
	0 02 181	Supplementary present weather sensor	
	0 02 182	Visibility measurement system	
	0 02 183	Cloud detection system	
	0 02 184	Type of lightning detection sensor	
	0 02 179	Type of sky condition algorithm	
	0 02 186	Capability to detect precipitation phenomena	
	0 02 187	Capability to detect other weather phenomena	
	0 02 188	Capability to detect obscuration	
	0 02 189	Capability to discriminate lightning strikes	

(continued)

(Category 01 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(Mobile surface station identification, date/time, horizontal and vertical coordinates)	
3 01 092	0 01 011	Ship or mobile land station identifier	
	0 01 003	WMO Region number/geographical area	
	0 02 001	Type of station	
	3 01 011	Year, month, day	
	3 01 012	Hour, minute	
	3 01 021	Latitude/longitude (high accuracy)	
	0 07 030	Height of station ground above mean sea level	
	0 07 031	Height of barometer above mean sea level	
	0 33 024	Station elevation quality mark (for mobile stations)	
		(Ship identification, movement, date/time, horizontal and vertical coordinates)	
3 01 093	3 01 036	Ship	Ship identification
	0 07 030	Height of station ground above mean sea level	
	0 07 031	Height of barometer above mean sea level	
		(Identification of launch site and instrumentation for wind measurements)	
3 01 110	3 01 001	WMO block and station numbers	
	0 01 011	Ship or mobile land station identifier	
	0 02 011	Radiosonde type	
	0 02 014	Tracking technique/status of system used	
	0 02 003	Type of measuring equipment used	
		(Identification of launch site and instrumentation for P, T, U and wind measurements)	
3 01 111	3 01 001	WMO block and station numbers	
	0 01 011	Ship or mobile land station identifier	
	0 02 011	Radiosonde type	
	0 02 013	Solar and infrared radiation correction	
	0 02 014	Tracking technique/status of system used	
	0 02 003	Type of measuring equipment used	
		(Identification of launch point and instrumentation of dropsonde)	
3 01 112	0 01 006	Aircraft flight number	
	0 02 011	Radiosonde type	
	0 02 013	Solar and infrared radiation correction	
	0 02 014	Tracking technique/status of system used	
	0 02 003	Type of measuring equipment used	
		(Date/time of launch) (see Note 3)	
3 01 113	0 08 021	Time significance	= 18 Launch time
	3 01 011	Year, month, day	Launch time
	3 01 013	Hour, minute, second	Launch time

(continued)

(Category 01 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(Horizontal and vertical coordinates of launch site)	
3 01 114	3 01 021	Latitude/longitude (high accuracy)	
	0 07 030	Height of station ground above mean sea level	
	0 07 031	Height of barometer above mean sea level	
	0 07 007	Height	Release of sonde above mean sea level
	0 33 024	Station elevation quality mark (for mobile stations)	
		(Radiosonde abbreviated header and launch information)	
3 01 120	3 01 001	WMO block and station numbers	
	0 01 094	WBAN number	
	0 02 011	Radiosonde type	
	3 01 121	Radiosonde launch point location	
		(Radiosonde launch point location)	
3 01 121	0 08 041	Data significance	= 3 Balloon launch point
	3 01 122	Date/time (to hundredths of second)	
	3 01 021	Latitude/longitude (high accuracy)	
	0 07 031	Height of barometer above mean sea level	
	0 07 007	Height	Release of radiosonde above mean sea level
		(Date/time (to hundredths of second)) (see Note 3)	
3 01 122	3 01 011	Year, month, day	
	3 01 012	Hour, minute	
	2 01 135	Change data width	
	2 02 130	Change scale	
	0 04 006	Second	
	2 02 000	Change scale	Cancel
	2 01 000	Change data width	Cancel
		(Radiosonde full header information)	
3 01 123	1 02 002	Replicate 2 descriptors 2 times	
	0 08 041	Data significance	= 0 Parent site, = 1 Observation site
	0 01 062	Short ICAO location indicator	
	3 01 001	WMO block and station numbers	
	0 01 094	WBAN number	
	0 02 011	Radiosonde type	
	0 01 018	Short station or site name	
	0 01 095	Observer identification	
	0 25 061	Software identification and version number	
	0 25 068	Number of archive recomputes	
	0 01 082	Radiosonde ascension number	
	0 01 083	Radiosonde release number	
	0 01 081	Radiosonde serial number	
	0 02 067	Radiosonde operating frequency	

(continued)

(Category 01 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 01 123 *(continued)*	0 02 066	Radiosonde ground receiving system	
	0 02 014	Tracking technique/status of system used	
	0 25 067	Radiosonde release point pressure correction	
	0 25 065	Orientation correction (azimuth)	
	0 25 066	Orientation correction (elevation)	
	0 02 095	Type of pressure sensor	
	0 02 096	Type of temperature sensor	
	0 02 097	Type of humidity sensor	
	0 02 016	Radiosonde configuration	
	0 02 083	Type of balloon shelter	
	0 02 080	Balloon manufacturer	
	0 02 081	Type of balloon	
	0 01 093	Balloon lot number	
	0 02 084	Type of gas used in balloon	
	0 02 085	Amount of gas used in balloon	
	0 02 086	Balloon flight train length	
	0 02 082	Weight of balloon	
	0 08 041	Data significance	= 2 Balloon manufacture date
	3 01 011	Year, month, day	
		(ASCAT header information)	
3 01 125	0 01 033	Identification of originating/generating centre	
	0 01 034	Identification of originating/generating sub-centre	
	0 25 060	Software identification	
	0 01 007	Satellite identifier	
	0 02 019	Satellite instruments	
	0 01 012	Direction of motion of moving observing platform	

Notes:

(1) As supplied by originating sub-centre ARINC, this value is a pseudo-value rather than the actual value. The relationship between this pseudo-value and the true value is known only by ARINC.

(2) Descriptors from 3 01 041 to 3 01 049 and 3 01 062, 3 01 071, and 3 01 072 should not be used in CREX for transmission.

(3) Time of launch shall be reported with the highest possible accuracy available. If the launch time is not available with second accuracy, the entry for seconds shall be set to zero.

(4) Descriptor 3 01 055 should be used instead of 3 01 035 to encode moving buoy/platform information.

(5) This replication factor shall have a value of “1” when a 2-D feature is being described, whereas 3-D features may be described via any one of the following methods:

   (a) Via two or more horizontal sections in successive ascending flight levels. In this case, each section shall be described by an identical number of latitude/longitude points listed in identical order (i.e. where each point x of section n is to be joined via a straight line to point x of section n+1), in order to ensure that the overall shape of the 3-D feature is unambiguously described. In this case, all values reported for 0 33 042 shall be “missing”.

   (b) Via a single horizontal section with an appropriate value reported for 0 33 042, as follows. In all such cases, the corresponding horizontal section description applies throughout the entire region.

      (i) A value of “0” to indicate a region above (but not including) the reported flight level and with unspecified upper bound.

(continued)

(Category 01 – continued)

(ii) A value of “1” to indicate a region above (and including) the reported flight level and with unspecified upper bound.

(iii) A value of “2” to indicate a region below (but not including) the reported flight level and extending to the surface.

(iv) A value of “3” to indicate a region below (and including) the reported flight level and extending to the surface.

(c) Via two replications of the same horizontal section at the same reported flight level, in order to indicate a region extending both below and above (and including!) the reported flight level. In this case, the values reported for the two replications of 0 33 042 shall be as follows:

(i) Values of “3” and “1”, respectively, to indicate a region beginning from below a reported flight level, but continuing through that level upward to some unspecified point above (e.g. TOP ABV FL100).

(ii) Values of “1” and “3”, respectively, to indicate a region beginning from above a reported flight level, but continuing through that level downward to some unspecified point below (e.g. CIGS BLW FL010).

(6) This replication factor shall have a value of “1” when a circle or point is being described, and it shall have a value of “2” when a line is being described. A polygon, on the other hand, shall be described via a sequence of three or more contiguous points in accordance with the note to code table 0 08 007.

(7) The value reported for 0 19 007 shall be “missing” unless the horizontal section being described is a circle.

(8) Descriptor 3 01 002 should not be used.

Category 02 – Meteorological sequences common to surface data

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(Pressure and 3-hour pressure change)	
3 02 001	0 10 004	Pressure	Station level
	0 10 051	Pressure reduced to mean sea level	
	0 10 061	3-hour pressure change	
	0 10 063	Characteristic of pressure tendency	
		(High altitude station)	
3 02 002	0 10 004	Pressure	Station level
	0 07 004	Pressure	Pressure level
	0 10 003	Geopotential	Pressure level
	0 10 061	3-hour pressure change	
	0 10 063	Characteristic of pressure tendency	
		(Wind, temperature, humidity, visibility, weather)	
3 02 003	0 11 011	Wind direction at 10 m	
	0 11 012	Wind speed at 10 m	
	0 12 004	Air temperature at 2 m	
	0 12 006	Dewpoint temperature at 2 m	
	0 13 003	Relative humidity	
	0 20 001	Horizontal visibility	
	0 20 003	Present weather	
	0 20 004	Past weather (1)	
	0 20 005	Past weather (2)	
		(General cloud information)	
3 02 004	0 20 010	Cloud cover (total)	
	0 08 002	Vertical significance (surface observations)	
	0 20 011	Cloud amount	
	0 20 013	Height of base of cloud	
	0 20 012	Cloud type	
	0 20 012	Cloud type	
	0 20 012	Cloud type	
		(Cloud layer)	
3 02 005	0 08 002	Vertical significance (surface observations)	
	0 20 011	Cloud amount	
	0 20 012	Cloud type	
	0 20 013	Height of base of cloud	
		(Pressure and 24-hour pressure change)	
3 02 006	0 10 004	Pressure	Station level
	0 10 051	Pressure reduced to mean sea level	
	0 10 062	24-hour pressure change	
	0 10 063	Characteristic of pressure tendency	
		(Low altitude station)	
3 02 011	3 02 001	Pressure and 3-hour pressure change	
	3 02 003	Wind, temperature, humidity, visibility, weather	
	3 02 004	General cloud information	Significant cloud layer

(continued)

(Category 02 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(High altitude station)	
3 02 012	3 02 002	High altitude station	Pressure and pressure change
	3 02 003	Wind, temperature, humidity, visibility, weather	
	3 02 004	General cloud information	Significant cloud layer
		(Basic surface report)	
3 02 013	3 02 006	Pressure and 24-hour pressure change	
	3 02 003	Wind, temperature, humidity, visibility, weather	
	1 01 000	Delayed replication of 1 descriptor	
	0 31 001	Delayed descriptor replication factor	
	3 02 005	Cloud layer	
		(Waves)	
3 02 021	0 22 001	Direction of waves	
	0 22 011	Period of waves	
	0 22 021	Height of waves	
		(Wind waves)	
3 02 022	0 22 002	Direction of wind waves	
	0 22 012	Period of wind waves	
	0 22 022	Height of wind waves	
		(Swell waves)	
3 02 023	0 22 003	Direction of swell waves	
	0 22 013	Period of swell waves	
	0 22 023	Height of swell waves	
		(Wind and swell waves)	
3 02 024	3 02 022	Wind waves	
	1 01 002	Replicate 1 descriptor 2 times	
	3 02 023	Swell waves	2 systems of swell
		(Pressure information)	
3 02 031	3 02 001	Pressure and 3-hour pressure change	
	0 10 062	24-hour pressure change	
	0 07 004	Pressure	Standard level
	0 10 009	Geopotential height	
		(Temperature and humidity data)	
3 02 032	0 07 032	Height of sensor above local ground (or deck of marine platform)	Temperature and humidity measurement
	0 12 101	Temperature/air temperature	Scale: 2
	0 12 103	Dewpoint temperature	Scale: 2
	0 13 003	Relative humidity	
		(Visibility data)	
3 02 033	0 07 032	Height of sensor above local ground (or deck of marine platform)	Visibility measurement
	0 20 001	Horizontal visibility	

(continued)

(Category 02 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(Precipitation past 24 hours)	
3 02 034	0 07 032	Height of sensor above local ground (or deck of marine platform)	Precipitation measurement
	0 13 023	Total precipitation past 24 hours	
		(Basic synoptic “instantaneous” data)	
3 02 035	3 02 032	Temperature and humidity data	
	3 02 033	Visibility data	
	3 02 034	Precipitation past 24 hours	
	0 07 032	Height of sensor above local ground (or deck of marine platform)	Set to missing (cancel)
	3 02 004	General cloud information	
	1 01 000	Delayed replication of 1 descriptor	
	0 31 001	Delayed descriptor replication factor	
	3 02 005	Cloud layer	Individual cloud layer or mass
		(Clouds with bases below station level)	
3 02 036	1 05 000	Delayed replication of 5 descriptors	
	0 31 001	Delayed descriptor replication factor	
	0 08 002	Vertical significance (surface observations)	
	0 20 011	Cloud amount	
	0 20 012	Cloud type	
	0 20 014	Height of top of cloud	
	0 20 017	Cloud top description	
		(State of ground, snow depth, ground minimum temperature)	
3 02 037	0 20 062	State of the ground (with or without snow)	
	0 13 013	Total snow depth	
	0 12 113	Ground minimum temperature, past 12 hours	Scale: 2
		(Present and past weather)	
3 02 038	0 20 003	Present weather	
	0 04 024	Time period or displacement	Hours
	0 20 004	Past weather (1)	
	0 20 005	Past weather (2)	
		(Sunshine data (from 1 hour and 24 hour period))	
3 02 039	0 04 024	Time period or displacement	Hours
	0 14 031	Total sunshine	
		(Precipitation measurement)	
3 02 040	0 07 032	Height of sensor above local ground (or deck of marine platform)	Precipitation measurement
	1 02 002	Replicate 2 descriptors 2 times	
	0 04 024	Time period or displacement	Hours
	0 13 011	Total precipitation/total water equivalent	

(continued)

(Category 02 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(Extreme temperature data)	
3 02 041	0 07 032	Height of sensor above local ground (or deck of marine platform)	Temperature measurement
	0 04 024	Time period or displacement	
	0 04 024	Time period or displacement (see Notes 1 and 2)	
	0 12 111	Maximum temperature, at height and over period specified	Scale: 2
	0 04 024	Time period or displacement	
	0 04 024	Time period or displacement (see Note 2)	
	0 12 112	Minimum temperature, at height and over period specified	Scale: 2
		(Wind data)	
3 02 042	0 07 032	Height of sensor above local ground (or deck of marine platform)	Wind measurement
	0 02 002	Type of instrumentation for wind measurement	
	0 08 021	Time significance	= 2 Time averaged
	0 04 025	Time period or displacement	= –10 minutes, or number of minutes after a significant change of wind
	0 11 001	Wind direction	
	0 11 002	Wind speed	
	0 08 021	Time significance	Set to missing
	1 03 002	Replicate 3 descriptors 2 times	
	0 04 025	Time period or displacement	Minutes
	0 11 043	Maximum wind gust direction	
	0 11 041	Maximum wind gust speed	
		(Basic synoptic “period” data)	
3 02 043	3 02 038	Present and past weather	
	1 01 002	Replicate 1 descriptor 2 times	
	3 02 039	Sunshine data (from 1 hour and 24 hour period)	
	3 02 040	Precipitation measurement	
	3 02 041	Extreme temperature data	
	3 02 042	Wind data	
	0 07 032	Height of sensor above local ground (or deck of marine platform)	Set to missing (cancel)
		(Evaporation data)	
3 02 044	0 04 024	Time period or displacement	Hours
	0 02 004	Type of instrumentation for evaporation measurement or type of crop for which evapotranspiration is reported	
	0 13 033	Evaporation/evapotranspiration	
		(Radiation data (from 1 hour and 24 hour period))	
3 02 045	0 04 024	Time period or displacement	Hours
	0 14 002	Long-wave radiation, integrated over period specified	
	0 14 004	Short-wave radiation, integrated over period specified	

(continued)

(Category 02 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 02 045 *(continued)*	0 14 016	Net radiation, integrated over period specified	
	0 14 028	Global solar radiation (high accuracy), integrated over period specified	
	0 14 029	Diffuse solar radiation (high accuracy), integrated over period specified	
	0 14 030	Direct solar radiation (high accuracy), integrated over period specified	
		(Temperature change)	
3 02 046	0 04 024	Time period or displacement	
	0 04 024	Time period or displacement (see Note 3)	
	0 12 049	Temperature change over specified period	
		(Direction of cloud drift)	
3 02 047	1 02 003	Replicate 2 descriptors 3 times	
	0 08 002	Vertical significance (surface observations)	
	0 20 054	True direction from which a phenomenon or clouds are moving	
		(Direction and elevation of cloud)	
3 02 048	0 05 021	Bearing or azimuth	
	0 07 021	Elevation	Elevation angle
	0 20 012	Cloud type	
	0 05 021	Bearing or azimuth	Set to missing (cancel)
	0 07 021	Elevation	Set to missing (cancel)
		(Cloud information reported with vertical soundings)	
3 02 049	0 08 002	Vertical significance (surface observations)	
	0 20 011	Cloud amount	Low or middle clouds N_h
	0 20 013	Height of base of cloud	h
	0 20 012	Cloud type	Low clouds C_L
	0 20 012	Cloud type	Middle clouds C_M
	0 20 012	Cloud type	High clouds C_H
	0 08 002	Vertical significance (surface observations)	Set to missing
		(Radiosonde surface observation)	
3 02 050	0 08 041	Data significance	= 5 Surface observation displacement from launch point
	0 05 021	Bearing or azimuth	
	0 07 005	Height increment	
	2 02 130	Change scale	
	0 06 021	Distance	
	2 02 000	Change scale	Cancel
	0 08 041	Data significance	= 4 Surface observation
	2 01 131	Change data width	
	2 02 129	Change scale	

(continued)

(Category 02 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 02 050 *(continued)*	0 02 115	Type of surface observing equipment	
	0 10 004	Pressure	
	0 02 115	Type of surface observing equipment	
	0 13 003	Relative humidity	
	2 02 000	Change scale	Cancel
	2 01 000	Change data width	Cancel
	0 02 115	Type of surface observing equipment	
	0 11 001	Wind direction	
	0 11 002	Wind speed	
	0 02 115	Type of surface observing equipment	
	1 02 002	Replicate 2 descriptors 2 times	
	0 12 101	Temperature/air temperature	
	0 04 024	Time period or displacement	Hours
	0 02 115	Type of surface observing equipment	
	0 12 103	Dewpoint temperature	
	0 12 102	Wet-bulb temperature	
	1 01 003	Replicate 1 descriptor 3 times	
	0 20 012	Cloud type	
	0 20 011	Cloud amount	
	0 20 013	Height of base of cloud	
	1 01 002	Replicate 1 descriptor 2 times	
	0 20 003	Present weather	
3 02 051	0 10 004	Pressure	
	0 10 051	Pressure reduced to mean sea level	
	0 07 004	Pressure	Vertical location
	0 10 003	Geopotential	
	0 12 004	Air temperature at 2 m	
	0 12 051	Standard deviation temperature	
	0 12 016	Maximum temperature at 2 m, past 24 hours	
	0 12 017	Minimum temperature at 2 m, past 24 hours	
	0 13 004	Vapour pressure	
	1 02 004	Replicate 2 descriptors 4 times	
	0 08 051	Qualifier for number of missing values in calculation of statistic	
	0 08 020	Total number of missing entities (with respect to accumulation or average)	
		(Ship temperature and humidity data)	
3 02 052	0 07 032	Height of sensor above local ground (or deck of marine platform)	Temperature and humidity measurement
	0 07 033	Height of sensor above water surface	Temperature and humidity measurement
	0 12 101	Temperature/air temperature	Scale: 2
	0 02 039	Method of wet-bulb temperature measurement	
	0 12 102	Wet-bulb temperature	Scale: 2
	0 12 103	Dewpoint temperature	Scale: 2
	0 13 003	Relative humidity	

(continued)

(Category 02 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(Ship visibility data)	
3 02 053	0 07 032	Height of sensor above local ground (or deck of marine platform)	Visibility measurement
	0 07 033	Height of sensor above water surface	Visibility measurement
	0 20 001	Horizontal visibility	
		(Ship “instantaneous” data)	
3 02 054	3 02 052	Ship temperature and humidity data	
	3 02 053	Ship visibility data	
	0 07 033	Height of sensor above water surface	Set to missing (cancel)
	3 02 034	Precipitation past 24 hours	
	0 07 032	Height of sensor above local ground (or deck of marine platform)	Set to missing (cancel)
	3 02 004	General cloud information	
	1 01 000	Delayed replication of 1 descriptor	
	0 31 001	Delayed descriptor replication factor	
	3 02 005	Cloud layer	
		(Icing and ice)	
3 02 055	0 20 031	Ice deposit (thickness)	
	0 20 032	Rate of ice accretion (estimated)	
	0 20 033	Cause of ice accretion	
	0 20 034	Sea ice concentration	
	0 20 035	Amount and type of ice	
	0 20 036	Ice situation	
	0 20 037	Ice development	
	0 20 038	Bearing of ice edge	
		(Sea/water temperature)	
3 02 056	0 02 038	Method of water temperature and/or salinity measurement	
	0 07 063	Depth below sea/water surface (cm)	Sea-surface temperature measurement
	0 22 043	Sea/water temperature	
	0 07 063	Depth below sea/water surface (cm)	Set to missing (cancel)
		(Ship marine data)	
3 02 057	3 02 056	Sea/water temperature	Sea-surface temperature, method of measurement, and depth below sea surface
	3 02 021	Waves	
	3 02 024	Wind and swell waves	

(continued)

(Category 02 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(Ship extreme temperature data)	
3 02 058	0 07 032	Height of sensor above local ground (or deck of marine platform)	Temperature measurement
	0 07 033	Height of sensor above water surface	Temperature measurement
	0 04 024	Time period or displacement	
	0 04 024	Time period or displacement (see Notes 1 and 2)	
	0 12 111	Maximum temperature, at height and over period specified	Scale: 2
	0 04 024	Time period or displacement	
	0 04 024	Time period or displacement (see Note 2)	
	0 12 112	Minimum temperature, at height and over period specified	Scale: 2
		(Ship wind data)	
3 02 059	0 07 032	Height of sensor above local ground (or deck of marine platform)	Wind measurement
	0 07 033	Height of sensor above water surface	Wind measurement
	0 02 002	Type of instrumentation for wind measurement	
	0 08 021	Time significance	= 2 Time averaged
	0 04 025	Time period or displacement	= –10 minutes, or number of minutes after a significant change of wind
	0 11 001	Wind direction	
	0 11 002	Wind speed	
	0 08 021	Time significance	Set to missing
	1 03 002	Replicate 3 descriptors 2 times	
	0 04 025	Time period or displacement	Minutes
	0 11 043	Maximum wind gust direction	
	0 11 041	Maximum wind gust speed	
		(Ship “period” data)	
3 02 060	3 02 038	Present and past weather	
	3 02 040	Precipitation measurement	
	3 02 058	Ship extreme temperature data	
	3 02 059	Ship wind data	
		(Dangerous weather phenomena)	
3 02 066	0 20 023	Other weather phenomena	
	0 20 024	Intensity of phenomena	
	0 20 027	Phenomena occurrence	
	0 20 054	True direction from which a phenomenon or clouds are moving	
	0 20 023	Other weather phenomena	
	0 20 027	Phenomena occurrence	
	0 20 054	True direction from which a phenomenon or clouds are moving	
	0 20 025	Obscuration	
	0 20 026	Character of obscuration	

(continued)

(Category 02 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 02 066 *(continued)*	0 20 027	Phenomena occurrence	
	0 20 040	Evolution of drift snow	
	0 20 066	Maximum diameter of hailstones	
	0 20 027	Phenomena occurrence	
	0 20 021	Type of precipitation	
	0 20 067	Diameter of deposit	
	0 20 027	Phenomena occurrence	
		(Visibility data)	
3 02 069	0 07 032	Height of sensor above local ground (or deck of marine platform)	
	0 07 033	Height of sensor above water surface	
	0 33 041	Attribute of following value	
	0 20 001	Horizontal visibility	
		(Wind data)	
3 02 070	0 07 032	Height of sensor above local ground (or deck of marine platform)	
	0 07 033	Height of sensor above water surface	
	0 11 001	Wind direction	
	0 11 002	Wind speed	
	0 11 043	Maximum wind gust direction	
	0 11 041	Maximum wind gust speed	
	0 11 016	Extreme counterclockwise wind direction of a variable wind	
	0 11 017	Extreme clockwise wind direction of a variable wind	
		(Wind data from one-hour period)	
3 02 071	0 07 032	Height of sensor above local ground (or deck of marine platform)	
	0 07 033	Height of sensor above water surface	
	0 08 021	Time significance	= 2 Time averaged
	0 04 025	Time period or displacement	= –10 minutes, or number of minutes after a significant change of wind, if any
	0 11 001	Wind direction	
	0 11 002	Wind speed	
	0 08 021	Time significance	Set to missing
	1 03 002	Replicate 3 descriptors 2 times	
	0 04 025	Time period or displacement	= –10 minutes in the first replication, = –60 minutes in the second replication
	0 11 043	Maximum wind gust direction	
	0 11 041	Maximum wind gust speed	
	0 04 025	Time period or displacement	= –10 minutes
	0 11 016	Extreme counterclockwise wind direction of a variable wind	
	0 11 017	Extreme clockwise wind direction of a variable wind	

(continued)

(Category 02 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(Temperature and humidity data)	
3 02 072	0 07 032	Height of sensor above local ground (or deck of marine platform)	
	0 07 033	Height of sensor above water surface	
	0 12 101	Temperature/air temperature	Scale: 2
	0 12 103	Dewpoint temperature	Scale: 2
	0 13 003	Relative humidity	
		(Cloud data)	
3 02 073	0 20 010	Cloud cover (total)	
	1 05 004	Replicate 5 descriptors 4 times	
	0 08 002	Vertical significance (surface observations)	
	0 20 011	Cloud amount	
	0 20 012	Cloud type	
	0 33 041	Attribute of following value	
	0 20 013	Height of base of cloud	
		(Present and past weather)	
3 02 074	0 20 003	Present weather	
	0 04 025	Time period or displacement	
	0 20 004	Past weather (1)	
	0 20 005	Past weather (2)	
		(Intensity of precipitation, size of precipitation element)	
3 02 075	0 08 021	Time significance	= 2 Time averaged
	0 04 025	Time period or displacement	= –10 minutes
	0 13 055	Intensity of precipitation	
	0 13 058	Size of precipitating element	
	0 08 021	Time significance	Set to missing
		(Precipitation, obscuration and other phenomena)	
3 02 076	0 20 021	Type of precipitation	
	0 20 022	Character of precipitation	
	0 26 020	Duration of precipitation	
	0 20 023	Other weather phenomena	
	0 20 024	Intensity of phenomena	
	0 20 025	Obscuration	
	0 20 026	Character of obscuration	
		(Extreme temperature data)	
3 02 077	0 07 032	Height of sensor above local ground (or deck of marine platform)	
	0 07 033	Height of sensor above water surface	
	0 04 025	Time period or displacement	
	0 12 111	Maximum temperature, at height and over period specified	Scale: 2
	0 12 112	Minimum temperature, at height and over period specified	Scale: 2

(continued)

(Category 02 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 02 077 *(continued)*	0 07 032	Height of sensor above local ground (or deck of marine platform)	Ground temperature
	0 04 025	Time period or displacement	
	0 12 112	Minimum temperature, at height and over period specified	Scale: 2 **|** Ground temperature
		(State of ground and snow depth measurement)	
3 02 078	0 02 176	Method of state of ground measurement	
	0 20 062	State of the ground (with or without snow)	
	0 02 177	Method of snow depth measurement	
	0 13 013	Total snow depth	
		(Precipitation measurement)	
3 02 079	0 07 032	Height of sensor above local ground (or deck of marine platform)	
	0 02 175	Method of precipitation measurement	
	0 02 178	Method of liquid content measurement of precipitation	
	0 04 025	Time period or displacement	
	0 13 011	Total precipitation/total water equivalent	
		(Evaporation measurement)	
3 02 080	0 02 185	Method of evaporation measurement	
	0 04 025	Time period or displacement	
	0 13 033	Evaporation/evapotranspiration	
		(Total sunshine data)	
3 02 081	0 04 025	Time period or displacement	
	0 14 031	Total sunshine	
		(Radiation data)	
3 02 082	0 04 025	Time period or displacement	
	0 14 002	Long-wave radiation, integrated over period specified	
	0 14 004	Short-wave radiation, integrated over period specified	
	0 14 016	Net radiation, integrated over period specified	
	0 14 028	Global solar radiation (high accuracy), integrated over period specified	
	0 14 029	Diffuse solar radiation (high accuracy), integrated over period specified	
	0 14 030	Direct solar radiation (high accuracy), integrated over period specified	
		(First-order statistics of P, W, T, U data)	
3 02 083	0 04 025	Time period or displacement	
	0 08 023	First-order statistics	
	0 10 004	Pressure	
	0 11 001	Wind direction	
	0 11 002	Wind speed	
	0 12 101	Temperature/air temperature	Scale: 2
	0 13 003	Relative humidity	
	0 08 023	First-order statistics	Set to missing

(continued)

(Category 02 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(“Instantaneous” data of sequence 3 07 096)	
3 02 084	3 02 031	Pressure information	
	3 02 072	Temperature and humidity data	
	1 03 000	Delayed replication of 3 descriptors	
	0 31 000	Short delayed descriptor replication factor	
	1 01 005	Replicate 1 descriptor 5 times	
	3 07 063	Depth below land surface and soil temperature	
	0 07 061	Depth below land surface	Set to missing (cancel)
		Visibility data	
	1 01 000	Delayed replication of 1 descriptor	
	0 31 000	Short delayed descriptor replication factor	
	3 02 069	Visibility data	
	0 07 032	Height of sensor above local ground (or deck of marine platform)	Set to missing (cancel)
	0 07 033	Height of sensor above water surface	Set to missing (cancel)
		Marine data	
	1 05 000	Delayed replication of 5 descriptors	
	0 31 000	Short delayed descriptor replication factor	
	0 20 031	Ice deposit (thickness)	
	0 20 032	Rate of ice accretion (estimated)	
	0 02 038	Method of water temperature and/or salinity measurement	
	0 22 043	Sea/water temperature	Scale: 2
	3 02 021	Waves	
		State of ground and snow depth measurement	
	1 01 000	Delayed replication of 1 descriptor	
	0 31 000	Short delayed descriptor replication factor	
	3 02 078	State of ground and snow depth measurement	
	0 12 113	Ground minimum temperature, past 12 hours	Scale: 2
		Cloud data	
	1 01 000	Delayed replication of 1 descriptor	
	0 31 000	Short delayed descriptor replication factor	
	3 02 004	General cloud information	
	1 05 000	Delayed replication of 5 descriptors	
	0 31 001	Delayed descriptor replication factor	
	0 08 002	Vertical significance (surface observations)	
	0 20 011	Cloud amount	
	0 20 012	Cloud type	
	0 33 041	Attribute of following value	
	0 20 013	Height of base of cloud	
	3 02 036	Clouds with bases below station level	
		Direction of cloud drift $6D_LD_MD_H$	
	1 01 000	Delayed replication of 1 descriptor	
	0 31 000	Short delayed descriptor replication factor	
	3 02 047	Direction of cloud drift	
	0 08 002	Vertical significance (surface observations)	Set to missing (cancel)
		Direction and elevation of cloud $57CD_ae_c$	
	1 01 000	Delayed replication of 1 descriptor	
	0 31 000	Short delayed descriptor replication factor	
	3 02 048	Direction and elevation of cloud	

(continued)

(Category 02 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(“Period” data of sequence 3 07 096)	
		Present and past weather data	
3 02 085	1 05 000	Delayed replication of 5 descriptors	
	0 31 000	Short delayed descriptor replication factor	
	0 20 003	Present weather	
	1 03 002	Replicate 3 descriptors 2 times	
	0 04 024	Time period or displacement	= –1 hour in the first replication, = –x hours in the second replication, x corresponding to the time period of W_1W_2 in the SYNOP report
	0 20 004	Past weather (1)	
	0 20 005	Past weather (2)	
		Intensity of precipitation, size of precipitation element	
	1 01 000	Delayed replication of 1 descriptor	
	0 31 000	Short delayed descriptor replication factor	
	3 02 175	Intensity of precipitation, size of precipitation element	
		Precipitation, obscuration and other phenomena	
	1 02 000	Delayed replication of 2 descriptors	
	0 31 000	Short delayed descriptor replication factor	
	0 04 025	Time period or displacement	= –10 minutes
	3 02 076	Precipitation, obscuration and other phenomena	
		Lightning data	
	1 02 000	Delayed replication of 2 descriptors	
	0 31 000	Short delayed descriptor replication factor	
	0 04 025	Time period or displacement	= –10 minutes
	0 13 059	Number of flashes (thunderstorm)	
		Wind data	
	0 07 032	Height of sensor above local ground (or deck of marine platform)	
	0 07 033	Height of sensor above water surface	
	0 08 021	Time significance	= 2 Time averaged
	0 04 025	Time period or displacement	= –10 minutes, or number of minutes after a significant change of wind
	0 11 001	Wind direction	
	0 11 002	Wind speed	
	0 08 021	Time significance	Set to missing
	1 03 003	Replicate 3 descriptors 3 times	
	0 04 025	Time period or displacement	= –10 minutes in the first replication, = –60 minutes in the second replication, = –60x3 or 60x6 minutes in the third replication
	0 11 043	Maximum wind gust direction	
	0 11 041	Maximum wind gust speed	

(continued)

(Category 02 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 02 085 *(continued)*	0 04 025	Time period or displacement	= –10 minutes
	0 11 016	Extreme counterclockwise wind direction of a variable wind	
	0 11 017	Extreme clockwise wind direction of a variable wind	
		Extreme temperature data	
	3 02 077	Extreme temperature data	
	0 07 033	Height of sensor above water surface	Set to missing (cancel)
	3 02 041	Extreme temperature data	
		Precipitation measurement	
	1 06 000	Delayed replication of 6 descriptors	
	0 31 000	Short delayed descriptor replication factor	
	0 07 032	Height of sensor above local ground (or deck of marine platform)	
	0 02 175	Method of precipitation measurement	
	0 02 178	Method of liquid content measurement of precipitation	
	1 02 005	Replicate 2 descriptors 5 times	
	0 04 024	Time period or displacement	= –1 hour in the first replication, = –3, –6, –12 and –24 hours in the other replications
	0 13 011	Total precipitation/total water equivalent	
	0 07 032	Height of sensor above local ground (or deck of marine platform)	Set to missing (cancel)
		Evaporation data	
	1 03 000	Delayed replication of 3 descriptors	
	0 31 000	Short delayed descriptor replication factor	
	0 02 185	Method of evaporation measurement	
	1 01 002	Replicate 1 descriptor 2 times	
	3 02 044	Evaporation data	
		Total sunshine data	
	1 02 000	Delayed replication of 2 descriptors	
	0 31 000	Short delayed descriptor replication factor	
	1 01 002	Replicate 1 descriptor 2 times	
	3 02 039	Sunshine data (from 1 hour and 24 hour period)	
		Radiation data	
	1 02 000	Delayed replication of 2 descriptors	
	0 31 000	Short delayed descriptor replication factor	
	1 01 002	Replicate 1 descriptor 2 times	
	3 02 045	Radiation data (from 1 hour and 24 hour period)	
		Temperature change gr. 54$g_0s_nd_T$	
	1 01 000	Delayed replication of 1 descriptor	
	0 31 000	Short delayed descriptor replication factor	
	3 02 046	Temperature change	
		First order statistics of P, W, T, U data	
	1 01 000	Delayed replication of 1 descriptor	
	0 31 000	Short delayed descriptor replication factor	
	3 02 083	First-order statistics of P, W, T, U data	

(continued)

(Category 02 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(Locust information)	
3 02 089	0 20 101	Locust (acridian) name	L_n
	0 20 102	Locust (maturity) colour	L_c
	0 20 103	Stage of development of locusts	L_d
	0 20 104	Organization state of swarm or band of locusts	L_g
	0 20 105	Size of swarm or band of locusts and duration of passage of swarm	s_L
	0 20 106	Locust population density	d_L
	0 20 107	Direction of movements of locust swarm	D_L
	0 20 108	Extent of vegetation	v_e
		(Sea/water temperature high precision)	
3 02 090	0 02 038	Method of water temperature and/or salinity measurement	
	0 07 063	Depth below sea/water surface (cm)	Sea-surface temperature measurement
	0 22 045	Sea/water temperature	
		(Intensity of precipitation, size of precipitation element)	
3 02 175	0 08 021	Time significance	
	0 04 025	Time period or displacement	
	0 13 155	Intensity of precipitation (high accuracy)	
	0 13 058	Size of precipitating element	
	0 08 021	Time significance	

Notes:

(1) Within RA IV, the maximum temperature at 1200 UTC is reported for the previous calendar day (i.e. the ending time of the period is not equal to the nominal time of the report). To construct the required time range, descriptor 0 04 024 has to be included two times. If the period ends at the nominal time of the report, value of the second 0 04 024 shall be set to 0.

(2) Within RA III, the maximum daytime temperature and the minimum night-time temperature is reported (i.e. the ending time of the period may not be equal to the nominal time of the report). To construct the required time range, descriptor 0 04 024 has to be included two times. If the period ends at the nominal time of the report, value of the second 0 04 024 shall be set to 0.

(3) To construct the required time range, descriptor 0 04 024 has to be included two times.

