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
3 00 002	0 00 002	Table A category, line 1
	0 00 003	Table A category, line 2
3 00 003	0 00 010	F, part descriptor
	0 00 011	X, part descriptor
	0 00 012	Y, part descriptor
3 00 004	3 00 003	
	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	Table D descriptor to be defined
	1 01 000	Delayed replication of 1 descriptor
	0 31 001	Delayed descriptor replication factor
	0 00 030	Descriptor defining sequence

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
3 01 001	0 01 001	WMO block number
	0 01 002	WMO station number
3 01 002	0 01 003	WMO Region number
	0 01 004	WMO Region sub-area
	0 01 005	Buoy/platform identifier
3 01 003	0 01 011	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
		(Origin and identification sequence)
3 01 005	0 01 035	Originating centre
	0 01 034	Identification of originating/generating sub-centre
3 01 011	0 04 001	Year
	0 04 002	Month
	0 04 003	Day
3 01 012	0 04 004	Hour
	0 04 005	Minute
3 01 013	0 04 004	Hour
	0 04 005	Minute
	0 04 006	Second
		(Time period)
3 01 014	1 02 002	Replication of 2 descriptors 2 times
	3 01 011	Year, month, day
	3 01 012	Hour, minute
3 01 021	0 05 001	Latitude (high accuracy)
	0 06 001	Longitude (high accuracy)
3 01 022	0 05 001	Latitude (high accuracy)
	0 06 001	Longitude (high accuracy)
	0 07 001	Height of station
3 01 023	0 05 002	Latitude (coarse accuracy)
	0 06 002	Longitude (coarse accuracy)
3 01 024	0 05 002	Latitude (coarse accuracy)
	0 06 002	Longitude (coarse accuracy)
	0 07 001	Height of station

(continued)

(Category 01 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
3 01 025	3 01 023	Latitude and longitude (coarse accuracy)
	0 04 003	Day
	3 01 012	Time
3 01 026	3 01 021	Latitude and longitude (high accuracy)
	0 04 003 0 04 003	(Time period in days)
	0 04 004 0 04 004	(Time period in hours)
	0 04 005 0 04 005	(Time period in minutes)
		(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	Replication factor (see Note 5)
	3 01 028	Description of horizontal section
	0 08 007	Dimensional significance, 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 (flight level) value
	0 07 010	Flight level
	1 01 000	Delayed replication of 1 descriptor
	0 31 002	Extended replication factor (see Note 6)
	3 01 023	Location
	0 19 007	Radius of feature (see Note 7)
	0 08 040	Flight level significance, Missing = Cancel
3 01 031	3 01 001	WMO block and station number
	0 02 001	Type of station
	3 01 011	Date
	3 01 012	Time
	3 01 022	Latitude and longitude (high accuracy), height of station
3 01 032	3 01 001	WMO block and station number
	0 02 001	Type of station
	3 01 011	Date
	3 01 012	Time
	3 01 024	Latitude and 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	Date
	3 01 012	Time
	3 01 021	Latitude and longitude (high accuracy)

(continued)

(Category 01 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
		(Buoy/platform - fixed)
3 01 034	0 01 005	Buoy/platform identifier
	0 02 001	Type of station
	3 01 011	Date
	3 01 012	Time
	3 01 023	Latitude and 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	Date
	3 01 012	Time
	3 01 023	Latitude and longitude (coarse accuracy)
		(Ship)
3 01 036	3 01 003	Ship's call sign and motion
	0 02 001	Type of station
	3 01 011	Date
	3 01 012	Time
	3 01 023	Latitude and longitude (coarse accuracy)
		(Land station for vertical soundings)
3 01 037	3 01 001	WMO block and station number
	0 02 011	Radiosonde type
	0 02 012	Radiosonde computational method
	3 01 011	Date
	3 01 012	Time
	3 01 022	Latitude and longitude (high accuracy), height of station
		(Land station for vertical soundings)
3 01 038	3 01 001	WMO block and station number
	0 02 011	Radiosonde type
	0 02 012	Radiosonde computational method
	3 01 011	Date
	3 01 012	Time
	3 01 024	Latitude and 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	Date
	3 01 012	Time
	3 01 023	Latitude and longitude (coarse accuracy)

(continued)

(Category 01 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
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	Date
	3 01 012	Time
	3 01 024	Latitude and longitude (coarse accuracy), height of station
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	Date
	3 01 012	Time
3 01 042	3 01 041	Satellite identifier, data used, and data processing technique; date/time
	3 01 021	Latitude, longitude
3 01 043	0 01 007	Satellite identifier
	0 02 023	Cloud motion computational method
	3 01 011	Date
	3 01 013	Time
	3 01 021	Latitude, longitude
3 01 044	0 01 007	Satellite identifier
	0 02 024	Integrated mean humidity computational method
	3 01 011	Date
	3 01 013	Time
	3 01 021	Latitude, longitude
		(Satellite location and velocity)
3 01 045	3 01 011	Year, month, day
	3 01 012	Time (hour, minute)
	2 01 138	Change width to 16 bits
	2 02 131	Change scale to 3
	0 04 006	Second
	2 01 000	Change width back to Table B
	2 02 000	Change scale back to Table B
	3 04 030	Location relative to the Earth’s centre
	3 04 031	Velocity relative to the Earth’s centre
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-tract resolution
	2 02 000	Change scale back to Table B
	0 05 040	Orbit number

(continued)

(Category 01 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
		(ERS product header)
3 01 047	0 01 007	Satellite identifier
	0 25 060	Software identification
	0 01 033	Originating/generating centre
	0 01 034	Originating/generating sub-centre
	0 01 012	Direction of motion of moving observation platform
	3 01 045	Satellite location and velocity
	0 02 021	Satellite instrument data used in processing
	3 01 011	Date (year, month, day)
	3 01 012	Time (hour, minute)
	2 01 138	Change bit width to 16 bits
	2 02 131	Change scale to 3
	0 04 006	Second
	2 01 000	Change width back to Table B
	2 02 000	Change scale back to Table B
	3 01 023	Location (latitude, longitude)
		(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 to -1
	0 01 013	Radar platform velocity
	2 02 126	Change scale to -2
	0 07 001	Radar platform altitude
	2 02 000	Change scale to Table B
	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
3 01 051	0 01 006	Aircraft flight number
	0 02 061	Navigational system
	3 01 011	Date
	3 01 012	Time
	3 01 021	Latitude, longitude
	0 08 004	Phase of aircraft flight

(continued)