Category 03 – Meteorological sequences common to vertical soundings data

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 03 001	0 07 003	Geopotential	
	0 11 001	Wind direction	
	0 11 002	Wind speed	
		(Wind at pressure level)	
3 03 002	0 07 004	Pressure	
	0 11 001	Wind direction	
	0 11 002	Wind speed	
3 03 003	0 07 004	Pressure	
	0 10 003	Geopotential	
	0 12 001	Temperature/air temperature	
	0 12 003	Dewpoint temperature	
3 03 004	0 07 004	Pressure	
	0 10 003	Geopotential	
	0 12 001	Temperature/air temperature	
	0 12 003	Dewpoint temperature	
	0 11 001	Wind direction	
	0 11 002	Wind speed	
		(Wind at height)	
3 03 011	0 07 003	Geopotential	
	0 08 001	Vertical sounding significance	
	0 11 001	Wind direction	
	0 11 002	Wind speed	
		(Wind at pressure level)	
3 03 012	0 07 004	Pressure	
	0 08 001	Vertical sounding significance	
	0 11 001	Wind direction	
	0 11 002	Wind speed	
		(Geopotential, temperature, humidity, wind at pressure level)	
3 03 013	0 07 004	Pressure	
	0 08 001	Vertical sounding significance	
	0 10 003	Geopotential	
	0 12 001	Temperature/air temperature	
	0 13 003	Relative humidity	
	0 11 001	Wind direction	
	0 11 002	Wind speed	
		(Geopotential, temperature, dewpoint temperature, wind at pressure level)	
3 03 014	0 07 004	Pressure	
	0 08 001	Vertical sounding significance	
	0 10 003	Geopotential	
	0 12 001	Temperature/air temperature	

(continued)

(Category 03 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 03 014 *(continued)*	0 12 003	Dewpoint temperature	
	0 11 001	Wind direction	
	0 11 002	Wind speed	
		(Layer, quality)	
3 03 021	0 07 004	Pressure }	Define layer
	0 07 004	Pressure }	
	2 04 007	Add associated field	7 bits long
	0 31 021	Associated field significance	
3 03 022	3 03 021	Layer, quality	
	0 10 003	Geopotential	Layer mean thickness
	2 04 000	Add associated field	Cancel
		(Layer mean temperature)	
3 03 023	3 03 021	Layer, quality	
	0 12 001	Temperature/air temperature	Layer mean
	2 04 000	Add associated field	Cancel
		(Precipitable water)	
3 03 024	3 03 021	Layer, quality	
	0 13 016	Precipitable water	
	2 04 000	Add associated field	Cancel
		(Satellite channel and brightness temperature)	
3 03 025	0 02 025	Satellite channel(s) used in computation	
	2 04 007	Add associated field	7 bits long
	0 31 021	Associated field significance	
	0 12 063	Brightness temperature	
	2 04 000	Add associated field	Cancel
3 03 026	0 07 004	Pressure	
	0 08 003	Vertical significance (satellite observations)	
	2 04 007	Add associated field	7 bits long
	0 31 021	Associated field significance	
	0 12 001	Temperature/air temperature	
	2 04 000	Add associated field	Cancel
3 03 027	0 07 004	Pressure	
	2 04 007	Add associated field	7 bits long
	0 31 021	Associated field significance	
	0 10 003	Geopotential	
	2 04 000	Add associated field	Cancel

(continued)

(Category 03 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(Significance data, land/sea, skin temperature)	
3 03 031	0 07 004	Pressure	
	0 08 003	Vertical significance (satellite observations)	Base of sounding
	0 07 021	Elevation	Local zenith
	0 07 022	Solar elevation	Solar zenith
	0 08 012	Land/sea qualifier	
	0 12 061	Skin temperature	
		(Cloud)	
3 03 032	0 20 011	Cloud amount	
	0 20 016	Pressure at top of cloud	
		(Cloud)	
3 03 033	0 20 010	Cloud cover (total)	
	0 20 016	Pressure at top of cloud	
		(Radiosonde duration of flight and termination information)	
3 03 040	0 08 041	Data significance	= 7 Flight level termination point
	0 04 025	Time period or displacement	Minutes
	0 04 026	Time period or displacement	Seconds
	3 01 021	Latitude/longitude (high accuracy)	
	3 01 122	Date/time (to hundredths of second)	
	2 01 131	Change data width	
	2 02 129	Change scale	
	0 25 069	Flight level pressure corrections	
	0 07 004	Pressure	
	0 13 003	Relative humidity	
	2 02 000	Change scale	Cancel
	2 01 000	Change data width	Cancel
	0 02 013	Solar and infrared radiation correction	
	0 12 101	Temperature/air temperature	
	0 10 009	Geopotential height	
	1 02 002	Replicate 2 descriptors 2 times	
	0 08 040	Flight level significance	
	0 35 035	Reason for termination	
		(Wind sequence)	
3 03 041	0 02 152	Satellite instrument used in data processing	
	0 02 023	Satellite-derived wind computation method	
	0 07 004	Pressure	
	0 11 001	Wind direction	
	0 11 002	Wind speed	
	0 02 153	Satellite channel centre frequency	
	0 02 154	Satellite channel band width	
	0 12 071	Coldest cluster temperature	

(continued)

(Category 03 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(Wind data at a pressure level with radiosonde position)	
3 03 050	0 04 086	Long time period or displacement	Since launch time
	0 08 042	Extended vertical sounding significance	
	0 07 004	Pressure	
	0 05 015	Latitude displacement (high accuracy)	Since launch site
	0 06 015	Longitude displacement (high accuracy)	Since launch site
	0 11 001	Wind direction	
	0 11 002	Wind speed	
		(Wind shear data at a pressure level with radiosonde position)	
3 03 051	0 04 086	Long time period or displacement	Since launch time
	0 08 042	Extended vertical sounding significance	
	0 07 004	Pressure	
	0 05 015	Latitude displacement (high accuracy)	Since launch site
	0 06 015	Longitude displacement (high accuracy)	Since launch site
	0 11 061	Absolute wind shear in 1 km layer below	
	0 11 062	Absolute wind shear in 1 km layer above	
		(Wind data at a height level with radiosonde position)	
3 03 052	0 04 086	Long time period or displacement	Since launch time
	0 08 042	Extended vertical sounding significance	
	0 07 009	Geopotential height	
	0 05 015	Latitude displacement (high accuracy)	Since launch site
	0 06 015	Longitude displacement (high accuracy)	Since launch site
	0 11 001	Wind direction	
	0 11 002	Wind speed	
		(Wind shear data at a height level with radiosonde position)	
3 03 053	0 04 086	Long time period or displacement	Since launch time
	0 08 042	Extended vertical sounding significance	
	0 07 009	Geopotential height	
	0 05 015	Latitude displacement (high accuracy)	Since launch site
	0 06 015	Longitude displacement (high accuracy)	Since launch site
	0 11 061	Absolute wind shear in 1 km layer below	
	0 11 062	Absolute wind shear in 1 km layer above	
		(Temperature, dewpoint and wind data at a pressure level with radiosonde position)	
3 03 054	0 04 086	Long time period or displacement	Since launch time
	0 08 042	Extended vertical sounding significance	
	0 07 004	Pressure	
	0 10 009	Geopotential height	
	0 05 015	Latitude displacement (high accuracy)	Since launch site
	0 06 015	Longitude displacement (high accuracy)	Since launch site
	0 12 101	Temperature/air temperature	Scale: 2

(continued)

(Category 03 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 03 054 *(continued)*	0 12 103 0 11 001 0 11 002	Dewpoint temperature Wind direction Wind speed	Scale: 2
		(Temperature, dewpoint, relative humidity and wind data at a height level with radiosonde position)	
3 03 055	0 04 086 0 08 042 0 07 009 0 05 015 0 06 015 0 12 101 0 13 009 0 12 103 0 11 001 0 11 002	Long time period or displacement Extended vertical sounding significance Geopotential height Latitude displacement (high accuracy) Longitude displacement (high accuracy) Temperature/air temperature Relative humidity Dewpoint temperature Wind direction Wind speed	Since launch time Since launch site Since launch site Scale: 2 Scale: 2

Notes:

(1) Descriptors 3 03 021 to 3 03 027 are not available in CREX.

(2) Long time displacement 0 04 086 represents the time offset from the launch time 3 01 013 (in seconds).

(3) Latitude displacement 0 05 015 represents the latitude offset from the latitude of the launch site. Longitude displacement 0 06 015 represents the longitude offset from the longitude of the launch site.

Category 04 – Meteorological sequences common to satellite observations

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(Cloud top pressure, temperature, wind)	
3 04 001	0 08 003	Vertical significance (satellite observations)	
	0 10 004	Pressure	
	0 12 001	Temperature/air temperature	
	0 11 001	Wind direction	
	0 11 002	Wind speed	
		(Cloud top pressure, wind)	
3 04 002	0 08 003	Vertical significance (satellite observations)	
	0 10 004	Pressure	
	0 11 001	Wind direction	
	0 11 002	Wind speed	
		(Surface temperature)	
3 04 003	0 08 003	Vertical significance (satellite observations)	
	0 12 001	Temperature/air temperature	
		(Cloud top pressure, cloud cover, temperature)	
3 04 004	0 08 003	Vertical significance (satellite observations)	
	0 10 004	Pressure	
	0 20 010	Cloud cover (total)	
	0 12 001	Temperature/air temperature	
		(Layer mean relative humidity)	
3 04 005	0 02 024	Integrated mean humidity computational method	
	0 07 004	Pressure }	Define layer
	0 07 004	Pressure }	
	0 13 003	Relative humidity	
		(Radiation)	
3 04 006	0 14 001	Long-wave radiation, integrated over 24 hours	Outgoing long-wave radiation
	0 14 001	Long-wave radiation, integrated over 24 hours	Incoming long-wave radiation
	0 14 003	Short-wave radiation, integrated over 24 hours	Outgoing short-wave radiation
		(GOES-I/M info)	
3 04 011	0 02 163	Height assignment method	
	0 02 164	Tracer correlation method	
	0 08 012	Land/sea qualifier	
	0 07 024	Satellite zenith angle	
	0 02 057	Origin of first-guess information for GOES-I/M soundings	
	0 08 021	Time significance	
	0 04 001	Year	
	0 04 002	Month	
	0 04 003	Day	
	0 04 004	Hour	

(continued)

(Category 04 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 04 011 *(continued)*	0 08 021	Time significance	
	0 04 024	Time period or displacement	
	1 10 004	Replicate 10 descriptors 4 times	
	0 08 021	Time significance	
	0 04 004	Hour	
	0 04 005	Minute	
	0 04 006	Second	
	0 08 021	Time significance	
	0 04 004	Hour	
	0 04 005	Minute	
	0 04 006	Second	
	0 11 001	Wind direction	
	0 11 002	Wind speed	
	1 03 010	Replicate 3 descriptors 10 times	
	0 02 163	Height assignment method	
	0 07 004	Pressure	
	0 12 001	Temperature/air temperature	
		(Location of platform)	
3 04 030	0 27 031	In direction of 0 degrees longitude, distance from the Earth's centre	
	0 28 031	In direction 90 degrees East, distance from the Earth's centre	
	0 10 031	In direction of the North Pole, distance from the Earth's centre	
		(Speed of platform)	
3 04 031	0 01 041	Absolute platform velocity – first component	
	0 01 042	Absolute platform velocity – second component	
	0 01 043	Absolute platform velocity – third component	
		(Cloud fraction)	
3 04 032	0 02 153	Satellite channel centre frequency	
	0 02 154	Satellite channel band width	
	0 20 081	Cloud amount in segment	
	0 20 082	Amount segment cloud free	
	0 20 012	Cloud type	
		(Clear sky radiance)	
3 04 033	0 02 152	Satellite instrument used in data processing	
	0 02 166	Radiance type	
	0 02 167	Radiance computational method	
	0 02 153	Satellite channel centre frequency	
	0 02 154	Satellite channel band width	
	0 12 075	Spectral radiance	
	0 12 076	Radiance	
	0 12 063	Brightness temperature	

(continued)

(Category 04 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(Latitude/longitude, solar elevation, number of layers)	
3 04 034	1 02 004	Replicate 2 descriptors 4 times	
	0 27 001	Latitude (high accuracy)	
	0 28 001	Longitude (high accuracy)	
	0 07 022	Solar elevation	
	0 05 043	Field of view number	
	0 20 010	Cloud cover (total)	
	0 20 016	Pressure at top of cloud	
	0 33 003	Quality information	
	0 10 040	Number of retrieved layers	
		(All sky radiance data)	
3 04 035	0 02 153	Satellite channel centre frequency	
	0 02 154	Satellite channel band width	
	0 12 063	Brightness temperature	
	0 08 001	Meteorological feature	Pixel type: clear
	0 12 063	Brightness temperature	Clear
	0 08 001	Meteorological feature	Pixel type: cloudy
	0 12 063	Brightness temperature	Cloudy
	0 08 001	Meteorological feature	Cancel
	0 08 003	Vertical significance (satellite observations)	Low cloud
	0 12 063	Brightness temperature	Low cloud
	0 08 003	Vertical significance (satellite observations)	Mid cloud
	0 12 063	Brightness temperature	Mid cloud
	0 08 003	Vertical significance (satellite observations)	High cloud
	0 12 063	Brightness temperature	High cloud
	0 08 003	Vertical significance (satellite observations)	Cancel
		(Cloud coverage)	
3 04 036	0 20 082	Amount segment cloud free	
	0 08 012	Land/sea qualifier	Sea
	0 20 082	Amount segment cloud free	Sea
	0 08 012	Land/sea qualifier	Cancel
	0 20 081	Cloud amount in segment	
	0 08 003	Vertical significance (satellite observations)	Low cloud
	0 20 081	Cloud amount in segment	Low cloud
	0 08 003	Vertical significance (satellite observations)	Mid cloud
	0 20 081	Cloud amount in segment	Mid cloud
	0 08 003	Vertical significance (satellite observations)	High cloud
	0 20 081	Cloud amount in segment	High cloud
	0 08 003	Vertical significance (satellite observations)	Cancel
		(All sky radiance data)	
3 04 037	0 02 153	Satellite channel centre frequency	
	0 02 154	Satellite channel band width	
	0 12 063	Brightness temperature	
	0 08 011	Meteorological feature	Pixel type: clear
	0 12 063	Brightness temperature	Clear
	0 08 011	Meteorological feature	Pixel type: cloudy
	0 12 063	Brightness temperature	Cloudy

(continued)

(Category 04 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 04 037 *(continued)*	0 08 011 0 08 003 0 12 063 0 08 003 0 12 063 0 08 003 0 12 063	Meteorological feature Vertical significance (satellite observations) Brightness temperature Vertical significance (satellite observations) Brightness temperature Vertical significance (satellite observations) Brightness temperature	Cancel Low cloud Low cloud Mid cloud Mid cloud High cloud

Note: 3 04 035 is deprecated.

Category 05 – Meteorological or hydrological sequences common to hydrological observations

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(SADC-HYCOS single measurement)	
3 05 001	0 11 001	Wind direction	
	0 11 002	Wind speed	
	0 13 060	Total accumulated precipitation	
	0 13 071	Upstream water level	
		(SADC-HYCOS environmental measurement)	
3 05 002	3 01 012	Hour, minute	
	0 12 001	Temperature/air temperature	
	0 13 003	Relative humidity	
	0 14 051	Direct solar radiation integrated over last hour	
	0 13 060	Total accumulated precipitation	
	0 13 072	Downstream water level	
	0 13 080	Water pH	
	0 13 081	Water conductivity	
	0 13 082	Water temperature	
	0 13 083	Dissolved oxygen	
	0 13 084	Turbidity	
		(SADC-HYCOS measurement array definition)	
3 05 003	3 01 012	Hour, minute	First single measurement minus increment
	0 04 065	Short time increment	Time interval between measurements
	1 01 000	Delayed replication of 1 descriptor	
	0 31 001	Delayed descriptor replication factor	
	3 05 001	SADC-HYCOS single measurement	
		(SADC-HYCOS report)	
3 05 004	3 01 030	Identification – with physical location	
	3 05 002	SADC-HYCOS environmental measurement	
	3 05 003	SADC-HYCOS measurement array definition	
		(MEDHYCOS measurement)	
3 05 006	0 13 072	Downstream water level	
	0 13 082	Water temperature	
	0 13 019	Total precipitation past 1 hour	
	0 12 001	Temperature/air temperature	
	0 13 073	Maximum water level	
	0 13 060	Total accumulated precipitation	
		(MEDHYCOS report)	
3 05 007	3 01 029	Identification	
	3 01 012	Hour, minute	Time of first measurement
	0 04 065	Short time increment	Time interval between measurements
	1 01 000	Delayed replication of 1 descriptor	

(continued)

(Category 05 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 05 007 *(continued)*	0 31 001	Delayed descriptor replication factor	
	3 05 006	MEDHYCOS measurement	Single measurement
		(AOCHYCOS – Chad measurement)	
3 05 008	3 05 006	MEDHYCOS measurement	Same as MEDHYCOS type measurement
	0 12 030	Soil temperature	At –50 cm
		(AOCHYCOS – Chad report)	
3 05 009	3 01 029	Identification	
	3 01 012	Hour, minute	Time of first measurement
	0 04 065	Short time increment	Time interval between measurements
	1 01 000	Delayed replication of 1 descriptor	
	0 31 001	Delayed descriptor replication factor	
	3 05 008	AOCHYCOS – Chad measurement	Single measurement
		(MEDHYCOS-Measurement type 2)	
3 05 010	3 05 008	AOCHYCOS-Chad measurement	Same as AOCHYCOS type measurement
	0 02 091	Entry sensor 4/20 mA	No. 1
	0 02 091	Entry sensor 4/20 mA	No. 2
		(MEDHYCOS report type 2)	
3 05 011	3 01 029	Identification	
	3 01 012	Hour, minute	Time of first measurement
	0 04 065	Short time increment	Time interval between measurements
	1 01 000	Delayed replication of 1 descriptor	
	0 31 001	Delayed descriptor replication factor	
	3 05 010	MEDHYCOS-Measurement type 2	Single measurement
		(Meteorological parameters associated with hydrological data)	
3 05 016	0 14 021	Global solar radiation, integrated over period specified	
	0 07 004	Pressure	Atmospheric pressure
	0 13 003	Relative humidity	
	0 11 002	Wind speed	
	0 11 001	Wind direction	
	0 11 041	Maximum wind gust speed	
	0 11 043	Maximum wind gust direction	
		(Water quality measurement)	
3 05 017	0 13 080	Water pH	
	0 13 081	Water conductivity	
	0 13 083	Dissolved oxygen	
	0 13 085	Oxydation Reduction Potential (ORP)	
	0 13 084	Turbidity	

(continued)

(Category 05 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(MEDHYCOS report with meteorology and water quality data)	
3 05 018	3 01 029	Identification	
	3 01 012	Hour, minute	Time of first measurement
	0 04 065	Short time increment	Hour increment
	1 03 000	Delayed replication of 3 descriptors	
	0 31 001	Delayed descriptor replication factor	
	3 05 008	AOCHYCOS-Chad measurement	Same as AOCHYCOS type measurement
	3 05 016	Meteorological parameters associated with hydrological data	
	3 05 017	Water quality measurement	

Category 06 – Meteorological or oceanographic sequences common to oceanographic observations

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(Depth, temperature)	
3 06 001	0 02 032	Indicator for digitization	
	1 02 000	Delayed replication of 2 descriptors	
	0 31 001	Delayed descriptor replication factor	
	0 07 062	Depth below sea/water surface	
	0 22 042	Sea/water temperature	
		(Current)	
3 06 002	0 02 031	Duration and time of current measurement	
	0 22 004	Direction of current	
	0 22 031	Speed of current	
		(Surface wind and temperature)	
3 06 003	0 02 002	Type of instrumentation for wind measurement	
	0 11 011	Wind direction at 10 m	
	0 11 012	Wind speed at 10 m	
	0 12 004	Air temperature at 2 m	
		(Depth, temperature, salinity)	
3 06 004	0 02 032	Indicator for digitization	
	0 02 033	Method of salinity/depth measurement	
	1 03 000	Delayed replication of 3 descriptors	
	0 31 001	Delayed descriptor replication factor	
	0 07 062	Depth below sea/water surface	
	0 22 043	Sea/water temperature	
	0 22 062	Salinity	
3 06 005	0 02 031	Duration and time of current measurement	
	1 03 000	Delayed replication of 3 descriptors	
	0 31 001	Delayed descriptor replication factor	
	0 07 062	Depth below sea/water surface	
	0 22 004	Direction of current	
	0 22 031	Speed of current	
		(Under water sounding (optional) parameters)	
3 06 006	3 06 003	Surface wind and temperature	
	3 06 002	Current	
	0 22 063	Total water depth	
		(Buoy spare block parameters)	
3 06 007	0 01 012	Direction of motion of moving observing platform	
	0 01 014	Platform drift speed (high precision)	
	3 06 008	Buoy instrumentation parameters	
	0 04 024	Time period or displacement	
	0 27 003	Alternate latitude (coarse accuracy)	
	0 28 003	Alternate longitude (coarse accuracy)	

(continued)

(Category 06 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(Buoy instrumentation parameters)	
3 06 008	0 02 034	Drogue type	
	0 02 035	Cable length	
	0 02 036	Buoy type	
		(Tide report identification, water level checks, time increments)	
3 06 019	0 01 075	Tide station identification	Alphanumeric
	3 01 011	Year, month, day	
	3 01 012	Hour, minute	
	0 22 042	Sea/water temperature	
	0 22 120	Tide station automated water level check	
	0 22 121	Tide station manual water level check	
	0 04 015	Time increment (see Note 1)	Minutes
	0 04 065	Short time increment	
		(Tide report identification, water level checks, time period or displacement, time increment) (see Note 2)	
3 06 020	0 01 075	Tide station identification	Alphanumeric
	3 01 011	Year, month, day	
	3 01 012	Hour, minute	
	0 22 042	Sea/water temperature	
	0 22 120	Tide station automated water level check	
	0 22 121	Tide station manual water level check	
	0 04 075	Short time period or displacement	
	0 04 065	Short time increment	
		(Meteorological parameters in tide station)	
3 06 021	0 01 075	Tide station identification	Alphanumeric
	3 01 011	Year, month, day	
	3 01 012	Hour, minute	
	0 22 122	Tide station automated meteorological data check	
	0 22 123	Tide station manual meteorological data check	
	0 12 001	Temperature/air temperature	
	3 03 002	Wind at pressure level	
		(Tidal elevation)	
3 06 022	0 01 075	Tide station identification	
	3 01 011	Year, month, day	
	3 01 012	Hour, minute	
	0 22 038	Tidal elevation with respect to local chart datum	
	0 22 039	Meteorological residual tidal elevation (surge or offset)	
3 06 023	0 01 015	Station or site name	
	3 01 023	Latitude/longitude (coarse accuracy)	
	3 01 011	Year, month, day	
	3 01 012	Hour, minute	
	0 22 038	Tidal elevation with respect to local chart datum	
	0 22 039	Meteorological residual tidal elevation (surge or offset)	
	0 22 120	Tide station automated water level check	
	0 22 121	Tide station manual water level check	

(continued)

(Category 06 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(Tide elevation series) (see Note 3)	
3 06 024	3 06 020	Tide report identification, water level checks, time period or displacement, time increment	
	1 02 006	Replicate 2 descriptors 6 times	
	0 22 038	Tidal elevation with respect to local chart datum	
	0 22 039	Meteorological residual tidal elevation (surge or offset)	
		(Tide elevation series)	
3 06 025	3 06 019	Tide report identification, water level checks, time increments	
	1 02 006	Replicate 2 descriptors 6 times	
	0 22 038	Tidal elevation with respect to local chart datum	
	0 22 039	Meteorological residual tidal elevation (surge or offset)	
		(Sequence for representation of DART buoy identification, transmitter ID, type of tsunameter and the time the message is transmitted to the ground system)	
3 06 027	0 01 005	Buoy/platform identifier	
	0 01 052	Platform transmitter ID	
	0 02 047	Deep-ocean tsunameter type	
	3 01 011	Year, month, day	Time the message is transmitted to the ground system
	3 01 013	Hour, minute, second	
		(Sequence for representation of time of observation and DART buoy position daily report)	
3 06 028	3 06 027	Sequence for representation of DART buoy identification, transmitter ID, type of tsunameter and the time the message is transmitted to the ground system	
	3 01 011	Year, month, day	Observation time
	3 01 013	Hour, minute, second	
	3 01 021	Latitude/longitude (high accuracy)	
		(Sequence for representation of tsunameter sampling information for water column heights in the time series report)	
3 06 029	0 25 170	Sampling interval (time)	Seconds
	0 25 171	Sample averaging period	Seconds
	0 25 172	Number of samples	
		(Sequence for representation of DART buoy standard hourly report)	
3 06 030	3 06 027	Sequence for representation of DART buoy identification, transmitter ID, type of tsunameter and the time the message is transmitted to the ground system	
	3 06 029	Sequence for representation of tsunameter sampling information for water column heights in the time series report	
	1 11 000	Delayed replication of 11 descriptors	

(continued)

(Category 06 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 06 030 *(continued)*	0 31 001	Delayed descriptor replication factor	
	0 33 002	Quality information	Message status
	3 01 011	Year, month, day	Reference date/time for the time series
	3 01 013	Hour, minute, second	
	0 25 025	Battery voltage	BPR CPU
	0 25 025	Battery voltage	Acoustic modem DSP
	0 25 026	Battery voltage (large range)	Acoustic modem
	0 22 185	BPR transmission count	
	0 04 015	Time increment	Added to reset the reference time
	0 04 065	Short time increment	Added to each data value in the time series
	1 01 004	Replicate 1 descriptor 4 times	
	0 22 182	Water column height	
		(Sequence for representation of DART buoy tsunami event reports and extended tsunami event reports)	
3 06 031	3 06 027	Sequence for representation of DART buoy identification, transmitter ID, type of tsunameter and the time the message is transmitted to the ground system	
	3 06 029	Sequence for representation of tsunameter sampling information for water column heights in the time series report	
	0 01 053	Tsunameter report sequence number triggered by a tsunami event	
	0 33 002	Quality information	Message status
	3 01 011	Year, month, day	Time when tsunami is detected
	3 01 013	Hour, minute, second	
	3 01 011	Year, month, day	Reference date/time for the time series
	3 01 013	Hour, minute, second	
	0 22 185	BPR transmission count	
	0 22 182	Water column height	Determination of actual value reported in the time series
	0 04 016	Time increment	Added to reset the reference time
	0 04 066	Short time increment	Added to each data value in the time series
	1 01 000	Delayed replication of 1 descriptor	
	0 31 001	Delayed descriptor replication factor	
	0 22 184	Water column height deviation from the reference value	

Notes:

(1) Range of value for parameter 0 04 015 limited from –99 to 99; CREX common sequence D 06 019 being the original sequence with 2 characters only for the corresponding descriptor.

(2) This sequence is deprecated because of incorrect usage of descriptor 0 04 075; sequence 3 06 019 should be used instead.

(3) This sequence is deprecated because of incorrect usage of descriptor 0 04 075 in sequence 3 06 020; sequence 3 06 025 should be used instead.

Category 07 – Surface report sequences (land)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(Low altitude station)	
3 07 001	3 01 031	Identification and type of station, date/time, location (high accuracy), height of station	
	3 02 011	Low altitude station	Basic surface report
		(Low altitude station)	
3 07 002	3 01 032	Identification and type of station, date/time, location (coarse accuracy), height of station	
	3 02 011	Low altitude station	Basic surface report
		(Low altitude station)	
3 07 003	3 07 001	Low altitude station	Location (high accuracy) and basic report
	1 01 000	Delayed replication of 1 descriptor	
	0 31 001	Delayed descriptor replication factor	
	3 02 005	Cloud layer	
		(Low altitude station)	
3 07 004	3 07 002	Low altitude station	Location (coarse accuracy) and basic report
	1 01 000	Delayed replication of 1 descriptor	
	0 31 001	Delayed descriptor replication factor	
	3 02 005	Cloud layer	
		(Low altitude station)	
3 07 005	3 07 001	Low altitude station	Location (high accuracy) and basic report
	1 01 004	Replicate 1 descriptor 4 times	
	3 02 005	Cloud layer	4 layers
		(Low altitude station)	
3 07 006	3 07 002	Low altitude station	Location (coarse accuracy) and basic report
	1 01 004	Replicate 1 descriptor 4 times	
	3 02 005	Cloud layer	4 layers
		(High altitude station)	
3 07 007	3 01 031	Identification and type of station, date/time, location (high accuracy), height of station	
	3 02 012	High altitude station	Basic surface report
		(High altitude station)	
3 07 008	3 01 032	Identification and type of station, date/time, location (coarse accuracy), height of station	
	3 02 012	High altitude station	Basic surface report

(continued)

(Category 07 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 07 009	3 01 031	Identification and type of station, date/time, location (high accuracy), height of station	
	3 02 013	Basic surface report	
		(Main part of data for representation of METAR/SPECI code in BUFR)	
3 07 011	0 01 063	ICAO location indicator	
	0 02 001	Type of station	
	3 01 011	Year, month, day	YY
	3 01 012	Hour, minute	GG, gg
	3 01 024	Latitude/longitude (coarse accuracy), height of station	
	0 07 006	Height above station	Height of an anemometer
	0 11 001	Wind direction	
	0 11 016	Extreme counterclockwise wind direction of a variable wind	
	0 11 017	Extreme clockwise wind direction of a variable wind	
	0 11 002	Wind speed	
	0 11 041	Maximum wind gust speed	
	0 07 006	Height above station	Height of a thermometer
	0 12 001	Temperature/air temperature	
	0 12 003	Dewpoint temperature	
	0 10 052	Altimeter setting (QNH)	
	0 20 009	General weather indicator (TAF/METAR)	
		(Horizontal visibility)	
3 07 012	1 03 000	Delayed replication of 3 descriptors	
	0 31 001	Delayed descriptor replication factor	Up to 3
	0 08 023	First-order statistics	
	0 05 021	Bearing or azimuth	Direction of visibility observed
	0 20 001	Horizontal visibility	
		(Runway visual range)	
3 07 013	1 06 000	Delayed replication of 6 descriptors	
	0 31 001	Delayed descriptor replication factor	Up to 4
	0 01 064	Runway designator	
	0 08 014	Qualifier for runway visual range	
	0 20 061	Runway visual range (RVR)	
	0 08 014	Qualifier for runway visual range	
	0 20 061	Runway visual range (RVR)	
	0 20 018	Tendency of runway visual range	
		(Significant present or forecast weather)	
3 07 014	1 01 000	Delayed replication of 1 descriptor	
	0 31 001	Delayed descriptor replication factor	Up to 3
	0 20 019	Significant present or forecast weather	

(continued)

(Category 07 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(Clouds group(s))	
3 07 015	1 01 000	Delayed replication of 1 descriptor	
	0 31 001	Delayed descriptor replication factor	
	3 02 005	Cloud layer	$N_sN_sN_s$, CC, $h_sh_sh_s$
	0 20 002	Vertical visibility	
		(Significant recent weather phenomena)	
3 07 016	1 01 000	Delayed replication of 1 descriptor	
	0 31 001	Delayed descriptor replication factor	Up to 3
	0 20 020	Significant recent weather phenomena	
		(Wind shear on runway(s))	
3 07 017	1 01 000	Delayed replication of 1 descriptor	
	0 31 001	Delayed descriptor replication factor	
	0 11 070	Designator of the runway affected by wind shear (including ALL)	
		(Trend-type landing forecast)	
3 07 018	0 08 016	Change qualifier of a trend-type forecast or an aerodrome forecast	
	1 02 000	Delayed replication of 2 descriptors	
	0 31 001	Delayed descriptor replication factor	Up to 2
	0 08 017	Qualifier of the time when the forecast change is expected	FM, TL, AT
	3 01 012	Hour, minute	GG, gg
	1 04 000	Delayed replication of 4 descriptors	
	0 31 001	Delayed descriptor replication factor	Up to 1
	0 07 006	Height above station	
	0 11 001	Wind direction	
	0 11 002	Wind speed	
	0 11 041	Maximum wind gust speed	
	0 20 009	General weather indicator (TAF/METAR)	
	1 01 000	Delayed replication of 1 descriptor	
	0 31 001	Delayed descriptor replication factor	Up to 1
	0 20 001	Horizontal visibility	
	3 07 014	Significant present or forecast weather	w´w´
		(Short METAR/SPECI)	
3 07 020	3 07 011	Main part of data for representation of METAR/SPECI code in BUFR	
	3 07 014	Significant present or forecast weather	w´w´
	3 07 016	Significant recent weather phenomena	REw´w´
		(Total sequence for representation of METAR/SPECI code in BUFR)	
3 07 021	3 07 011	Main part of data for representation of METAR/SPECI code in BUFR	
	3 07 012	Horizontal visibility	D_VVVVV
	3 07 013	Runway visual range	$D_RD_R/V_RV_RV_RV_R$

(continued)

(Category 07 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 07 021 *(continued)*	3 07 014	Significant present or forecast weather	w´w´
	3 07 015	Clouds group(s)	
	3 07 016	Significant recent weather phenomena	REw´w´
	3 07 017	Wind shear on runway(s)	
	3 07 018	Trend-type landing forecast	
	3 07 015	Clouds group(s)	
		(Ground-based GNSS data)	
3 07 022	0 01 015	Station or site name	
	3 01 011	Year, month, day	
	3 01 012	Hour, minute	
	3 01 022	Latitude/longitude (high accuracy), height of station	
	0 08 021	Time significance	= 23 Monitoring period
	0 04 025	Time period or displacement	
	0 10 004	Pressure	
	0 12 001	Temperature/air temperature	
	0 13 003	Relative humidity	
	0 33 038	Quality flags for ground-based GNSS data	
	0 08 022	Total number (with respect to accumulation or average)	Number of GNSS satellites used
	1 06 025	Replicate 6 descriptors 25 times	
	0 02 020	Satellite classification	
	0 01 050	Platform transmitter ID number	
	0 05 021	Bearing or azimuth	
	0 07 021	Elevation	
	0 15 031	Atmospheric path delay in satellite signal	
	0 15 032	Estimated error in atmospheric path delay	
	0 08 060	Sample scanning mode significance	= 5 North/South
	0 15 033	Difference in path delays for limb views at extremes of scan	
	0 15 034	Estimated error in path delay difference	
	0 08 060	Sample scanning mode significance	= 6 East/West
	0 15 033	Difference in path delays for limb views at extremes of scan	
	0 15 034	Estimated error in path delay difference	
	0 15 035	Component of zenith path delay due to water vapour	
	2 01 131	Change data width	
	2 02 129	Change scale	
	0 13 016	Precipitable water	
	2 02 000	Change scale	Cancel
	2 01 000	Change data width	Cancel
	0 15 011	Log_{10} of integrated electron density	
		(Ozone data – single observation)	
3 07 030	0 15 001	Total ozone	
	0 15 002	Air mass (slant path at 22 km)	

(continued)

(Category 07 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(Ozone data – averaged observations)	
3 07 031	0 08 022	Total number (with respect to accumulation or average)	Number of measurements
	0 08 023	First-order statistics	= 4 Mean value
	0 15 001	Total ozone	Average value of ozone measurement
	0 08 023	First-order statistics	= 9 Best estimate of standard deviation
	0 15 001	Total ozone	Best estimate of standard deviation of the ozone measurement
	0 08 023	First-order statistics	= 11 Harmonic mean
	0 15 002	Air mass (slant path at 22 km)	Harmonic mean value of the air-mass
		(Total ozone measurement from a Brewer ground-based spectrophotometer obtained from a single observation)	
3 07 041	3 01 001	WMO block and station numbers	
	0 01 015	Station or site name	
	3 01 024	Latitude/longitude (coarse accuracy), height of station	
	3 01 011	Year, month, day	Ozone measurement
	3 01 012	Hour, minute	Ozone measurement
	3 01 070	Ozone instrumentation – Brewer spectrophotometer	
	3 07 030	Ozone data – single observation	
		(Total ozone measurement from a Brewer ground-based spectrophotometer obtained from averaged observations)	
3 07 042	3 01 001	WMO block and station numbers	
	0 01 015	Station or site name	
	3 01 024	Latitude/longitude (coarse accuracy), height of station	
	3 01 011	Year, month, day	Ozone measurement
	3 01 012	Hour, minute	Ozone measurement
	0 08 021	Time significance	= 8 Ensemble mean
	0 04 025	Time period or displacement	Time period (minutes) for the computation of the average
	3 01 070	Ozone instrumentation – Brewer spectrophotometer	
	3 07 031	Ozone data – averaged observations	
		(Total ozone measurement from a Dobson ground-based spectrophotometer obtained from a single observation)	
3 07 043	3 01 001	WMO block and station numbers	
	0 01 015	Station or site name	
	3 01 024	Latitude/longitude (coarse accuracy), height of station	
	3 01 011	Year, month, day	Ozone measurement
	3 01 012	Hour, minute	Ozone measurement
	3 01 074	Ozone instrumentation – Dobson spectrophotometer	
	3 07 030	Ozone data – single observation	

(continued)