(Category 01 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
3 01 055	0 01 005	Buoy/platform identifier
	0 02 001	Type of station
	3 01 011	Date
	3 01 012	Time
	3 01 021	Latitude and 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	
	2 02 135	
	0 04 006	Seconds
	2 02 000	
	2 01 000	
		Horizontal and vertical coordinates of lightning event
	3 01 021	Latitude, longitude (high accuracy)
	0 20 111	x-axis error ellipse
	0 20 112	y-axis error ellipse
	0 20 113	z-axis error ellipse
	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 voltage for polarity decision
	0 20 122	Threshold current 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 (for cloud to ground or cloud to cloud identification)
		Sensor processing
	0 25 063	Central processor identifier
	2 02 136	
	2 01 136	
	0 02 121	Mean frequency (to define centre frequency, if used)
	2 01 000	
	2 02 000	
	0 25 061	Software identification and version number
	0 02 184	Type of lightning detection sensor
	0 02 189	Capability to discriminate lightning strike
	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

(continued)

(Category 01 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
		(Identification of sensor site and instrumentation)
3 01 059	3 01 021	Latitude, longitude (high accuracy) of sensor
	0 07 030	Height of station ground above mean sea level
	0 07 032	Height of sensor above local ground (for lightning)
		(Radar location(s))
3 01 062	1 01 000	Delayed replication of 1 descriptor
	0 31 001	Replication factor
	3 01 001	WMO block and station number
		(ACARS identification)
3 01 065	0 01 006	Aircraft flight number (see Note 1)
	0 01 008	Aircraft registration number (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 and longitude (coarse accuracy)
	0 07 004	Pressure
	0 02 064	Aircraft roll angle quality
	0 08 004	Phase of aircraft flight
		(Satellite identifier/Generating resolution)
3 01 071	0 01 007	Satellite identifier
	0 01 031	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
		(Satellite identification)
3 01 072	3 01 071	Satellite identification, Generation resolution
	3 01 011	Date
	3 01 013	Time
	3 01 021	Latitude, longitude
		(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

(continued)

(Category 01 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
		(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
		(Mobile surface station identification, date/time, horizontal and vertical coordinates)
3 01 092	0 01 011	Mobile land station identifier
	0 01 003	WMO Region number
	0 02 001	Type of station
	3 01 011	Year, month, day
	3 01 012	Hour, minute
	3 01 021	Latitude (high accuracy), 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
		(Ship identification, movement, date/time, horizontal and vertical coordinates)
3 01 093	3 01 036	Ship identification
	0 07 030	Height of station platform 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 number, WMO station number
	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 number, WMO station number
	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 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

(continued)

(Category 01 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
		(Date/time of launch) (see Note 3)
3 01 113	0 08 021	Time significance (= 18 (launch time))
	3 01 011	Year, month, day of launch
	3 01 013	Hour, minute, second of launch
		(Horizontal and vertical coordinates of launch site)
3 01 114	3 01 021	Latitude (high accuracy), 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 of 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 number
	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 and longitude (high accuracy)
	0 07 031	Height of barometer above MSL
	0 07 007	Height (of radiosonde release above MSL)
		(Date/time (to hundredths of second)) (see Note 3)
3 01 122	3 01 011	Date
	3 01 012	Time
	2 01 135	Change data width
	2 02 130	Change scale
	0 04 006	Second
	2 02 000	Cancel change scale
	2 01 000	Cancel change data width
		(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 identifier
	3 01 001	WMO block and station number
	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
	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
	0 02 066	Radiosonde ground receiving system
	0 02 014	Tracking technique/status of system used
	0 25 067	Release point pressure correction

(continued)

(Category 01 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
3 01 123 *(continued)*	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	Date
		(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.

      (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.

(continued)

(Category 01 - continued)

(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
3 02 001	0 10 004	Pressure (at 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 (at station level)
	0 07 004	Pressure level
	0 10 003	Geopotential of pressure level
	0 10 061	3-hour pressure change
	0 10 063	Characteristic of pressure tendency
3 02 003	0 11 011	Wind direction (10 m)
	0 11 012	Wind speed (10 m)
	0 12 004	Temperature (2 m)
	0 12 006	Dew point (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 in per cent)
	0 08 002	Vertical significance
	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
3 02 005	0 08 002	Vertical significance
	0 20 011	Cloud amount
	0 20 012	Cloud type
	0 20 013	Height of base of cloud
3 02 006	0 10 004	Pressure (at 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 pressure change
	3 02 003	Wind, temperature, humidity, visibility, weather
	3 02 004	Significant cloud layer

(continued)

(Category 02 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
		(High altitude station)
3 02 012	3 02 002	Pressure and pressure change
	3 02 003	Wind, temperature, humidity, visibility, weather
	3 02 004	Significant cloud information
3 02 013	3 02 006	Pressure and 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 information
3 02 021	0 22 001	Direction of waves
	0 22 011	Period of waves
	0 22 021	Height of 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
3 02 023	0 22 003	Direction of swell waves
	0 22 013	Period of swell waves
	0 22 023	Height of 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 data
	0 10 062	24-hour pressure change
	0 07 004	Pressure (standard level)
	0 10 009	Geopotential height of the standard level
		(Temperature and humidity data)
3 02 032	0 07 032	Height of sensor above local ground (for temperature and humidity measurement)
	0 12 101	Temperature/air temperature (scale 2)
	0 12 103	Dew-point temperature (scale 2)
	0 13 003	Relative humidity
		(Visibility data)
3 02 033	0 07 032	Height of sensor above local ground (for visibility measurement)
	0 20 001	Horizontal visibility
		(Precipitation past 24 hours)
3 02 034	0 07 032	Height of sensor above local ground (for precipitation measurement)
	0 13 023	Total precipitation past 24 hours

(continued)

(Category 02 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
		(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 (set to missing to cancel the previous value)
	3 02 004	Cloud data
	1 01 000	Delayed replication
	0 31 001	Delayed descriptor replication factor
	3 02 005	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
	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 ground (with or without snow)
	0 13 013	Total snow depth
	0 12 113	Ground minimum temperature (scale 2), past 12 hours
		(Present and past weather)
3 02 038	0 20 003	Present weather
	0 04 024	Time period in 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 in hours
	0 14 031	Total sunshine
		(Precipitation measurement)
3 02 040	0 07 032	Height of sensor above local ground (for precipitation measurement)
	1 02 002	Replicate next 2 descriptors 2 times
	0 04 024	Time period in hours
	0 13 011	Total precipitation / total water equivalent of snow
		(Extreme temperature data)
3 02 041	0 07 032	Height of sensor above local ground (for 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 (scale 2) at height and over period specified
	0 04 024	Time period or displacement
	0 04 024	Time period or displacement (see Note 2)
	0 12 112	Minimum temperature (scale 2) at height and over period specified

(continued)