(Category 07 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(Total ozone measurement from a Dobson ground-based spectrophotometer obtained from averaged observations)	
3 07 044	3 01 001	WMO block and station numbers	
	0 01 015	Station or site name	
	3 01 024	Latitude/longitude (coarse accuracy), height of station	
	3 01 011	Year, month, day	Ozone measurement
	3 01 012	Hour, minute	Ozone measurement
	0 08 021	Time significance	= 8 Ensemble mean
	0 04 025	Time period or displacement	Time period (minutes) for the computation of the average
	3 01 074	Ozone instrumentation – Dobson spectrophotometer	
	3 07 031	Ozone data – averaged observations	
		(Main part of METAR/SPECI), replacing 3 07 011	
3 07 045	0 01 063	ICAO location indicator	CCCC
	0 08 079	Product status	METAR SPECI COR
	0 02 001	Type of station	AUTO
	3 01 011	Year, month, day	YY
	3 01 012	Hour, minute	GGgg
	3 01 023	Latitude/longitude (coarse accuracy)	
	0 07 030	Height of station ground above mean sea level	
	0 07 031	Height of barometer above mean sea level	
	0 07 032	Height of sensor above local ground (or deck of marine platform)	= 10 m (if the actual value is not available)
	0 11 001	Wind direction	ddd
	0 11 016	Extreme counterclockwise wind direction of a variable wind	$d_nd_nd_n$
	0 11 017	Extreme clockwise wind direction of a variable wind	$d_xd_xd_x$
	0 08 054	Qualifier for wind speed or wind gusts	P
	0 11 083	Wind speed (see Note 5)	Ff – km/h
	0 11 084	Wind speed (see Note 5)	ff – kt
	0 11 002	Wind speed (see Note 5)	ff – m/s
	0 08 054	Qualifier for wind speed or wind gusts	P
	0 11 085	Maximum wind gust speed (see Note 6)	f_mf_m – km/h
	0 11 086	Maximum wind gust speed (see Note 6)	f_mf_m – kt
	0 11 041	Maximum wind gust speed (see Note 6)	f_mf_m – m/s
	0 08 054	Qualifier for wind speed or wind gusts	Set to missing (cancel)
	0 07 032	Height of sensor above local ground (or deck of marine platform)	= 2 m (if the actual value is not available)
	0 12 023	Temperature	TT – Celsius
	0 12 024	Dewpoint temperature	T_dT_d – Celsius
	0 07 032	Height of sensor above local ground (or deck of marine platform)	Set to missing (cancel)
	0 10 052	Altimeter setting (QNH)	$QP_HP_HP_HP_H$
	0 20 009	General weather indicator (TAF/METAR)	CAVOK

(continued)

(Category 07 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(METAR/SPECI visibility)	
3 07 046	0 20 060	Prevailing horizontal visibility	VVVV or VVVVNDV
	1 02 000	Delayed replication of 2 descriptors	
	0 31 001	Delayed descriptor replication factor	Up to 2
	0 05 021	Bearing or azimuth	Direction of minimum visibility observed D_v
	0 20 059	Minimum horizontal visibility	$V_NV_NV_NV_N$
		(METAR/SPECI/TAF clouds), replacing 3 07 015	
3 07 047	1 05 000	Delayed replication of 5 descriptors	
	0 31 001	Delayed descriptor replication factor	
	0 08 002	Vertical significance (surface observations)	
	0 20 011	Cloud amount	$N_sN_sN_s$
	0 20 012	Cloud type	CC
	0 20 013	Height of base of cloud	$h_sh_sh_s$ – m
	0 20 092	Height of base of cloud	$h_sh_sh_s$ – ft
	0 20 002	Vertical visibility	$VVh_sh_sh_s$ – m
	0 20 091	Vertical visibility	$VVh_sh_sh_s$ – ft
		(Trend type forecast), replacing 3 07 018	
3 07 048	0 08 016	Change qualifier of a trend-type forecast or an aerodrome forecast	TTTTT NOSIG
	1 02 000	Delayed replication of 2 descriptors	
	0 31 001	Delayed descriptor replication factor	= 0, 1 or 2
	0 08 017	Qualifier of the time when the forecast change is expected	TT
	3 01 012	Hour, minute	GGgg
	1 12 000	Delayed replication of 12 descriptors	
	0 31 000	Short delayed descriptor replication factor	= 0 or 1
	0 07 032	Height of sensor above local ground (or deck of marine platform)	= 10 m (if the actual value is not available)
	0 11 001	Wind direction	ddd
	0 08 054	Qualifier for wind speed or wind gusts	P
	0 11 083	Wind speed (see Note 5)	ff – km/h
	0 11 084	Wind speed (see Note 5)	ff – kt
	0 11 002	Wind speed (see Note 5)	ff – m/s
	0 08 054	Qualifier for wind speed or wind gusts	P
	0 11 085	Maximum wind gust speed (see Note 6)	f_mf_m – km/h
	0 11 086	Maximum wind gust speed (see Note 6)	f_mf_m – kt
	0 11 041	Maximum wind gust speed (see Note 6)	f_mf_m – m/s
	0 08 054	Qualifier for wind speed or wind gusts	Set to missing (cancel)
	0 07 032	Height of sensor above local ground (or deck of marine platform)	Set to missing (cancel)
	0 20 009	General weather indicator (TAF/METAR)	CAVOK NSW NSC
	1 01 000	Delayed replication of 1 descriptor	
	0 31 000	Short delayed descriptor replication factor	= 0 or 1
	0 20 060	Prevailing horizontal visibility	VVVV
	3 07 014	Significant present and forecast weather	Weather intensity and phenomena w´w´
	3 07 047	METAR/SPECI/TAF clouds, replacing 3 07 015	$N_sN_sN_sh_sh_sh_s$

(continued)

(Category 07 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(Sea conditions)	
3 07 049	1 02 000	Delayed replication of 2 descriptors	
	0 31 000	Short delayed descriptor replication factor	= 0 or 1
	0 22 043	Sea/water temperature	T_sT_s
	0 22 021	Height of waves	S´
		(Runway state)	
3 07 050	1 01 000	Delayed replication of 1 descriptor	
	0 31 000	Short delayed descriptor replication factor	= 0 or 1
	0 20 085	General condition of runway	SNOCLO
	1 02 000	Delayed replication of 2 descriptors	
	0 31 001	Delayed descriptor replication factor	
	0 01 064	Runway designator	D_RD_R
	0 20 085	General condition of runway	CLRD//
	1 05 000	Delayed replication of 5 descriptors	
	0 31 001	Delayed descriptor replication factor	
	0 01 064	Runway designator	D_RD_R
	0 20 086	Runway deposits	E_R
	0 20 087	Runway contamination	C_R
	0 20 088	Depth of runway deposits	e_Re_R
	0 20 089	Runway friction coefficient	B_RB_R
		(Full METAR/SPECI), replacing 3 07 021	
3 07 051	3 07 045	Main part of METAR/SPECI, replacing 3 07 011	
	3 07 046	METAR/SPECI visibility	VVVV or VVVVNDV $V_NV_NV_NV_ND_V$
	3 07 013	Runway visual range	$RD_RD_R/V_RV_RV_RV_R$
	3 07 014	Significant present and forecast weather	Weather intensity and phenomena w´w´
	3 07 047	METAR/SPECI/TAF clouds, replacing 3 07 015	$N_sN_sN_sh_sh_sh_s$
	3 07 016	Significant recent weather phenomena	REw´w´
	3 07 017	Wind shear on runway(s)	WS RD_RD_R
	3 07 049	Sea conditions	$WT_sT_s/SS´$
	3 07 050	Runway state	$RD_RD_R/E_RC_Re_Re_RB_RB_R$
	1 01 000	Delayed replication of 1 descriptor	
	0 31 001	Delayed descriptor replication factor	= 0 to 3 normally
	3 07 048	Trend type forecast, replacing 3 07 018	
		(Aerodrome forecast identification and time interval)	
3 07 052	0 01 063	ICAO location indicator	CCCC
	0 08 039	Time significance (Aviation forecast)	= 0 Issue time of forecast
	3 01 011	Year, month, day	YY
	3 01 012	Hour, minute	GGgg
	0 08 079	Product status	COR CNL AMD NIL

(continued)

(Category 07 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 07 052 *(continued)*	0 08 039	Time significance (Aviation forecast)	= 1 Time of commencement of period of the forecast
	3 01 011	Year, month, day	Y_1Y_1
	3 01 012	Hour, minute	G_1G_1
	0 08 039	Time significance (Aviation forecast)	= 2 Time of ending of period of the forecast
	3 01 011	Year, month, day	Y_2Y_2
	3 01 012	Hour, minute	G_2G_2
	3 01 023	Latitude/longitude (coarse accuracy)	
	0 07 030	Height of station ground above mean sea level	
	0 07 031	Height of barometer above mean sea level	
		(Forecast weather at an aerodrome)	
3 07 053	0 07 032	Height of sensor above local ground (or deck of marine platform)	= 10 m (if the actual value is not available)
	0 11 001	Wind direction	ddd
	0 08 054	Qualifier for wind speed or wind gusts	P
	0 11 083	Wind speed (see Note 5)	ff – km/h
	0 11 084	Wind speed (see Note 5)	ff – kt
	0 11 002	Wind speed (see Note 5)	ff – m/s
	0 08 054	Qualifier for wind speed or wind gusts	P
	0 11 085	Maximum wind gust speed (see Note 6)	f_mf_m – km/h
	0 11 086	Maximum wind gust speed (see Note 6)	f_mf_m – kt
	0 11 041	Maximum wind gust speed (see Note 6)	f_mf_m – m/s
	0 08 054	Qualifier for wind speed or wind gusts	Set to missing (cancel)
	0 07 032	Height of sensor above local ground (or deck of marine platform)	Set to missing (cancel)
	0 20 009	General weather indicator (TAF/METAR)	CAVOK NSW NSC
	0 20 060	Prevailing horizontal visibility	VVVV
	3 07 014	Significant present and forecast weather	w´w´
	3 07 047	METAR/SPECI/TAF clouds, replacing 3 07 015	$N_sN_sN_sh_sh_sh_s$
		(Forecast of extreme temperatures)	
3 07 054	0 07 032	Height of sensor above local ground (or deck of marine platform)	= 2 m (if the actual value is not available)
	0 08 039	Time significance (Aviation forecast)	= 3 Forecast time of maximum temperature
	0 04 003	Day	
	0 04 004	Hour	G_FG_F
	0 08 023	First-order statistics	= 3 Minimum
	0 12 023	Temperature	T_FT_F – Celsius
	0 08 039	Time significance (Aviation forecast)	= 4 Forecast time of minimum temperature
	0 04 003	Day	
	0 04 004	Hour	G_FG_F
	0 08 023	First-order statistics	= 2 Maximum

(continued)

(Category 07 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 07 054 *(continued)*	0 12 023	Temperature	T_FT_F – Celsius
	0 08 023	First-order statistics	Set to missing (cancel)
	0 07 032	Height of sensor above local ground (or deck of marine platform)	Set to missing (cancel)
		(Change indicator and forecast changes)	
3 07 055	0 33 045	Probability of following event	C_2C_2
	0 08 016	Change qualifier of a trend-type forecast or an aerodrome forecast	TTTTTT
	0 08 039	Time significance (Aviation forecast)	= 5 Time of beginning of the forecast change
	0 04 003	Day	
	3 01 012	Hour, minute	GGgg
	0 08 039	Time significance (Aviation forecast)	= 6 Time of ending of the forecast change
	0 04 003	Day	
	3 01 012	Hour, minute	G_eG_e
	3 07 053	Forecast weather at an aerodrome	During or after change
		(Aerodrome forecast – full TAF)	
3 07 056	3 07 052	Aerodrome forecast identification and time interval	
	3 07 053	Forecast weather at an aerodrome	
	3 07 054	Forecast of extreme temperatures	
	1 01 000	Delayed replication of 1 descriptor	
	0 31 001	Delayed descriptor replication factor	
	3 07 055	Change indicator and forecast changes	
		(Soil temperature below land surface)	
3 07 060	0 07 061	Depth below land surface	
	0 12 030	Soil temperature	
		(Soil temperature data at number of depths not exceeding five – high accuracy position)	
3 07 061	3 01 031	Identification and type of station, date/time, location (high accuracy), height of station	
	1 01 005	Replicate 1 descriptor 5 times	
	3 07 060	Soil temperature below land surface	
		(Soil temperature data at number of depths not exceeding five – coarse accuracy position)	
3 07 062	3 01 032	Identification and type of station, date/time, location (coarse accuracy), height of station	
	1 01 005	Replicate 1 descriptor 5 times	
	3 07 060	Soil temperature below land surface	
		(Depth below land surface and soil temperature)	
3 07 063	0 07 061	Depth below land surface	
	0 12 130	Soil temperature	Scale: 2

(continued)

(Category 07 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(Monthly values of a land station)	
3 07 071	3 01 090	Surface station identification; time, horizontal and vertical coordinates (see Note 1)	
	0 04 074	Short time period or displacement (see Note 1)	= UTC – LST
	0 04 023	Time period or displacement	Number of days in the month
		Monthly mean values of pressure, temperature, extreme temperatures and vapour pressure:	
	0 08 023	First-order statistics	= 4 Mean value
	0 10 004	Pressure	
	0 10 051	Pressure reduced to mean sea level	
	0 07 004	Pressure	Standard level **|** Set to missing for lowland stations
	0 10 009	Geopotential height	Standard level **|** Set to missing for lowland stations
	0 07 032	Height of sensor above local ground (or deck of marine platform) (see Note 3)	
	0 12 101	Temperature/air temperature	
	0 02 051	Indicator to specify observing method for extreme temperatures	
	0 04 051	Principal time of daily reading of maximum temperature	
	0 12 118	Maximum temperature at height specified, past 24 hours	
	0 04 052	Principal time of daily reading of minimum temperature	
	0 12 119	Minimum temperature at height specified, past 24 hours	
	0 13 004	Vapour pressure	
	0 08 023	First-order statistics	Set to missing
	0 12 151	Standard deviation of daily mean temperature	
	0 07 032	Height of sensor above local ground (or deck of marine platform)	Set to missing (cancel)
	1 02 005	Replicate 2 descriptors 5 times	
	0 08 050	Qualifier for number of missing values in calculation of statistic	= 1 Pressure, = 2 Temperature, = 4 Vapour pressure, = 7 Maximum temperature, = 8 Minimum temperature
	0 08 020	Total number of missing entities (with respect to accumulation or average)	Days
		Sunshine duration:	
	0 14 032	Total sunshine	
	0 14 033	Total sunshine	
	0 08 050	Qualifier for number of missing values in calculation of statistic	= 6 Sunshine duration
	0 08 020	Total number of missing entities (with respect to accumulation or average)	Days

(continued)

(Category 07 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 07 071 *(continued)*		*Number of days of occurrence:*	
	1 02 018	Replicate 2 descriptors 18 times	
	0 08 052	Condition for which number of days of occurrence follows	
	0 08 022	Total number (with respect to accumulation or average)	Days
		Occurrence of extreme values of temperature and wind speed:	
	0 07 032	Height of sensor above local ground (or deck of marine platform) (see Note 3)	
	0 08 053	Day of occurrence qualifier	= 0 On 1 day only, = 1 On 2 or more days
	0 04 003	Day	
	0 12 152	Highest daily mean temperature	
	0 08 053	Day of occurrence qualifier	= 0 On 1 day only, = 1 On 2 or more days
	0 04 003	Day	
	0 12 153	Lowest daily mean temperature	
	0 08 053	Day of occurrence qualifier	= 0 On 1 day only, = 1 On 2 or more days
	0 04 003	Day	
	0 08 023	First-order statistics	= 2 Maximum value
	0 12 101	Temperature/air temperature	
	0 08 053	Day of occurrence qualifier	= 0 On 1 day only, = 1 On 2 or more days
	0 04 003	Day	
	0 08 023	First-order statistics	= 3 Minimum value
	0 12 101	Temperature/air temperature	
	0 08 023	First-order statistics	Set to missing
	0 07 032	Height of sensor above local ground (or deck of marine platform) (see Note 3)	
	0 02 002	Type of instrumentation for wind measurement	
	0 08 053	Day of occurrence qualifier	= 0 On 1 day only, = 1 On 2 or more days
	0 04 003	Day	
	0 11 046	Maximum instantaneous wind speed	
	0 08 053	Day of occurrence qualifier	Set to missing (cancel)
		Precipitation:	
	0 04 003	Day (see Note 2)	= 1
	0 04 004	Hour (see Note 2)	= 6
	0 04 023	Time period or displacement (see Note 2)	Number of days in the month
	0 07 032	Height of sensor above local ground (or deck of marine platform) (see Note 3)	
	0 13 060	Total accumulated precipitation	
	0 13 051	Frequency group, precipitation	
	0 04 053	Number of days with precipitation equal to or more than 1 mm	
	0 08 050	Qualifier for number of missing values in calculation of statistic	= 5 Precipitation

(continued)

(Category 07 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 07 071 *(continued)*	0 08 020	Total number of missing entities (with respect to accumulation or average)	Days
		Numbers of days of occurrence:	
	1 02 006	Replicate 2 descriptors 6 times	
	0 08 052	Condition for which number of days of occurrence follows	
	0 08 022	Total number (with respect to accumulation or average)	Days
		Occurrence of extreme precipitation:	
	0 08 053	Day of occurrence qualifier	= 0 On 1 day only, = 1 On 2 or more days
	0 04 003	Day	
	0 13 052	Highest daily amount of precipitation	
	0 07 032	Height of sensor above local ground (or deck of marine platform)	Set to missing (cancel)
		(Monthly normals for a land station)	
3 07 072	0 04 001	Year	Beginning of the reference period
	0 04 001	Year	Ending of the reference period
	0 04 002	Month	
	0 04 003	Day (see Note 1)	= 1
	0 04 004	Hour (see Note 1)	= 0
	0 04 074	Short time period or displacement (see Note 1)	= UTC – LST
	0 04 022	Time period or displacement	= 1
		Normals of monthly mean pressure, temperature, vapour pressure and of standard deviation:	
	0 08 023	First-order statistics	= 4 Mean value
	0 10 004	Pressure	
	0 10 051	Pressure reduced to mean sea level	
	0 07 004	Pressure	Standard level
	0 10 009	Geopotential height	Standard level
	0 07 032	Height of sensor above local ground (or deck of marine platform) (see Note 3)	
	0 12 101	Temperature/air temperature	
	0 02 051	Indicator to specify observing method for extreme temperatures	= 2
	0 04 051	Principal time of daily reading of maximum temperature	
	0 12 118	Maximum temperature at height specified, past 24 hours	
	0 04 052	Principal time of daily reading of minimum temperature	
	0 12 119	Minimum temperature at height specified, past 24 hours	
	0 13 004	Vapour pressure	
	0 12 151	Standard deviation of daily mean temperature	
	0 07 032	Height of sensor above local ground (or deck of marine platform)	Set to missing (cancel)

(continued)

(Category 07 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 07 072 *(continued)*		*Normal of sunshine duration:*	
	0 14 032	Total sunshine	
	0 08 023	First-order statistics	Set to missing
		Normals of precipitation:	
	0 04 001	Year	Beginning of the reference period
	0 04 001	Year	Ending of the reference period
	0 04 002	Month	
	0 04 003	Day (see Note 2)	= 1
	0 04 004	Hour (see Note 2)	= 6
	0 04 022	Time period or displacement	= 1
	0 07 032	Height of sensor above local ground (or deck of marine platform) (see Note 3)	
	0 08 023	First-order statistics	= 4 Mean value
	0 13 060	Total accumulated precipitation	
	0 04 053	Number of days with precipitation equal to or more than 1 mm	
	0 08 023	First-order statistics	Set to missing
	1 02 008	Replicate 2 descriptors 8 times	
	0 08 050	Qualifier for number of missing values in calculation of statistic (see Note 4)	= 1 Pressure, = 2 Temperature, = 3 Extreme temperatures, = 4 Vapour pressure, = 5 Precipitation, = 6 Sunshine duration, = 7 Maximum temperature, = 8 Minimum temperature
	0 08 020	Total number of missing entities (with respect to accumulation or average) (see Note 4)	Years
		(Representation of CLIMAT data of the actual month and for monthly normals)	
3 07 073	3 07 071	Monthly values of a land station	
	3 07 072	Monthly normals for a land station	
		(Sequence for representation of synoptic reports from fixed land stations suitable for SYNOP data and for maritime data from coastal stations)	
3 07 079	3 01 090	Surface station identification; time, horizontal and vertical coordinates	
	3 02 031	Pressure information	
	3 02 035	Basic synoptic “instantaneous” data	
	3 02 036	Clouds with bases below station level	
	1 01 000	Delayed replication of 1 descriptor	
	0 31 000	Short delayed descriptor replication factor	
	3 02 047	Direction of cloud drift	
	0 08 002	Vertical significance (surface observations)	
	1 01 000	Delayed replication of 1 descriptor	
	0 31 000	Short delayed descriptor replication factor	

(continued)

(Category 07 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 07 079 *(continued)*	3 02 048	Direction and elevation of cloud	
	3 02 037	State of ground, snow depth, ground minimum temperature	
	1 02 000	Delayed replication of 2 descriptors	
	0 31 000	Short delayed descriptor replication factor	
	0 22 061	State of the sea	
	0 20 058	Visibility seawards from a coastal station	
	1 01 000	Delayed replication of 1 descriptor	
	0 31 000	Short delayed descriptor replication factor	
	3 02 056	Sea/water temperature	Sea/water surface temperature, method of measurement, depth below water
	1 01 000	Delayed replication of 1 descriptor	
	0 31 000	Short delayed descriptor replication factor	
	3 02 055	Icing and ice	
	3 02 043	Basic synoptic “period” data	
	3 02 044	Evaporation data	
	1 01 000	Delayed replication of 1 descriptor	
	0 31 001	Delayed descriptor replication factor	
	3 02 045	Radiation data (from 1 hour and 24-hour period)	
	1 01 000	Delayed replication of 1 descriptor	
	0 31 000	Short delayed descriptor replication factor	
	3 02 046	Temperature change	
		(Sequence for representation of synoptic reports from a fixed land station suitable for SYNOP data)	
3 07 080	3 01 090	Surface station identification; time, horizontal and vertical coordinates	
	3 02 031	Pressure information	
	3 02 035	Basic synoptic “instantaneous” data	
	3 02 036	Clouds with bases below station level	
	3 02 047	Direction of cloud drift	
	0 08 002	Vertical significance (surface observations)	
	3 02 048	Direction and elevation of cloud	
	3 02 037	State of ground, snow depth, ground minimum temperature	
	3 02 043	Basic synoptic “period” data	
	3 02 044	Evaporation data	
	1 01 002	Replicate 1 descriptor 2 times	
	3 02 045	Radiation data (from 1 hour and 24-hour period)	
	3 02 046	Temperature change	
		(Sequence for representation of synoptic reports from a fixed land station suitable for SYNOP data in compliance with reporting practices in RA I)	
3 07 081	3 01 090	Surface station identification; time, horizontal and vertical coordinates	
	3 02 031	Pressure information	
	3 02 035	Basic synoptic “instantaneous” data	

(continued)

(Category 07 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 07 081 *(continued)*	3 02 036	Clouds with bases below station level	
	3 02 047	Direction of cloud drift	
	0 08 002	Vertical significance (surface observations)	Set to missing (cancel)
	3 02 048	Direction and elevation of cloud	
	3 02 037	State of ground, snow depth, ground minimum temperature	
	0 12 122	Ground minimum temperature of the preceding night	
	0 13 056	Character and intensity of precipitation	
	0 13 057	Time of beginning or end of precipitation	
	0 20 101	Locust (acridian) name	
	0 20 102	Locust (maturity) colour	
	0 20 103	Stage of development of locusts	
	0 20 104	Organization state of swarm or band of locusts	
	0 20 105	Size of swarm or band of locusts and duration of passage of swarm	
	0 20 106	Locust population density	
	0 20 107	Direction of movements of locust swarm	
	0 20 108	Extent of vegetation	
	3 02 043	Basic synoptic “period” data	
	3 02 044	Evaporation data	
	1 01 002	Replicate 1 descriptor 2 times	
	3 02 045	Radiation data (from 1 hour and 24-hour period)	
	3 02 046	Temperature change	
		(Sequence for representation of synoptic reports from a fixed land station suitable for SYNOP data in compliance with reporting practices in RA II)	
3 07 082	3 01 090	Surface station identification; time, horizontal and vertical coordinates	
	3 02 031	Pressure information	
	3 02 035	Basic synoptic “instantaneous” data	
	3 02 036	Clouds with bases below station level	
	3 02 047	Direction of cloud drift	
	0 08 002	Vertical significance (surface observations)	Set to missing (cancel)
	3 02 048	Direction and elevation of cloud	
	3 02 037	State of ground, snow depth, ground minimum temperature	
	0 12 121	Ground minimum temperature	At the time of observation
	0 12 122	Ground minimum temperature of the preceding night	
	3 02 043	Basic synoptic “period” data	
	3 02 044	Evaporation data	
	1 01 002	Replicate 1 descriptor 2 times	
	3 02 045	Radiation data (from 1 hour and 24-hour period)	
	3 02 046	Temperature change	

(continued)

(Category 07 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(Sequence for representation of synoptic reports from a fixed land station suitable for SYNOP data in compliance with reporting practices in RA III)	
3 07 083	3 01 090	Surface station identification; time, horizontal and vertical coordinates	
	3 02 031	Pressure information	
	3 02 035	Basic synoptic “instantaneous” data	
	3 02 036	Clouds with bases below station level	
	3 02 047	Direction of cloud drift	
	0 08 002	Vertical significance (surface observations)	Set to missing (cancel)
	3 02 048	Direction and elevation of cloud	
	3 02 037	State of ground, snow depth, ground minimum temperature	
	0 12 122	Ground minimum temperature of the preceding night	
	3 02 043	Basic synoptic “period” data	
	3 02 044	Evaporation data	
	1 01 002	Replicate 1 descriptor 2 times	
	3 02 045	Radiation data (from 1 hour and 24-hour period)	
	3 02 046	Temperature change	
		(Sequence for representation of synoptic reports from a fixed land station suitable for SYNOP data in compliance with reporting practices in RA IV)	
3 07 084	3 01 090	Surface station identification; time, horizontal and vertical coordinates	
	3 02 031	Pressure information	
	3 02 035	Basic synoptic “instantaneous” data	
	3 02 036	Clouds with bases below station level	
	3 02 047	Direction of cloud drift	
	0 08 002	Vertical significance (surface observations)	Set to missing (cancel)
	3 02 048	Direction and elevation of cloud	
	3 02 037	State of ground, snow depth, ground minimum temperature	
	0 20 055	State of sky in the tropics	
	1 01 000	Delayed replication of 1 descriptor	
	0 31 001	Delayed descriptor replication factor	
	2 05 001	Signify character	Character field of 1 character
	3 02 043	Basic synoptic “period” data	
	3 02 044	Evaporation data	
	1 01 002	Replicate 1 descriptor 2 times	
	3 02 045	Radiation data (from 1 hour and 24-hour period)	
	3 02 046	Temperature change	
		(Sequence for representation of synoptic reports from a fixed land station suitable for SYNOP data in compliance with reporting practices in RA VI)	
3 07 086	3 01 090	Surface station identification; time, horizontal and vertical coordinates	
	3 02 031	Pressure information	

(continued)

(Category 07 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 07 086 *(continued)*	3 02 035	Basic synoptic “instantaneous” data	
	3 02 036	Clouds with bases below station level	
	0 08 002	Vertical significance (surface observations)	Set to missing (cancel)
	3 02 037	State of ground, snow depth, ground minimum temperature	
	3 02 066	Dangerous weather phenomena	
	3 02 043	Basic synoptic “period” data	
	3 02 044	Evaporation data	
	1 01 002	Replicate 1 descriptor 2 times	
	3 02 045	Radiation data (from 1 hour and 24-hour period)	
		(“Instantaneous” parameters of sequence 3 07 089)	
		Surface station identification, time, horizontal and vertical coordinates	
3 07 087	3 01 001	WMO block and station numbers	IIiii
	0 02 001	Type of station	i_x
	3 01 011	Year, month, day	YY
	3 01 012	Hour, minute	GG, gg
	3 01 023	Latitude/longitude (coarse accuracy)	
	0 07 030	Height of station ground above mean sea level	
	0 07 031	Height of barometer above mean sea level	
		Pressure data	
	3 02 001	Pressure and 3-hour pressure change	$P_oP_oP_oP_o$, PPPP, ppp, a
	0 10 062	24-hour pressure change	$p_{24}p_{24}p_{24}$
	0 07 004	Pressure	Standard level a_3 = 925, 850, 700, ..hPa **|** Set to missing for lowland stations
	0 10 009	Geopotential height	Standard level hhh **|** Set to missing for lowland stations
		Temperature and humidity	
	0 07 032	Height of sensor above local ground (or deck of marine platform)	Temperature measurement
	0 12 101	Temperature/air temperature	s_nTTT **|** Scale: 2
	0 12 103	Dewpoint temperature	$s_nT_dT_dT_d$ **|** Scale: 2
	0 13 003	Relative humidity	
	0 07 032	Height of sensor above local ground (or deck of marine platform)	Set to missing (cancel)
		Visibility	
	0 20 001	Horizontal visibility	VV

(continued)

(Category 07 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 07 087 *(continued)*		*Cloud data*	
	3 02 004	General cloud information	Cloud cover (total) N: If N = 9, then 0 20 010 = 113, if N = /, then 0 20 010 = missing **|** Vertical significance: If C_L are observed, then 0 08 002 = 7 **|** Low cloud: If C_L are not observed and C_M are observed, then 0 08 002 = 8 **|** Middle cloud: If only C_H are observed, 0 08 002 = 0, if N = 9, then 0 08 002 = 5, if N = 0, then 0 08 002 = 62, if N = /, then 0 08 002 = missing **|** Cloud amount (of low or middle clouds) N_h: If N = 0, then 0 20 011 = 0, if N = 9, then 0 20 011 = 9, if N = /, then 0 20 011 = missing **|** Height of base of cloud h: If N = 0 or /, then 0 20 013 = missing **|** Cloud type (low clouds) C_L: 0 20 012 = C_L + 30, if N = 0, then 0 20 012 = 30, if N = 9 or /, then 0 20 012 = 62 **|** Cloud type (middle clouds) C_M: 0 20 012 = C_M + 20, if N = 0, then 0 20 012 = 20, if N = 9 or / or C_M = /, then 0 20 012 = 61 **|** Cloud type (high clouds) C_H: 0 20 012 = C_H + 10, if N = 0, then 0 20 012 = 10, if N = 9 or / or C_H = /, then 0 20 012 = 60
	1 01 000 0 31 001	Delayed replication of 1 descriptor Delayed descriptor replication factor	

(continued)

(Category 07 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 07 087 *(continued)*	3 02 005	Cloud layer	Vertical significance: In any Cb layer, 0 08 002 = 4, else in the first replication, if N = 9, then 0 08 002 = 5, if N = /, then 0 08 002 = missing, else 0 08 002 = 1, in the other replications 0 08 002 = 2, 3, 4 **|** Cloud amount N_s: In the first replication, if N = /, then 0 20 011 = missing, else 0 20 011 = N_s, in the other replications 0 20 011 = N_s **|** Cloud type C: If N = 9 or /, then 0 20 012 = missing, else 0 20 012 = C **|** Height of base of cloud h_sh_s
		(“Period” parameters of sequence 3 07 089) *Present and past weather*	
3 07 088	0 20 003	Present weather	ww
	0 04 024	Time period or displacement	= –6 at 00, 06, 12, 18 UTC, = –3 at 03, 09, 15, 21 UTC
	0 20 004	Past weather (1)	W_1
	0 20 005	Past weather (2)	W_2
		Evaporation	
	0 04 024	Time period or displacement	= –24 (hours)
	0 02 004	Type of instrumentation for evaporation measurement or type of crop for which evapotranspiration is reported	i_E
	0 13 033	Evaporation/evapotranspiration	EEE
		Sunshine	
	1 02 002	Replicate 2 descriptors 2 times	
	0 04 024	Time period or displacement	= –24 (hours) in the first replication, = –1 (hour) in the second replication
	0 14 031	Total sunshine	SSS in the first replication, SS in the second replication
		Precipitation	
	1 02 002	Replicate 2 descriptors 2 times	
	0 04 024	Time period or displacement	t_R
	0 13 011	Total precipitation/total water equivalent	RRR **|** = 0 No precipitation, = –0.1 Trace

(continued)

(Category 07 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 07 088 *(continued)*		*Extreme temperatures*	
	0 07 032	Height of sensor above local ground (or deck of marine platform)	Temperature measurement
	0 04 024	Time period or displacement	= –12 (hours)
	0 12 111	Maximum temperature, at height and over period specified	$s_nT_xT_xT_x$
	0 04 024	Time period or displacement	= –12 (hours)
	0 12 112	Minimum temperature, at height and over period specified	$s_nT_nT_nT_n$
		Wind data	
	0 07 032	Height of sensor above local ground (or deck of marine platform)	Wind measurement
	0 02 002	Type of instrumentation for wind measurement	i_w
	0 08 021	Time significance	= 2 Time averaged
	0 04 025	Time period or displacement	= –10 (minutes) or number of minutes after a significant change of wind, if any
	0 11 001	Wind direction	dd **|** If dd = 00 Calm or dd = 99 Variable, 0 11 001 = 0
	0 11 002	Wind speed	ff
	0 08 021	Time significance	Set to missing (cancel)
		(Sequence for representation of synoptic reports from a fixed land station suitable for SYNOP data manually encoded in CREX)	
3 07 089	3 07 087	“Instantaneous” parameters of sequence 3 07 089	
	3 07 088	“Period” parameters of sequence 3 07 089	
		(Sequence for representation of synoptic reports from a mobile land station suitable for SYNOP MOBIL data)	
3 07 090	3 01 092	Mobile surface station identification, date/time, horizontal and vertical coordinates	
	3 02 031	Pressure information	
	3 02 035	Basic synoptic “instantaneous” data	
	3 02 036	Clouds with bases below station level	
	3 02 047	Direction of cloud drift	
	0 08 002	Vertical significance (surface observations)	
	3 02 048	Direction and elevation of cloud	
	3 02 037	State of ground, snow depth, ground minimum temperature	
	3 02 043	Basic synoptic “period” data	
	3 02 044	Evaporation data	
	1 01 002	Replicate 1 descriptor 2 times	
	3 02 045	Radiation data (from 1 hour and 24-hour period)	
	3 02 046	Temperature change	

(continued)

(Category 07 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(BUFR template for surface observations from one-hour period with national and WMO station identification)	
3 07 091	3 01 089	National station identification	
	3 01 090	Surface station identification; time, horizontal and vertical co-ordinates	
	0 08 010	Surface qualifier (temperature data)	
	3 01 091	Surface station instrumentation	
	3 02 001	Pressure and 3-hour pressure change	
	0 07 004	Pressure	Standard level
	0 10 009	Geopotential height	Standard level
	3 02 072	Temperature and humidity data	
	1 03 000	Delayed replication of 3 descriptors	
	0 31 000	Short delayed descriptor replication factor	
	1 01 005	Replicate 1 descriptor 5 times	
	3 07 063	Depth below land surface and soil temperature	
	0 07 061	Depth below land surface	Set to missing (cancel)
	1 01 000	Delayed replication of 1 descriptor	
	0 31 000	Short delayed descriptor replication factor	
	3 02 069	Visibility data	
	0 07 032	Height of sensor above local ground (or deck of marine platform)	Set to missing (cancel)
	0 07 033	Height of sensor above water surface	Set to missing (cancel)
	1 05 000	Delayed replication of 5 descriptors	
	0 31 000	Short delayed descriptor replication factor	
	0 20 031	Ice deposit (thickness)	
	0 20 032	Rate of ice accretion (estimated)	
	0 02 038	Method of water temperature and/or salinity measurement	
	0 22 043	Sea/water temperature	Scale: 2
	3 02 021	Waves	
	1 01 000	Delayed replication of 1 descriptor	
	0 31 000	Short delayed descriptor replication factor	
	3 02 078	State of ground and snow depth measurement	
	1 01 000	Delayed replication of 1 descriptor	
	0 31 000	Short delayed descriptor replication factor	
	3 02 073	Cloud data	
	1 01 000	Delayed replication of 1 descriptor	
	0 31 000	Short delayed descriptor replication factor	
	3 02 074	Present and past weather	
	1 01 000	Delayed replication of 1 descriptor	
	0 31 000	Short delayed descriptor replication factor	
	3 02 175	Intensity of precipitation, size of precipitation element	
	1 02 000	Delayed replication of 2 descriptors	
	0 31 000	Short delayed descriptor replication factor	
	0 04 025	Time period or displacement	= –10 (minutes)
	3 02 076	Precipitation, obscuration and other phenomena	
	3 02 071	Wind data from one-hour period	
	3 02 077	Extreme temperature data	

(continued)

(Category 07 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 07 091 *(continued)*	0 07 033	Height of sensor above water surface	Set to missing (cancel)
	1 01 000	Delayed replication of 1 descriptor	
	0 31 000	Short delayed descriptor replication factor	
	3 02 079	Precipitation measurement	
	0 07 032	Height of sensor above local ground (or deck of marine platform)	Set to missing (cancel)
	1 01 000	Delayed replication of 1 descriptor	
	0 31 000	Short delayed descriptor replication factor	
	3 02 080	Evaporation measurement	
	1 01 000	Delayed replication of 1 descriptor	
	0 31 000	Short delayed descriptor replication factor	
	3 02 081	Total sunshine data	
	1 01 000	Delayed replication of 1 descriptor	
	0 31 000	Short delayed descriptor replication factor	
	3 02 082	Radiation data	
	1 02 000	Delayed replication of 2 descriptors	
	0 31 000	Short delayed descriptor replication factor	
	0 04 025	Time period or displacement	= –10 (minutes)
	0 13 059	Number of flashes (thunderstorm)	
	1 01 000	Delayed replication of 1 descriptor	
	0 31 000	Short delayed descriptor replication factor	
	3 02 083	First-order statistics of P, W, T, U data	
	0 33 005	Quality information (AWS data)	
	0 33 006	Internal measurement status information (AWS)	
		(Sequence for representation of SYNOP with supplementary information on one-hour observations)	
3 07 096	3 01 090	Surface station identification; time, horizontal and vertical coordinates	
	3 01 089	National station identification	
	0 08 010	Surface qualifier (temperature data)	
	3 01 091	Surface station instrumentation	
	3 02 084	“Instantaneous” data of sequence 3 07 096	
	3 02 085	“Period” data of sequence 3 07 096	
	0 33 005	Quality information (AWS data)	
	0 33 006	Internal measurement status information (AWS)	

Notes:

(1) The time identification refers to the beginning of the one-month period.

(2) In case of precipitation measurements, the one-month period begins at 06 UTC on the first day of the month and ends at 06 UTC on the first day of the following month.

(3) If the height of the sensor was changed during the period specified, the value shall be that which existed for the greater part of the period.

(4) The number of missing years within the reference period from the calculation of normal for mean extreme air temperature should be given, if available, for both the calculation of normal maximum temperature and for the calculation of normal minimum temperature in addition to the number of missing years for the extreme air temperatures reported under 0 08 020 preceded by 0 08 050 in which figure 3 is used.

(continued)

(Category 07 – continued)

(5) Within 3 07 045, 3 07 048 and 3 07 053, wind speed shall be reported in the same units as in the original TAC data and:

0 11 083 shall be set to missing, if wind speed is reported in knots or m s^{-1} in TAC data,

0 11 084 shall be set to missing, if wind speed is reported in km h^{-1} or m s^{-1} in TAC data.

(6) Within 3 07 045, 3 07 048 and 3 07 053, maximum wind speed (gusts) shall be reported in the same units as in the original TAC data and:

0 11 085 shall be set to missing, if maximum wind speed is reported in knots or m s^{-1} in TAC data,

0 11 086 shall be set to missing, if maximum wind speed is reported in km h^{-1} or m s^{-1} in TAC data.

Category 08 – Surface report sequences (sea)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(Buoy/platform – fixed)	
3 08 001	3 01 033	Buoy/platform – fixed	Identification, type, date/time, position (high accuracy)
	3 02 011	Low altitude station	Basic surface report
	0 22 042	Sea/water temperature	
		(Buoy/platform – fixed)	
3 08 002	3 01 034	Buoy/platform – fixed	Identification, type, date/time, position (coarse accuracy)
	3 02 011	Low altitude station	Basic surface report
	0 22 042	Sea/water temperature	
		(Buoy/platform – moving) (see Note 4)	
3 08 003	3 01 035	Buoy/platform – moving	Identification, movement, type, date/time, position (coarse accuracy)
	3 02 011	Low altitude station	Basic surface report
	0 22 042	Sea/water temperature	
		(Ship)	
3 08 004	3 01 036	Ship	Identification, movement, type, date/time, position (coarse accuracy)
	3 02 011	Low altitude station	Basic surface report
	0 22 042	Sea/water temperature	
3 08 005	3 08 004	Ship	Basic ship report
	3 02 024	Wind and swell waves	
		(Buoy Section 1 optional parameters)	
3 08 006	0 10 004	Pressure	
	0 10 061	3-hour pressure change	
	0 10 063	Characteristic of pressure tendency	
	0 11 001	Wind direction	
	0 11 002	Wind speed	
	0 12 004	Air temperature at 2 m	
	0 13 003	Relative humidity	
	0 22 042	Sea/water temperature	
3 08 007	3 01 055	Identification and type of station, date/time, location (high accuracy), movement	
	3 02 011	Low altitude station	Basic surface report
	0 07 062	Depth below sea/water surface	
	0 22 042	Sea/water temperature	

(continued)

(Category 08 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(Sequence for representation of synoptic reports from a sea station suitable for ship data)	
3 08 009	3 01 093	Ship identification, movement, date/time, horizontal and vertical coordinates	
	3 02 001	Pressure and 3-hour pressure change	
	3 02 054	Ship “instantaneous” data	
	0 08 002	Vertical significance (surface observations)	
	3 02 055	Icing and ice	
	3 02 057	Ship marine data	
	3 02 060	Ship “period” data	
		(TRACKOB template)	
3 08 010	0 01 011	Ship or mobile land station identifier	
	1 13 000	Delayed replication of 13 descriptors	
	0 31 001	Delayed descriptor replication factor	
	3 01 011	Year, month, day	
	3 01 012	Hour, minute	
	3 01 021	Latitude/longitude (high accuracy)	
	0 04 080	Averaging period for following value	
	0 22 049	Sea-surface temperature	
	0 04 080	Averaging period for following value	
	0 22 059	Sea-surface salinity	
	0 04 080	Averaging period for following value	
	0 22 005	Direction of sea-surface current	
	0 02 042	Indicator for sea-surface current speed	
	0 22 032	Speed of sea-surface current	
	0 02 042	Indicator for sea-surface current speed	Cancel
	0 04 080	Averaging period for following value	Cancel
		(Monthly values from an ocean weather station – CLIMAT SHIP)	
3 08 011	0 01 011	Ship or mobile land station identifier	Ship’s call sign
	0 02 001	Type of station	
	3 01 011	Year, month, day (see Note 1)	
	3 01 012	Hour, minute (see Note 1)	
	3 01 023	Latitude/longitude (coarse accuracy)	
	0 07 030	Height of station ground above mean sea level (see Note 3)	
	0 07 031	Height of barometer above mean sea level (see Note 3)	
		Monthly mean values of pressure, temperature, vapour pressure and sea/water temperature:	
	0 04 074	Short time period or displacement) (see Note 1)	= UTC – LST
	0 04 023	Time period or displacement	= Number of days in the month
	0 08 023	First-order statistics	= 4 Mean value
	0 10 051	Pressure reduced to mean sea level	

(continued)

(Category 08 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 08 011 *(continued)*	0 07 032	Height of sensor above local ground (or deck of marine platform) (see Note 3)	Temperature measurement
	0 07 033	Height of sensor above water surface (see Note 3)	Temperature measurement
	0 12 101	Temperature/air temperature	
	0 13 004	Vapour pressure	
	0 07 032	Height of sensor above local ground (or deck of marine platform)	Set to missing (cancel)
	0 07 033	Height of sensor above water surface	Set to missing (cancel)
	3 02 056	Sea/water temperature	Sea-surface temperature, method of measurement, and depth below sea surface
	0 08 023	First-order statistics	Set to missing
		Precipitation:	
	0 04 003	Day (see Note 2)	= 1
	0 04 004	Hour (see Note 2)	= 6
	0 04 023	Time period or displacement (see Note 2)	= Number of days in the month
	0 07 032	Height of sensor above local ground (or deck of marine platform) (see Note 3)	
	0 13 060	Total accumulated precipitation	
	0 13 051	Frequency group, precipitation	
	0 04 053	Number of days with precipitation equal to or more than 1 mm	
	0 07 032	Height of sensor above local ground (or deck of marine platform)	Set to missing (cancel)
		(Monthly normals from an ocean weather station)	
3 08 012	0 04 001	Year	Beginning of the reference period
	0 04 001	Year	Ending of the reference period
	0 04 002	Month	
	0 04 003	Day (see Note 1)	= 1
	0 04 004	Hour (see Note 1)	= 0
	0 04 074	Short time period or displacement (see Note 1)	= UTC – LST
	0 04 022	Time period or displacement	= 1
		Normals of monthly mean pressure, temperature, vapour pressure and sea/water temperature:	
	0 08 023	First-order statistics	= 4 Mean value
	0 10 051	Pressure reduced to mean sea level	
	0 07 032	Height of sensor above local ground (or deck of marine platform) (see Note 3)	Temperature measurement
	0 07 033	Height of sensor above water surface (see Note 3)	Temperature measurement
	0 12 101	Temperature/air temperature	
	0 13 004	Vapour pressure	
	0 07 032	Height of sensor above local ground (or deck of marine platform)	Set to missing (cancel)

(continued)

(Category 08 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 08 012 *(continued)*	0 07 033	Height of sensor above water surface	Set to missing (cancel)
	3 02 056	Sea/water temperature	Sea-surface temperature, method of measurement, and depth below sea surface
	0 08 023	First-order statistics	Set to missing
	0 04 001	Year	Beginning of the reference period
	0 04 001	Year	Ending of the reference period
	0 04 002	Month	
	0 04 003	Day (see Note 2)	= 1
	0 04 004	Hour (see Note 2)	= 6
	0 04 022	Time period or displacement	= 1
		Normals of precipitation:	
	0 07 032	Height of sensor above local ground (or deck of marine platform) (see Note 3)	Precipitation measurement
	0 08 023	First-order statistics	= 4 Mean value
	0 13 060	Total accumulated precipitation	
	0 04 053	Number of days with precipitation equal to or more than 1 mm	
	0 08 023	First-order statistics	Set to missing
		(Representation of CLIMAT SHIP data of the actual month and for monthly normals)	
3 08 013	3 08 011	Monthly values from an ocean weather station – CLIMAT SHIP	
	3 08 012	Monthly normals from an ocean weather station	

Notes:

(1) The time identification refers to the beginning of the one-month period.

(2) In case of precipitation measurements, the one-month period begins at 06 UTC on the first day of the month and ends at 06 UTC on the first day of the following month.

(3) If the height of the sensor was changed during the period specified, the value shall be that which existed for the greater part of the period.

(4) Descriptor 3 08 007 should be used instead of 3 08 003 to encode moving buoy/platform information.

Category 09 – Vertical sounding sequences (conventional data)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(Vertical wind profile)	
3 09 001	3 01 037	Land station for vertical soundings	Identification, etc. (land station, high accuracy position)
	1 01 000	Delayed replication of 1 descriptor	
	0 31 001	Delayed descriptor replication factor	
	3 03 011	Wind at height	
		(Vertical wind profile)	
3 09 002	3 01 038	Land station for vertical soundings	Identification, etc. (land station, coarse accuracy position)
	1 01 000	Delayed replication of 1 descriptor	
	0 31 001	Delayed descriptor replication factor	
	3 03 011	Wind at height	
		(Vertical wind profile)	
3 09 003	3 01 037	Land station for vertical soundings	Identification, etc. (land station, high accuracy position)
	1 01 000	Delayed replication of 1 descriptor	
	0 31 001	Delayed descriptor replication factor	
	3 03 012	Wind at pressure level	
		(Vertical wind profile)	
3 09 004	3 01 038	Land station for vertical soundings	Identification, etc. (land station, coarse accuracy position)
	1 01 000	Delayed replication of 1 descriptor	
	0 31 001	Delayed descriptor replication factor	
	3 03 012	Wind at pressure level	
		(Vertical sounding with relative humidity)	
3 09 005	3 01 037	Land station for vertical soundings	Identification, etc. (land station, high accuracy position)
	3 02 004	General cloud information	Significant cloud layer
	1 01 000	Delayed replication of 1 descriptor	
	0 31 001	Delayed descriptor replication factor	
	3 03 013	Geopotential, temperature, humidity, wind at pressure level	
		(Vertical sounding with relative humidity)	
3 09 006	3 01 038	Land station for vertical soundings	Identification, etc. (land station, coarse accuracy position)
	3 02 004	General cloud information	Significant cloud layer
	1 01 000	Delayed replication of 1 descriptor	
	0 31 001	Delayed descriptor replication factor	
	3 03 013	Geopotential, temperature, humidity, wind at pressure level	

(continued)

(Category 09 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(Vertical sounding with dewpoint data)	
3 09 007	3 01 037	Land station for vertical soundings	Identification, etc. (land station, high accuracy position)
	3 02 004	General cloud information	Significant cloud layer
	1 01 000	Delayed replication of 1 descriptor	
	0 31 001	Delayed descriptor replication factor	
	3 03 014	Geopotential, temperature, dewpoint temperature, wind at pressure level	
		(Vertical sounding with dewpoint data)	
3 09 008	3 01 038	Land station for vertical soundings	Identification, etc. (land station, coarse accuracy position)
	3 02 004	General cloud information	Significant cloud layer
	1 01 000	Delayed replication of 1 descriptor	
	0 31 001	Delayed descriptor replication factor	
	3 03 014	Geopotential, temperature, dewpoint temperature, wind at pressure level	
		(Vertical wind profile)	
3 09 011	3 01 039	Ship for vertical soundings	Ship's identification, etc.
	1 01 000	Delayed replication of 1 descriptor	
	0 31 001	Delayed descriptor replication factor	
	3 03 011	Wind at height	
		(Vertical wind profile)	
3 09 012	3 01 039	Ship for vertical soundings	Ship's identification, etc.
	1 01 000	Delayed replication of 1 descriptor	
	0 31 001	Delayed descriptor replication factor	
	3 03 012	Wind at pressure level	
		(Vertical sounding with relative humidity)	
3 09 013	3 01 039	Ship for vertical soundings	Ship's identification, etc.
	3 02 004	General cloud information	Significant cloud layer
	1 01 000	Delayed replication of 1 descriptor	
	0 31 001	Delayed descriptor replication factor	
	3 03 013	Geopotential, temperature, humidity, wind at pressure level	
		(Vertical sounding with dewpoint data)	
3 09 014	3 01 039	Ship for vertical soundings	Ship's identification, etc.
	3 02 004	General cloud information	Significant cloud layer
	1 01 000	Delayed replication of 1 descriptor	
	0 31 001	Delayed descriptor replication factor	
	3 03 014	Geopotential, temperature, dewpoint temperature, wind at pressure level	

(continued)

(Category 09 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(Vertical wind profile)	
3 09 015	3 01 040	Ship for vertical soundings	Ship's identification, etc.
	1 01 000	Delayed replication of 1 descriptor	
	0 31 001	Delayed descriptor replication factor	
	3 03 011	Wind at height	
		(Vertical wind profile)	
3 09 016	3 01 040	Ship for vertical soundings	Ship's identification, etc.
	1 01 000	Delayed replication of 1 descriptor	
	0 31 001	Delayed descriptor replication factor	
	3 03 012	Wind at pressure level	
		(Vertical sounding with relative humidity)	
3 09 017	3 01 040	Ship for vertical soundings	Ship's identification, etc.
	3 02 004	General cloud information	Significant cloud layer
	1 01 000	Delayed replication of 1 descriptor	
	0 31 001	Delayed descriptor replication factor	
	3 03 013	Geopotential, temperature, humidity, wind at pressure level	
		(Vertical sounding with dewpoint data)	
3 09 018	3 01 040	Ship for vertical soundings	Ship's identification, etc.
	3 02 004	General cloud information	Significant cloud layer
	1 01 000	Delayed replication of 1 descriptor	
	0 31 001	Delayed descriptor replication factor	
	3 03 014	Geopotential, temperature, dewpoint temperature, wind at pressure level	
		(Wind profiler – wind data sounding)	
3 09 019	3 01 031	Identification and type of station, date/time, location (high accuracy), height of station	
	0 02 003	Type of measuring equipment used	
	1 01 000	Delayed replication of 1 descriptor	
	0 31 001	Delayed descriptor replication factor	
	3 03 011	Wind at height	
		(Wind profiler – Cartesian coordinates)	
3 09 020	3 01 031	Identification and type of station, date/time, location (high accuracy), height of station	
	0 02 003	Type of measuring equipment used	
	1 04 000	Delayed replication of 4 descriptors	
	0 31 001	Delayed descriptor replication factor	
	0 07 003	Geopotential	
	0 11 003	u-component	
	0 11 004	v-component	
	0 11 005	w-component	

(continued)

(Category 09 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(Ozone sonde flight data) (see Note 1)	
3 09 030	0 15 004	Ozone sounding correction factor (CF)	
	0 15 005	Ozone p	
	1 04 000	Delayed replication of 4 descriptors	
	0 31 001	Delayed descriptor replication factor	
	0 04 015	Time increment	Since launch time, if needed, in minutes
	0 08 006	Ozone vertical sounding significance	
	0 07 004	Pressure	
	0 15 003	Measured ozone partial pressure (sounding)	
		(Ozone sonde flight data)	
3 09 031	0 15 004	Ozone sounding correction factor (CF)	
	0 15 005	Ozone p	
	1 04 000	Delayed replication of 4 descriptors	
	0 31 001	Delayed descriptor replication factor	
	0 04 025	Time period or displacement	Since launch time in minutes
	0 08 006	Ozone vertical sounding significance	
	0 07 004	Pressure	
	0 15 003	Measured ozone partial pressure (sounding)	
		(Ozone sounding not coupled to a ground-based spectrophotometer) (see Note 2)	
3 09 040	3 01 075	Sounding identification	
	3 01 076	Ozone sounding instrumentation	
	3 09 030	Ozone sonde flight data	
		(Ozone sounding coupled to measurements from a Brewer ground-based spectrophotometer; the total ozone obtained from the Brewer is a single value) (see Note 2)	
3 09 041	3 07 041	Total ozone measurement from a Brewer ground-based spectrophotometer obtained from a single observation	Description of the ground-based part
	3 01 075	Sounding identification	Identification of the ozone sounding part
	3 01 076	Ozone sounding instrumentation	
	3 09 030	Ozone sonde flight data	
		(Ozone sounding coupled to measurements from a Brewer ground-based spectrophotometer; the total ozone obtained from the Brewer is an averaged value) (see Note 2)	
3 09 042	3 07 042	Total ozone measurement from a Brewer ground-based spectrophotometer obtained from averaged observations	Description of the ground-based part
	3 01 075	Sounding identification	Identification of the ozone sounding part
	3 01 076	Ozone sounding instrumentation	
	3 09 030	Ozone sonde flight data	

(continued)

(Category 09 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(Ozone sounding coupled to measurements from a Dobson ground-based spectrophotometer; the total ozone obtained from the Dobson is a single value) (see Note 2)	
3 09 043	3 07 043	Total ozone measurement from a Dobson ground-based spectrophotometer obtained from a single observation	Description of the ground-based part
	3 01 075	Sounding identification	Identification of the ozone sounding part
	3 01 076	Ozone sounding instrumentation	
	3 09 030	Ozone sonde flight data	
		(Ozone sounding coupled to measurements from a Dobson ground-based spectrophotometer; the total ozone obtained from the Dobson is an averaged value) (see Note 2)	
3 09 044	3 07 044	Total ozone measurement from a Dobson ground-based spectrophotometer obtained from averaged observations	Description of the ground-based part
	3 01 075	Sounding identification	Identification of the ozone sounding part
	3 01 076	Ozone sounding instrumentation	
	3 09 030	Ozone sonde flight data	
		(Ozone sounding not coupled to a ground-based spectrophotometer)	
3 09 045	3 01 075	Sounding identification	
	3 01 076	Ozone sounding instrumentation	
	3 09 031	Ozone sonde flight data	
		(Ozone sounding coupled to measurements from a Brewer ground-based spectrophotometer; the total ozone obtained from the Brewer is a single value)	
3 09 046	3 07 041	Total ozone measurement from a Brewer ground-based spectrophotometer obtained from a single observation	Description of the ground-based part
	3 01 075	Sounding identification	Identification of the ozone sounding part
	3 01 076	Ozone sounding instrumentation	
	3 09 031	Ozone sonde flight data	
		(Ozone sounding coupled to measurements from a Brewer ground-based spectrophotometer; the total ozone obtained from the Brewer is an averaged value)	
3 09 047	3 07 042	Total ozone measurement from a Brewer ground-based spectrophotometer obtained from averaged observations	Description of the ground-based part
	3 01 075	Sounding identification	Identification of the ozone sounding part
	3 01 076	Ozone sounding instrumentation	
	3 09 031	Ozone sonde flight data	

(continued)

(Category 09 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(Ozone sounding coupled to measurements from a Dobson ground-based spectrophotometer; the total ozone obtained from the Dobson is a single value)	
3 09 048	3 07 043	Total ozone measurement from a Dobson ground-based spectrophotometer obtained from a single observation	Description of the ground-based part
	3 01 075	Sounding identification	Identification of the ozone sounding part
	3 01 076	Ozone sounding instrumentation	
	3 09 031	Ozone sonde flight data	
		(Ozone sounding coupled to measurements from a Dobson ground-based spectrophotometer; the total ozone obtained from the Dobson is an averaged value)	
3 09 049	3 07 044	Total ozone measurement from a Dobson ground-based spectrophotometer obtained from averaged observations	Description of the ground-based part
	3 01 075	Sounding identification	Identification of the ozone sounding part
	3 01 076	Ozone sounding instrumentation	
	3 09 031	Ozone sonde flight data	
		(Sequence for representation of PILOT, PILOT SHIP and PILOT MOBIL observation type data with pressure as the vertical coordinate)	
3 09 050	3 01 110	Identification of launch site and instrumentation for wind measurements	
	3 01 113	Date/time of launch	
	3 01 114	Horizontal and vertical coordinates of launch site	
	1 01 000	Delayed replication of 1 descriptor	
	0 31 002	Extended delayed descriptor replication factor	
	3 03 050	Wind data at a pressure level with radiosonde position	
	1 01 000	Delayed replication of 1 descriptor	
	0 31 001	Delayed descriptor replication factor	
	3 03 051	Wind shear data at a pressure level with radiosonde position	
		(Sequence for representation of PILOT, PILOT SHIP and PILOT MOBIL observation type data with height as the vertical coordinate)	
3 09 051	3 01 110	Identification of launch site and instrumentation for wind measurements	
	3 01 113	Date/time of launch	
	3 01 114	Horizontal and vertical coordinates of launch site	
	1 01 000	Delayed replication of 1 descriptor	
	0 31 002	Extended delayed descriptor replication factor	
	3 03 052	Wind data at a height level with radiosonde position	
	1 01 000	Delayed replication of 1 descriptor	
	0 31 001	Delayed descriptor replication factor	
	3 03 053	Wind shear data at a height level with radiosonde position	

(continued)

(Category 09 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(Sequence for representation of TEMP, TEMP SHIP and TEMP MOBIL observation type data)	
3 09 052	3 01 111	Identification of launch site and instrumentation for P, T, U and wind measurements	
	3 01 113	Date/time of launch	
	3 01 114	Horizontal and vertical coordinates of launch site	
	3 02 049	Cloud information reported with vertical soundings	
	0 22 043	Sea/water temperature	
	1 01 000	Delayed replication of 1 descriptor	
	0 31 002	Extended delayed descriptor replication factor	
	3 03 054	Temperature, dewpoint and wind data at a pressure level with radiosonde position	
	1 01 000	Delayed replication of 1 descriptor	
	0 31 001	Delayed descriptor replication factor	
	3 03 051	Wind shear data at a pressure level with radiosonde position	
		(Sequence for representation of TEMP DROP observation type data)	
3 09 053	3 01 112	Identification of launch point and instrumentation of dropsonde	
	3 01 113	Date/time of launch	
	3 01 114	Horizontal and vertical coordinates of launch site	
	1 01 000	Delayed replication of 1 descriptor	
	0 31 002	Extended delayed descriptor replication factor	
	3 03 054	Temperature, dewpoint and wind data at a pressure level with radiosonde position	
	1 01 000	Delayed replication of 1 descriptor	
	0 31 001	Delayed descriptor replication factor	
	3 03 051	Wind shear data at a pressure level with radiosonde position	
		(Sequence for representation of CLIMAT TEMP and CLIMAT TEMP SHIP data)	
3 09 054	3 01 001	WMO block and station numbers	Identification of launch site
	0 01 011	Ship or mobile land station identifier	Ship's call sign
	3 01 011	Year, month, day	
	3 01 012	Hour, minute	
	3 01 021	Latitude/longitude (high accuracy)	
	0 07 030	Height of station ground above mean sea level	
	0 07 031	Height of barometer above mean sea level	
	0 07 007	Height	Release of sonde above mean sea level
		Monthly mean data:	
	0 04 023	Time period or displacement	Number of days in the month
	0 04 059	Times of observation used to compute the reported mean values	
	1 15 000	Delayed replication of 15 descriptors	
	0 31 001	Delayed descriptor replication factor	

(continued)

(Category 09 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 09 054 *(continued)*	0 08 001	Vertical sounding significance	
	0 08 023	First-order statistics	= 4 Mean value
	0 07 004	Pressure	
	0 10 009	Geopotential height	
	0 12 101	Temperature/air temperature	
	0 12 103	Dewpoint temperature	
	0 08 023	First-order statistics	= 32 Vector mean
	0 11 001	Wind direction	
	0 11 002	Wind speed	
	0 08 023	First-order statistics	Set to missing
	0 11 019	Steadiness of wind	
	0 08 050	Qualifier for number of missing values in calculation of statistic	= 2 Temperature
	0 08 020	Total number of missing entities (with respect to accumulation or average)	Days
	0 08 050	Qualifier for number of missing values in calculation of statistic	= 9 Wind
	0 08 020	Total number of missing entities (with respect to accumulation or average)	Days
		(Radiosonde complete registration and surface observation)	
3 09 060	3 01 123	Radiosonde full header information	
	3 01 121	Radiosonde launch point location	
	3 02 050	Radiosonde surface observation	
	3 03 040	Radiosonde duration of flight and termination information	
		(Raw PTU)	
3 09 061	3 01 120	Radiosonde abbreviated header and launch information	
	0 08 041	Data significance	= 6 Flight level observation
	3 01 122	Date/time (to hundredths of second)	
	2 01 131	Change data width	
	2 02 129	Change scale	
	0 25 069	Flight level pressure corrections	
	0 07 004	Pressure	
	2 02 000	Change scale	Cancel
	2 01 000	Change data width	Cancel
	0 33 007	Per cent confidence	Pressure
	0 33 035	Manual/automatic quality control	Pressure
	0 33 015	Data quality check indicator	Pressure
	0 13 009	Relative humidity	
	0 33 007	Per cent confidence	Relative humidity
	0 33 035	Manual/automatic quality control	Relative humidity
	0 33 015	Data quality check indicator	Relative humidity
	0 02 013	Solar and infrared radiation correction	
	0 12 101	Temperature/air temperature	
	0 33 007	Per cent confidence	Temperature

(continued)

(Category 09 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 09 061 *(continued)*	0 33 035	Manual/automatic quality control	Temperature
	0 33 015	Data quality check indicator	Temperature
		(Raw GPS unsmoothed wind)	
3 09 062	3 01 120	Radiosonde abbreviated header and launch information	
	0 08 041	Data significance	= 6 Flight level observation
	3 01 122	Date/time (to hundredths of second)	
	0 05 001	Latitude (high accuracy)	
	0 33 035	Manual/automatic quality control	Latitude
	0 33 015	Data quality check indicator	Latitude
	0 06 001	Longitude (high accuracy)	
	0 33 035	Manual/automatic quality control	Longitude
	0 33 015	Data quality check indicator	Longitude
	0 07 007	Height	
	0 33 035	Manual/automatic quality control	Height
	0 33 015	Data quality check indicator	Height
	0 11 003	u-component	
	0 33 035	Manual/automatic quality control	u-component
	0 33 015	Data quality check indicator	u-component
	0 11 004	v-component	
	0 33 035	Manual/automatic quality control	v-component
	0 33 015	Data quality check indicator	v-component
	0 33 007	Per cent confidence	Raw GPS unsmoothed wind
		(Raw GPS smoothed wind)	
3 09 063	3 01 120	Radiosonde abbreviated header and launch information	
	0 08 041	Data significance	= 6 Flight level observation
	3 01 122	Date/time (to hundredths of second)	
	0 05 001	Latitude (high accuracy)	
	0 33 035	Manual/automatic quality control	Latitude
	0 33 015	Data quality check indicator	Latitude
	0 06 001	Longitude (high accuracy)	
	0 33 035	Manual/automatic quality control	Longitude
	0 33 015	Data quality check indicator	Longitude
	0 07 007	Height	
	0 33 035	Manual/automatic quality control	Height
	0 33 015	Data quality check indicator	Height
	0 11 003	u-component	
	0 33 035	Manual/automatic quality control	u-component
	0 33 015	Data quality check indicator	u-component
	0 11 004	v-component	
	0 33 035	Manual/automatic quality control	v-component
	0 33 015	Data quality check indicator	v-component
	0 33 007	Per cent confidence	Raw GPS smoothed wind

(continued)

(Category 09 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(Processed PTU)	
3 09 064	3 01 120	Radiosonde abbreviated header and launch information	
	0 08 041	Data significance	= 6 Flight level observation
	3 01 122	Date/time (to hundredths of second)	
	2 01 131	Change data width	
	2 02 129	Change scale	
	1 04 002	Replicate 4 descriptors 2 times	
	0 25 069	Flight level pressure corrections	
	0 07 004	Pressure	
	0 33 035	Manual/automatic quality control	Pressure
	0 33 015	Data quality check indicator	Pressure
	0 13 003	Relative humidity	
	0 33 035	Manual/automatic quality control	Relative humidity
	0 33 015	Data quality check indicator	Relative humidity
	2 02 000	Change scale	Cancel
	2 01 000	Change data width	Cancel
	1 04 002	Replicate 4 descriptors 2 times	
	0 02 013	Solar and infrared radiation correction	
	0 12 101	Temperature/air temperature	
	0 33 035	Manual/automatic quality control	Temperature
	0 33 015	Data quality check indicator	Temperature
	0 12 103	Dewpoint temperature	
	0 33 035	Manual/automatic quality control	Dewpoint temperature
	0 33 015	Data quality check indicator	Dewpoint temperature
	0 10 009	Geopotential height	
	0 33 035	Manual/automatic quality control	Geopotential height
	0 33 015	Data quality check indicator	Geopotential height
		(Processed GPS)	
3 09 065	3 01 120	Radiosonde abbreviated header and launch information	
	0 08 041	Data significance	= 6 Flight level observation
	3 01 122	Date/time (to hundredths of second)	
	0 05 001	Latitude (high accuracy)	
	0 33 035	Manual/automatic quality control	Latitude
	0 33 015	Data quality check indicator	Latitude
	0 06 001	Longitude (high accuracy)	
	0 33 035	Manual/automatic quality control	Longitude
	0 33 015	Data quality check indicator	Longitude
	0 07 007	Height	
	0 33 035	Manual/automatic quality control	Height
	0 33 015	Data quality check indicator	Height
	0 11 003	u-component	
	0 33 035	Manual/automatic quality control	u-component
	0 33 015	Data quality check indicator	u-component
	0 11 004	v-component	
	0 33 035	Manual/automatic quality control	v-component
	0 33 015	Data quality check indicator	v-component

(continued)

(Category 09 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(Standard and significant levels)	
3 09 066	3 01 120	Radiosonde abbreviated header and launch information	
	0 08 041	Data significance	= 6 Flight level observation
	3 01 122	Date/time (to hundredths of second)	
	0 08 040	Flight level significance	
	2 01 131	Change data width	
	2 02 129	Change scale	
	0 25 069	Flight level pressure corrections	
	0 07 004	Pressure	
	0 13 003	Relative humidity	
	2 02 000	Change scale	Cancel
	2 01 000	Change data width	Cancel
	0 02 013	Solar and infrared radiation correction	
	0 12 101	Temperature/air temperature	
	0 12 103	Dewpoint temperature	
	0 10 009	Geopotential height	
	0 10 007	Height	
	0 11 002	Wind speed	
	0 11 001	Wind direction	
		(Vertical profile for numerical weather prediction data)	
		Identification	
3 09 070	0 01 035	Originating centre	
	0 01 032	Generating application	
	0 01 015	Station or site name	
	0 01 063	ICAO location indicator	
	3 01 001	WMO block and station numbers	
		Location and reference time	
	3 01 011	Year, month, day	
	3 01 012	Hour, minute	Reference time of the forecast (T-zero)
	3 01 021	Latitude/longitude (high accuracy)	
	2 07 001	Increase scale, reference value and data width	Increase scale factor by 1; reference value and data width are recalculated in accordance with the Table C specification of operator 2 07 YYY
	0 10 001	Height of land surface (see Note 3)	Station elevation (non coordinate)
	2 07 000	Increase scale, reference value and data width	Cancel
	0 08 086	Vertical significance for NWP	Bit 9 set to 1 Virtual station height

(continued)

(Category 09 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 09 070 *(continued)*	0 07 030	Height of station ground above mean sea level	Elevation of model terrain at the lat/lon of station. As qualified by 0 08 086, this value is both station and model specific.
		Vertical profile metadata	
	0 25 031	NWP-generated vertical profile thinning method (see Note 4)	
	0 08 021	Time significance	= 4 Forecast, = 16 Analysis, = 27 First guess
	0 04 014	Time increment	Validity time of the forecast expressed as a Delta T from reference time. In the case of an analysis or 00 hour forecast, the value is set to zero
		Point data at station height (including column-integrated data)	
	0 10 004	Pressure	
	0 10 051	Pressure reduced to mean sea level	
	0 10 009	Geopotential height	
	0 20 010	Cloud cover (total)	
	0 13 095	Total column water vapour	
		Replication loop for levels	
	1 28 000	Delayed replication of 28 descriptors	
	0 31 002	Extended delayed descriptor replication factor	The number of levels used in the vertical profile is determined by this replication. The number of levels is discretionary and comprises all agl levels and pressure levels
		Data on pressure coordinates	
	1 13 000	Delayed replication of 13 descriptors	
	0 31 000	Short delayed descriptor replication factor	= 1 Vertical coordinate is pressure, = 0 Otherwise
	0 08 086	Vertical significance for NWP	Bit 1 set to 0 and other bits as appropriate
	0 07 004	Pressure (see Note 5)	
	0 11 001	Wind direction	Degrees true
	0 11 002	Wind speed	m/s
	0 12 101	Temperature/air temperature	
	0 12 102	Wet-bulb temperature	
	0 12 103	Dewpoint temperature	
	0 10 009	Geopotential height	
	1 03 000	Delayed replication of 3 descriptors	

(continued)

(Category 09 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 09 070 *(continued)*	0 31 000	Short delayed descriptor replication factor	= 1 Optional enhanced model data is to be included
	0 11 021	Relative vorticity	
	0 11 022	Divergence	
	0 11 005	w-component	Vertical motion
		Data at 10 metres above ground level	
	1 04 000	Delayed replication of 4 descriptors	
	0 31 000	Short delayed descriptor replication factor	= 1 Vertical coordinate is 10 metres above ground level, = 0 Otherwise
	0 08 086	Vertical significance for NWP	Bit 1 set to 1, bit 8 set to 1
	0 07 006	Height above station	= 10 m
	0 11 001	Wind direction	Degrees true
	0 11 002	Wind speed	m/s
		Data at 2 metres above ground level	
	1 05 000	Delayed replication of 5 descriptors	
	0 31 000	Short delayed descriptor replication factor	= 1 Vertical coordinate is 2 metres above ground level, = 0 Otherwise
	0 08 086	Vertical significance for NWP	
	0 07 006	Height above station	= 2 m
	0 12 101	Temperature/air temperature	
	0 12 102	Wet-bulb temperature	
	0 12103	Dewpoint temperature	
		(Sequence for representation of PILOT in the area of ASECNA)	
3 09 071	3 01 001	WMO block and station numbers	
	0 02 014	Tracking technique/status of system used	
	0 02 003	Type of measuring equipment used	
	3 01 113	Date/time of launch	
	3 01 114	Horizontal and vertical coordinates of launch site	
	3 01 023	Latitude, longitude (coarse accuracy)	
	0 07 030	Height of station ground above mean sea level	
	0 07 007	Height	Release of balloon
	1 03 000	Delayed replication of 3 descriptors	
	0 31 001	Delayed descriptor replication factor	
	0 07 009	Geopotential height	
	0 11 001	Wind direction	
	0 11 002	Wind speed	

Notes:

(1) Sequence 3 09 030 is deprecated because of incorrect usage of descriptor 0 04 015; sequence 3 09 031 should be used instead.

(continued)

(Category 09 – continued)

(2) This sequence is deprecated because it includes deprecated sequence 3 09 030; sequence 3 09 045, 3 09 046, 3 09 047, 3 09 048 and 3 09 049 should be used instead of 3 09 040, 3 09 041, 3 09 042, 3 09 043 and 3 09 044, respectively.

(3) This value is the official or best estimate of the actual elevation of the station. It is provided for comparison with the model's virtual terrain elevation. The two can be substantially different in rugged terrain. The scale factor is increased to make the value directly comparable with 0 07 030 below.

(4) In this instance, the term "thinning" refers to a method that may be applied to select a subset of levels from a model that may have many native vertical levels. Selecting only a subset reduces the size of the pseudo-sounding, at the possible cost of information loss and extra processing.

(5) Non-surface levels on the model's native vertical coordinate are transposed to pressure coordinate. This makes the levels more readily intelligible for human interpretation and easier to use by generic display applications. The levels may correspond exactly to native model levels, or be interpolated between model levels to pressure levels chosen by the generating centre.