(Category 02 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
		(Wind data)
3 02 042	0 07 032	Height of sensor above local ground (for wind measurement)
	0 02 002	Type of instrumentation for wind measurement
	0 08 021	Time significance (= 2 (time averaged))
	0 04 025	Time period (= -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 (= missing value)
	1 03 002	Replicate next 3 descriptors 2 times
	0 04 025	Time period in 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 (set to missing to cancel the previous value)
		(Evaporation data)
3 02 044	0 04 024	Time period in hours
	0 02 004	Type of instrument for evaporation or crop type for evapo-transpiration
	0 13 033	Evaporation /evapotranspiration
		(Radiation data (from 1 hour and 24 hour period))
3 02 045	0 04 024	Time period in hours
	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
		(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 period specified

(continued)

(Category 02 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
		(Direction of cloud drift)
3 02 047	1 02 003	Replicate 2 descriptors 3 times
	0 08 002	Vertical significance
	0 20 054	True direction from which clouds are moving
		(Direction and elevation of cloud)
3 02 048	0 05 021	Bearing or azimuth
	0 07 021	Elevation angle
	0 20 012	Cloud type
	0 05 021	Bearing or azimuth (= missing to cancel the previous value)
	0 07 021	Elevation angle (= missing to cancel the previous value)
		(Cloud information reported with vertical soundings)
3 02 049	0 08 002	Vertical significance
	0 20 011	Cloud amount (of low or middle clouds N_h)
	0 20 013	Height of cloud base (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 (= missing value)
		(Radiosonde surface observation)
3 02 050	0 08 041	Data significance (5 = sfc ob displacement from launch pt)
	0 05 021	Bearing or azimuth
	0 07 005	Height increment
	2 02 130	Change scale
	0 06 021	Distance
	2 02 000	Cancel change scale
	0 08 041	Data significance (4 = surface observation)
	2 01 131	Change data width
	2 02 129	Change scale
	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	Cancel change scale
	2 01 000	Cancel change data width
	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 displacement (hour)
	0 02 115	Type of surface observing equipment
	0 12 103	Dew-point temperature

(continued)

(Category 02 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
3 02 050 *(continued)*	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 cloud base
	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 marine deck platform (for temperature and humidity measurement)
	0 07 033	Height of sensor above water surface (for 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	Dew-point temperature (scale 2)
	0 13 003	Relative humidity
		(Ship visibility data)
3 02 053	0 07 032	Height of sensor above marine deck platform (for visibility measurement)
	0 07 033	Height of sensor above water surface (for visibility measurement)
	0 20 001	Horizontal visibility
		(Ship "instantaneous" data)
3 02 054	3 02 052	Temperature and humidity data
	3 02 053	Visibility data
	0 07 033	Height of sensor above water surface (set to missing to cancel the previous value)
	3 02 034	Precipitation past 24 hours
	0 07 032	Height of sensor above marine deck platform (set to missing to cancel the previous value)

(continued)

(Category 02 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
3 02 054	3 02 004	Cloud data
(*continued*)	1 01 000	Delayed replication of 1 descriptor
	0 31 001	Delayed descriptor replication factor
	3 02 005	Cloud data
		(Icing and ice)
3 02 055	0 20 031	Ice deposit (thickness)
	0 20 032	Rate of ice accretion
	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 sea/water temperature measurement
	0 07 063	Depth below sea/water surface (for sea surface temperature measurement)
	0 22 043	Sea/water temperature
	0 07 063	Depth below sea/water surface (set to missing to cancel the previous value)
		(Ship marine data)
3 02 057	3 02 056	Sea surface temperature, method of measurement, and depth below sea surface
	3 02 021	Waves data
	3 02 024	Wind waves data
		(Ship extreme temperature data)
3 02 058	0 07 032	Height of sensor above marine deck platform (for temperature measurement)
	0 07 033	Height of sensor above water surface (for 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 (scale 2) at height and over period specified
	0 04 024	Time period or displacement
	0 04 024	Time period or displacement (see Note 2)
	0 12 112	Minimum temperature (scale 2) at height and over period specified
		(Ship wind data)
3 02 059	0 07 032	Height of sensor above marine deck platform (for wind measurement)
	0 07 033	Height of sensor above water surface (for wind measurement)

(continued)

(Category 02 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
3 02 059 *(continued)*	0 02 002	Type of instrumentation for wind measurement
	0 08 021	Time significance (= 2 (time averaged))
	0 04 025	Time period (= -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 (= missing value)
	1 03 002	Replicate next 3 descriptors 2 times
	0 04 025	Time period in 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	Phenomenon occurrence
	0 20 054	True direction from which a phenomenon or clouds are moving
	0 20 023	Other weather phenomena
	0 20 027	Phenomenon occurrence
	0 20 054	True direction from which a phenomenon or clouds are moving
	0 20 025	Obscuration
	0 20 026	Character of obscuration
	0 20 027	Phenomenon occurrence
	0 20 040	Evolution of drift of snow
	0 20 066	Maximum diameter of hailstones
	0 20 027	Phenomenon occurrence
	0 20 021	Type of precipitation
	0 20 067	Diameter of deposit
	0 20 027	Phenomenon occurrence
		(Visibility data)
3 02 069	0 07 032	Height of sensor above local ground
	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
	0 07 033	Height of sensor above water surface

(continued)

(Category 02 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
3 02 070	0 11 001	Wind direction
(continued)	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
	0 07 033	Height of sensor above water surface
	0 08 021	Time significance (= 2 (time averaged))
	0 04 025	Time period (= -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 (= missing value)
	1 03 002	Replicate next 3 descriptors 2 times
	0 04 025	Time period (= -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 (= -10 minutes)
	0 11 016	Extreme counterclockwise wind direction of a variable wind
	0 11 017	Extreme clockwise wind direction of a variable wind
		(Temperature and humidity data)
3 02 072	0 07 032	Height of sensor above local ground
	0 07 033	Height of sensor above water surface
	0 12 101	Temperature/air temperature (scale 2)
	0 12 103	Dew-point 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
	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
	0 20 004	Past weather (1)
	0 20 005	Past weather (2)

(continued)

(Category 02 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
		(Intensity of precipitation, size of precipitation element)
3 02 075	0 08 021	Time significance (= 2 (time averaged))
	0 04 025	Time period (= -10 minutes)
	0 13 055	Intensity of precipitation
	0 13 058	Size of precipitation element
	0 08 021	Time significance (= missing value)
		(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
	0 07 033	Height of sensor above water surface
	0 04 025	Time period
	0 12 111	Maximum temperature (scale 2) at height and over period specified
	0 12 112	Minimum temperature (scale 2) at height and over period specified
	0 07 032	Height of sensor above local ground (for ground temperature)
	0 04 025	Time period
	0 12 112	Minimum temperature (scale 2) at height and over period specified (for 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 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
	0 02 175	Method of precipitation measurement
	0 02 178	Method of liquid water content measurement of precipitation
	0 04 025	Time period
	0 13 011	Total precipitation/total water equivalent of snow
		(Evaporation measurement)
3 02 080	0 02 185	Method of evaporation measurement
	0 04 025	Time period
	0 13 033	Evaporation/evapotranspiration

(continued)

(Category 02 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
		(Total sunshine data)
3 02 081	0 04 025	Time period
	0 14 031	Total sunshine
		(Radiation data)
3 02 082	0 04 025	Time period
	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
	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 (= missing value)
		("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	Soil temperature
	0 07 061	Depth below land surface (set to missing to cancel the previous value)
		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 (set to missing to cancel the previous value)
	0 07 033	Height of sensor above water surface (set to missing to cancel the previous value)
		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
	0 02 038	Method of sea surface temperature measurement

(continued)

(Category 02 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
3 02 084 *(continued)*	0 22 043	Sea/water temperature (scale 2)
	3 02 021	Wave data
		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 (scale 2), past 12 hours
		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
	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 (set to missing to cancel the previous value)
		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
		("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 (= -1 hour in 1. replication, -x hours in 2. 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

(continued)

(Category 02 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
3 02 085 *(continued)*	0 04 025	Time period (= -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 (= -10 minutes)
	0 13 059	Number of flashes
		Wind data
	0 07 032	Height of sensor above local ground
	0 07 033	Height of sensor above water surface
	0 08 021	Time significance (= 2 (time averaged))
	0 04 025	Time period (= -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 (= missing value)
	1 03 003	Replicate next 3 descriptors 3 times
	0 04 025	Time period (= -10 minutes in 1. replication, = -60 minutes in 2. replication, = -60 x 3 or 60 x 6 minutes in 3. replication)
	0 11 043	Maximum wind gust direction
	0 11 041	Maximum wind gust speed
	0 04 025	Time period (= -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 to cancel the previous value)
	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
	0 02 175	Method of precipitation measurement
	0 02 178	Method of liquid water content measurement of precipitation
	1 02 005	Replicate 2 descriptors 5 times
	0 04 024	Time period in hours (= -1 hour in the first replication, = - 3, -6, -12 and -24 hours in the other replications)
	0 13 011	Total precipitation/total water equivalent of snow
	0 07 032	Height of sensor above local ground (set to missing to cancel the previous value)
		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

(continued)

(Category 02 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	
3 02 085 *(continued)*	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	
		(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
3 02 175	0 08 021	Time significance	
	0 04 025	Time period of 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
3 03 001	0 07 003	Geopotential
	0 11 001	Wind direction
	0 11 002	Wind speed
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
	0 12 003	Dew point
3 03 004	0 07 004	Pressure
	0 10 003	Geopotential
	0 12 001	Temperature
	0 12 003	Dew point
	0 11 001	Wind direction
	0 11 002	Wind speed
3 03 011	0 07 003	Geopotential
	0 08 001	Vertical sounding significance
	0 11 001	Wind direction
	0 11 002	Wind speed
3 03 012	0 07 004	Pressure
	0 08 001	Vertical sounding significance
	0 11 001	Wind direction
	0 11 002	Wind speed
3 03 013	0 07 004	Pressure
	0 08 001	Vertical sounding significance
	0 10 003	Geopotential
	0 12 001	Temperature
	0 13 003	Relative humidity
	0 11 001	Wind direction
	0 11 002	Wind speed
3 03 014	0 07 004	Pressure
	0 08 001	Vertical sounding significance
	0 10 003	Geopotential
	0 12 001	Temperature
	0 12 003	Dew point
	0 11 001	Wind direction
	0 11 002	Wind speed

(continued)

(Category 03 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
3 03 021	0 07 004	Pressure (1) defines layer
	0 07 004	Pressure (2)
	2 04 007	Add associated field of 7 bits
	0 31 021	Additional field significance
3 03 022	3 03 021	Layer, quality
	0 10 003	Geopotential (layer mean thickness)
	2 04 000	Cancel the added associated field
3 03 023	3 03 021	Layer, quality
	0 12 001	Temperature (layer mean)
	2 04 000	Cancel the added associated field
3 03 024	3 03 021	Layer, quality
	0 13 016	Precipitation water
	2 04 000	Cancel the added associated field
3 03 025	0 02 025	Satellite channel
	2 04 007	Add associated field of 7 bits
	0 31 021	Additional field significance
	0 12 063	Brightness temperature
	2 04 000	Cancel the added associated field
3 03 026	0 07 004	Pressure
	0 08 003	Vertical significance
	2 04 007	Add associated field of 7 bits
	0 31 021	Additional field significance
	0 12 001	Temperature
	2 04 000	Cancel the added associated field
3 03 027	0 07 004	Pressure
	2 04 007	Add associated field of 7 bits
	0 31 021	Additional field significance
	0 10 003	Geopotential
	2 04 000	Cancel the added associated field
3 03 031	0 07 004	Pressure
	0 08 003	Vertical significance (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
3 03 032	0 20 011	Cloud amount
	0 20 016	Pressure at top of cloud
3 03 033	0 20 010	Cloud cover (total)
	0 20 016	Pressure at the top of cloud

(continued)

(Category 03 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
		(Radiosonde duration of flight and termination information)
3 03 040	0 08 041	Data significance (7 = Flight level termination point)
	0 04 025	Time displacement (minute)
	0 04 026	Time displacement (second)
	3 01 021	Latitude and 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 correction
	0 07 004	Pressure
	0 13 003	Relative humidity
	2 02 000	Cancel change scale
	2 01 000	Cancel change data width
	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	Geostationary satellite instrument used
	0 02 023	Cloud motion computational 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 T
		(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 since launch site (high accuracy)
	0 06 015	Longitude displacement since launch site (high accuracy)
	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 since launch site (high accuracy)
	0 06 015	Longitude displacement since launch site (high accuracy)
	0 11 061	Absolute wind shear in 1 km layer below
	0 11 062	Absolute wind shear in 1 km layer above

(continued)

(Category 03 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
		(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 since launch site (high accuracy)
	0 06 015	Longitude displacement since launch site (high accuracy)
	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 since launch site (high accuracy)
	0 06 015	Longitude displacement since launch site (high accuracy)
	0 11 061	Absolute wind shear in 1 km layer below
	0 11 062	Absolute wind shear in 1 km layer above
		(Temperature, dew-point 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 since launch site (high accuracy)
	0 06 015	Longitude displacement since launch site (high accuracy)
	0 12 101	Temperature/air temperature (scale 2)
	0 12 103	Dew-point temperature (scale 2)
	0 11 001	Wind direction
	0 11 002	Wind speed