Category 10 – Vertical sounding sequences (satellite data)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(Satellite – brightness temperature)	
3 10 001	3 01 042	Satellite identifier, instrument, data-processing technique, date/time, location	
	3 03 031	Significance data, land/sea, skin temperature	
	3 03 032	Cloud	
	1 01 026	Replicate 1 descriptor 26 times	
	3 03 025	Satellite channel and brightness temperature	
		(Satellite – low level)	
3 10 002	3 01 042	Satellite identifier, instrument, data-processing technique, date/time, location	
	3 03 031	Significance data, land/sea, skin temperature	
	3 03 032	Cloud	
	1 01 009	Replicate 1 descriptor 9 times	
	3 03 023	Layer mean temperature	
		(Satellite – high level)	
3 10 003	3 01 042	Satellite identifier, instrument, data-processing technique, date/time, location	
	3 03 031	Significance data, land/sea, skin temperature	
	3 03 032	Cloud	
	1 01 006	Replicate 1 descriptor 6 times	
	3 03 023	Layer mean temperature	
		(Satellite – precipitable water)	
3 10 004	3 01 042	Satellite identifier, instrument, data-processing technique, date/time, location	
	3 03 031	Significance data, land/sea, skin temperature	
	3 03 032	Cloud	
	1 01 003	Replicate 1 descriptor 3 times	
	3 03 024	Precipitable water	
3 10 005	3 01 042	Satellite identifier, instrument, data-processing technique, date/time, location	
	3 03 031	Significance data, land/sea, skin temperature	
	3 03 033	Cloud	
	1 01 000	Delayed replication of 1 descriptor	
	0 31 001	Delayed descriptor replication factor	
	3 03 025	Satellite channel and brightness temperature	
3 10 006	3 01 042	Satellite identifier, instrument, data-processing technique, date/time, location	
	3 03 031	Significance data, land/sea, skin temperature	
	3 03 033	Cloud	
	1 01 000	Delayed replication of 1 descriptor	
	0 31 001	Delayed descriptor replication factor	
	3 03 023	Layer mean temperature	

(continued)

(Category 10 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 10 007	3 01 042	Satellite identifier, instrument, data-processing technique, date/time, location	
	3 03 031	Significance data, land/sea, skin temperature	
	3 03 033	Cloud	
	1 01 000	Delayed replication of 1 descriptor	
	0 31 001	Delayed descriptor replication factor	
	3 03 024	Precipitable water	
		(ATOVS HIRS report)	
3 10 008	3 10 011	ATOVS field of view variables	
	1 01 019	Replicate 1 descriptor 19 times	
	3 10 012	ATOVS channel variables	
	0 02 150	TOVS/ATOVS/AVHRR instrumentation channel number	
	0 25 079	Albedo-radiance solar filtered irradiance for ATOVS	
	0 25 080	Albedo-radiance equivalent filter width for ATOVS	
	0 33 032	Channel quality flags for ATOVS	
	0 14 045	Channel radiance	
		(ATOVS AMSU-A report)	
3 10 009	3 10 011	ATOVS field of view variables	
	1 01 015	Replicate 1 descriptor 15 times	
	3 10 012	ATOVS channel variables	
		(ATOVS AMSU-B/MHS report)	
3 10 010	3 10 011	ATOVS field of view variables	
	1 01 005	Replicate 1 descriptor 5 times	
	3 10 012	ATOVS channel variables	
		(ATOVS field of view variables)	
3 10 011	0 08 070	TOVS/ATOVS product qualifier	
	0 01 033	Identification of originating/generating centre	
	0 01 034	Identification of originating/generating sub-centre	
	0 08 070	TOVS/ATOVS product qualifier	
	0 01 033	Identification of originating/generating centre	
	0 01 034	Identification of originating/generating sub-centre	
	0 01 007	Satellite identifier	
	0 02 048	Satellite sensor indicator	
	0 05 040	Orbit number	
	0 25 075	Satellite antenna corrections version number	
	2 01 133	Change data width	
	0 05 041	Scan line number	
	2 01 000	Change data width	
	0 05 043	Field of view number	
	0 25 070	Major frame count	
	0 33 030	Scan line status flags for ATOVS	
	0 33 031	Scan line quality flags for ATOVS	
	0 04 001	Year	
	0 04 002	Month	

(continued)

(Category 10 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 10 011 *(continued)*	0 04 003	Day	
	0 04 004	Hour	
	0 04 005	Minute	
	2 02 131	Change scale	
	2 01 138	Change data width	
	0 04 006	Second	
	2 01 000	Change data width	
	2 02 000	Change scale	
	0 05 001	Latitude (high accuracy)	
	0 06 001	Longitude (high accuracy)	
	2 02 126	Change scale	
	0 07 001	Height of station	
	2 02 000	Change scale	
	0 07 024	Satellite zenith angle	
	0 05 021	Bearing or azimuth	Satellite azimuth
	0 07 025	Solar zenith angle	
	0 05 022	Solar azimuth	
	0 33 033	Field of view quality flags for ATOVS	
	0 02 151	Radiometer identifier	
	0 12 064	Instrument temperature	
	0 02 151	Radiometer identifier	
	0 12 064	Instrument temperature	
	0 02 151	Radiometer identifier	
	0 12 064	Instrument temperature	
	0 02 151	Radiometer identifier	
	0 12 064	Instrument temperature	
		(ATOVS channel variables)	
3 10 012	0 02 150	TOVS/ATOVS/AVHRR instrumentation channel number	
	0 25 076	Log_{10} of (temperature-radiance central wave number) for ATOVS	
	0 25 077	Bandwidth correction coefficient 1 for ATOVS	
	0 25 078	Bandwidth correction coefficient 2 for ATOVS	
	0 33 032	Channel quality flags for ATOVS	
	2 01 132	Change data width	
	2 02 129	Change scale	
	0 12 063	Brightness temperature	
	2 02 000	Change scale	
	2 01 000	Change data width	
		(AVHRR (GAC) report)	
3 10 013	0 01 007	Satellite identifier	
	0 05 040	Orbit number	
	0 04 001	Year	
	0 04 002	Month	
	0 04 003	Day	
	0 04 004	Hour	
	0 04 005	Minute	

(continued)

(Category 10 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 10 013 *(continued)*	0 04 006	Second	
	0 05 001	Latitude (high accuracy)	
	0 06 001	Longitude (high accuracy)	
	0 07 025	Solar zenith angle	
	0 05 043	Field of view number	
	0 25 085	Fraction of clear pixels in HIRS FOV	
	2 01 131	Change data width	
	2 02 129	Change scale	
	0 02 150	TOVS/ATOVS/AVHRR instrumentation channel number	
	0 08 023	First-order statistics	
	0 08 072	Pixel(s) type	
	0 14 027	Albedo	
	0 08 072	Pixel(s) type	
	0 14 027	Albedo	
	0 02 150	TOVS/ATOVS/AVHRR instrumentation channel number	
	0 08 023	First-order statistics	
	0 08 072	Pixel(s) type	
	0 14 027	Albedo	
	0 08 072	Pixel(s) type	
	0 14 027	Albedo	
	0 02 150	TOVS/ATOVS/AVHRR instrumentation channel number	
	0 08 023	First-order statistics	
	0 08 072	Pixel(s) type	
	0 14 027	Albedo	
	0 08 072	Pixel(s) type	
	0 14 027	Albedo	
	2 02 000	Change scale	
	2 01 000	Change data width	
	2 01 132	Change data width	
	2 02 129	Change scale	
	0 02 150	TOVS/ATOVS/AVHRR instrumentation channel number	
	0 08 023	First-order statistics	
	0 08 072	Pixel(s) type	
	0 12 063	Brightness temperature	
	0 08 072	Pixel(s) type	
	0 12 063	Brightness temperature	
	0 02 150	TOVS/ATOVS/AVHRR instrumentation channel number	
	0 08 023	First-order statistics	
	0 08 072	Pixel(s) type	
	0 12 063	Brightness temperature	
	0 08 072	Pixel(s) type	
	0 12 063	Brightness temperature	
	0 08 023	First-order statistics	
	0 08 072	Pixel(s) type	
	0 12 063	Brightness temperature	

(continued)

(Category 10 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 10 013 *(continued)*	0 08 072	Pixel(s) type	
	0 12 063	Brightness temperature	
	0 02 150	TOVS/ATOVS/AVHRR instrumentation channel number	
	0 08 023	First-order statistics	
	0 08 072	Pixel(s) type	
	0 12 063	Brightness temperature	
	0 08 072	Pixel(s) type	
	0 12 063	Brightness temperature	
	2 02 000	Change scale	
	2 01 000	Change data width	
		(Satellite – geostationary wind data)	
3 10 014	3 01 072	Satellite identification	Satellite identification, date/time, latitude/longitude
	3 03 041	Wind sequence	
	3 04 011	GOES-I/M info	
		(Meteosat radiance data)	
3 10 015	3 01 072	Satellite identification	
	0 07 024	Satellite zenith angle	
	0 10 002	Height	
	3 03 041	Wind sequence	
	1 01 003	Replicate 1 descriptor 3 times	
	3 04 032	Cloud fraction	
	0 02 152	Satellite instrument used in data processing	
	0 02 024	Integrated mean humidity computational method	
	0 07 004	Pressure	
	0 07 004	Pressure	
	0 13 003	Relative humidity	
	1 01 003	Replicate 1 descriptor 3 times	
	3 04 033	Clear sky radiance	
		(Meteosat Second Generation (MSG) radiance data)	
3 10 016	3 01 072	Satellite identification	
	0 07 024	Satellite zenith angle	
	0 10 002	Height	
	3 03 041	Wind sequence	
	1 01 012	Replicate 1 descriptor 12 times	
	3 04 032	Cloud fraction	
	0 02 152	Satellite instrument used in data processing	
	0 02 024	Integrated mean humidity computational method	
	0 07 004	Pressure	
	0 07 004	Pressure	
	0 13 003	Relative humidity	
	1 01 012	Replicate 1 descriptor 12 times	
	3 04 033	Clear sky radiance	

(continued)

(Category 10 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(Ozone data)	
3 10 018	0 01 007	Satellite identifier	
	0 05 040	Orbit number	
	0 04 001	Year	
	0 04 043	Day of the year	
	0 04 004	Hour	
	0 04 005	Minute	
	0 04 006	Second	
	2 07 002	Increase scale, reference value and data width	
	0 26 030	Measurement integration time	
	2 07 000	Increase scale, reference value and data width	Cancel
	0 05 002	Latitude (coarse accuracy)	
	0 06 002	Longitude (coarse accuracy)	
	0 33 072	Ozone error	
	0 07 025	Solar zenith angle	
	0 05 022	Solar azimuth	
	2 07 002	Increase scale, reference value and data width	
	0 15 001	Total ozone	
	2 07 000	Increase scale, reference value and data width	Cancel
	0 08 003	Vertical significance (satellite observations)	= 0 Surface
	2 07 001	Increase scale, reference value and data width	
	0 10 004	Pressure	Terrain
	2 07 000	Increase scale, reference value and data width	Cancel
	0 08 003	Vertical significance (satellite observations)	Set to missing (cancel)
	0 08 003	Vertical significance (satellite observations)	= 2 Cloud top
	0 33 042	Type of limit represented by following value	= 0 Exclusive lower limit
	2 07 001	Increase scale, reference value and data width	
	0 07 004	Pressure	
	2 07 000	Increase scale, reference value and data width	Cancel
	2 07 002	Increase scale, reference value and data width	
	0 15 001	Total ozone	Below cloud top pressure
	2 07 000	Increase scale, reference value and data width	Cancel
	0 08 003	Vertical significance (satellite observations)	Set to missing (cancel)
	2 07 002	Increase scale, reference value and data width	
	0 20 081	Cloud amount in segment	Cloud fraction
	2 07 000	Increase scale, reference value and data width	Cancel
	0 20 065	Snow cover	
	0 08 029	Surface type	
	2 07 004	Increase scale, reference value and data width	
	0 15 030	Aerosol contamination index	
	2 07 000	Increase scale, reference value and data width	Cancel
	0 08 075	Ascending/descending orbit qualifier	
		(Ozone data)	
3 10 019	0 01 007	Satellite identifier	
	0 02 019	Satellite instruments	= 624 SBUV/2
	3 01 011	Year, month, day	

(continued)

(Category 10 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 10 019 *(continued)*	3 01 013	Hour, minute, second	
	3 01 023	Latitude/longitude (coarse accuracy)	
	0 07 025	Solar zenith angle	
	0 08 021	Time significance	= 28 Start of scan
	0 07 025	Solar zenith angle	
	0 08 021	Time significance	= 29 End of scan
	0 07 025	Solar zenith angle	
	0 08 021	Time significance	Set to missing (cancel)
	0 08 029	Surface type	
	0 05 040	Orbit number	
	0 08 075	Ascending/descending orbit qualifier	
	0 08 003	Vertical significance (satellite observations)	= 0 Surface
	0 10 004	Pressure	= Terrain
	0 08 003	Vertical significance (satellite observations)	Set to missing (cancel)
	2 07 002	Increase scale, reference value and data width	
	0 15 001	Total ozone	
	2 07 000	Increase scale, reference value and data width	Cancel
	0 33 070	Total ozone quality	
	0 15 030	Aerosol contamination index	
	2 07 002	Increase scale, reference value and data width	
	0 20 081	Cloud amount in segment	Cloud fraction
	2 07 000	Increase scale, reference value and data width	Cancel
	0 08 003	Vertical significance (satellite observations)	= 2 Cloud top
	0 33 042	Type of limit represented by following value	= 0 Exclusive lower limit
	0 07 004	Pressure	
	2 07 002	Increase scale, reference value and data width	
	0 15 001	Total ozone	Below cloud top pressure
	2 07 000	Increase scale, reference value and data width	Cancel
	0 08 003	Vertical significance (satellite observations)	Set to missing (cancel)
	1 13 021	Replicate 13 descriptors 21 times	
	0 07 004	Pressure	Bottom of layer
	0 07 004	Pressure	Top of layer
	2 07 002	Increase scale, reference value and data width	
	0 08 021	Time significance	= 27 First guess
	0 15 005	Ozone p	
	0 08 021	Time significance	Set to missing (cancel)
	0 15 005	Ozone p	
	0 33 007	Per cent confidence	
	2 07 000	Increase scale, reference value and data width	Cancel
	0 08 026	Matrix significance	= 0 Row of averaging kernel matrix
	1 01 020	Replicate 1 descriptor 20 times	
	0 25 143	Linear coefficient	
	0 08 026	Matrix significance	Set to missing (cancel)
	0 08 043	Atmospheric chemical or physical constituent type	= 0 Ozone
	1 09 015	Replicate 9 descriptors 15 times	
	0 07 004	Pressure	

(continued)

(Category 10 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 10 019 *(continued)*	0 08 090	Decimal scale of following significands	
	2 07 006	Increase scale, reference value and data width	
	0 15 008	Significand of volumetric mixing ratio	
	2 07 000	Increase scale, reference value and data width	Cancel
	0 08 090	Decimal scale of following significands	Set to missing (cancel)
	2 07 002	Increase scale, reference value and data width	
	0 33 007	Per cent confidence	
	2 07 000	Increase scale, reference value and data width	Cancel
	0 08 043	Atmospheric chemical or physical constituent type	Set to missing (cancel)
	0 33 071	Profile ozone quality	
	1 08 008	Replicate 8 descriptors 8 times	
	2 02 124	Change scale	
	2 01 107	Change data width	
	0 02 071	Spectrographic wavelength	
	2 01 000	Change data width	Cancel
	2 02 000	Change scale	Cancel
	2 07 002	Increase scale, reference value and data width	
	0 20 081	Cloud amount in segment	Cloud fraction
	2 07 000	Increase scale, reference value and data width	Cancel
		(Retrieved ozone data)	
3 10 020	3 10 022	Satellite identifier, instrument and product type	
	3 01 011	Year, month, day	
	3 01 013	Hour, minute, second	
	3 01 021	Latitude/longitude (high accuracy)	
	3 04 034	Latitude/longitude, solar elevation, number of layers	
	3 10 021	Integrated ozone density, height of defined layer	
		(Integrated ozone density, height of defined layer)	
3 10 021	1 08 000	Delayed replication of 8 descriptors	
	0 31 001	Delayed descriptor replication factor	
	2 01 131	Change data width	
	2 02 129	Change scale	
	0 07 004	Pressure	
	0 07 004	Pressure	
	2 02 000	Change scale	Cancel
	2 01 000	Change data width	Cancel
	0 15 020	Integrated ozone density	
	0 10 002	Height	
		(Satellite identifier, instrument and product type)	
3 10 022	0 01 007	Satellite identifier	
	0 02 019	Satellite instruments	
	0 01 033	Identification of originating/generating centre	
	0 02 172	Product type for retrieved atmospheric gases	
		(Geostationary multi-channel satellite radiance data)	
3 10 023	3 01 072	Satellite identification	
	0 30 021	Number of pixels per row	
	0 30 022	Number of pixels per column	

(continued)

(Category 10 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 10 023 *(continued)*	0 08 012	Land/sea qualifier	
	0 07 024	Satellite zenith angle	
	0 07 025	Solar zenith angle	
	0 10 002	Height	
	1 01 012	Replicate 1 descriptor 12 times	
	3 04 032	Cloud fraction	
	1 05 002	Replicate 5 descriptors 2 times	
	0 02 152	Satellite instrument used in data processing	
	0 02 024	Integrated mean humidity computational method	
	0 07 004	Pressure	
	0 07 004	Pressure	
	0 13 003	Relative humidity	
	1 01 012	Replicate 1 descriptor 12 times	
	3 04 033	Clear sky radiance	
		(Geostationary three-channel satellite radiance data)	
3 10 024	3 01 072	Satellite identification	
	0 30 021	Number of pixels per row	
	0 30 022	Number of pixels per column	
	0 08 012	Land/sea qualifier	
	0 07 024	Satellite zenith angle	
	0 07 025	Solar zenith angle	
	0 10 002	Height	
	1 01 003	Replicate 1 descriptor 3 times	
	3 04 032	Cloud fraction	
	1 05 002	Replicate 5 descriptors 2 times	
	0 02 152	Satellite instrument used in data processing	
	0 02 024	Integrated mean humidity computational method	
	0 07 004	Pressure	
	0 07 004	Pressure	
	0 13 003	Relative humidity	
	1 01 003	Replicate 1 descriptor 3 times	
	3 04 033	Clear sky radiance	
		(SSMIS temperature data record)	
3 10 025	0 01 007	Satellite identifier	
	0 08 021	Time significance	Scan start
	0 04 001	Year	
	0 04 002	Month	
	0 04 003	Day	
	0 04 004	Hour	
	0 04 005	Minute	
	2 01 138	Change data width	
	2 02 131	Change scale	
	0 04 006	Second	Milliseconds
	2 02 000	Change scale	
	2 01 000	Change data width	
	2 01 132	Change data width	
	0 05 041	Scan line number	Scan number

(continued)

(Category 10 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 10 025 *(continued)*	2 01 000	Change data width	
	2 01 129	Change data width	
	0 05 043	Field of view number	Scene number
	2 01 000	Change data width	
	0 05 002	Latitude (coarse accuracy)	
	0 06 002	Longitude (coarse accuracy)	
	0 13 040	Surface flag	
	0 20 029	Rain flag	
	1 04 024	Replicate 4 descriptors 24 times	
	0 05 042	Channel number	
	0 12 163	Brightness temperature	
	0 21 083	Warm target calibration	
	0 21 084	Cold target calibration	
	1 15 003	Replicate 15 descriptors 3 times	
	0 04 001	Year	
	0 04 002	Month	
	0 04 003	Day	
	2 01 142	Change data width	
	2 02 131	Change scale	
	0 04 026	Time period or displacement	Ephemeris milliseconds
	2 02 000	Change scale	
	2 01 000	Change data width	
	0 05 001	Latitude (high accuracy)	Ephemeris
	0 06 001	Longitude (high accuracy)	Ephemeris
	2 01 138	Change data width	
	2 02 129	Change scale	
	0 07 001	Height of station	Ephemeris
	2 02 000	Change scale	
	2 01 000	Change data width	
	0 08 021	Time significance	Orbit start
	0 04 001	Year	
	0 04 002	Month	
	0 04 003	Day	
	0 04 004	Hour	
	0 04 005	Minute	
	0 05 040	Orbit number	
	1 01 003	Replicate 1 descriptor 3 times	
	0 12 070	Warm load temperature	
	0 25 054	SSMIS subframe ID number	
	1 01 004	Replicate 1 descriptor 4 times	
	0 25 055	Multiplexer housekeeping	
	0 08 007	Dimensional significance	Line
	1 04 028	Replicate 4 descriptors 28 times	
	0 05 002	Latitude (coarse accuracy)	
	0 06 002	Longitude (coarse accuracy)	
	0 02 111	Radar incidence angle	Earth angle
	0 05 021	Bearing or azimuth	

(continued)

(Category 10 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(Satellite radio occultation data)	
3 10 026	3 10 022	Satellite identifier, instrument and product type	
	0 25 060	Software identification	
	0 08 021	Time significance	= 17 Start of phenomenon
	3 01 011	Year, month, day	
	3 01 012	Hour, minute	
	2 01 138	Change data width	16 bits long
	2 02 131	Change scale	Scale: 3
	0 04 006	Second	
	2 02 000	Change scale	Cancel
	2 01 000	Change data width	Cancel
	0 33 039	Quality flags for radio occultation data	
	0 33 007	Per cent confidence	Whole message
	3 04 030	Location of platform	
	3 04 031	Speed of platform	
	0 02 020	Satellite classification	
	0 01 050	Platform transmitter ID number	
	2 02 127	Change scale	Scale: 1
	3 04 030	Location of platform	
	2 02 000	Change scale	Cancel
	3 04 031	Speed of platform	
	2 01 133	Change data width	18 bits long
	2 02 131	Change scale	Scale: 3
	0 04 016	Time increment	
	2 02 000	Change scale	Cancel
	2 01 000	Change data width	Cancel
	3 01 021	Latitude/longitude (high accuracy)	
	3 04 030	Location of platform	
	0 10 035	Earth's local radius of curvature	
	0 05 021	Bearing or azimuth	
	0 10 036	Geoid undulation	
	1 13 000	Delayed replication of 13 descriptors	
	0 31 002	Extended delayed descriptor replication factor	
	3 01 021	Latitude/longitude (high accuracy)	
	0 05 021	Bearing or azimuth	
	1 08 000	Delayed replication of 8 descriptors	
	0 31 001	Delayed descriptor replication factor	
	0 02 121	Mean frequency	
	0 07 040	Impact parameter	
	0 15 037	Bending angle	
	0 08 023	First-order statistics	= 13 Root-mean-square
	2 01 125	Change data width	20 bits long
	0 15 037	Bending angle	
	2 01 000	Change data width	Cancel
	0 08 023	First-order statistics	Set to missing
	0 33 007	Per cent confidence	All data for current replication

(continued)

(Category 10 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 10 026 *(continued)*	1 08 000	Delayed replication of 8 descriptors	
	0 31 002	Extended delayed descriptor replication factor	
	0 07 007	Height	
	0 15 036	Atmospheric refractivity	
	0 08 023	First-order statistics	= 13 Root-mean-square
	2 01 123	Change data width	14 bits long
	0 15 036	Atmospheric refractivity	
	2 01 000	Change data width	Cancel
	0 08 023	First-order statistics	Set to missing
	0 33 007	Per cent confidence	All data for current height
	1 16 000	Delayed replication of 16 descriptors	
	0 31 002	Extended delayed descriptor replication factor	
	0 07 009	Geopotential height	
	0 10 004	Pressure	
	0 12 001	Temperature/air temperature	
	0 13 001	Specific humidity	
	0 08 023	First-order statistics	= 13 Root-mean-square
	2 01 120	Change data width	6 bits long
	0 10 004	Pressure	
	2 01 000	Change data width	Cancel
	2 01 122	Change data width	6 bits long
	0 12 001	Temperature/air temperature	
	2 01 000	Change data width	Cancel
	2 01 123	Change data width	9 bits long
	0 13 001	Specific humidity	
	2 01 000	Change data width	Cancel
	0 08 023	First-order statistics	Set to missing
	0 33 007	Per cent confidence	All data for current height
	0 08 003	Vertical significance (satellite observations)	= 0 Surface
	0 07 009	Geopotential height	
	0 10 004	Pressure	
	0 08 023	First-order statistics	= 13 Root-mean-square
	2 01 120	Change data width	6 bits long
	0 10 004	Pressure	
	2 01 000	Change data width	Cancel
	0 08 023	First-order statistics	Set to missing
	0 33 007	Per cent confidence	Surface data
		(All sky radiance product main sequence)	
3 10 027	3 01 071	Satellite identifier/Generating resolution	Product information
	3 01 011	Year, month, day	
	3 01 013	Hour, minute, second	
	3 01 021	Latitude/longitude (high accuracy)	
	0 30 021	Number of pixels per row	
	0 30 022	Number of pixels per column	

(continued)

(Category 10 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 10 027 *(continued)*	0 10 002	Height	Orbit height
	3 04 036	Cloud coverage	
	0 02 152	Satellite instrument used in data processing	
	0 02 167	Radiance computational method	
	1 01 011	Replicate 1 descriptor 11 times	
	3 04 035	All sky radiance data	
		(All sky radiance product main sequence)	
3 10 028	3 01 071	Satellite identifier/Generating resolution	Product information
	3 01 011	Year, month, day	
	3 01 013	Hour, minute, second	
	3 01 021	Latitude/longitude (high accuracy)	
	0 30 021	Number of pixels per row	
	0 30 022	Number of pixels per column	
	0 10 002	Height	Orbit height
	3 04 036	Cloud coverage	
	0 02 152	Satellite instrument used in data processing	
	0 02 167	Radiance computational method	
	1 01 011	Replicate 1 descriptor 11 times	
	3 04 037	All sky radiance data	
		(Layer, ozone, height, temperature and water vapour)	
3 10 029	1 10 000	Delayed replication of 10 descriptors	
	0 31 001	Delayed descriptor replication factor	
	2 01 138	Change data width	
	2 02 130	Change scale	
	0 07 004	Pressure	
	0 07 004	Pressure	
	2 02 000	Change scale	Cancel
	2 01 000	Change data width	Cancel
	0 15 020	Integrated ozone density	
	0 10 002	Height	
	0 12 101	Temperature/air temperature	
	0 13 098	Integrated water vapour density	
		(MIPAS or GOMOS instruments reporting)	
3 10 030	3 10 022	Satellite identifier, instrument and product type	
	3 01 011	Year, month, day	
	3 01 013	Hour, minute, second	
	3 01 021	Latitude/longitude (high accuracy)	
	3 04 034	Latitude/longitude, solar elevation, number of layers	
	3 10 029	Layer, ozone, height, temperature and water vapour	
		(Satellite collocated 1C reports with 3 instruments)	
3 10 050	3 10 051	Satellite position and instrument temperatures	
	3 10 052	Satellite instrument type and position	AIRS
	1 01 000	Delayed replication of 1 descriptor	
	0 31 002	Extended delayed descriptor replication factor	

(continued)

(Category 10 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 10 050 *(continued)*	3 10 053	Satellite channels and brightness temperatures with expanded channel set	AIRS
	1 01 004	Replicate 1 descriptor 4 times	
	3 10 054	Satellite visible channels and albedos with expanded channel set	
	0 20 010	Cloud cover (total)	
	3 10 052	Satellite instrument type and position	AMSU-A
	1 01 015	Replicate 1 descriptor 15 times	
	3 10 053	Satellite channels and brightness temperatures with expanded channel set	AMSU-A
	3 10 052	Satellite instrument type and position	HSB
	1 01 005	Replicate 1 descriptor 5 times	
	3 10 053	Satellite channels and brightness temperatures with expanded channel set	HSB
		(Satellite position and instrument temperatures)	
3 10 051	0 01 007	Satellite identifier	
	0 05 040	Orbit number	
	2 01 133	Change data width	
	0 05 041	Scan line number	
	2 01 000	Change data width	Cancel
	2 01 132	Change data width	
	0 25 070	Major frame count	
	2 01 000	Change data width	Cancel
	2 02 126	Change scale	
	0 07 001	Height of station	
	2 02 000	Change scale	Cancel
	0 07 025	Solar zenith angle	
	0 05 022	Solar azimuth	
	1 02 009	Replicate 2 descriptors 9 times	
	0 02 151	Radiometer identifier	
	0 12 064	Instrument temperature	
		(Satellite instrument type and position)	
3 10 052	0 02 019	Satellite instruments	
	3 01 011	Year, month, day	
	3 01 012	Hour, minute	
	2 02 131	Change scale	
	2 01 138	Change data width	
	0 04 006	Second	
	2 01 000	Change data width	Cancel
	2 02 000	Change scale	Cancel
	3 01 021	Latitude/longitude (high accuracy)	
	0 07 024	Satellite zenith angle	
	0 05 021	Bearing or azimuth	
	0 05 043	Field of view number	

(continued)

(Category 10 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(Satellite channels and brightness temperatures with expanded channel set)	
3 10 053	2 01 134	Change data width	
	0 05 042	Channel number	
	2 01 000	Change data width	Cancel
	0 25 076	Log_{10} of (temperature-radiance central wave number) for ATOVS	
	0 33 032	Channel quality flags for ATOVS	
	0 12 163	Brightness temperature	Scale: 2
		(Satellite visible channels and albedos with expanded channel set)	
3 10 054	2 01 134	Change data width	
	0 05 042	Channel number	
	2 01 000	Change data width	Cancel
	0 25 076	Log_{10} of (temperature-radiance central wave number) for ATOVS	
	0 33 032	Channel quality flags for ATOVS	
	2 01 131	Change data width	
	2 02 129	Change scale	
	1 02 002	Replicate 2 descriptors 2 times	
	0 08 023	First-order statistics	
	0 14 027	Albedo	
	0 08 023	First-order statistics	
	2 02 000	Change scale	Cancel
	2 01 000	Change data width	Cancel
		(Satellite radiance/channel principal components)	
3 10 055	3 10 051	Satellite position and instrument temperatures	
	3 10 052	Satellite instrument type and position	AIRS
	1 02 020	Replicate 2 descriptors 20 times	
	0 25 076	Log_{10} of (temperature-radiance central wave number) for ATOVS	
	0 25 052	Log_{10} of principal components normalized fit to data	
	1 01 000	Delayed replication of 1 descriptor	
	0 31 002	Extended delayed descriptor replication factor	
	0 25 050	Principal component score	Satellite radiance
		(CrIS (Cross-Track Infrared Sounder) radiance data)	
3 10 060	0 01 007	Satellite identifier	
	0 01 033	Identification of originating/generating centre	
	0 02 019	Satellite instruments	
	0 02 020	Satellite classification	
	3 01 011	Year, month, day	
	3 01 012	Hour, minute	
	2 07 003	Increase scale, reference value and data width	
	0 04 006	Second	
	2 07 000	Increase scale, reference value and data width	Cancel
	3 04 030	Location of platform	

(continued)

(Category 10 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 10 060 *(continued)*	3 01 021	Latitude/longitude (high accuracy)	
	0 07 024	Satellite zenith angle	
	0 05 021	Bearing or azimuth	
	0 07 025	Solar zenith angle	
	0 05 022	Solar azimuth	
	0 08 075	Ascending/descending orbit qualifier	
	2 01 133	Change data width	Increase bit width
	0 05 041	Scan line number	
	2 01 000	Change data width	Cancel increase bit width
	0 05 045	Field of regard number	
	0 05 043	Field of view number	
	0 05 040	Orbit number	
	0 10 001	Height of land surface	
	2 01 129	Change data width	Increase bit width
	0 07 002	Height or altitude	
	2 01 000	Change data width	Cancel increase bit width
	2 02 127	Change scale	Increase scale
	2 01 125	Change data width	Increase bit width
	0 21 166	Land fraction	
	2 01 000	Change data width	Cancel increase bit width
	2 02 000	Change scale	Cancel increase scale
	0 08 012	Land/sea qualifier	
	0 20 010	Cloud cover (total)	
	0 20 014	Height of top of cloud	
	0 02 165	Radiance type flags	
	0 33 075	Scan-level quality flags	
	1 07 003	Replicate 7 descriptors 3 times	
	0 08 076	Type of band	
	0 06 029	Wave number	Start of range
	0 06 029	Wave number	End of range
	0 25 140	Start channel	
	0 25 141	End channel	
	0 33 076	Calibration quality flags	
	0 33 077	Field-of-view quality flags	
	0 08 076	Type of band	Set to missing (cancel)
	0 33 078	Geolocation quality	
	0 33 003	Quality information	
	1 04 000	Delayed replication of 4 descriptors	
	0 31 002	Extended delayed descriptor replication factor	
	2 01 133	Change data width	Increase bit width
	0 05 042	Channel number	
	2 01 000	Change data width	Cancel increase bit width
	0 14 044	Channel radiance	

(continued)

(Category 10 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(ATMS (Advanced Technology Microwave Sounder) data)	
3 10 061	0 01 007	Satellite identifier	
	0 01 033	Identification of originating/generating centre	
	0 01 034	Identification of originating/generating sub-centre	
	0 02 019	Satellite instruments	
	0 02 020	Satellite classification	
	3 01 011	Year, month, day	
	3 01 012	Hour, minute	
	2 07 003	Increase scale, reference value and data width	
	0 04 006	Second	
	2 07 000	Increase scale, reference value and data width	Cancel
	0 05 040	Orbit number	
	0 05 041	Scan line number	
	0 05 043	Field of view number	
	0 33 079	Granule level quality flags	
	0 33 080	Scan level quality flags	
	0 33 078	Geolocation quality	
	3 01 021	Latitude/longitude (high accuracy)	
	2 01 129	Change data width	
	0 07 002	Height or altitude	
	2 01 000	Change data width	Cancel
	0 07 024	Satellite zenith angle	
	0 05 021	Bearing or azimuth	
	0 07 025	Solar zenith angle	
	0 05 022	Solar azimuth	
	0 25 075	Satellite antenna corrections version number	
	1 11 000	Delayed replication of 11 descriptors	
	0 31 002	Extended delayed descriptor replication factor	
	0 05 042	Channel number	
	2 02 131	Change scale	Increase scale by 3
	0 02 153	Satellite channel centre frequency	
	0 02 154	Satellite channel band width	
	2 02 000	Change scale	Cancel increase scale
	0 02 104	Antenna polarization	
	0 12 066	Antenna temperature	
	0 12 163	Brightness temperature	
	0 12 158	Noise-equivalent delta temperature while viewing cold target	
	0 12 159	Noise-equivalent delta temperature while viewing warm target	
	0 33 081	Channel data quality flags	
		(VIIRS (Visible/Infrared Imager Radiometer Suite) data)	
3 10 062	0 01 007	Satellite identifier	
	0 01 033	Identification of originating/generating centre	
	0 01 034	Identification of originating/generating sub-centre	
	0 02 019	Satellite instruments	

(continued)

(Category 10 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 10 062 *(continued)*	0 02 020	Satellite classification	
	3 01 011	Year, month, day	
	3 01 012	Hour, minute	
	2 07 003	Increase scale, reference value and data width	
	0 04 006	Second	
	2 07 000	Increase scale, reference value and data width	Cancel
	0 05 040	Orbit number	
	2 01 133	Change data width	Increase bit width
	0 05 041	Scan line number	
	0 05 043	Field of view number	
	2 01 000	Change data width	Cancel increase bit width
	0 08 076	Type of band	
	0 33 082	Geolocation quality flags	
	3 01 021	Latitude/longitude (high accuracy)	
	2 01 129	Change data width	Increase bit width
	0 07 002	Height or altitude	
	2 01 000	Change data width	Cancel increase bit width
	0 07 024	Satellite zenith angle	
	0 05 021	Bearing or azimuth	
	0 07 025	Solar zenith angle	
	0 05 022	Solar azimuth	
	0 08 072	Pixel(s) type	
	0 08 029	Surface type	
	1 05 000	Delayed replication of 5 descriptors	
	0 31 002	Extended delayed descriptor replication factor	
	0 05 042	Channel number	
	0 02 155	Satellite channel wavelength	
	0 33 083	Radiance data quality flags	
	0 14 043	Channel radiance	
	0 15 042	Reflectance	
		(SST (Sea-surface temperature) data)	
3 10 063	0 01 007	Satellite identifier	
	0 01 033	Identification of originating/generating centre	
	0 01 034	Identification of originating/generating sub-centre	
	0 02 019	Satellite instruments	
	0 02 020	Satellite classification	
	3 01 011	Year, month, day	
	3 01 012	Hour, minute	
	2 07 003	Increase scale, reference value and data width	
	0 04 006	Second	
	2 07 000	Increase scale, reference value and data width	Cancel
	0 05 040	Orbit number	
	2 01 133	Change data width	
	0 05 041	Scan line number	
	0 05 043	Field of view number	
	2 01 000	Change data width	Cancel

(continued)

(Category 10 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 10 063 *(continued)*	0 33 082	Geolocation quality flags	
	3 01 021	Latitude/longitude (high accuracy)	
	2 01 129	Change data width	
	0 07 002	Height or altitude	
	2 01 000	Change data width	Cancel
	0 07 024	Satellite zenith angle	
	0 05 021	Bearing or azimuth	
	0 07 025	Solar zenith angle	
	0 05 022	Solar azimuth	
	0 08 075	Ascending/descending orbit qualifier	
	0 08 013	Day/night qualifier	
	0 08 072	Pixel(s) type	
	0 33 084	Pixel level quality flags	
	0 07 062	Depth below sea/water surface	
	0 33 086	Quality of pixel level retrieval	
	0 22 043	Sea/water temperature	
	0 07 062	Depth below sea/water surface	Top of layer
	0 07 062	Depth below sea/water surface	Bottom of layer
	0 33 086	Quality of pixel level retrieval	
	0 22 043	Sea/water temperature	

Note: 3 10 027 is deprecated.