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
3 04 001	0 08 003	Vertical significance
	0 10 004	Pressure
	0 12 001	Temperature
	0 11 001	Wind direction
	0 11 002	Wind speed
3 04 002	0 08 003	Vertical significance
	0 10 004	Pressure
	0 11 001	Wind direction
	0 11 002	Wind speed
3 04 003	0 08 003	Vertical significance
	0 12 001	Temperature
3 04 004	0 08 003	Vertical significance
	0 10 004	Pressure
	0 20 010	Cloud cover (total)
	0 12 001	Temperature
3 04 005	0 02 024	Integrated mean humidity computational method
	0 07 004	Pressure (1) defines layer
	0 07 004	Pressure (2)
	0 13 003	Relative humidity
3 04 006	0 14 001	Outgoing long-wave radiation
	0 14 001	Incoming long-wave radiation
	0 14 003	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
	0 08 021	Time significance
	0 04 001	Year
	0 04 002	Month
	0 04 003	Day
	0 04 004	Hour
	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

(continued)

(Category 04 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
3 04 011 *(continued)*	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
		(Location of platform)
3 04 030	0 27 031	In direction of 0 degree longitude, distance from the Earth's centre
	0 28 031	In direction of 90 degrees East longitude, distance from the Earth's centre
	0 10 031	In direction of North Pole, distance from 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
3 04 034	1 02 004	Replicating next two 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 table
	0 10 040	Number of retrieved layers

(continued)

(Category 04 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
		(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	Pixel type: clear
	0 12 063	Brightness temperature (clear)
	0 08 001	Pixel type: cloudy
	0 12 063	Brightness temperature (cloudy)
	0 08 001	Cancel type
	0 08 003	Vertical significance: low cloud
	0 12 063	Brightness temperature (low cloud)
	0 08 003	vertical significance: mid cloud
	0 12 063	Brightness temperature (mid cloud)
	0 08 003	vertical significance: high cloud
	0 12 063	Brightness temperature (high cloud)
	0 08 003	Cancel significance
		(Cloud coverage)
3 04 036	0 20 082	Amount of segment cloud free
	0 08 012	Land-sea qualifier: sea
	0 20 082	Amount of segment cloud free (sea)
	0 08 012	Cancel qualifier
	0 20 081	Cloud amount in segment
	0 08 003	Vertical significance: low cloud
	0 20 081	Cloud amount in segment (low cloud)
	0 08 003	Vertical significance: mid cloud
	0 20 081	Cloud amount in segment (mid cloud)
	0 08 003	Vertical significance: high cloud
	0 20 081	Cloud amount in segment (high cloud)
	0 08 003	Cancel significance
		(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	Pixel type: clear
	0 12 063	Brightness temperature (clear)
	0 08 011	Pixel type: cloudy
	0 12 063	Brightness temperature (cloudy)
	0 08 011	Cancel type
	0 08 003	Vertical significance: low cloud
	0 12 063	Brightness temperature (low cloud)
	0 08 003	Vertical significance: mid cloud
	0 12 063	Brightness temperature (mid cloud)
	0 08 003	Vertical significance: high cloud
	0 12 063	Brightness temperature

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
		(SADC-HYCOS measurement array definition)
3 05 003	3 01 012	Hour, minute of 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	Replication factor
	3 05 001	Single measurement
		(MEDHYCOS measurement)
3 05 006	0 13 072	Downstream water level
	0 13 082	Water temperature
	0 13 019	Precipitation last hour
	0 12 001	Air temperature
	0 13 073	Maximum water height observed
	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
	0 31 001	Replication factor
	3 05 006	Single measurement
		(AOCHYCOS - Chad measurement)
3 05 008	3 05 006	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	Replication factor
	3 05 008	Single measurement
		(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	Replication factor
	3 05 010	Single measurement

(continued)

(Category 05 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
3 05 018		(MEDHYCOS report with meteorology and water quality data)
	3 01 029	Identification
	3 01 012	Hour, minute (time) of first measurement
	0 04 065	Hour increment
	1 03 000	Delayed replications of 3 descriptors
	0 31 001	Replication factor
	3 05 008	Same as AOCHYCOS type measurement
	3 05 016	Meteorological parameters associated to 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
3 06 001	0 02 032	Indicator for digitization
	1 02 000	Delayed replication of 2 descriptors
	0 31 001	Replication factor
	0 07 062	Depth below sea surface
	0 22 042	Subsurface sea temperature
3 06 002	0 02 031	Method of current measurement
	0 22 004	Direction of current
	0 22 031	Speed of current
3 06 003	0 02 002	Wind instrumentation
	0 11 011	Wind direction (10 m)
	0 11 012	Wind speed (10 m)
	0 12 004	Air temperature (2 m)
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	Replication factor
	0 07 062	Depth below sea surface
	0 22 043	Subsurface sea temperature
	0 22 062	Salinity
3 06 005	0 02 031	Method of current measurement (duration and time)
	1 03 000	Delayed replication of 3 descriptors
	0 31 001	Replication factor
	0 07 062	Depth below sea 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
	0 04 024	Time period
	0 27 003	Alternate latitude
	0 28 003	Alternate longitude

(continued)

(Category 06 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
		(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 alphanumeric identification
	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 in minutes (see Note)
	0 04 065	Short time increment
3 06 023	0 01 015	Station or site name
	3 01 023	Latitude, longitude
	3 01 011	Year, month, day
	3 01 012	Hour, minute
	0 22 038	Tidal level with respect to local chart datum
	0 22 039	Meteorological residual tidal elevation
	0 22 120	Tide station automated water level check
	0 22 121	Tide station manual water level check
		(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 identifier
	0 02 047	Deep-ocean tsunameter platform type/manufacturer
	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	Buoy ID, transmitter ID, platform type, message transmission time
	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 (seconds)
	0 25 171	Sample averaging period (seconds)
	0 25 172	Number of samples

(continued)

(Category 06 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
		(Sequence for representation of DART buoy standard hourly report)
3 06 030	3 06 027	Buoy ID, transmitter ID, platform type, message transmission time
	3 06 029	Tsunameter sampling information
	1 11 000	Delayed replication of 11 descriptors
	0 31 001	Delayed replication factor
	0 33 002	Quality information (for 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 for BPR CPU
	0 25 025	Battery voltage for acoustic modem DSP
	0 25 026	Battery voltage for acoustic modem
	0 22 185	BPR transmission count
	0 04 015	Time increment added to reset the reference time
	0 04 065	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	Buoy ID, transmitter ID, platform type, message transmission time
	3 06 029	Tsunameter sampling information
	0 01 053	Tsunameter report sequence number triggered by a tsunami event
	0 33 002	Quality information (for 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 reference for determination of actual value reported in the time series
	0 04 016	Time increment added to reset the reference time
	0 04 066	Time increment added to each data value in the time series
	1 01 000	Delayed replication of 1 descriptor
	0 31 001	Delayed replication factor
	0 22 184	Water column height deviation from the reference value

Note: 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.

Category 07 - Surface report sequences (land)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
		(Low altitude station)
3 07 001	3 01 031	Identification, type, date/time, position (high accuracy), height
	3 02 011	Basic surface report
		(Low altitude station)
3 07 002	3 01 032	Identification, type, date/time, position (coarse accuracy), height
	3 02 011	Basic surface report
		(Low altitude station)
3 07 003	3 07 001	Location (high accuracy) and basic report
	1 01 000	Delayed replication of 1 descriptor
	0 31 001	Replication factor
	3 02 005	Cloud layer information
		(Low altitude station)
3 07 004	3 07 002	Location (coarse accuracy) and basic report
	1 01 000	Delayed replication of 1 descriptor
	0 31 001	Replication factor
	3 02 005	Cloud layer information
		(Low altitude station)
3 07 005	3 07 001	Location (high accuracy) and basic report
	1 01 004	Replicate 1 descriptor 4 times
	3 02 005	Cloud layer information (4 layers)
		(Low altitude station)
3 07 006	3 07 002	Location (coarse accuracy) and basic report
	1 01 004	Replicate 1 descriptor 4 times
	3 02 005	Cloud layer information (4 layers)
		(High altitude station)
3 07 007	3 01 031	Identification, type, date/time, position (high accuracy), height
	3 02 012	Basic surface report
		(High altitude station)
3 07 008	3 01 032	Identification, type, date/time, position (coarse accuracy), height
	3 02 012	Basic surface report
3 07 009	3 01 031	Identification, type, date/time, position (high accuracy), height
	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	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

(continued)

(Category 07 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
3 07 011 *(continued)*	0 11 017 0 11 002 0 11 041 0 07 006 0 12 001 0 12 003 0 10 052 0 20 009	Extreme clockwise wind direction of a variable wind Wind speed Maximum wind speed (gusts) Height above station (= height of a thermometer) Temperature Dew-point temperature Altimeter setting (QNH) General Weather Indicator TAF/METAR
		(D_VVVVV)
3 07 012	1 03 000 0 31 001 0 08 023 0 05 021 0 20 001	Delayed replication of 3 descriptors Number of replication (up to 3) First-order statistics Direction of visibility observed Horizontal visibility
		(D_RD_R/$V_RV_RV_RV_R$)
3 07 013	1 06 000 0 31 001 0 01 064 0 08 014 0 20 061 0 08 014 0 20 061 0 20 018	Delayed replication of 6 descriptors Number of replication (up to 4) Runway designator Qualification for runway visual range Runway visual range Qualification for runway visual range Runway visual range Tendency of runway visual range
		(w´w´)
3 07 014	1 01 000 0 31 001 0 20 019	Delayed replication of 1 descriptor Number of replication (up to 3) Significant present weather
		(Clouds group(s))
3 07 015	1 01 000 0 31 001 3 02 005 0 20 002	Delayed replication of 1 descriptor Number of replication ($N_SN_SN_S$, CC, $h_Sh_Sh_S$) Vertical visibility
		(REw´w´)
3 07 016	1 01 000 0 31 001 0 20 020	Delayed replication of 1 descriptor Number of replication (up to 3) Significant recent weather phenomena
		(Wind shear on runway(s))
3 07 017	1 01 000 0 31 001 0 11 070	Delayed replication of 1 descriptor Number of replication Runway designator of the runway affected by wind shear (including ALL)

(continued)

(Category 07 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
		(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	Number of replication (up to 2)
	0 08 017	Qualifier of the time when the forecast change is expected (FM, TL, AT)
	3 01 012	GG, gg
	1 04 000	Delayed replication of 4 descriptors
	0 31 001	Number of replication (up to 1)
	0 07 006	Height above station
	0 11 001	Wind direction
	0 11 002	Wind speed
	0 11 041	Maximum wind speed (gusts)
	0 20 009	General weather indicator
	1 01 000	Delayed replication of 1 descriptor
	0 31 001	Number of replication (up to 1)
	0 20 001	Horizontal visibility
	3 07 014	w´w´
		(Short METAR/SPECI)
3 07 020	3 07 011	Main part of data
	3 07 014	w´w´
	3 07 016	REw´w´
		(Total sequence for representation of METAR/SPECI code in BUFR)
3 07 021	3 07 011	Main part of data
	3 07 012	D_VVVVV
	3 07 013	$D_RD_R/V_RV_RV_RV_R$
	3 07 014	w´w´
	3 07 015	Clouds group(s)
	3 07 016	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 (high accuracy), 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

(continued)

(Category 07 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	
3 07 022 *(continued)*	0 13 003	Relative humidity	
	0 33 038	Quality flags for ground-based GNSS data	
	0 08 022	Total number (number of GNSS satellites used)	
	1 06 025	Replicate next 6 descriptors 25 times	
	0 02 020	Satellite classification	
	0 01 050	Platform transmitter identification number	
	0 05 021	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 for 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 for 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 bit width	
	2 02 129	Change scale	
	0 13 016	Precipitable water	
	2 02 000	Reset scale	
	2 01 000	Reset bit width	
	0 15 011	Log_{10} of integrated electron density	
		(Main part of METAR/SPECI), replacing 3 07 011	
3 07 045	0 01 063	ICAO location indicator	CCCC
	0 08 079	Aviation product status (routine, special, corrected, not available)	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 = 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 (km/h) (see Note 5)	ff
	0 11 084	Wind speed (knots) (see Note 5)	ff
	0 11 002	Wind speed (m/s) (see Note 5)	ff
	0 08 054	Qualifier for wind speed or wind gusts	P
	0 11 085	Maximum wind speed (gusts) (km/h) (see Note 6)	f_mf_m
	0 11 086	Maximum wind speed (gusts) (knots) (see Note 6)	f_mf_m

(continued)