Category 11 – Single level report sequences (conventional data)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(Aircraft reports)	
3 11 001	3 01 051	Flight number, navigational system, date/time, location, phase of flight	ASDAR
	0 07 002	Height or altitude	
	0 12 001	Temperature/air temperature	
	0 11 001	Wind direction	
	0 11 002	Wind speed	
	0 11 031	Degree of turbulence	
	0 11 032	Height of base of turbulence	
	0 11 033	Height of top of turbulence	
	0 20 041	Airframe icing	
		(ACARS reports)	
3 11 002	3 01 065	ACARS identification	
	3 01 066	ACARS location	
	3 11 003	ACARS standard reported variables	
	3 11 004	ACARS supplementary reported variables	
		(ACARS standard reported variables)	
3 11 003	0 10 070	Indicated aircraft altitude	
	0 11 001	Wind direction	
	0 11 002	Wind speed	
	0 12 001	Temperature/air temperature	
	0 13 002	Mixing ratio	
		(ACARS supplementary reported variables)	
3 11 004	1 01 000	Delayed replication of 1 descriptor	
	0 31 000	Short delayed descriptor replication factor	
	0 11 034	Vertical gust velocity	
	1 01 000	Delayed replication of 1 descriptor	
	0 31 000	Short delayed descriptor replication factor	
	0 11 035	Vertical gust acceleration	
	1 01 000	Delayed replication of 1 descriptor	
	0 31 000	Short delayed descriptor replication factor	
	0 11 075	Mean turbulence intensity (eddy dissipation rate)	
	1 01 000	Delayed replication of 1 descriptor	
	0 31 000	Short delayed descriptor replication factor	
	0 11 076	Peak turbulence intensity (eddy dissipation rate)	
	1 01 000	Delayed replication of 1 descriptor	
	0 31 000	Short delayed descriptor replication factor	
	0 33 025	ACARS interpolated values indicator	
	1 01 000	Delayed replication of 1 descriptor	
	0 31 000	Short delayed descriptor replication factor	
	0 33 026	Moisture quality	
		(Standard AMDAR reports)	
3 11 005	0 01 008	Aircraft registration number or other identification	
	0 01 023	Observation sequence number	
	3 01 021	Latitude/longitude (high accuracy)	

(continued)

(Category 11 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 11 005 *(continued)*	3 01 011 3 01 013 0 07 010 0 08 009 0 11 001 0 11 002 0 11 031 0 11 036 0 12 101 0 33 025	Year, month, day Hour, minute, second Flight level Detailed phase of flight Wind direction Wind speed Degree of turbulence Maximum derived equivalent vertical gust speed Temperature/air temperature ACARS interpolated values indicator	
		(AMDAR data or aircraft data for one level without latitude/longitude)	
3 11 006	0 07 010 0 11 001 0 11 002 0 02 064 0 12 101 0 12 103	Flight level Wind direction Wind speed Aircraft roll angle quality Temperature/air temperature Dewpoint temperature	
		(Aircraft data for one level with latitude/longitude indicated)	
3 11 007	0 07 010 3 01 021 0 11 001 0 11 002 0 02 064 0 12 101 0 12 103	Flight level Latitude/longitude (high accuracy) Wind direction Wind speed Aircraft roll angle quality Temperature/air temperature Dewpoint temperature	
		(Aircraft ascent/descent profile without latitude/longitude indicated at each level)	
3 11 008	0 01 008 3 01 011 3 01 013 3 01 021 0 08 004 1 01 000 0 31 001 3 11 006	Aircraft registration number or other identification Year, month, day Hour, minute, second Latitude/longitude (high accuracy) Phase of aircraft flight Delayed replication of 1 descriptor Delayed descriptor replication factor AMDAR data or aircraft data for one level without latitude/longitude	
		(Aircraft ascent/descent profile with latitude/longitude given for each level)	
3 11 009	0 01 008 3 01 011 3 01 013 3 01 021 0 08 004 1 01 000	Aircraft registration number or other identification Year, month, day Hour, minute, second Latitude/longitude (high accuracy) Phase of aircraft flight Delayed replication of 1 descriptor	

(continued)

(Category 11 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 11 009 *(continued)*	0 31 001 3 11 007	Delayed descriptor replication factor Aircraft data for one level with latitude/longitude indicated	
		(BUFR template for AMDAR, version 7)	
3 11 010	0 01 008	Aircraft registration number or other identification	
	0 01 023	Observation sequence number	
	0 01 006	Aircraft flight number	
	0 01 110	Aircraft tail number	
	0 01 111	Origination airport	
	0 01 112	Destination airport	
	2 04 002	Add associated field	2 bits long
	0 31 021	Associated field significance	= 8 Two bits quality information
	3 01 011	Year, month, day	
	3 01 013	Hour, minute, second	
	3 01 021	Latitude/longitude (high accuracy)	
	0 07 010	Flight level	Pressure altitude
	0 10 053	Global navigation satellite system altitude	
	0 08 009	Detailed phase of flight	
	0 11 001	Wind direction	
	0 11 002	Wind speed	
	0 02 064	Aircraft roll angle quality	
	0 11 100	Aircraft true airspeed	
	0 11 101	Aircraft ground speed u-component	
	0 11 102	Aircraft ground speed v-component	
	0 11 103	Aircraft ground speed w-component	
	0 11 104	Aircraft true heading	
	0 12 101	Temperature/air temperature	
	0 02 170	Aircraft humidity sensors	
	2 01 144	Change data width	
	2 02 133	Change scale	
	0 13 002	Mixing ratio	
	2 02 000	Change scale	Cancel
	2 01 000	Change data width	Cancel
	2 01 135	Change data width	
	2 02 130	Change scale	
	0 13 003	Relative humidity	
	2 02 000	Change scale	Cancel
	2 01 000	Change data width	Cancel
	1 01 000	Delayed replication of 1 descriptor	
	0 31 000	Short delayed descriptor replication factor	
	0 12 103	Dewpoint temperature	
	0 33 026	Moisture quality	
	1 01 000	Delayed replication of 1 descriptor	
	0 31 000	Short delayed descriptor replication factor	
	0 20 042	Airframe icing present	
	1 03 000	Delayed replication of 3 descriptors	
	0 31 000	Short delayed descriptor replication factor	

(continued)

(Category 11 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 11 010 *(continued)*	0 20 043	Peak liquid water content	
	0 20 044	Average liquid water content	
	0 20 045	Supercooled large droplet (SLD) conditions	
	1 01 000	Delayed replication of 1 descriptor	
	0 31 000	Short delayed descriptor replication factor	
	0 33 025	ACARS interpolated values indicator	
	1 03 000	Delayed replication of 3 descriptors	
	0 31 001	Delayed descriptor replication factor	
	0 11 075	Mean turbulence intensity (eddy dissipation rate)	
	0 11 076	Peak turbulence intensity (eddy dissipation rate)	
	0 11 039	Extended time of occurrence of peak eddy dissipation rate	
	1 02 000	Delayed replication of 2 descriptors	
	0 31 000	Short delayed descriptor replication factor	
	0 11 037	Turbulence index	EDR
	0 11 077	Reporting interval or averaging time for eddy dissipation rate	
	1 03 000	Delayed replication of 3 descriptors	
	0 31 000	Short delayed descriptor replication factor	
	0 11 034	Vertical gust velocity	
	0 11 035	Vertical gust acceleration	
	0 11 036	Maximum derived equivalent vertical gust speed	
	2 04 000	Add associated field	Cancel
	1 19 000	Delayed replication of 19 descriptors	
	0 31 001	Delayed descriptor replication factor	
	3 01 011	Year, month, day	
	3 01 013	Hour, minute, second	
	3 01 021	Latitude/longitude (high accuracy)	
	0 07 007	Height	
	0 11 105	EDR algorithm version	
	2 04 007	Add associated field	7 bits long
	0 31 021	Associated field significance	= 7 Percentage confidence
	0 11 076	Peak turbulence intensity (eddy dissipation rate)	
	0 11 075	Mean turbulence intensity (eddy dissipation rate)	
	2 04 000	Add associated field	Cancel
	0 11 106	Running minimum confidence	
	0 11 107	Maximum number bad inputs	
	0 11 108	Peak location	
	0 11 109	Number of good EDR	
	0 12 101	Temperature/air temperature	
	0 11 001	Wind direction	
	2 01 130	Change data width	
	0 11 084	Wind speed	
	2 01 000	Change data width	Cancel

(continued)

(Category 11 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(IAGOS template for a single observation), version 2	
3 11 011	0 01 023	Observation sequence number	
	0 08 004	Phase of aircraft flight	
	3 01 011	Year, month, day	
	3 01 013	Hour, minute, second	
	0 05 002	Latitude (coarse accuracy)	
	0 06 002	Longitude (coarse accuracy)	
	0 07 004	Pressure	
	0 11 001	Wind direction	
	0 11 002	Wind speed	
	0 12 101	Temperature/air temperature	
	1 06 000	Delayed replication of 6 descriptors	
	0 31 001	Delayed descriptor replication factor	
	0 08 046	Atmospheric chemical or physical constituent type	
	2 01 139	Change data width	20 bits long
	2 02 126	Change scale	Scale: 7
	0 15 026	Concentration of pollutant (mol mol^{-1})	
	2 02 000	Change scale	Cancel
	2 01 000	Change data width	Cancel
	1 06 000	Delayed replication of 6 descriptors	
	0 31 001	Delayed descriptor replication factor	
	0 08 046	Atmospheric chemical or physical constituent type	
	2 01 138	Change data width	19 bits long
	2 02 130	Change scale	Scale: 11
	0 15 026	Concentration of pollutant (mol mol^{-1})	
	2 02 000	Change scale	Cancel
	2 01 000	Change data width	Cancel
	0 15 052	Log_{10} of number density of aerosol particles with diameter greater than 5 nm	
	0 15 053	Log_{10} of number density of aerosol particles with diameter greater than 14 nm	
	0 15 054	Log_{10} of number density of aerosol particles with diameter between 0.25 and 2.5 µm	
	0 15 055	Non volatile aerosol ratio	
	0 07 004	Pressure	
	0 07 004	Pressure	
	0 13 099	Log_{10} of integrated cloud particle density	
	0 13 100	Log_{10} of integrated cloud particle area	
	0 13 101	Log_{10} of integrated cloud particle volume	

Category 12 – Single level report sequences (satellite data)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 12 001	3 01 043	Satellite identifier, wind computation method, date/time, location	
	3 04 001	Cloud top pressure, temperature, wind	
3 12 002	3 01 043	Satellite identifier, wind computation method, date/time, location	
	3 04 002	Cloud top pressure, wind	
3 12 003	3 01 042	Satellite identifier, instrument, data-processing technique, date/time, location	
	3 04 003	Surface temperature	
3 12 004	3 01 042	Satellite identifier, instrument, data-processing technique, date/time, location	
	3 04 004	Cloud top pressure, cloud cover, temperature	
3 12 005	3 01 042	Satellite identifier, instrument, data-processing technique, date/time, location	
	0 20 014	Height of top of cloud	
3 12 006	3 01 044	Satellite identifier, humidity computation method, date/time, location	
	3 04 005	Layer mean relative humidity	
3 12 007	3 01 042	Satellite identifier, instrument, data-processing technique, date/time, location	
	3 04 006	Radiation	
		(Orbital information, Part I)	
3 12 010	0 01 007	Satellite identifier	
	0 05 040	Orbit number	
	0 02 021	Satellite instrument data used in processing	
	0 05 041	Scan line number	
	0 04 001	Year	
	0 04 043	Day of the year	
		(Orbital information, Part II)	
3 12 011	2 02 131	Change scale	
	2 01 149	Change data width	
	0 04 006	Second	
	2 01 000	Change data width	
	2 02 126	Change scale	
	0 10 002	Height	
	2 02 000	Change scale	
	0 05 043	Field of view number	
	0 05 053	Field of view number increment	

(continued)

(Category 12 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(HIRS brightness temperatures – channels 1-19)	
3 12 012	2 02 129	Change scale	
	2 01 132	Change data width	
	1 01 019	Replicate 1 descriptor 19 times	
	0 12 063	Brightness temperature	
	2 01 000	Change data width	
	2 02 000	Change scale	
		(HIRS brightness temperatures – channel 20)	
3 12 013	0 05 042	Channel number	
	2 02 129	Change scale	
	2 01 135	Change data width	
	0 12 063	Brightness temperature	
	2 01 000	Change data width	
	2 02 000	Change scale	
		(HIRS satellite data)	
3 12 014	3 12 010	Orbital information, Part I	
	3 12 011	Orbital information, Part II	
	1 05 056	Replicate 5 descriptors 56 times	
	3 01 023	Latitude/longitude (coarse accuracy)	
	0 05 042	Channel number	
	0 05 052	Channel number increment	
	3 12 012	HIRS brightness temperatures – channels 1–19	
	3 12 013	HIRS brightness temperatures – channel 20	
		(MSU brightness temperatures – channels 1–4)	
3 12 015	1 09 011	Replicate 9 descriptors 11 times	
	3 01 023	Latitude/longitude (coarse accuracy)	
	0 05 042	Channel number	
	0 05 052	Channel number increment	
	2 02 129	Change scale	
	2 01 132	Change data width	
	1 01 004	Replicate 1 descriptor 4 times	
	0 12 063	Brightness temperature	
	2 02 000	Change scale	
	2 01 000	Change data width	
		(MSU satellite data)	
3 12 016	3 12 010	Orbital information, Part I	
	3 12 011	Orbital information, Part II	
	3 12 015	MSU brightness temperatures – channels 1–4	
		(SSU brightness temperatures – channels 1–3)	
3 12 017	1 09 008	Replicate 9 descriptors 8 times	
	3 01 023	Latitude/longitude (coarse accuracy)	
	0 05 042	Channel number	
	0 05 052	Channel number increment	
	2 02 129	Change scale	

(continued)

(Category 12 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 12 017 *(continued)*	2 01 132	Change data width	
	1 01 003	Replicate 1 descriptor 3 times	
	0 12 063	Brightness temperature	
	2 02 000	Change scale	
	2 01 000	Change data width	
		(SSU satellite data)	
3 12 018	3 12 010	Orbital information, Part I	
	3 12 011	Orbital information, Part II	
	3 12 017	SSU brightness temperatures – channels 1-3	
		(Wave scatterometer product with width change for wave number (spectral))	
3 12 019	3 01 047	ERS product header	
	3 01 048	Radar parameters	
	0 15 015	Maximum image spectral component before normalization	
	0 29 002	Coordinate grid type	
	0 21 076	Representation of intensities	
	1 06 012	Replicate 6 descriptors 12 times	
	2 01 129	Change data width	14 bits long
	0 06 030	Wave number (spectral)	
	2 01 000	Change data width	Cancel
	1 02 012	Replicate 2 descriptors 12 times	
	0 05 030	Direction (spectral)	
	0 21 075	Image spectrum intensity	
	0 21 066	Wave scatterometer product confidence data	
		(Wave scatterometer product)	
3 12 020	3 01 047	ERS product header	
	3 01 048	Radar parameters	
	0 15 015	Maximum image spectral component before normalization	
	0 29 002	Coordinate grid type	
	0 21 076	Representation of intensities	
	1 04 012	Replicate 4 descriptors 12 times	
	0 06 030	Wave number (spectral)	
	1 02 012	Replicate 2 descriptors 12 times	
	0 05 030	Direction (spectral)	
	0 21 075	Image spectrum intensity	
	0 21 066	Wave scatterometer product confidence data	
		(Wind scatterometer product)	
3 12 021	3 01 047	ERS product header	
	1 01 003	Replicate 1 descriptor 3 times	
	3 01 049	Radar beam data	
	0 11 012	Wind speed at 10 m	
	0 11 011	Wind direction at 10 m	
	0 21 067	Wind product confidence data	

(continued)

(Category 12 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(Radar altimeter product)	
3 12 022	3 01 047	ERS product header	
	0 08 022	Total number (with respect to accumulation or average)	Number in average
	0 11 012	Wind speed at 10 m	
	0 11 050	Standard deviation of horizontal wind speed	
	0 22 070	Significant wave height	
	0 22 026	Standard deviation of significant wave height	
	3 12 041	Altitude	
	0 10 050	Standard deviation altitude	
	0 21 068	Radar altimeter product confidence data	
	0 21 071	Peakiness	
	0 21 072	Satellite altimeter calibration status	
	0 21 073	Satellite altimeter instrument mode	
	3 12 042	Altitude corrections	
	0 21 062	Backscatter	
	0 15 011	Log_{10} of integrated electron density	
		(ATSR sea-surface temperature product)	
3 12 023	3 01 047	ERS product header	
	1 03 003	Replicate 3 descriptors 3 times	
	0 08 022	Total number (with respect to accumulation or average)	Number in average
	0 12 061	Skin temperature	
	0 22 050	Standard deviation sea-surface temperature	
	0 21 069	SST product confidence data	
	0 21 085	ATSR sea-surface temperature across-track band number	
		(Wave scatterometer product enhanced)	
3 12 024	3 12 020	Wave scatterometer product	
	0 08 060	Sample scanning mode significance	Range
	0 08 022	Total number (with respect to accumulation or average)	Number in sample
	0 08 060	Sample scanning mode significance	Horizontal
	0 08 022	Total number (with respect to accumulation or average)	Number in sample
	0 25 014	Azimuth clutter cut-off	
	0 22 101	Total energy (wavelength > 731m) at low wave numbers	
	0 22 097	Mean wavelength > 731 m of image spectrum at low wave numbers	
	0 22 098	Wavelength spread (wavelength > 731 m) at low wave numbers	
	0 22 099	Mean direction at low wave numbers (wavelength > 731 m)	
	0 22 100	Direction spread at low wave numbers (wavelength > 731 m)	

(continued)

(Category 12 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(Wave scatterometer enhanced product (with change of width for wave number (spectral))	
3 12 025	3 12 019	Wave scatterometer product with width change for wave number (spectral)	
	0 08 060	Sample scanning mode significance	Range
	0 08 022	Total number (with respect to accumulation or average)	Number in sample
	0 08 060	Sample scanning mode significance	Horizontal
	0 08 022	Total number (with respect to accumulation or average)	Number in sample
	0 25 014	Azimuth clutter cut-off	
	0 22 101	Total energy (wavelength > 731m) at low wave numbers	
	0 22 097	Mean wavelength > 731 m of image spectrum at low wave numbers	
	0 22 098	Wavelength spread (wavelength > 731 m) at low wave numbers	
	0 22 099	Mean direction at low wave numbers (wavelength > 731 m)	
	0 22 100	Direction spread at low wave numbers (wavelength > 731 m)	
		(QUIKSCAT data)	
3 12 026	3 01 046	Satellite identifier, direction of motion, sensor, model function, software, resolution	
	3 01 011	Year, month, day	
	3 01 013	Hour, minute, second	
	3 01 023	Latitude/longitude (coarse accuracy)	
	3 12 031	SEAWINDS wind	
	1 01 004	Replicate 1 descriptor 4 times	
	3 12 030	Wind, formal uncertainty, likelihood	
	0 21 110	Number of inner-beam sigma-0 (forward of satellite)	
	3 01 023	Latitude/longitude (coarse accuracy)	
	3 21 027	Radar specification, normalized radar cross-section, Kp variance coefficient	
	0 21 111	Number of outer-beam sigma-0 (forward of satellite)	
	3 01 023	Latitude/longitude (coarse accuracy)	
	3 21 027	Radar specification, normalized radar cross-section, Kp variance coefficient	
	0 21 112	Number of inner-beam sigma-0 (aft of satellite)	
	3 01 023	Latitude/longitude (coarse accuracy)	
	3 21 027	Radar specification, normalized radar cross-section, Kp variance coefficient	
	0 21 113	Number of outer-beam sigma-0 (aft of satellite)	
	3 01 023	Latitude/longitude (coarse accuracy)	
	3 21 027	Radar specification, normalized radar cross-section, Kp variance coefficient	

(continued)

(Category 12 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(ATSR SST product (SADIST-2))	
3 12 027	3 01 047	ERS product header	
	1 05 009	Replicate 5 descriptors 9 times	
	3 01 023	Latitude/longitude (coarse accuracy)	10-arcmin cell
	0 07 021	Elevation	Incidence angle nadir view **|** Set to zero
	0 12 061	Skin temperature	SST (nadir-only view)
	0 07 021	Elevation	Incidence angle Dual view **|** Set to missing
	0 12 061	Skin temperature	SST (dual view)
	0 21 085	ATSR sea-surface temperature across-track band number	0–9
	0 21 070	SST product confidence data (SADIST-2)	23-bit flag
		(SEAWINDS QUIKSCAT data)	
3 12 028	3 01 046	Satellite identifier, direction of motion, sensor, model function, software, resolution	
	3 01 011	Year, month, day	
	3 01 013	Hour, minute, second	
	3 01 023	Latitude/longitude (coarse accuracy)	
	0 08 025	Time difference qualifier	
	2 01 136	Change data width	
	0 04 006	Second	
	2 01 000	Change data width	Cancel
	3 12 031	SEAWINDS wind	
	3 12 032	SEAWINDS precipitation	
	1 01 004	Replicate 1 descriptor 4 times	
	3 12 030	Wind, formal uncertainty, likelihood	
	1 01 002	Replicate 1 descriptor 2 times	
	3 12 033	Antenna polarization, brightness temperature	
	0 21 110	Number of inner-beam sigma-0 (forward of satellite)	
	3 01 023	Latitude/longitude (coarse accuracy)	
	3 21 028	Radar specification, SEAWINDS normalized radar cross-section, Kp variance coefficient	
	0 21 111	Number of outer-beam sigma-0 (forward of satellite)	
	3 01 023	Latitude/longitude (coarse accuracy)	
	3 21 028	Radar specification, SEAWINDS normalized radar cross-section, Kp variance coefficient	
	0 21 112	Number of inner-beam sigma-0 (aft of satellite)	
	3 01 023	Latitude/longitude (coarse accuracy)	
	3 21 028	Radar specification, SEAWINDS normalized radar cross-section, Kp variance coefficient	
	0 21 113	Number of outer-beam sigma-0 (aft of satellite)	
	3 01 023	Latitude/longitude (coarse accuracy)	
	3 21 028	Radar specification, SEAWINDS normalized radar cross-section, Kp variance coefficient	

(continued)

(Category 12 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(Wind, formal uncertainty, likelihood)	
3 12 030	2 01 130	Change data width	
	2 02 129	Change scale	
	0 11 012	Wind speed at 10 m	
	2 02 000	Change scale	Cancel
	2 01 000	Change data width	Cancel
	0 11 052	Formal uncertainty in wind speed	
	2 01 135	Change data width	
	2 02 130	Change scale	
	0 11 011	Wind direction at 10 m	
	2 02 000	Change scale	Cancel
	2 01 000	Change data width	Cancel
	0 11 053	Formal uncertainty in wind direction	
	0 21 104	Likelihood computed for solution	
		(SEAWINDS wind)	
3 12 031	0 05 034	Along-track row number	
	0 06 034	Cross-track cell number	
	0 21 109	SEAWINDS wind vector cell quality	
	0 11 081	Model wind direction at 10 m	
	0 11 082	Model wind speed at 10 m	
	0 21 101	Number of vector ambiguities	
	0 21 102	Index of selected wind vector	
	0 21 103	Total number of sigma-0 measurements	
		(SEAWINDS precipitation)	
3 12 032	0 21 120	Probability of rain	
	0 21 121	SEAWINDS NOF rain index	
	0 13 055	Intensity of precipitation	
	0 21 122	Attenuation correction on sigma-0 (from tB)	
		(Antenna polarization, brightness temperature)	
3 12 033	0 02 104	Antenna polarization	
	0 08 022	Total number (with respect to accumulation or average)	
	0 12 063	Brightness temperature	
	0 12 065	Standard deviation brightness temperature	
		(Altitude)	
3 12 041	2 01 141	Change data width	28 bits long
	2 02 130	Change scale	Scale: 2
	0 07 001	Height of station	
	2 01 000	Change data width	Cancel
	2 02 000	Change scale	Cancel
		(Altitude corrections)	
3 12 042	0 21 077	Altitude correction (ionosphere)	
	0 21 078	Altitude correction (dry troposphere)	
	0 21 079	Altitude correction (wet troposphere)	

(continued)

(Category 12 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 12 042 *(continued)*	0 21 080	Altitude correction (calibration constant)	
	0 21 081	Open loop correction (height-time loop)	
	0 21 082	Open loop correction (auto gain control)	
		(AATSR sea-surface temperatures)	
3 12 045	0 01 007	Satellite identifier	
	0 02 019	Satellite instruments	
	0 01 096	Station acquisition	
	0 25 061	Software identification and version number	
	0 05 040	Orbit number	
	3 01 011	Year, month, day	
	3 01 013	Hour, minute, second	
	3 01 021	Latitude/longitude (high accuracy)	
	0 07 002	Height or altitude	
	0 12 180	Averaged 12 micron BT for all clear pixels at nadir	
	0 12 181	Averaged 11 micron BT for all clear pixels at nadir	
	0 12 182	Averaged 3.7 micron BT for all clear pixels at nadir	
	0 12 183	Averaged 12 micron BT for all clear pixels, forward view	
	0 12 184	Averaged 11 micron BT for all clear pixels, forward view	
	0 12 185	Averaged 3.7 micron BT for all clear pixels, forward view	
	0 02 174	Mean across-track pixel number	
	0 21 086	Number of pixels in nadir only, average	
	0 12 186	Mean nadir sea-surface temperature	
	0 21 087	Number of pixels in dual view, average	
	0 12 187	Mean dual view sea-surface temperature	
	0 33 043	AST confidence	
		(MERIS instrument reporting)	
3 12 050	0 01 007	Satellite identifier	
	0 02 019	Satellite instruments	
	0 01 096	Station acquisition	
	0 25 061	Software identification and version number	
	0 05 040	Orbit number	
	3 01 011	Year, month, day	
	3 01 013	Hour, minute, second	
	3 01 021	Latitude/longitude (high accuracy)	
	0 07 025	Solar zenith angle	
	0 05 022	Solar azimuth	
	0 10 080	Viewing zenith angle	
	0 27 080	Viewing azimuth angle	
	0 08 003	Vertical significance (satellite observations)	
	0 07 004	Pressure	
	0 13 093	Cloud optical thickness	
	0 08 003	Vertical significance (satellite observations)	
	2 01 131	Change data width	
	2 02 129	Change scale	
	0 07 004	Pressure	

(continued)

(Category 12 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 12 050 *(continued)*	0 07 004	Pressure	
	2 02 000	Change scale	Cancel
	2 01 000	Change data width	Cancel
	0 13 095	Total column water vapour	
		(Ocean cross spectra – WVS)	
3 12 051	0 01 007	Satellite identifier	
	0 02 019	Satellite instruments	
	0 01 096	Station acquisition	
	0 25 061	Software identification and version number	
	0 05 040	Orbit number	
	0 08 075	Ascending/descending orbit qualifier	
	3 01 011	Year, month, day	
	3 01 013	Hour, minute, second	
	3 01 021	Latitude/longitude (high accuracy)	
	0 01 012	Direction of motion of moving observing platform	
	2 01 131	Change data width	
	0 01 013	Speed of motion of moving observing platform	
	2 01 000	Change data width	Cancel
	0 10 032	Satellite distance to Earth's centre	
	0 10 033	Altitude (platform to ellipsoid)	
	0 10 034	Earth's radius	
	0 07 002	Height or altitude	
	0 08 012	Land/sea qualifier	
	0 25 110	Image processing summary	
	0 25 111	Number of input data gaps	
	0 25 102	Number of missing lines excluding data gaps	
	0 02 104	Antenna polarization	
	0 25 103	Number of directional bins	
	0 25 104	Number of wavelength bins	
	0 25 105	First directional bin	
	0 25 106	Directional bin step	
	0 25 107	First wavelength bin	
	0 25 108	Last wavelength bin	
	0 02 111	Radar incidence angle	
	0 02 121	Mean frequency	
	0 02 026	Cross-track resolution	
	0 02 027	Along-track resolution	
	0 21 130	Spectrum total energy	
	0 21 131	Spectrum max energy	
	0 21 132	Direction of spectrum max on higher resolution grid	
	0 21 133	Wavelength of spectrum max on higher resolution grid	
	0 21 064	Clutter noise estimate	
	0 25 014	Azimuth clutter cut-off	
	0 21 134	Range resolution of cress covariance spectrum	
	1 07 018	Replicate 7 descriptors 18 times	
	0 05 030	Direction (spectral)	
	1 05 024	Replicate 5 descriptors 24 times	
	2 01 130	Change data width	

(continued)

(Category 12 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 12 051 *(continued)*	0 06 030	Wave number (spectral)	
	2 01 000	Change data width	Cancel
	0 21 135	Real part of cross spectra polar grid number of bins	
	0 21 136	Imaginary part of cross spectra polar grid number of bins	
	0 33 044	ASAR quality information	
		(RA2 – radar altimeter-2)	
3 12 052	0 01 007	Satellite identifier	
	0 02 019	Satellite instruments	
	0 01 096	Station acquisition	
	0 25 061	Software identification and version number	
	0 05 040	Orbit number	
	0 25 120	RA2-L2-processing flag	
	0 25 121	RA2-L2-processing quality	
	0 25 124	MWR-L2-processing flag	
	0 25 125	MWR-L2-processing quality	
	0 25 122	Hardware configuration for RF	
	0 25 123	Hardware configuration for HPA	
	3 01 011	Year, month, day	
	3 01 013	Hour, minute, second	
	3 01 021	Latitude/longitude (high accuracy)	
	0 07 002	Height or altitude	
	0 02 119	RA-2 instrument operations	
	0 33 047	Measurement confidence data	
	0 10 081	Altitude of COG above reference ellipsoid	
	0 10 082	Instantaneous altitude rate	
	0 10 083	Squared off nadir angle of the satellite from platform data	
	0 10 084	Squared off nadir angle of the satellite from waveform data	
	0 02 116	Percentage of 320 MHz band processed	
	0 02 117	Percentage of 80 MHz band processed	
	0 02 118	Percentage of 20 MHz band processed	
	0 02 156	Percentage of valid Ku ocean retracker measurements	
	0 02 157	Percentage of valid S ocean retracker measurements	
	0 14 055	Solar activity index	
	0 22 150	Number of 18 Hz valid points for Ku band	
	0 22 151	Ku band ocean range	
	0 22 152	STD of 18 Hz Ku band ocean range	
	0 22 153	Number of 18 Hz valid points for S band	
	0 22 154	S band ocean range	
	0 22 155	STD of 18 Hz S band ocean range	
	0 22 156	Ku band significant wave height	
	0 22 157	STD of 18 Hz Ku band ocean range	Significant wave height
	0 22 158	S band significant wave height	
	0 22 159	STD of 18 Hz S band significant wave height	
	0 21 137	Ku band corrected ocean backscatter coefficient	
	0 21 138	STD Ku band corrected ocean backscatter coefficient	

(continued)

(Category 12 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 12 052 *(continued)*	0 21 139	Ku band net instrumental correction for AGC	
	0 21 140	S band corrected ocean backscatter coefficient	
	0 21 141	STD S band corrected ocean backscatter coefficient	
	0 21 142	S band net instrumental correction for AGC	
	0 10 085	Mean sea-surface height	
	0 10 086	Geoid's height	
	0 10 087	Ocean depth/land elevation	
	0 10 088	Total geocentric ocean tide height (solution 1)	
	0 10 089	Total geocentric ocean tide height (solution 2)	
	0 10 090	Long period tide height	
	0 10 091	Tidal loading height	
	0 10 092	Solid Earth tide height	
	0 10 093	Geocentric pole tide height	
	0 11 002	Wind speed	
	0 25 126	Model dry tropospheric correction	
	0 25 127	Inverted barometer correction	
	0 25 128	Model wet tropospheric correction	
	0 25 129	MWR derived wet tropospheric correction	
	0 25 130	RA2 ionospheric correction on Ku band	
	0 25 131	Ionospheric correction from Doris on Ku band	
	0 25 132	Ionospheric correction from model on Ku band	
	0 25 133	Sea state bias correction on Ku band	
	0 25 134	RA2 ionospheric correction on S band	
	0 25 135	Ionospheric correction from Doris on S band	
	0 25 136	Ionospheric correction from model on S band	
	0 25 137	Sea state bias correction on S band	
	0 13 096	MWR water vapour content	
	0 13 097	MWR liquid water content	
	0 11 095	u-component of the model wind vector	
	0 11 096	v-component of the model wind vector	
	0 12 188	Interpolated 23.8 GHz brightness T from MWR	
	0 12 189	Interpolated 36.5 GHz brightness T from MWR	
	0 02 158	RA-2 instrument	
	0 02 159	MWR instrument	
	0 33 052	S band ocean retracking quality	
	0 33 053	Ku band ocean retracking quality	
	0 21 143	Ku band rain attenuation	
	0 21 144	Altimeter rain flag	
		(Ocean wave spectra)	
3 12 053	0 01 007	Satellite identifier	
	0 02 019	Satellite instruments	
	0 01 096	Station acquisition	
	0 25 061	Software identification and version number	
	0 05 040	Orbit number	
	0 08 075	Ascending/descending orbit qualifier	
	3 01 011	Year, month, day	
	3 01 013	Hour, minute, second	
	3 01 021	Latitude/longitude (high accuracy)	

(continued)

(Category 12 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 12 053 *(continued)*	0 01 012	Direction of motion of moving observing platform	
	2 01 131	Change data width	
	0 01 013	Speed of motion of moving observing platform	
	2 01 000	Change data width	Cancel
	0 10 032	Satellite distance to Earth's centre	
	0 10 033	Altitude (platform to ellipsoid)	
	0 10 034	Earth's radius	
	0 07 002	Height or altitude	
	0 08 012	Land/sea qualifier	
	0 25 110	Image processing summary	
	0 25 111	Number of input data gaps	
	0 25 102	Number of missing lines excluding data gaps	
	0 02 104	Antenna polarization	
	0 25 103	Number of directional bins	
	0 25 104	Number of wavelength bins	
	0 25 105	First directional bin	
	0 25 106	Directional bin step	
	0 25 107	First wavelength bin	
	0 25 108	Last wavelength bin	
	0 11 001	Wind direction	
	0 11 002	Wind speed	
	0 22 160	Normalized inverse wave age	
	0 25 138	Average signal-to-noise ratio	
	2 01 130	Change data width	
	2 02 129	Change scale	
	0 22 021	Height of waves	
	2 02 000	Change scale	Cancel
	2 01 000	Change data width	Cancel
	0 33 048	Confidence measure of SAR inversion	
	0 33 049	Confidence measure of wind retrieval	
	0 02 026	Cross-track resolution	
	0 02 027	Along-track resolution	
	0 21 130	Spectrum total energy	
	0 21 131	Spectrum max energy	
	0 21 132	Direction of spectrum max on higher resolution grid	
	0 21 133	Wavelength of spectrum max on higher resolution grid	
	0 25 014	Azimuth clutter cut-off	
	1 06 036	Replicate 6 descriptors 36 times	
	0 05 030	Direction (spectral)	
	1 04 024	Replicate 4 descriptors 24 times	
	2 01 130	Change data width	
	0 06 030	Wave number (spectral)	
	2 01 000	Change data width	Cancel
	0 22 161	Wave spectra	
	0 33 044	ASAR quality information	
		(ASCAT level 1b cell information)	
3 12 055	0 05 033	Pixel size on horizontal – 1	
	0 05 040	Orbit number	

(continued)

(Category 12 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 12 055 *(continued)*	0 06 034	Cross-track cell number	
	0 10 095	Height of atmosphere used	
	0 21 157	Loss per unit length of atmosphere used	
		(Scatterometer wind cell information)	
3 12 056	0 25 060	Software identification	
	0 01 032	Generating application	
	0 11 082	Model wind speed at 10 m	
	0 11 081	Model wind direction at 10 m	
	0 20 095	Ice probability	
	0 20 096	Ice age (“A” parameter)	
	0 21 155	Wind vector cell quality	
	2 01 133	Change data width	Increase data width by 5 bits
	0 21 101	Number of vector ambiguities	
	0 21 102	Index of selected wind vector	
	2 01 000	Change data width	Cancel
		(Ambiguous wind data)	
3 12 057	2 01 130	Change data width	Increase data width by 2 bits
	2 02 129	Change scale	Increase scaling by 10^1
	0 11 012	Wind speed at 10 m	
	2 02 000	Change scale	Cancel
	2 01 000	Change data width	Cancel
	2 01 131	Change data width	Increase data width by 3 bits
	2 02 129	Change scale	Increase scaling by 10^1
	0 11 011	Wind direction at 10 m	
	2 02 000	Change scale	Cancel
	2 01 000	Change data width	Cancel
	0 21 156	Backscatter distance	
	0 21 104	Likelihood computed for solution	
		(ASCAT level 1b data)	
3 12 058	3 01 125	ASCAT header information	
	3 01 011	Year, month, day	
	3 01 013	Hour, minute, second	
	3 01 021	Latitude/longitude (high accuracy)	
	3 12 055	ASCAT level 1b cell information	
	0 21 150	Beam co-location	
	1 01 003	Replicate 1 descriptor 3 times	
	3 21 030	ASCAT sigma-0 information	
		(Scatterometer wind data)	
3 12 059	3 12 056	Scatterometer wind cell information	
	1 01 000	Delayed replication of 1 descriptor	
	0 31 001	Delayed descriptor replication factor	
	3 12 057	Ambiguous wind data	

(continued)

(Category 12 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(Scatterometer soil moisture data)	
3 12 060	0 25 060	Software identification	
	0 25 062	Database identification	
	0 40 001	Surface soil moisture (ms)	
	0 40 002	Estimated error in surface soil moisture	
	0 21 062	Backscatter	Extrapolated backscatter at 40 deg incidence angle (sigma0_40)
	0 21 151	Estimated error in sigma-0 at 40 degrees incidence angle	
	0 21 152	Slope at 40 degrees incidence angle	
	0 21 153	Estimated error in slope at 40 degrees incidence angle	
	0 21 154	Soil moisture sensitivity	
	0 21 062	Backscatter	Dry backscatter
	0 21 088	Wet backscatter	
	0 40 003	Mean surface soil moisture	
	0 40 004	Rain fall detection	
	0 40 005	Soil moisture correction flag	
	0 40 006	Soil moisture processing flag	
	0 40 007	Soil moisture quality	
	0 20 065	Snow cover	
	0 40 008	Frozen land surface fraction	
	0 40 009	Inundation and wetland fraction	
	0 40 010	Topographic complexity	
		(ASCAT level 1b and level 2 data)	
3 12 061	3 12 058	ASCAT level 1b data	
	3 12 060	Scatterometer soil moisture data	
	3 12 059	Scatterometer wind data	
		(SMOS data)	
3 12 070	0 01 007	Satellite identifier	
	0 02 019	Satellite instruments	
	0 01 144	Snapshot identifier	
	0 01 124	Grid point identifier	
	0 30 010	Number of grid points	
	3 01 011	Year, month, day	
	3 01 013	Hour, minute, second	
	3 01 021	Latitude/longitude (high accuracy)	
	0 07 012	Grid point altitude	
	0 15 012	Total electron count per square metre	
	0 12 165	Direct sun brightness temperature	
	0 12 166	Snapshot accuracy	
	0 12 167	Radiometric accuracy (pure polarization)	
	0 12 168	Radiometric accuracy (cross polarization)	
	0 27 010	Footprint axis 1	
	0 28 010	Footprint axis 2	
	0 02 099	Polarization	

(continued)

(Category 12 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 12 070 *(continued)*	0 13 048	Water fraction	
	0 25 081	Incidence angle	
	0 25 082	Azimuth angle	
	0 25 083	Faraday rotational angle	
	0 25 084	Geometric rotational angle	
	0 12 080	Brightness temperature real part	
	0 12 081	Brightness temperature imaginary part	
	0 12 082	Pixel radiometric accuracy	
	0 25 174	SMOS information flag	
	0 33 028	Snapshot overall quality	
		(CryoSat-2 SIRAL altimeter)	
3 12 071	0 01 007	Satellite identifier	
	0 02 019	Satellite instruments	
	0 02 139	SIRAL instrument configuration	
	0 01 096	Station acquisition	Acquisition station name
	0 01 040	Processing centre ID code	
	0 25 061	Software identification and version number	
	0 05 040	Orbit number	
	0 05 044	Satellite cycle number	
	0 08 075	Ascending/descending orbit qualifier	
	0 08 077	Radiometer sensed surface type	
	0 04 001	Year	
	0 04 002	Month	
	0 04 003	Day	
	0 04 004	Hour	
	0 04 005	Minute	
	0 04 006	Second	
	0 05 001	Latitude (high accuracy)	
	0 06 001	Longitude (high accuracy)	
	0 10 081	Altitude of COG above reference ellipsoid	
	0 22 156	Ku band significant wave height	
	0 22 142	Square of significant wave height	
	1 01 020	Replicate 1 descriptor 20 times	
	0 22 149	20 Hz significant wave height squared	
	0 22 143	STD of 20 Hz SWH squared	
	0 22 144	Number of 20 Hz valid points for SWH squared	
	0 21 137	Ku band corrected ocean backscatter coefficient	
	1 01 020	Replicate 1 descriptor 20 times	
	0 21 181	20 Hz ocean backscatter coefficient	
	0 21 138	STD Ku band corrected ocean backscatter coefficient	
	0 21 180	Number of 20 Hz valid points for ocean backscatter coefficient	
	0 21 177	Corrected OCOG backscatter coefficient	
	0 21 178	STD of 20 Hz OCOG backscatter coefficient	
	0 21 179	Number of 20 Hz valid points for OCOG backscatter coefficient	

(continued)

(Category 12 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 12 071 *(continued)*	0 10 079	Off nadir angle of the satellite from platform data	
	0 10 085	Mean sea-surface height	
	0 10 086	Geoid's height	
	0 10 087	Ocean depth/land elevation	
	0 10 089	Total geocentric ocean tide height (solution 2)	
	0 10 090	Long period tide height	
	0 10 091	Tidal loading height	
	0 10 092	Solid Earth tide height	
	0 10 093	Geocentric pole tide height	
	0 11 097	Wind speed from altimeter	
	0 21 093	Ku band peakiness	Average of 20 Hz values
	1 01 020	Replicate 1 descriptor 20 times	
	0 21 182	20 Hz Ku band peakiness	20 values
	0 33 053	Ku band ocean retracking quality	
	0 22 151	Ku band ocean range	
	0 22 145	STD of 20 Hz ocean range	
	0 22 148	Number of 20 Hz valid points for ocean range	
	0 22 146	OCOG range	
	0 22 147	STD of 20 Hz OCOG range	
	0 25 126	Model dry tropospheric correction	
	0 25 128	Model wet tropospheric correction	
	0 25 127	Inverted barometer correction	
	0 21 176	High frequency variability correction	
	0 25 132	Ionospheric correction from model on Ku band	
	0 25 133	Sea state bias correction on Ku band	
	0 25 182	L1 processing flag	
	0 25 183	L1 processing quality	
	0 25 180	LRM mode per cent	
	0 25 184	L2 product status	
	0 25 181	L2 processing flag	
	0 33 080	Scan level quality flags	L2 processing quality

Notes:

(1) Separation of single level satellite data into sets of BUFR messages helps compression and results in efficient data transmission and storage.

(2) Each BUFR message may contain data for a number of locations; the BUFR compression technique involves negligible overheads for data items that are invariant.

(3) Compound BUFR messages may be described within the data description section, if required (e.g. 3 01 041, 3 04 001, 3 04 002, 3 04 003, 3 04 004, 3 04 005, 3 04 006).

Category 13 – Sequences common to image data

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(Radar reflectivity values)	
3 13 009	0 21 001	Horizontal reflectivity	
	1 01 000	Delayed replication of 1 descriptor	
	0 31 001	Delayed descriptor replication factor	
	0 21 001	Horizontal reflectivity	
		(Radar rainfall intensities)	
3 13 010	0 21 036	Radar rainfall intensity	
	1 01 000	Delayed replication of 1 descriptor	
	0 31 001	Delayed descriptor replication factor	
	0 21 036	Radar rainfall intensity	
		(Non run-length encoded row for Pixel value (4 bits))	
3 13 031	0 06 002	Longitude (coarse accuracy)	First longitude location minus one increment
	0 06 012	Longitude increment (coarse accuracy)	
	1 01 000	Delayed replication of 1 descriptor	
	0 31 002	Extended delayed descriptor replication factor	
	0 30 001	Pixel value (4 bits)	
		(Non run-length encoded picture data for Pixel value (4 bits))	
3 13 032	0 05 002	Latitude (coarse accuracy)	First latitude location minus one increment
	0 05 012	Latitude increment (coarse accuracy)	Signed value so cannot cross pole
	1 01 000	Delayed replication of 1 descriptor	
	0 31 002	Extended delayed descriptor replication factor	
	3 13 031	Non run-length encoded row for Pixel value (4 bits)	
		(Run-length encoded row for Pixel value (4 bits))	
3 13 041	0 06 002	Longitude (coarse accuracy)	First longitude location minus one increment
	1 10 000	Delayed replication of 10 descriptors	
	0 31 001	Delayed descriptor replication factor	
	1 04 000	Delayed replication of 4 descriptors	
	0 31 001	Delayed descriptor replication factor	
	0 06 012	Longitude increment (coarse accuracy)	
	1 01 000	Delayed replication of 1 descriptor	
	0 31 012	Extended delayed descriptor and data repetition factor	
	0 30 001	Pixel value (4 bits)	
	0 06 012	Longitude increment (coarse accuracy)	
	1 01 000	Delayed replication of 1 descriptor	
	0 31 001	Delayed descriptor replication factor	
	0 30 001	Pixel value (4 bits)	

(continued)

(Category 13 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(Run-length encoded picture data for Pixel value (4 bits))	
3 13 042	0 05 002	Latitude (coarse accuracy)	First latitude location minus one increment
	0 05 012	Latitude increment (coarse accuracy)	Signed value so cannot cross pole
	1 01 000	Delayed replication of 1 descriptor	
	0 31 002	Extended delayed descriptor replication factor	
	3 13 041	Run-length encoded row for pixel value (4 bits)	
		(Run-length encoded picture data for pixel value (4 bits), regular grid)	
3 13 043	0 06 002	Longitude (coarse accuracy)	First longitude location minus one increment
	0 05 002	Latitude (coarse accuracy)	First latitude location minus one increment
	0 05 012	Latitude increment (coarse accuracy)	
	1 12 000	Delayed replication of 12 descriptors	
	0 31 001	Delayed descriptor replication factor	
	1 10 000	Delayed replication of 10 descriptors	
	0 31 001	Delayed descriptor replication factor	
	1 04 000	Delayed replication of 4 descriptors	
	0 31 001	Delayed descriptor replication factor	
	0 06 012	Longitude increment (coarse accuracy)	
	1 01 000	Delayed replication of 1 descriptor	
	0 31 011	Delayed descriptor and data repetition factor	
	0 30 001	Pixel value (4 bits)	
	0 06 012	Longitude increment (coarse accuracy)	
	1 01 000	Delayed replication of 1 descriptor	
	0 31 001	Delayed descriptor replication factor	
	0 30 001	Pixel value (4 bits)	

Category 15 – Oceanographic report sequences

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(Typically reported underwater sounding without optional fields)	
3 15 001	0 01 011	Ship or mobile land station identifier	Ship's call sign
	3 01 011	Year, month, day	
	3 01 012	Hour, minute	
	3 01 023	Latitude/longitude (coarse accuracy)	
	3 06 001	Depth, temperature	
		(Typically reported underwater sounding without optional fields)	
3 15 002	0 01 011	Ship or mobile land station identifier	Ship's call sign
	3 01 011	Year, month, day	
	3 01 012	Hour, minute	
	3 01 023	Latitude/longitude (coarse accuracy)	
	3 06 004	Depth, temperature, salinity	
		(Temperature and salinity profile observed by profile floats)	
3 15 003	0 01 087	WMO marine observing platform extended identifier	
	0 01 085	Observing platform manufacturer's model	
	0 01 086	Observing platform manufacturer's serial number	
	0 02 036	Buoy type	
	0 02 148	Data collection and/or location system	
	0 02 149	Type of data buoy	
	0 22 055	Float cycle number	
	0 22 056	Direction of profile	
	0 22 067	Instrument type for water temperature profile measurement	
	3 01 011	Year, month, day	
	3 01 012	Hour, minute	
	3 01 021	Latitude/longitude (high accuracy)	
	0 08 080	Qualifier for GTSPP quality flag	
	0 33 050	Global GTSPP quality flag	
	1 09 000	Delayed replication of 9 descriptors	
	0 31 002	Extended delayed descriptor replication factor	
	0 07 065	Water pressure	
	0 08 080	Qualifier for GTSPP quality flag	
	0 33 050	Global GTSPP quality flag	
	0 22 045	Sea/water temperature	
	0 08 080	Qualifier for GTSPP quality flag	
	0 33 050	Global GTSPP quality flag	
	0 22 064	Salinity	
	0 08 080	Qualifier for GTSPP quality flag	
	0 33 050	Global GTSPP quality flag	
		(XBT temperature profile data sequence)	
3 15 004	0 01 079	Unique identifier for the profile	Hexadecimal string
	0 01 011	Ship or mobile land station identifier	Ship's call sign
	0 01 103	IMO Number. Unique Lloyd's register	= 0 to 9999999

(continued)

(Category 15 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 15 004 *(continued)*	0 01 087	WMO marine observing platform extended identifier (see Note 1)	
	0 01 019	Long station or site name	Ship name
	0 01 080	Ship line number according to SOOP	
	0 05 036	Ship transect number according to SOOP (see Note 2)	
	0 01 036	Agency in charge of operating the observing platform	
	0 01 013	Speed of motion of moving observing platform	
	0 01 012	Direction of motion of moving observing platform	
	3 01 011	Year, month, day	
	3 01 012	Hour, minute	
	3 01 021	Latitude/longitude (high accuracy)	
	0 07 032	Height of sensor above local ground (or deck of marine platform)	
	0 07 033	Height of sensor above water surface	
	0 02 002	Type of instrumentation for wind measurement	
	0 11 002	Wind speed	
	0 11 001	Wind direction	
	0 07 032	Height of sensor above local ground (or deck of marine platform)	
	0 07 033	Height of sensor above water surface	
	0 12 101	Temperature/air temperature	
	0 12 103	Dewpoint temperature	
	0 07 032	Height of sensor above local ground (or deck of marine platform)	Set to missing (cancel)
	0 07 033	Height of sensor above water surface	Set to missing (cancel)
	3 02 021	Waves	
	0 02 031	Duration and time of current measurement	
	0 02 030	Method of current measurement	
	0 22 005	Direction of sea-surface current	
	0 22 032	Speed of sea-surface current	
	0 22 063	Total water depth	
	0 08 080	Qualifier for GTSPP quality flag	
	0 33 050	Global GTSPP quality flag	
	0 22 178	XBT/XCTD launcher type	
	0 22 177	Height of XBT/XCTD launcher	Above sea level 0 to 50 m in units of whole m
	0 22 067	Instrument type for water temperature profile measurement	
	0 08 041	Data significance	
	0 26 021	Year	
	0 26 022	Month	
	0 26 023	Day	
	0 22 068	Water temperature profile recorder types	
	0 25 061	Software identification and version number	
	0 08 041	Data significance	Set to missing (cancel)
	0 08 080	Qualifier for GTSPP quality flag	Set to missing (cancel)
	0 02 171	Instrument serial number for water temperature profile measurement	

(continued)

(Category 15 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 15 004 *(continued)*	3 02 090 0 02 171	Sea/water temperature high precision Instrument serial number for water temperature profile measurement	
	0 02 032	Indicator for digitization (see Note 3)	
	3 15 005	Water temperature profile (Temperature profile observed by XBT or buoy)	
		(Water temperature profile (Temperature profile observed by XBT or buoy)	
3 15 005	1 06 000	Delayed replication of 6 descriptors	
	0 31 002	Extended delayed descriptor replication factor	
	0 07 063	Depth below sea/water surface (cm)	
	0 08 080	Qualifier for GTSPP quality flag	= 13 Water depth at a level
	0 33 050	Global GTSPP quality flag	
	0 22 043	Sea/water temperature	
	0 08 080	Qualifier for GTSPP quality flag	= 11 Water temperature at a level
	0 33 050	Global GTSPP quality flag	

Notes:

(1) If field 0 01 011 is used, this field will be left missing and vice versa.

(2) Integer, assigned by the operator, incremented for each new transect (i.e. all drops have the same transect number while the ship is moving from one end point of the line to the other end point; as soon as the ship arrived to port and goes back to start a new transect then transect number is incremented). The initial value and subsequent values for transect numbers do not matter provided that each new transect by a ship on a line has a transect number higher than previous transect numbers for the same line and the same ship. In case a single cruise follows more than one SOOP line in a row, then the transect number should be incremented each time the cruise changes line.

(3) This descriptor applies to the method used to select depths for the temperature profile encoded through 3 15 005. If temperatures are reported at significant depths, the values shall:

(a) Be sufficient to reproduce basic features of the profile; and

(b) Define the top and the bottom of isothermal layers.

Category 16 – Synoptic feature sequences

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 16 001	3 01 011	Year, month, day	
	0 04 004	Hour	
	3 01 023	Latitude/longitude (coarse accuracy)	
	0 01 021	Synoptic feature identifier	
	0 02 041	Method for estimating reports related to synoptic features	
	0 19 001	Type of synoptic feature	
	0 10 051	Pressure reduced to mean sea level	
	0 19 002	Effective radius of feature	
	0 19 003	Wind speed threshold	15 m s^{-1} typically
	0 19 004	Effective radius with respect to wind speeds above threshold	
		(Header)	
3 16 002	0 08 021	Time significance	Data time (analysis)
	0 04 001	Year	
	0 04 002	Month	
	0 04 003	Day	
	0 04 004	Hour	
	0 04 005	Minute	
	0 01 033	Identification of originating/generating centre	
	0 08 021	Time significance	Validity time (forecast)
	0 04 001	Year	
	0 04 002	Month	
	0 04 003	Day	
	0 04 004	Hour	
	0 04 005	Minute	
	0 07 002	Height or altitude	Flight level (base of chart layer)
	0 07 002	Height or altitude	Flight level (top of chart layer)
		(Jet stream)	
3 16 003	1 10 000	Delayed replication of 10 descriptors	
	0 31 001	Delayed descriptor replication factor	
	0 08 011	Meteorological feature	Jet stream value
	0 08 007	Dimensional significance	Value for line
	1 04 000	Delayed replication of 4 descriptors	
	0 31 001	Delayed descriptor replication factor	
	0 05 002	Latitude (coarse accuracy)	
	0 06 002	Longitude (coarse accuracy)	
	0 10 002	Height	Flight level
	0 11 002	Wind speed	
	0 08 007	Dimensional significance	Cancel
	0 08 011	Meteorological feature	Cancel **|** End of object

(continued)

(Category 16 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(Turbulence)	
3 16 004	1 11 000	Delayed replication of 11 descriptors	
	0 31 001	Delayed descriptor replication factor	
	0 08 011	Meteorological feature	Value for turbulence
	0 08 007	Dimensional significance	Value for area
	0 07 002	Height or altitude	Flight level (base of layer)
	0 07 002	Height or altitude	Flight level (top of layer)
	1 02 000	Delayed replication of 2 descriptors	
	0 31 001	Delayed descriptor replication factor	
	0 05 002	Latitude (coarse accuracy)	
	0 06 002	Longitude (coarse accuracy)	
	0 11 031	Degree of turbulence (see Note 1)	
	0 08 007	Dimensional significance	Cancel
	0 08 011	Meteorological feature	Cancel **|** End of object
		(Storm)	
3 16 005	1 08 000	Delayed replication of 8 descriptors	
	0 31 001	Delayed descriptor replication factor	
	0 08 005	Meteorological attribute significance	Storm centre
	0 08 007	Dimensional significance	Value for point
	0 05 002	Latitude (coarse accuracy)	
	0 06 002	Longitude (coarse accuracy)	
	0 01 026	WMO storm name	Use “UNKNOWN” for a sandstorm
	0 19 001	Type of synoptic feature	Value for type of storm
	0 08 007	Dimensional significance	Cancel
	0 08 005	Meteorological attribute significance	Cancel **|** End of object
		(Cloud)	
3 16 006	1 12 000	Delayed replication of 12 descriptors	
	0 31 001	Delayed descriptor replication factor	
	0 08 011	Meteorological feature	Value for cloud
	0 08 007	Dimensional significance	Value for area
	0 07 002	Height or altitude	Flight level (base of layer)
	0 07 002	Height or altitude	Flight level (top of layer)
	1 02 000	Delayed replication of 2 descriptors	
	0 31 001	Delayed descriptor replication factor	
	0 05 002	Latitude (coarse accuracy)	
	0 06 002	Longitude (coarse accuracy)	
	0 20 011	Cloud amount (see Note 2)	
	0 20 012	Cloud type	
	0 08 007	Dimensional significance	Cancel
	0 08 011	Meteorological feature	Cancel **|** End of object

(continued)

(Category 16 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(Front)	
3 16 007	1 10 000	Delayed replication of 10 descriptors	
	0 31 001	Delayed descriptor replication factor	
	0 08 011	Meteorological feature (see Note 3)	Value for type of front
	0 08 007	Dimensional significance	Value for line
	1 04 000	Delayed replication of 4 descriptors	
	0 31 001	Delayed descriptor replication factor	
	0 05 002	Latitude (coarse accuracy)	
	0 06 002	Longitude (coarse accuracy)	
	0 19 005	Direction of motion of feature	
	0 19 006	Speed of motion of feature	
	0 08 007	Dimensional significance	Cancel
	0 08 011	Meteorological feature	Cancel **|** End of object
		(Tropopause)	
3 16 008	1 11 000	Delayed replication of 11 descriptors	
	0 31 001	Delayed descriptor replication factor	
	0 08 001	Vertical sounding significance	Bit 3 set for tropopause
	0 08 007	Dimensional significance	Value for point
	0 08 023	First-order statistics (see Note 4)	Type of tropopause value
	1 03 000	Delayed replication of 3 descriptors	
	0 31 001	Delayed descriptor replication factor	
	0 05 002	Latitude (coarse accuracy)	
	0 06 002	Longitude (coarse accuracy)	
	0 10 002	Height	
	0 08 023	First-order statistics	Cancel
	0 08 007	Dimensional significance	Cancel
	0 08 001	Vertical sounding significance	Cancel **|** End of object
		(Airframe icing area)	
3 16 009	1 11 000	Delayed replication of 11 descriptors	
	0 31 001	Delayed descriptor replication factor	
	0 08 011	Meteorological feature	Value for airframe icing
	0 08 007	Dimensional significance	Value for area
	0 07 002	Height or altitude	Flight level (base of layer)
	0 07 002	Height or altitude	Flight level (top of layer)
	1 02 000	Delayed replication of 2 descriptors	
	0 31 001	Delayed descriptor replication factor	
	0 05 002	Latitude (coarse accuracy)	
	0 06 002	Longitude (coarse accuracy)	
	0 20 041	Airframe icing	Type of airframe icing
	0 08 007	Dimensional significance	Cancel
	0 08 011	Meteorological feature	Cancel **|** End of object

(continued)

(Category 16 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(Name of feature)	
3 16 010	1 07 000	Delayed replication of 7 descriptors	
	0 31 001	Delayed descriptor replication factor	
	0 08 011	Meteorological feature	
	0 08 007	Dimensional significance	Value for point
	0 01 022	Name of feature	
	0 05 002	Latitude (coarse accuracy)	
	0 06 002	Longitude (coarse accuracy)	
	0 08 007	Dimensional significance	Cancel
	0 08 011	Meteorological feature	Cancel **|** End of object
		(Volcano erupting)	
3 16 011	1 17 000	Delayed replication of 17 descriptors	
	0 31 001	Delayed descriptor replication factor	
	0 08 011	Meteorological feature	Value for special clouds
	0 01 022	Name of feature	Volcano name
	0 08 007	Dimensional significance	Value for point
	1 02 000	Delayed replication of 2 descriptors	
	0 31 001	Delayed descriptor replication factor	
	0 05 002	Latitude (coarse accuracy)	
	0 06 002	Longitude (coarse accuracy)	
	0 08 021	Time significance	Eruption starting time
	0 04 001	Year	
	0 04 002	Month	
	0 04 003	Day	
	0 04 004	Hour	
	0 04 005	Minute	
	0 20 090	Special clouds	Clouds from volcanic eruptions
	0 08 021	Time significance	Cancel
	0 08 007	Dimensional significance	Cancel
	0 08 011	Meteorological feature	Cancel **|** End of object
		(Tropical storm identification)	
3 16 020	0 01 033	Identification of originating/generating centre	
	0 01 025	Storm identifier	
	0 01 027	WMO long storm name	
	3 01 011	Year, month, day	
	3 01 012	Hour, minute	
		(Analysis data)	
3 16 021	3 01 023	Latitude/longitude (coarse accuracy)	
	0 02 041	Method for estimating reports related to synoptic features	
	0 19 001	Type of synoptic feature	
	0 19 007	Effective radius of feature	
	0 19 005	Direction of motion of feature	
	0 19 006	Speed of motion of feature	

(continued)

(Category 16 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 16 021 *(continued)*	0 19 008	Vertical extent of circulation	
	0 08 005	Meteorological attribute significance	= 1 Storm centre
	0 10 004	Pressure	Storm centre by virtue of preceding significance qualifier
	0 08 005	Meteorological attribute significance	= 2 Outer limit or edge of feature
	0 10 004	Pressure	Outer limit
	0 19 007	Effective radius of feature	Outer limit
	0 08 005	Meteorological attribute significance	= 3 Location of maximum wind
	0 08 021	Time significance	Time averaged
	0 04 075	Short time period or displacement	Minutes
	0 11 040	Maximum wind speed (mean wind)	
	0 19 007	Effective radius of feature	Maximum wind
	1 05 004	Replicate 5 descriptors 4 times	
	0 05 021	Bearing or azimuth	Starting
	0 05 021	Bearing or azimuth	Ending
	1 02 002	Replicate 2 descriptors 2 times	
	0 19 003	Wind speed threshold	
	0 19 004	Effective radius with respect to wind speeds above threshold	
		(Forecast data)	
3 16 022	0 01 032	Generating application	NWP model name, etc. code table defined by originating/ generating centre
	0 02 041	Method for estimating reports related to synoptic features	
	0 19 001	Type of synoptic feature	
	0 19 010	Method for tracking the centre of synoptic feature	
	1 18 000	Delayed replication of 18 descriptors	
	0 31 001	Delayed descriptor replication factor	
	0 08 021	Time significance	Forecast
	0 04 014	Time increment	Hours
	0 08 005	Meteorological attribute significance	Surface synoptic feature
	3 01 023	Latitude/longitude (coarse accuracy)	
	0 19 005	Direction of motion of feature	
	0 19 006	Speed of motion of feature	
	0 10 004	Pressure	
	0 11 041	Maximum wind gust speed	For example, used in the United States
	0 08 021	Time significance	Forecast time averaged
	0 04 075	Short time period or displacement	Minutes
	0 11 040	Maximum wind speed (mean wind)	
	0 19 008	Vertical extent of circulation	
	1 05 004	Replicate 5 descriptors 4 times	

(continued)

(Category 16 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 16 022	0 05 021	Bearing or azimuth	Starting
(continued)	0 05 021	Bearing or azimuth	Ending
	1 02 002	Replicate 2 descriptors 2 times	
	0 19 003	Wind speed threshold	
	0 19 004	Effective radius with respect to wind speeds above threshold	
		(Tropical storm analysis information)	
3 16 026	3 16 020	Tropical storm identification	
	3 16 021	Analysis data	
		(Tropical storm forecast information)	
3 16 027	3 16 020	Tropical storm identification	
	3 16 022	Forecast data	
		(SIGMET header)	
3 16 030	3 01 014	Time period	For which SIGMET is valid
	0 01 037	SIGMET sequence identifier	
	0 10 064	SIGMET cruising level	
	0 08 019	Qualifier for following centre identifier	= 1 ATS unit serving FIR
	0 01 062	Short ICAO location indicator	
	0 08 019	Qualifier for following centre identifier	= 2 FIR, = 3 UIR, = 4 CTA
	0 01 065	ICAO region identifier	
	0 08 019	Qualifier for following centre identifier	= 6 MWO
	0 01 062	Short ICAO location indicator	
	0 08 019	Qualifier for following centre identifier	Set to missing (cancel)
		(SIGMET, Observed or forecast location and motion)	
3 16 031	0 08 021	Time significance	= 16 Analysis, = 4 Forecast
	3 01 011	Year, month, day	
	3 01 012	Hour, minute	
	3 01 027	Description of a feature in 3-D or 2-D	
	0 19 005	Direction of motion of feature	
	0 19 006	Speed of motion of feature	
	0 20 028	Expected change in intensity	
	0 08 021	Time significance	Set to missing (cancel)
		(SIGMET, Forecast position)	
3 16 032	0 08 021	Time significance	= 4 Forecast
	3 01 011	Year, month, day	
	3 01 012	Hour, minute	
	3 01 027	Description of a feature in 3-D or 2-D	
	0 08 021	Time significance	Set to missing (cancel)

(continued)

(Category 16 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(SIGMET, Outlook)	
3 16 033	0 08 021	Time significance	= 4 Forecast
	3 01 011	Year, month, day	
	3 01 012	Hour, minute	
	1 01 000	Delayed replication of 1 descriptor	
	0 31 001	Delayed descriptor replication factor	
	3 01 027	Description of a feature in 3-D or 2-D	
	0 08 021	Time significance	Set to missing (cancel)
		(Volcanic Ash SIGMET)	
3 16 034	0 08 079	Product status	= 0 Normal issue, = 1 Correction
	3 16 030	SIGMET header	
	0 08 011	Meteorological feature	= 17 Volcano
	0 01 022	Name of feature	
	0 08 007	Dimensional significance	= 0 Point
	3 01 023	Latitude/longitude (coarse accuracy)	
	0 08 007	Dimensional significance	Set to missing (cancel)
	0 20 090	Special clouds	= 5 Clouds from volcanic eruptions
	3 16 031	SIGMET, Observed or forecast location and motion	
	1 01 000	Delayed replication of 1 descriptor	
	0 31 000	Short delayed descriptor replication factor	
	3 16 032	SIGMET, Forecast position	
	1 01 000	Delayed replication of 1 descriptor	
	0 31 001	Delayed descriptor replication factor	
	3 16 033	SIGMET, Outlook	
	0 08 011	Meteorological feature	Set to missing (cancel)
	0 08 079	Product status	Set to missing (cancel)
		(Thunderstorm SIGMET)	
3 16 035	0 08 079	Product status	= 0 Normal issue, = 1 Correction
	3 16 030	SIGMET header	
	0 08 011	Meteorological feature	= 21 Thunderstorm
	0 20 023	Other weather phenomena	Bit 2 = Squalls or all 18 bits = Missing
	0 20 021	Type of precipitation	Bit 14 = Hail or all 30 bits = Missing
	0 20 008	Cloud distribution for aviation	= 15 OBSC, = 16 EMBD, = 12 FRQ, = 31 Missing
	3 16 031	SIGMET, Observed or forecast location and motion	
	0 08 011	Meteorological feature	Set to missing (cancel)
	0 08 079	Product status	Set to missing (cancel)

(continued)

(Category 16 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(Tropical cyclone SIGMET)	
3 16 036	0 08 079	Product status	= 0 Normal issue, = 1 Correction
	3 16 030	SIGMET header	
	0 08 011	Meteorological feature	= 22 Tropical cyclone
	0 01 027	WMO long storm name	
	3 16 031	SIGMET, Observed or forecast location and motion	
	1 01 000	Delayed replication of 1 descriptor	
	0 31 000	Short delayed descriptor replication factor	
	3 16 032	SIGMET, Forecast position	
	1 01 000	Delayed replication of 1 descriptor	
	0 31 001	Delayed descriptor replication factor	
	3 16 033	SIGMET, Outlook	
	0 08 011	Meteorological feature	Set to missing (cancel)
	0 08 079	Product status	Set to missing (cancel)
		(Turbulence SIGMET)	
3 16 037	0 08 079	Product status	= 0 Normal issue, = 1 Correction
	3 16 030	SIGMET header	
	0 08 011	Meteorological feature	= 13 Turbulence
	0 11 031	Degree of turbulence	= 10 Moderate, = 11 Severe
	3 16 031	SIGMET, Observed or forecast location and motion	
	0 08 011	Meteorological feature	Set to missing (cancel)
	0 08 079	Product status	Set to missing (cancel)
		(Icing SIGMET)	
3 16 038	0 08 079	Product status	= 0 Normal issue, = 1 Correction
	3 16 030	SIGMET header	
	0 08 011	Meteorological feature	= 15 Airframe icing
	0 20 041	Airframe icing	= 7 Severe
	0 20 021	Type of precipitation	Bit 3 = Liquid freezing or all 30 bits = Missing
	3 16 031	SIGMET, Observed or forecast location and motion	
	0 08 011	Meteorological feature	Set to missing (cancel)
	0 08 079	Product status	Set to missing (cancel)
		(Mountain wave, duststorm or sandstorm SIGMET)	
3 16 039	0 08 079	Product status	= 0 Normal issue, = 1 Correction
	3 16 030	SIGMET header	
	0 08 011	Meteorological feature	= 23 Mountain wave, = 24 Duststorm, = 25 Sandstorm
	0 20 024	Intensity of phenomena	= 3 Heavy, = 5 Severe
	3 16 031	SIGMET, Observed or forecast location and motion	
	0 08 011	Meteorological feature	Set to missing (cancel)
	0 08 079	Product status	Set to missing (cancel)

(continued)

(Category 16 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(Cancellation of SIGMET)	
3 16 040	3 16 030	SIGMET header	
	0 08 079	Product status	= 4 Cancellation
	3 01 014	Time period	Of the SIGMET to be cancelled
	0 01 037	SIGMET sequence identifier	Of the SIGMET to be cancelled
	0 10 064	SIGMET cruising level	Of the SIGMET to be cancelled
	0 08 079	Product status	Set to missing (cancel)
		(RADOB template – Part A: Information on tropical cyclone)	
3 16 050	3 01 001	WMO block and station numbers	
	3 01 011	Year, month, day	
	3 01 012	Hour, minute	
	0 02 160	Wave length of the radar	
	0 08 005	Meteorological attribute significance	= 1
	0 05 002	Latitude (coarse accuracy)	
	0 06 002	Longitude (coarse accuracy)	
	0 08 005	Meteorological attribute significance	Cancel
	0 19 100	Time interval to calculate the movement of the tropical cyclone	
	0 19 005	Direction of motion of feature	
	0 19 006	Speed of motion of feature	
	0 19 101	Accuracy of the position of the centre of the tropical cyclone	
	0 19 102	Shape and definition of the eye of the tropical cyclone	
	0 19 103	Diameter of major axis of the eye of the tropical cyclone	
	0 19 104	Change in character of the eye during the 30 minutes	
	0 19 105	Distance between the end of spiral band and the centre	
		(SAREP template – Part A: Information on tropical cyclone)	
3 16 052	3 01 005	Originating centre/sub-centre	
	3 01 011	Year, month, day	
	3 01 012	Hour, minute	
	0 01 007	Satellite identifier	
	0 25 150	Method of tropical cyclone intensity analysis using satellite data	
	1 22 000	Delayed replication of 22 descriptors	
	0 31 001	Delayed descriptor replication factor	
	0 01 027	WMO long storm name	
	0 19 150	Typhoon International Common Number (Typhoon Committee)	
	0 19 106	Identification number of tropical cyclone	
	0 08 005	Meteorological attribute significance	= 1
	0 05 002	Latitude (coarse accuracy)	

(continued)

(Category 16 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 16 052 *(continued)*	0 06 002	Longitude (coarse accuracy)	
	0 08 005	Meteorological attribute significance	Cancel
	0 19 107	Time interval over which the movement of the tropical cyclone has been calculated	
	0 19 005	Direction of motion of feature	
	0 19 006	Speed of motion of feature	
	0 19 108	Accuracy of geographical position of the tropical cyclone	
	0 19 109	Mean diameter of the overcast cloud of the tropical cyclone	
	0 19 110	Apparent 24-hour change in intensity of the tropical cyclone	
	0 19 111	Current Intensity (CI) number of the tropical cyclone	
	0 19 112	Data Tropical (DT) number of the tropical cyclone	
	0 19 113	Cloud pattern type of the DT-number	
	0 19 114	Model Expected Tropical (MET) number of the tropical cyclone	
	0 19 115	Trend of the past 24-hour change (+: Developed, –: Weakened)	
	0 19 116	Pattern Tropical (PT) number of the tropical cyclone	
	0 19 117	Cloud picture type of the PT-number	
	0 19 118	Final Tropical (T) number of the tropical cyclone	
	0 19 119	Type of the final T-number	
		(Definition of squall line (by 3 points: Centre, North, South) and forecasted trajectory and evolution)	
3 16 060	3 01 011	Year, month, day	
	3 01 012	Hour, minute	
		Position of squall line centre	
	0 05 002	Latitude (coarse accuracy)	
	0 06 002	Longitude (coarse accuracy)	
	0 19 005	Direction of motion of feature	
	0 19 006	Speed of motion of feature	
		Amplitude of feature from most external points to centre point – North point	
	0 05 002	Latitude (coarse accuracy)	
	0 06 002	Longitude (coarse accuracy)	
		Amplitude of feature from most external points to centre point – South point	
	0 05 002	Latitude (coarse accuracy)	
	0 06 002	Longitude (coarse accuracy)	
		Amplitude of feature from most external points to centre point – Evolution	
	0 04 074	Short time period or displacement	Period of validity
	0 20 048	Evolution of feature	
	0 11 041	Maximum wind gust speed	Maximum burst expected
	0 13 055	Intensity of precipitation	Intensity of rain expected

(continued)

(Category 16 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(Definition of squall line (by centre and several points: North points and South points) and forecasted trajectory and evolution)	
3 16 061	3 01 011	Year, month, day	
	3 01 012	Hour, minute	
		Position of squall line centre	
	0 05 002	Latitude (coarse accuracy)	
	0 06 002	Longitude (coarse accuracy)	
	0 19 005	Direction of motion of feature	
	0 19 006	Speed of motion of feature	
		Amplitude of feature from most external points to centre point – North points	
	1 02 000	Delayed replication of 2 descriptors	
	0 31 001	Delayed descriptor replication factor	
	0 05 002	Latitude (coarse accuracy)	
	0 06 002	Longitude (coarse accuracy)	
		Amplitude of feature from most external points to centre point – South points	
	1 02 000	Delayed replication of 2 descriptors	
	0 31 001	Delayed descriptor replication factor	
	0 05 002	Latitude (coarse accuracy)	
	0 06 002	Longitude (coarse accuracy)	
		Amplitude of feature from most external points to centre point – Evolution	
	0 04 074	Short time period or displacement	Period of validity
	0 20 048	Evolution of feature	
	0 11 041	Maximum wind gust speed	Maximum burst expected
	0 13 055	Intensity of precipitation	Intensity of rain expected
		(Graphical AIRMET Sierra)	
3 16 071	3 01 014	Time period	For which AIRMET is valid
	1 01 000	Delayed replication of 1 descriptor	
	0 31 002	Extended delayed descriptor replication factor	
	3 16 075	GFA IFR ceiling and visibility	
	1 01 000	Delayed replication of 1 descriptor	
	0 31 002	Extended delayed descriptor replication factor	
	3 16 076	GFA mountain obscuration	
		(Graphical AIRMET Tango)	
3 16 072	3 01 014	Time period	For which AIRMET is valid
	1 01 000	Delayed replication of 1 descriptor	
	0 31 002	Extended delayed descriptor replication factor	
	3 16 077	GFA turbulence	
	1 01 000	Delayed replication of 1 descriptor	
	0 31 002	Extended delayed descriptor replication factor	
	3 16 078	GFA strong surface wind	

(continued)

(Category 16 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 16 072 *(continued)*	1 01 000	Delayed replication of 1 descriptor	
	0 31 002	Extended delayed descriptor replication factor	
	3 16 079	GFA low-level wind shear	
		(Graphical AIRMET Zulu)	
3 16 073	3 01 014	Time period	For which AIRMET is valid
	1 01 000	Delayed replication of 1 descriptor	
	0 31 002	Extended delayed descriptor replication factor	
	3 16 080	GFA icing	
	1 01 000	Delayed replication of 1 descriptor	
	0 31 002	Extended delayed descriptor replication factor	
	3 16 081	GFA freezing level	
		(GFA identifier and observed/forecast location)	
3 16 074	0 01 039	Graphical Area Forecast (GFA) sequence identifier	
	0 08 021	Time significance	= 4 Forecast, = 16 Analysis
	3 01 014	Time period	For which hazard is being observed/ forecast
	3 01 027	Description of a feature in 3-D or 2-D	
	0 08 021	Time significance	Set to missing (cancel)
		(GFA IFR ceiling and visibility)	
3 16 075	0 08 079	Product status	= 0 Normal, = 1 COR, = 2 AMD, = 3 COR AMD, = 4 CNL
	0 08 041	Data significance	= 8 IFR ceiling and visibility
	3 16 074	GFA identifier and observed/forecast location	
	0 20 006	Flight rules	= 1 IFR
	0 33 042	Type of limit represented by following value	= 2 Exclusive upper limit, = 7 Missing
	0 20 013	Height of base of cloud	
	0 33 042	Type of limit represented by following value	= 2 Exclusive upper limit, = 7 Missing
	0 20 001	Horizontal visibility	
	0 20 025	Obscuration	
	0 20 026	Character of obscuration	= 6 Blowing, = 15 Missing
	0 08 041	Data significance	Set to missing (cancel)
	0 08 079	Product status	Set to missing (cancel)
		(GFA mountain obscuration)	
3 16 076	0 08 079	Product status	= 0 Normal, = 1 COR, = 2 AMD, = 3 COR AMD, = 4 CNL
	0 08 041	Data significance	= 9 Mountain obscuration

(continued)

(Category 16 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 16 076 *(continued)*	3 16 074	GFA identifier and observed/forecast location	
	0 20 006	Flight rules	= 1 IFR
	0 20 025	Obscuration	
	0 20 026	Character of obscuration	= 6 Blowing, = 15 Missing
	0 08 041	Data significance	Set to missing (cancel)
	0 08 079	Product status	Set to missing (cancel)
		(GFA turbulence)	
3 16 077	0 08 079	Product status	= 0 Normal, = 1 COR, = 2 AMD, = 3 COR AMD, = 4 CNL
	0 08 011	Meteorological feature	= 13 Turbulence
	3 16 074	GFA identifier and observed/forecast location	
	0 11 031	Degree of turbulence	= 6 Moderate
	0 08 011	Meteorological feature	Set to missing (cancel)
	0 08 079	Product status	Set to missing (cancel)
		(GFA strong surface wind)	
3 16 078	0 08 079	Product status	= 0 Normal, = 1 COR, = 2 AMD, = 3 COR AMD, = 4 CNL
	0 08 041	Data significance	= 10 Strong surface wind
	3 16 074	GFA identifier and observed/forecast location	
	0 33 042	Type of limit represented by following value	= 0 Exclusive lower limit
	0 11 012	Wind speed at 10 m	
	0 08 041	Data significance	Set to missing (cancel)
	0 08 079	Product status	Set to missing (cancel)
		(GFA low-level wind shear)	
3 16 079	0 08 079	Product status	= 0 Normal, = 1 COR, = 2 AMD, = 3 COR AMD, = 4 CNL
	0 08 011	Meteorological feature	= 16 Phenomenon
	3 16 074	GFA identifier and observed/forecast location	
	0 20 023	Other weather phenomena	Bit 12 = Wind shear
	0 20 024	Intensity of phenomena	
	0 08 011	Meteorological feature	Set to missing (cancel)
	0 08 079	Product status	Set to missing (cancel)
		(GFA icing)	
3 16 080	0 08 079	Product status	= 0 Normal, = 1 COR, = 2 AMD, = 3 COR AMD, = 4 CNL
	0 08 011	Meteorological feature	= 15 Airframe icing
	3 16 074	GFA identifier and observed/forecast location	
	0 20 041	Airframe icing	= 4 Moderate icing
	0 08 011	Meteorological feature	Set to missing (cancel)
	0 08 079	Product status	Set to missing (cancel)

(continued)

(Category 16 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 16 081		(GFA freezing level)	
	0 08 079	Product status	= 0 Normal, = 1 COR, = 2 AMD, = 3 COR AMD, = 4 CNL
	0 08 041	Data significance	= 11 Freezing level, = 12 Multiple freezing level
	3 16 074	GFA identifier and observed/forecast location	
	0 08 041	Data significance	Set to missing (cancel)
	0 08 079	Product status	Set to missing (cancel)

Notes:

(1) For MOD OCNL SEV code as 12 (extreme in clear air) or 13 (extreme in cloud).