(Category 07 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	
3 07 045 *(continued)*	0 11 041	Maximum wind speed (gusts) (m/s) (see Note 6)	f_mf_m
	0 08 054	Qualifier for wind speed or wind gusts = missing (to cancel the previous value)	
	0 07 032	Height of sensor above local ground = 2 m (if the actual value is not available)	
	0 12 023	Temperature (Celsius)	TT
	0 12 024	Dew point (Celsius)	T_dT_d
	0 07 032	Height of sensor above local ground = missing (to cancel the previous value)	
	0 10 052	Altimeter setting (QNH)	$QP_HP_HP_HP_H$
	0 20 009	General weather indicator TAF/METAR	CAVOK
		(METAR/SPECI visibility)	
3 07 046	0 20 060	Prevailing visibility	VVVV or VVVV**NDV**
	1 02 000	Delayed replication of two descriptors	
	0 31 001	Number of replication (up to 2)	
	0 05 021	Bearing or azimuth (direction of minimum visibility observed)	D_v
	0 20 059	Minimum 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	Number of replications	
	0 08 002	Vertical significance	
	0 20 011	Cloud amount	$N_sN_sN_s$
	0 20 012	Cloud type	CC
	0 20 013	Height of base of cloud (m)	$h_sh_sh_s$
	0 20 092	Height of base of cloud (feet)	$h_sh_sh_s$
	0 20 002	Vertical visibility (m)	$VVh_sh_sh_s$
	0 20 091	Vertical visibility (feet)	$VVh_sh_sh_s$
		(Trend type forecast), replacing 3 07 018	
3 07 048	0 08 016	Change qualifier for trend type forecast	TTTTT NOSIG
	1 02 000	Delayed replication of 2 descriptors	
	0 31 001	Number of replications (0, 1 or 2)	
	0 08 017	Qualifier for time of forecast change	TT
	3 01 012	Time of change	GGgg
	1 12 000	Delayed replication of 12 descriptors	
	0 31 000	Short delayed replication count (0 or 1)	
	0 07 032	Height of sensor above local ground = 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 (km/h) (see Note 5)	ff
	0 11 084	Wind speed (knots) (see Note 5)	ff
	0 11 002	Wind speed (m/s) (see Note 5)	ff
	0 08 054	Qualifier for wind speed or wind gusts	P

(continued)

(Category 07 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	
3 07 048 *(continued)*	0 11 085	Maximum wind speed (gusts) (km/h) (see Note 6)	f_mf_m
	0 11 086	Maximum wind speed (gusts) (knots) (see Note 6)	f_mf_m
	0 11 041	Maximum wind speed (gusts) (m/s) (see Note 6)	f_mf_m
	0 08 054	Qualifier for wind speed or wind gusts = missing (to cancel the previous value)	
	0 07 032	Height of sensor above local ground = missing (to cancel the previous value)	
	0 20 009	General weather indicator	CAVOK **NSW NSC**
	1 01 000	Delayed replication of 1 descriptor	
	0 31 000	Short delayed replication count (0 or 1)	
	0 20 060	Prevailing visibility	
	3 07 014	Weather intensity and phenomena	w´w´
	3 07 047	METAR/SPECI/TAF clouds	$N_sN_sN_sh_sh_sh_s$
		(Sea conditions WT_sT_s/SS´)	
3 07 049	1 02 000	Delayed replication of 2 descriptors	
	0 31 000	Short delayed replication factor (0 or 1)	
	0 22 043	Sea/water temperature	T_sT_s
	0 22 021	Height of waves	S´
		(Runway state $RD_RD_R/E_RC_Re_Re_RB_RB_R$)	
3 07 050	1 01 000	Delayed replication of 1 descriptor	
	0 31 000	Short delayed replication factor (0 or 1)	
	0 20 085	General condition of runway	**SNOCLO**
	1 02 000	Delayed replication of 2 descriptors	
	0 31 001	Number of replications	
	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	Number of replications	
	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 data	
	3 07 046	Visibility	VVVV or VVVV**NDV** $V_NV_NVVV_ND_V$
	3 07 013	Runway visual range	$\mathbf{R}D_RD_R/V_RV_RV_RV_R$
	3 07 014	Weather intensity and phenomena	w´w´
	3 07 047	Clouds	$N_sN_sN_sh_sh_sh_s$
	3 07 016	Recent weather phenomena	**RE**w´w´
	3 07 017	Runway shear	**WS R**D_RD_R
	3 07 049	Sea conditions	**W**T_sT_s/**S**S´
	3 07 050	Runway state	$RD_RD_R/E_RC_Re_Re_RB_RB_R$

(continued)

(Category 07 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	
3 07 051	1 01 000	Delayed replication of 1 descriptor	
(continued)	0 31 001	Replication count (0 to 3 normally)	
	3 07 048	Trend type forecast	
		(Aerodrome forecast identification and time interval)	
3 07 052	0 01 063	ICAO location identifier	CCCC
	0 08 039	Time significance = 0 (issue time of forecast)	
	3 01 011	Year, month, day	YY
	3 01 012	Hour, minute	GGgg
	0 08 079	Aviation product status	**COR CNL AMD NIL**
	0 08 039	Time significance = 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 = 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 = 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 (km/h) (see Note 5)	ff
	0 11 084	Wind speed (knots) (see Note 5)	ff
	0 11 002	Wind speed (m/s) (see Note 5)	ff
	0 08 054	Qualifier for wind speed or wind gusts	**P**
	0 11 085	Maximum wind speed (gusts) (km/h) (see Note 6)	f_mf_m
	0 11 086	Maximum wind speed (gusts) (knots) (see Note 6)	f_mf_m
	0 11 041	Maximum wind speed (gusts) (m/s) (see Note 6)	f_mf_m
	0 08 054	Qualifier for wind speed or wind gusts = missing (to cancel the previous value)	
	0 07 032	Height of sensor above local ground = missing (to cancel the previous value)	
	0 20 009	General weather indicator	CAVOK **NSW NSC**
	0 20 060	Prevailing visibility	VVVV
	3 07 014	Weather	w´w´
	3 07 047	Cloud layer(s)	$N_sN_sN_sh_sh_sh_s$

(continued)

(Category 07 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME	
		(Forecast of extreme temperatures)	
3 07 054	0 07 032	Height of sensor above local ground = 2 m (if the actual value is not available)	
	0 08 039	Time significance = 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 (Celsius)	T_FT_F
	0 08 039	Time significance = 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)	
	0 12 023	Temperature (Celsius)	T_FT_F
	0 08 023	First-order statistics = missing (to cancel the previous value)	
	0 07 032	Height of sensor above local ground = missing (to cancel the previous value)	
		(Change indicator and forecast changes)	
3 07 055	0 33 045	Probability of following event	C_2C_2
	0 08 016	Change qualifier for an aerodrome forecast	TTTTTT
	0 08 039	Time significance = 5 (time of beginning of the forecast change)	
	0 04 003	Day	
	3 01 012	Hour, minute	GGgg
	0 08 039	Time significance = 6 (time of ending of the forecast change)	
	0 04 003	Day	
	3 01 012	Hour, minute	G_eG_e
	3 07 053	Forecast conditions during or after change	
		(Aerodrome forecast - full TAF)	
3 07 056	3 07 052	Identification and time interval	
	3 07 053	Forecast	
	3 07 054	Extreme temperature forecast	
	1 01 000	Delayed replication of 1 descriptor	
	0 31 001	Replication factor	
	3 07 055	Forecast change	
3 07 063	0 07 061	Depth below land surface	
	0 12 130	Soil temperature (scale 2)	
		(Monthly values of a land station)	
3 07 071	3 01 090	Surface station identification, date and time (see Note 1), horizontal and vertical co-ordinates	
	0 04 074	Short time displacement (= UTC - LST) (see Note 1)	
	0 04 023	Time period (= number of days in the month)	