(2) Code table values:

FRQ = code figure 8 (8 oktas)

OCNL EMBD = code figure 6 (6 oktas)

ISOL = code figure 2 (2 oktas) when the cloud = Cb.

(3) Front direction (towards which the front is moving) must always be given as it is needed for plotting purposes. A front direction with a front speed of zero would indicate a slow front. A value in the code table exists to represent a quasi-stationary front.

(4) The statistic is to determine whether the following tropopause levels are minimum, maximum or spot values (missing code value).

(5) Decibel (dB) is a logarithmic measure of the relative power, or of the relative values of two flux densities, especially of sound intensities and radio and radar power densities. In radar meteorology, the logarithmic scale (dBZ) is used for measuring radar reflectivity factor (obtained from the American Meteorological Society *Glossary of Meteorology*).

Category 18 – Radiological report sequences

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 18 001	3 01 025	Latitude/longitude (coarse accuracy), day/time	
	0 24 011	Dose	
3 18 003	3 01 026	Latitude/longitude (high accuracy), time period (day, hour, minute)	
	0 24 005	Isotope mass	
	0 24 004	Element name	
	0 24 021	Air concentration (of named isotope type including gross beta)	
3 18 004	3 01 025	Latitude/longitude (coarse accuracy), day/time	
	0 04 023	Time period or displacement	
	0 13 011	Total precipitation/total water equivalent	
	0 24 005	Isotope mass	
	0 24 004	Element name	
	0 24 022	Concentration in precipitation (of named isotope type)	

Category 21 – Radar report sequences

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(Wind profiler – antenna characteristics)	
3 21 001	0 02 101	Type of antenna	
	0 02 114	Antenna effective surface area	
	0 02 105	Maximum antenna gain	
	0 02 106	3-dB beamwidth	
	0 02 107	Sidelobe suppression	
	0 02 121	Mean frequency	
		(Wind profiler – moment data)	
3 21 003	0 21 051	Signal power above 1 mW	
	0 21 014	Doppler mean velocity (radial)	
	0 21 017	Doppler velocity spectral width	
	0 21 030	Signal to noise ratio	
		(Wind profiler – moment data sounding)	
3 21 004	3 01 031	Identification and type of station, date/time, location (high accuracy), height of station	
	0 02 003	Type of measuring equipment used	
	1 01 000	Delayed replication of 1 descriptor	
	0 31 001	Delayed descriptor replication factor	
	3 21 003	Wind profiler – moment data	
		(Transmitter-receiver characteristics)	
3 21 005	0 25 004	Echo processing	
	0 02 121	Mean frequency	
	0 02 122	Frequency agility range	
	0 02 123	Peak power	
	0 02 124	Average power	
	0 02 125	Pulse repetition frequency	
	0 02 126	Pulse width	
	0 02 127	Receiver intermediate frequency	
	0 02 128	Intermediate frequency bandwidth	
	0 02 129	Minimum detectable signal	
	0 02 130	Dynamic range	
	0 02 131	Sensitivity time control (STC)	
		(Integration characteristics)	
3 21 006	0 25 001	Range-gate length	
	0 25 002	Number of gates averaged	
	0 25 003	Number of integrated pulses	
	0 25 005	Echo integration	
		(Corrections)	
3 21 007	0 25 009	Calibration method	
	0 25 010	Clutter treatment	
	0 25 011	Ground occultation correction (screening)	
	0 25 012	Range attenuation correction	
	0 25 013	Bright-band correction	
	0 25 015	Radome attenuation correction	
	0 25 016	Clear-air attenuation correction	
	0 25 017	Precipitation attenuation correction	

(continued)

(Category 21 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(Z to R conversion)	
3 21 008	0 25 006	Z to R conversion	
	0 25 007	Z to R conversion factor	
	0 25 008	Z to R conversion exponent	
		(A to Z law)	
3 21 009	0 25 018	A to Z law for attenuation factor	
	0 25 019	A to Z law for attenuation exponent	
		(Antenna characteristics)	
3 21 010	0 02 101	Type of antenna	
	0 07 002	Height or altitude	Altitude of the tower base
	0 02 102	Antenna height above tower base	
	0 02 103	Radome	
	0 02 104	Antenna polarization	
	0 02 105	Maximum antenna gain	
	0 02 106	3-dB beamwidth	
	0 02 107	Sidelobe suppression	
	0 02 108	Crosspol discrimination (on axis)	
	0 02 109	Antenna speed (azimuth)	
	0 02 110	Antenna speed (elevation)	
	0 02 132	Azimuth pointing accuracy	
	0 02 133	Elevation pointing accuracy	
		(General characteristics)	
3 21 011	0 30 031	Picture type	
	0 30 032	Combination with other data	
	0 29 002	Coordinate grid type	
		(Antenna elevations)	
3 21 012	1 01 000	Delayed replication of 1 descriptor	
	0 31 001	Delayed descriptor replication factor	
	0 02 135	Antenna elevation	
		(Basic information (system/site header) on wind profiler/RASS)	
3 21 021	0 02 003	Type of measuring equipment used	
	0 02 101	Type of antenna	
	2 01 130	Change data width	8 bits long
	0 02 106	3-dB beamwidth	
	2 01 000	Change data width	Cancel
	2 01 132	Change data width	11 bits long
	2 02 130	Change scale	Scale: –6
	0 02 121	Mean frequency	
	2 02 000	Change scale	Cancel
	2 01 000	Change data width	Cancel
	2 01 133	Change data width	11 bits long
	2 02 129	Change scale	Scale: 0
	0 25 001	Range-gate length	
	2 02 000	Change scale	Cancel
	2 01 000	Change data width	Cancel

(continued)

(Category 21 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(Wind profiler: processed-data winds)	
3 21 022	0 07 007	Height	
	2 04 001	Add associated field	1 bit long
	0 31 021	Associated field significance	
	0 11 001	Wind direction	
	2 04 000	Add associated field	Cancel
	0 11 002	Wind speed	
	2 04 001	Add associated field	1 bit long
	0 31 021	Associated field significance	
	0 11 006	w-component	
	2 04 000	Add associated field	Cancel
	0 21 030	Signal to noise ratio	
		(Wind profiler: raw-data winds)	
3 21 023	0 07 007	Height	
	0 21 091	Radar signal Doppler spectrum 0th moment	
	0 21 030	Signal to noise ratio	
	2 02 129	Change scale	Scale: 2
	0 21 014	Doppler mean velocity (radial)	
	2 01 129	Change data width	9 bits long
	0 21 017	Doppler velocity spectral width	
	2 02 000	Change scale	Cancel
	2 01 000	Change data width	Cancel
		(RASS-mode: processed-data RASS)	
3 21 024	0 07 007	Height	
	2 04 001	Add associated field	1 bit long
	0 31 021	Associated field significance	
	0 12 007	Virtual temperature	
	0 11 006	w-component	
	2 04 000	Add associated field	Cancel
	0 21 030	Signal to noise ratio	
		(RASS-mode: raw-data RASS)	
3 21 025	0 07 007	Height	
	0 21 091	Radar signal Doppler spectrum 0th moment	
	0 21 030	Signal to noise ratio	
	2 02 129	Change scale	Scale: 2
	0 21 014	Doppler mean velocity (radial)	
	2 01 129	Change data width	9 bits long
	0 21 017	Doppler velocity spectral width	
	2 02 000	Change scale	Cancel
	2 01 000	Change data width	Cancel
	0 21 092	RASS signal Doppler spectrum 0th moment, referring to RASS signal	
	0 21 030	Signal to noise ratio	Referring to RASS signal
	0 25 092	Acoustic propagation velocity	
	2 01 129	Change data width	9 bits long
	2 02 129	Change scale	Scale: 2
	0 21 017	Doppler velocity spectral width	Referring to RASS signal
	2 02 000	Change scale	Cancel
	2 01 000	Change data width	Cancel

(continued)

(Category 21 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(RASS data – fluxes)	
3 21 026	0 07 007	Height	
	2 04 001	Add associated field	1 bit long
	0 31 021	Associated field significance	
	0 12 007	Virtual temperature	
	0 25 091	Structure constant of the refraction index (C_n^2)	
	0 11 071	Turbulent vertical momentum flux	
	0 11 072	Turbulent vertical buoyancy flux	
	0 11 073	Turbulent kinetic energy	
	0 11 074	Dissipation energy	
	2 04 000	Add associated field	Cancel
		(Radar specification, normalized radar cross-section, Kp variance coefficient)	
3 21 027	0 21 118	Attenuation correction on sigma-0	
	2 02 129	Change scale	
	2 01 132	Change data width	
	0 02 112	Radar look angle	
	2 01 000	Change data width	Cancel
	2 01 131	Change data width	
	0 02 111	Radar incidence angle	
	2 01 000	Change data width	Cancel
	2 02 000	Change scale	Cancel
	0 02 104	Antenna polarization	
	0 21 105	Normalized radar cross-section	
	0 21 106	Kp variance coefficient (alpha)	
	0 21 107	Kp variance coefficient (beta)	
	0 21 114	Kp variance coefficient (gamma)	
	0 21 115	SEAWINDS sigma-0 quality	
	0 21 116	SEAWINDS sigma-0 mode	
	0 08 018	SEAWINDS land/ice surface type	
	0 21 117	Sigma-0 variance quality control	
		(Radar specification, SEAWINDS normalized radar cross-section, Kp variance coefficient)	
3 21 028	0 21 118	Attenuation correction on sigma-0	
	2 02 129	Change scale	
	2 01 132	Change data width	
	0 02 112	Radar look angle	
	2 01 000	Change data width	Cancel
	2 01 131	Change data width	
	0 02 111	Radar incidence angle	
	2 01 000	Change data width	Cancel
	2 02 000	Change scale	Cancel
	0 02 104	Antenna polarization	
	0 21 123	SEAWINDS normalized radar cross-section	
	0 21 106	Kp variance coefficient (alpha)	
	0 21 107	Kp variance coefficient (beta)	
	0 21 114	Kp variance coefficient (gamma)	
	0 21 115	SEAWINDS sigma-0 quality	
	0 21 116	SEAWINDS sigma-0 mode	
	0 08 018	SEAWINDS land/ice surface type	
	0 21 117	Sigma-0 variance quality control	

(continued)

(Category 21 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(ASCAT sigma-0 information)	
3 21 030	0 08 085	Beam identifier	
	2 02 129	Change scale	Increase scale by 10^1
	2 01 131	Change data width	Increase width by 3 bits
	0 02 111	Radar incidence angle	
	2 01 000	Change data width	Cancel
	2 02 000	Change scale	Cancel
	0 02 134	Antenna beam azimuth	
	0 21 062	Backscatter	
	0 21 063	Radiometric resolution (noise value)	
	0 21 158	ASCAT Kp estimate quality	
	0 21 159	ASCAT sigma-0 usability	
	0 21 160	ASCAT use of synthetic data	
	0 21 161	ASCAT synthetic data quantity	
	0 21 162	ASCAT satellite orbit and attitude quality	
	0 21 163	ASCAT solar array reflection contamination	
	0 21 164	ASCAT telemetry presence and quality	
	0 21 165	ASCAT extrapolated reference function presence	
	0 21 166	Land fraction	

Category 22 – Chemical and aerosol sequences

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(METOP GOME-2)	
3 22 028	0 01 007	Satellite identifier	
	0 02 019	Satellite instruments	
	0 04 001	Year	
	0 04 002	Month	
	0 04 003	Day	
	0 04 004	Hour	
	0 04 005	Minute	
	0 04 006	Second	
	0 05 001	Latitude (high accuracy)	
	0 06 001	Longitude (high accuracy)	
	0 27 001	Latitude (high accuracy)	
	0 28 001	Longitude (high accuracy)	
	0 27 001	Latitude (high accuracy)	
	0 28 001	Longitude (high accuracy)	
	0 27 001	Latitude (high accuracy)	
	0 28 001	Longitude (high accuracy)	
	0 27 001	Latitude (high accuracy)	
	0 28 001	Longitude (high accuracy)	
	0 10 001	Height of land surface	
	0 14 019	Surface albedo	
	0 07 025	Solar zenith angle	
	0 10 080	Viewing zenith angle	
	0 05 023	Sun to satellite azimuth difference	
	0 20 010	Cloud cover (total)	
	0 08 003	Vertical significance (satellite observations)	
	0 07 004	Pressure	
	0 14 026	Albedo at the top of clouds	
	0 20 014	Height of top of cloud	
	0 13 093	Cloud optical thickness	
	1 05 000	Delayed replication of 5 descriptors	
	0 31 001	Delayed descriptor replication factor	
	0 07 004	Pressure	
	0 07 004	Pressure	
	0 08 043	Atmospheric chemical or physical constituent type	
	0 08 044	CAS registry number	
	0 15 021	Integrated mass density	

Category 40 – Additional satellite report sequences

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(IASI Level 1c data)	
3 40 001	0 01 007	Satellite identifier	
	0 01 031	Identification of originating/generating centre	
	0 02 019	Satellite instruments	
	0 02 020	Satellite classification	
	0 04 001	Year	
	0 04 002	Month	
	0 04 003	Day	
	0 04 004	Hour	
	0 04 005	Minute	
	2 02 131	Change scale	Add 3 to scale
	2 01 138	Change data width	Add 10 to width
	0 04 006	Second	
	2 01 000	Change data width	Cancel
	2 02 000	Change scale	Cancel
	0 05 001	Latitude (high accuracy)	
	0 06 001	Longitude (high accuracy)	
	0 07 024	Satellite zenith angle	
	0 05 021	Bearing or azimuth	
	0 07 025	Solar zenith angle	
	0 05 022	Solar azimuth	
	0 05 043	Field of view number	
	0 05 040	Orbit number	
	2 01 133	Change data width	Add 5 to width
	0 05 041	Scan line number	
	2 01 000	Change data width	Cancel
	2 01 132	Change data width	Add 4 to width
	0 25 070	Major frame count	
	2 01 000	Change data width	Cancel
	2 02 126	Change scale	Subtract 2 from scale
	0 07 001	Height of station	
	2 02 000	Change scale	Cancel
	0 33 060	GqisFlagQual – individual IASI-System quality flag	
	0 33 061	GqisQualIndex – indicator for instrument noise performance (contributions from spectral and radiometric calibration)	
	0 33 062	GqisQualIndexLoc – indicator for geometric quality index	
	0 33 063	GqisQualIndexRad – indicator for instrument noise performance (contributions from radiometric calibration)	
	0 33 064	GqisQualIndexSpect – indicator for instrument noise performance (contributions from spectral calibration)	
	0 33 065	GqisSysTecSondQual – output of system TEC (Technical Expertise Centre) quality function	
	1 01 010	Replicate 1 descriptor 10 times	
	3 40 002	IASI Level 1c band description	
	1 01 087	Replicate 1 descriptor 87 times	
	3 40 003	IASI Level 1c 100 channels	
	0 02 019	Satellite instruments	
	0 25 051	AVHRR channel combination	
	1 01 007	Replicate 1 descriptor 7 times	
	3 40 004	IASI Level 1c AVHRR single scene	

(continued)

(Category 40 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(IASI Level 1c band description)	
3 40 002	0 25 140	Start channel	
	0 25 141	End channel	
	0 25 142	Channel scale factor	
		(IASI Level 1c 100 channels)	
3 40 003	1 04 100	Replicate 4 descriptors 100 times	
	2 01 136	Change data width	Add 8 to width
	0 05 042	Channel number	
	2 01 000	Change data width	Cancel
	0 14 046	Scaled IASI radiance	
		(IASI Level 1c AVHRR single scene)	
3 40 004	0 05 060	Y angular position from centre of gravity	
	0 05 061	Z angular position from centre of gravity	
	0 25 085	Fraction of clear pixels in HIRS FOV	
	1 05 006	Replicate 5 descriptors 6 times	
	0 05 042	Channel number	
	0 25 142	Channel scale factor	
	0 14 047	Scaled mean AVHRR radiance	
	0 25 142	Channel scale factor	
	0 14 048	Scaled standard deviation AVHRR radiance	
		(JASON2 OGDR data)	
3 40 005	0 01 007	Satellite identifier	
	0 02 019	Satellite instruments	
	0 01 096	Station acquisition	
	0 25 061	Software identification and version number	
	0 05 044	Satellite cycle number	
	0 05 040	Orbit number	
	0 01 030	Numerical model identifier	
		Datation	
	0 04 001	Year	
	0 04 002	Month	
	0 04 003	Day	
	0 04 004	Hour	
	0 04 005	Minute	
	0 04 007	Seconds within a minute (microsecond accuracy)	
		Location and surface type	
	0 05 001	Latitude (high accuracy)	
	0 06 001	Longitude (high accuracy)	
	0 08 029	Surface type	
	0 08 074	Altimeter echo type	
	0 08 077	Radiometer sensed surface type	
		Flags	
	0 40 011	Interpolation flag	
	0 25 097	Three-dimensional error estimate of the navigator orbit	

(continued)

(Category 40 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 40 005 *(continued)*	0 25 095	Altimeter state flag	
	0 25 098	Altimeter data quality flag	
	0 25 099	Altimeter correction quality flag	
	0 21 144	Altimeter rain flag	
	0 25 096	Radiometer state flag	
	0 40 012	Radiometer data quality flag	
	0 40 013	Radiometer brightness temperature interpretation flag	
	0 21 169	Ice presence indicator	
		Altimeter: Ku band	
	0 22 151	Ku band ocean range	
	0 22 162	RMS of 20 Hz Ku band ocean range	
	0 22 163	Number of 20 Hz valid points for Ku band	
	0 25 160	Ku band net instrumental correction	
	0 25 133	Sea state bias correction on Ku band	
	0 22 156	Ku band significant wave height	
	0 22 164	RMS 20 Hz Ku band significant wave height	
	0 22 165	Number of 20 Hz valid points for Ku band significant wave height	
	0 22 166	Ku band net instrumental correction for significant wave height	
	0 21 137	Ku band corrected ocean backscatter coefficient	
	0 21 138	STD Ku band corrected ocean backscatter coefficient	
	0 22 167	Number of valid points for Ku band backscatter	
	0 21 139	Ku band net instrumental correction for AGC	
	0 21 118	Attenuation correction on sigma-0	
	0 21 145	Ku band automatic gain control	
	0 21 146	RMS Ku band automatic gain control	
	0 21 147	Number of valid points for Ku band automatic gain control	
		Altimeter: C band	
	0 22 168	C band ocean range	
	0 22 169	RMS of C band ocean range	
	0 22 170	Number of 20 Hz valid points for C band	
	0 25 161	C band net instrumental correction	
	0 25 162	Sea state bias correction on C band	
	0 22 171	C band significant wave height	
	0 22 172	RMS 20 Hz C band significant wave height	
	0 22 173	Number of 20 Hz valid points for C band significant wave height	
	0 22 174	C band net instrumental correction for significant wave height	
	0 21 170	C band corrected ocean backscatter coefficient	
	0 21 171	RMS C band corrected ocean backscatter coefficient	
	0 22 175	Number of valid points for C band backscatter	
	0 21 172	C band net instrumental correction for AGC	
	0 21 118	Attenuation correction on sigma-0	
	0 21 173	C band automatic gain control	
	0 21 174	RMS C band automatic gain control	
	0 21 175	Number of valid points for C band automatic gain control	

(continued)

(Category 40 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 40 005 *(continued)*		*Radiometer*	
	0 02 153	Satellite channel centre frequency	
	0 12 063	Brightness temperature	
	0 02 153	Satellite channel centre frequency	
	0 12 063	Brightness temperature	
	0 02 153	Satellite channel centre frequency	
	0 12 063	Brightness temperature	
	0 13 090	Radiometer water vapour content	
	0 13 091	Radiometer liquid content	
		Wind	
	0 07 002	Height or altitude	
	0 11 097	Wind speed from altimeter	
	0 11 098	Wind speed from radiometer	
	0 07 002	Height or altitude	
	0 11 095	u-component of the model wind vector	
	0 11 096	v-component of the model wind vector	
		Dynamic topography	
	0 10 096	Mean dynamic topography	
	0 10 081	Altitude of COG above reference ellipsoid	
	0 10 082	Instantaneous altitude rate	
	0 10 083	Squared off nadir angle of the satellite from platform data	
	0 10 101	Squared off nadir angle of the satellite from waveform data	
	0 25 132	Ionospheric correction from model on Ku band	
	0 25 163	Altimeter ionospheric correction on Ku band	
	0 25 126	Model dry tropospheric correction	
	0 25 128	Model wet tropospheric correction	
	0 25 164	Radiometer wet tropospheric correction	
	0 10 085	Mean sea-surface height	
	0 10 097	Mean sea-surface height from altimeter only	
	0 10 086	Geoid's height	
	0 10 087	Ocean depth/land elevation	
	0 10 092	Solid Earth tide height	
	0 10 088	Total geocentric ocean tide height (solution 1)	
	0 10 089	Total geocentric ocean tide height (solution 2)	
	0 10 098	Loading tide height geocentric ocean tide solution 1	
	0 10 099	Loading tide height geocentric ocean tide solution 2	
	0 10 090	Long period tide height	
	0 10 100	Non-equilibrium long period tide height	
	0 10 093	Geocentric pole tide height	
	0 25 127	Inverted barometer correction	Sea-surface height correction due to pressure loading
	0 40 014	High-frequency fluctuations of the sea-surface topography correction	

(continued)

(Category 40 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
		(IASI Level 1c data (all channels))	
3 40 007	0 01 007	Satellite identifier	
	0 01 031	Identification of originating/generating centre	
	0 02 019	Satellite instruments	
	0 02 020	Satellite classification	
	0 04 001	Year	
	0 04 002	Month	
	0 04 003	Day	
	0 04 004	Hour	
	0 04 005	Minute	
	2 02 131	Change scale	Add 3 to scale
	2 01 138	Change data width	Add 10 to width
	0 04 006	Second	
	2 01 000	Change data width	Cancel
	2 02 000	Change scale	Cancel
	0 05 001	Latitude (high accuracy)	
	0 06 001	Longitude (high accuracy)	
	0 07 024	Satellite zenith angle	
	0 05 021	Bearing or azimuth	
	0 07 025	Solar zenith angle	
	0 05 022	Solar azimuth	
	0 05 043	Field of view number	
	0 05 040	Orbit number	
	2 01 133	Change data width	Add 5 to width
	0 05 041	Scan line number	
	2 01 000	Change data width	Cancel
	2 01 132	Change data width	Add 4 to width
	0 25 070	Major frame count	
	2 01 000	Change data width	Cancel
	2 02 126	Change scale	Subtract 2 from scale
	0 07 001	Height of station	
	2 02 000	Change scale	Cancel
	1 03 003	Replicate 3 descriptors 3 times	
	0 25 140	Start channel	
	0 25 141	End channel	
	0 33 060	GqisFlagQual – individual IASI-System quality flag	
	0 33 061	GqisQualIndex – indicator for instrument noise performance (contributions from spectral and radiometric calibration)	
	0 33 062	GqisQualIndexLoc – indicator for geometric quality index	
	0 33 063	GqisQualIndexRad – indicator for instrument noise performance (contributions from radiometric calibration)	
	0 33 064	GqisQualIndexSpect – indicator for instrument noise performance (contributions from spectral calibration)	
	0 33 065	GqisSysTecSondQual – output of system TEC (Technical Expertise Centre) quality function	
	0 40 020	GqisFlagQualDetailed – quality flag for the system	
	1 01 010	Replicate 1 descriptor 10 times	

(continued)

(Category 40 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 40 007 *(continued)*	3 40 002	IASI Level 1c band description	
	1 01 087	Replicate 1 descriptor 87 times	
	3 40 003	IASI Level 1c 100 channels	
	0 02 019	Satellite instruments	
	0 25 051	AVHRR channel combination	
	1 01 007	Replicate 1 descriptor 7 times	
	3 40 004	IASI Level 1c AVHRR single scene	
	0 20 081	Cloud amount in segment	
	0 08 029	Surface type	
	0 20 083	Amount of segment covered by scene	
	0 08 029	Surface type	
	0 40 018	GlacAvgImagIIS – average of imager measurements	
	0 40 019	GlacVarImagIIS – variance of imager measurements	
	0 40 021	Fraction of weighted AVHRR pixel in IASI FOV covered with snow/ice	
	0 40 022	Number of missing, bad or failed AVHRR pixels	
		(IASI sequence combining PC scores, channel selection and enhanced data)	
		Satellite processing information	
3 40 008	0 01 007	Satellite identifier	
	0 01 031	Identification of originating/generating centre	
	0 02 019	Satellite instruments	
	0 02 020	Satellite classification	
		Date and time	
	0 04 001	Year	
	0 04 002	Month	
	0 04 003	Day	
	0 04 004	Hour	
	0 04 005	Minute	
	2 02 131	Change scale	Add 3 to scale
	2 01 138	Change data width	Add 10 to width
	0 04 006	Second	
	2 01 000	Change data width	Cancel
	2 02 000	Change scale	Cancel
		Location information	
	0 05 001	Latitude (high accuracy)	
	0 06 001	Longitude (high accuracy)	
	0 07 024	Satellite zenith angle	
	0 05 021	Bearing or azimuth	
	0 07 025	Solar zenith angle	
	0 05 022	Solar azimuth	
	0 05 043	Field of view number	
	0 05 040	Orbit number	
	2 01 133	Change data width	Add 5 to width
	0 05 041	Scan line number	
	2 01 000	Change data width	Cancel
	2 01 132	Change data width	Add 4 to width
	0 25 070	Major frame count	

(continued)

(Category 40 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 40 008 *(continued)*	2 01 000	Change data width	Cancel
	2 02 126	Change scale	Subtract 2 from scale
	0 07 001	Height of station	
	2 02 000	Change scale	Cancel
		Quality information	
	1 03 003	Replicate 3 descriptors 3 times	
	0 25 140	Start channel	
	0 25 141	End channel	
	0 33 060	GqisFlagQual – individual IASI-System quality flag	
	0 33 061	GqisQualIndex – indicator for instrument noise performance (contributions from spectral and radiometric calibration)	
	0 33 062	GqisQualIndexLoc – indicator for geometric quality index	
	0 33 063	GqisQualIndexRad – indicator for instrument noise performance (contributions from radiometric calibration)	
	0 33 064	GqisQualIndexSpect – indicator for instrument noise performance (contributions from spectral calibration)	
	0 33 065	GqisSysTecSondQual – output of system TEC (Technical Expertise Centre) quality function	
	0 40 020	GqisFlagQualDetailed – quality flag for the system	
		IASI subset of channels	
	1 01 010	Replicate 1 descriptor 10 times	
	3 40 002	IASI Level 1c band description	
	1 04 000	Delayed replication of 4 descriptors	
	0 31 002	Extended delayed descriptor replication factor	
	2 01 136	Change data width	Add 8 to width
	0 05 042	Channel number	
	2 01 000	Change data width	Cancel
	0 14 046	Scaled IASI radiance	
		Instrument band definition	
	1 08 003	Replicate 8 descriptors 3 times	
	0 25 140	Start channel	
	0 25 141	End channel	
	0 40 026	Score quantization factor	
	0 40 016	Residual RMS in band	
	0 25 062	Database identification	
		Principal component scores for band	
	1 01 000	Delayed replication of 1 descriptor	
	0 31 002	Extended delayed descriptor replication factor	
	0 40 017	Non-normalized principal component score	
		AVHRR scene analysis	
	0 02 019	Satellite instruments	
	0 25 051	AVHRR channel combination	
	1 01 007	Replicate 1 descriptor 7 times	
	3 40 004	IASI Level 1c AVHRR single scene	
	0 20 081	Cloud amount in segment	
	0 08 029	Surface type	

(continued)

(Category 40 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 40 008 *(continued)*	0 20 083	Amount of segment covered by scene	
	0 08 029	Surface type	
	0 40 018	GlacAvgImagIIS – average of imager measurements	
	0 40 019	GlacVarImagIIS – variance of imager measurements	
	0 40 021	Fraction of weighted AVHRR pixel in IASI FOV covered with snow/ice	
	0 40 022	Number of missing, bad or failed AVHRR pixels	
		(Normalized differential vegetation index (NDVI))	
3 40 009	0 01 007	Satellite identifier	
	0 01 031	Identification of originating/generating centre	
	0 02 019	Satellite instruments	
	0 02 020	Satellite classification	
	3 01 011	Year, month, day	
	3 01 013	Hour, minute, second	
	0 05 040	Orbit number	
	2 01 136	Change data width	Add 8 to width
	0 05 041	Scan line number	
	2 01 000	Change data width	Cancel
	0 25 071	Frame count	
	0 05 001	Latitude (high accuracy)	
	0 05 001	Latitude (high accuracy)	
	0 06 001	Longitude (high accuracy)	
	0 06 001	Longitude (high accuracy)	
	1 07 064	Replicate 7 descriptors 64 times	
	1 06 032	Replicate 6 descriptors 32 times	
	0 08 012	Land/sea qualifier	
	0 08 013	Day/night qualifier	
	0 08 065	Sun-glint indicator	
	0 08 072	Pixel(s) type	
	0 13 039	Terrain type (ice/snow)	
	0 40 015	Normalized differential vegetation index (NDVI)	
		(JASON-2 OGDR data)	
		Satellite	
3 40 010	0 01 007	Satellite identifier	
	0 02 019	Satellite instruments	
	0 01 096	Station acquisition	
	0 25 061	Software identification and version number	
	0 05 044	Satellite cycle number	
	0 05 040	Orbit number	
	0 01 030	Numerical model identifier	
		Datation	
	0 04 001	Year	
	0 04 002	Month	
	0 04 003	Day	
	0 04 004	Hour	
	0 04 005	Minute	
	0 04 007	Seconds within a minute (microsecond accuracy)	

(continued)

(Category 40 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 40 010 *(continued)*		*Location and surface type*	
	0 05 001	Latitude (high accuracy)	
	0 06 001	Longitude (high accuracy)	
	0 08 029	Surface type	
	0 08 074	Altimeter echo type	
	0 08 077	Radiometer sensed surface type	
		Flags	
	0 40 011	Interpolation flag	
	0 25 097	Three-dimensional error estimate of the navigator orbit	
	0 25 095	Altimeter state flag	
	0 25 098	Altimeter data quality flag	
	0 25 099	Altimeter correction quality flag	
	0 21 144	Altimeter rain flag	
	0 25 096	Radiometer state flag	
	0 40 012	Radiometer data quality flag	
	0 40 013	Radiometer brightness temperature interpretation flag	
	0 21 169	Ice presence indicator	
	0 40 023	Auxiliary altimeter state flags	
	0 40 024	Meteorological map availability	
	0 40 025	Interpolation flag for mean diurnal tide	
		Altimeter: Ku band	
	0 22 151	Ku band ocean range	
	0 22 162	RMS of 20 Hz Ku band ocean range	
	0 22 163	Number of 20 Hz valid points for Ku band	
	0 25 160	Ku band net instrumental correction	
	0 25 133	Sea state bias correction on Ku band	
	0 22 156	Ku band significant wave height	
	0 22 164	RMS 20 Hz Ku band significant wave height	
	0 22 165	Number of 20 Hz valid points for Ku band significant wave height	
	0 22 166	Ku band net instrumental correction for significant wave height	
	0 21 137	Ku band corrected ocean backscatter coefficient	
	0 21 138	STD Ku band corrected ocean backscatter coefficient	
	0 22 167	Number of valid points for Ku band backscatter	
	0 21 139	Ku band net instrumental correction for AGC	
	0 21 118	Attenuation correction on sigma-0	
	0 21 145	Ku band automatic gain control	
	0 21 146	RMS Ku band automatic gain control	
	0 21 147	Number of valid points for Ku band automatic gain control	
		Altimeter: C band	
	0 22 168	C band ocean range	
	0 22 169	RMS of C band ocean range	
	0 22 170	Number of 20 Hz valid points for C band	
	0 25 161	C band net instrumental correction	
	0 25 162	Sea state bias correction on C band	
	0 22 171	C band significant wave height	

(continued)

(Category 40 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 40 010 *(continued)*	0 22 172	RMS 20 Hz C band significant wave height	
	0 22 173	Number of 20 Hz valid points for C band significant wave height	
	0 22 174	C band net instrumental correction for significant wave height	
	0 21 170	C band corrected ocean backscatter coefficient	
	0 21 171	RMS C band corrected ocean backscatter coefficient	
	0 22 175	Number of valid points for C band backscatter	
	0 21 172	C band net instrumental correction for AGC	
	0 21 118	Attenuation correction on sigma-0	
	0 21 173	C band automatic gain control	
	0 21 174	RMS C band automatic gain control	
	0 21 175	Number of valid points for C band automatic gain control	
		Radiometer	
	0 02 153	Satellite channel centre frequency	
	0 12 063	Brightness temperature	
	0 02 153	Satellite channel centre frequency	
	0 12 063	Brightness temperature	
	0 02 153	Satellite channel centre frequency	
	0 12 063	Brightness temperature	
	0 13 090	Radiometer water vapour content	
	0 13 091	Radiometer liquid content	
		Wind	
	0 07 002	Height or altitude	
	0 11 097	Wind speed from altimeter	
	0 11 098	Wind speed from radiometer	
	0 07 002	Height or altitude	
	0 11 095	u-component of the model wind vector	
	0 11 096	v-component of the model wind vector	
		Dynamic topography	
	0 10 096	Mean dynamic topography	
	0 10 081	Altitude of COG above reference ellipsoid	
	0 10 082	Instantaneous altitude rate	
	0 10 083	Squared off nadir angle of the satellite from platform data	
	0 10 101	Squared off nadir angle of the satellite from waveform data	
	0 25 132	Ionospheric correction from model on Ku band	
	0 25 163	Altimeter ionospheric correction on Ku band	
	0 25 126	Model dry tropospheric correction	
	0 25 128	Model wet tropospheric correction	
	0 25 164	Radiometer wet tropospheric correction	
	0 10 085	Mean sea-surface height	
	0 10 097	Mean sea-surface height from altimeter only	
	0 10 086	Geoid's height	
	0 10 087	Ocean depth/land elevation	
	0 10 092	Solid Earth tide height	
	0 10 088	Total geocentric ocean tide height (solution 1)	

(continued)

(Category 40 – continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	ELEMENT DESCRIPTION
3 40 010 *(continued)*	0 10 089	Total geocentric ocean tide height (solution 2)	
	0 10 098	Loading tide height geocentric ocean tide solution 1	
	0 10 099	Loading tide height geocentric ocean tide solution 2	
	0 10 090	Long period tide height	
	0 10 100	Non-equilibrium long period tide height	
	0 10 093	Geocentric pole tide height	
	0 25 127	Inverted barometer correction	Sea-surface height correction due to pressure loading
	0 40 014	High-frequency fluctuations of the sea-surface topography correction	
	0 10 102	Sea-surface height anomaly	

Notes: Descriptor 3 40 010 should be used in preference to 3 40 005.