(continued)

(Category 07 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
3 07 071 *(continued)*		*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) (for lowland stations = missing value)
	0 10 009	Geopotential height of the standard level (for lowland stations = missing value)
	0 07 032	Height of sensor above local ground (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 (= 63, missing value)
	0 12 151	Standard deviation of daily mean temperature
	0 07 032	Height of sensor above local ground (set to missing to cancel the previous value)
	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 (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 (days)
		Number of days of occurrence:
	1 02 018	Replicate 2 descriptors 18 times
	0 08 052	Conditions for which number of days of occurrence follows
	0 08 022	Total number (of days)
		Occurrence of extreme values of temperature and wind speed:
	0 07 032	Height of sensor above local ground (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)

(continued)

(Category 07 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
3 07 071 *(continued)*	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 (= 63; missing value)
	0 07 032	Height of sensor above local ground (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 = 3 to cancel the previous value)
		Precipitation:
	0 04 003	Day (= 1) (see Note 2)
	0 04 004	Hour (= 6) (see Note 2)
	0 04 023	Time period (= number of days in the month) (see Note 2)
	0 07 032	Height of sensor above local ground (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)
	0 08 020	Total number of missing entities (days)
		Numbers of days of occurrence:
	1 02 006	Replicate 2 descriptors 6 times
	0 08 052	Conditions for which number of days of occurrence follows
	0 08 022	Total number (of 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 (set to missing to cancel the previous value)
		(Monthly normals for a land station)
3 07 072	0 04 001	Year (of beginning of the reference period)
	0 04 001	Year (of ending of the reference period)
	0 04 002	Month
	0 04 003	Day (= 1) (see Note 1)
	0 04 004	Hour (= 0) (see Note 1)
	0 04 074	Short time displacement (= UTC - LST) (see Note 1)
	0 04 022	Time period (= 1)

(continued)

(Category 07 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
3 07 072 *(continued)*		*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 of the standard level
	0 07 032	Height of sensor above local ground (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 (set to missing to cancel the previous value)
		Normal of sunshine duration:
	0 14 032	Total sunshine
	0 08 023	First-order statistics (= 63; missing value)
		Normals of precipitation:
	0 04 001	Year (of beginning of the reference period)
	0 04 001	Year (of ending of the reference period)
	0 04 002	Month
	0 04 003	Day (= 1) (see Note 2)
	0 04 004	Hour (= 6) (see Note 2)
	0 04 022	Time period (= 1)
	0 07 032	Height of sensor above local ground (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 (= 63; missing value)
	1 02 008	Replicate 2 descriptors 8 times
	0 08 050	Qualifier for number of missing values in calculation of statistic = 1 (pressure) = 2 (temperature) = 3 (extreme temperatures) (see Note 4) = 4 (vapour pressure) = 5 (precipitation) = 6 (sunshine duration) = 7 (maximum temperature) (see Note 4) = 8 (minimum temperature) (see Note 4)
	0 08 020	Total number of missing entities (years) (see Note 4)
		(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

(continued)

(Category 07 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
		(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	Fixed surface station identification, time, horizontal and vertical coordinates
	3 02 031	Pressure data
	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
	1 01 000	Delayed replication of 1 descriptor
	0 31 000	Short delayed descriptor replication factor
	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 surface temperature, method of measurement, depth below water surface
	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
	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	Fixed surface station identification, time, horizontal and vertical coordinates
	3 02 031	Pressure data
	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
	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 next descriptor 2 times
	3 02 045	Radiation data (from 1 hour and/or 24 hour period)
	3 02 046	Temperature change

(continued)

(Category 07 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
		(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	Fixed surface station identification, time, horizontal and vertical coordinates
	3 02 031	Pressure data
	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 (= missing to cancel the previous value)
	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 next descriptor 2 times
	3 02 045	Radiation data (from 1 hour and/or 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	Fixed surface station identification, time, horizontal and vertical coordinates
	3 02 031	Pressure data
	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 (= missing to cancel the previous value)
	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 next descriptor 2 times
	3 02 045	Radiation data (from 1 hour and/or 24 hour period)
	3 02 046	Temperature change

(continued)

(Category 07 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
		(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	Fixed surface station identification, time, horizontal and vertical coordinates
	3 02 031	Pressure data
	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 (= missing to cancel the previous value)
	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 next descriptor 2 times
	3 02 045	Radiation data (from 1 hour and/or 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	Fixed surface station identification, time, horizontal and vertical coordinates
	3 02 031	Pressure data
	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 (= missing to cancel the previous value)
	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 tropics
	1 01 000	Delayed replication of 1 descriptor
	0 31 001	Delayed descriptor replication factor
	2 05 001	Character field of 1 character
	3 02 043	Basic synoptic "period" data
	3 02 044	Evaporation data
	1 01 002	Replicate next descriptor 2 times
	3 02 045	Radiation data (from 1 hour and/or 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	Fixed surface station identification, time, horizontal and vertical coordinates
	3 02 031	Pressure data
	3 02 035	Basic synoptic "instantaneous" data
	3 02 036	Clouds with bases below station level
	0 08 002	Vertical significance (= missing to cancel the previous value)
	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 next descriptor 2 times
	3 02 045	Radiation data (from 1 hour and/or 24 hour period)

(continued)

(Category 07 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
		(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, time, horizontal and vertical coordinates
	3 02 031	Pressure data
	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
	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 next descriptor 2 times
	3 02 045	Radiation data (from 1 hour and/or 24 hour period)
	3 02 046	Temperature change
		(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	Fixed surface station identification; time, horizontal and vertical coordinates
	0 08 010	Surface qualifier (for temperature data)
	3 01 091	Surface station instrumentation
	3 02 001	Pressure
	0 07 004	Pressure (standard level)
	0 10 009	Geopotential height of the 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 five times
	3 07 063	Soil temperature
	0 07 061	Depth below land surface (set to missing to cancel the previous value)
	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 (set to missing to cancel the previous value)
	0 07 033	Height of sensor above water surface (set to missing to cancel the previous value)
	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
	0 02 038	Method of sea surface temperature measurement
	0 22 043	Sea/water temperature (scale 2)
	3 02 021	Wave data
	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

(continued)

(Category 07 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
3 07 091 *(continued)*	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 (= -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
	0 07 033	Height of sensor above water surface (set to missing to cancel the previous value)
	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 (set to missing to cancel the previous value)
	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 (= -10 minutes)
	0 13 059	Number of flashes
	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	Fixed surface station identification, time, horizontal and vertical coordinates
	3 01 089	National station identification
	0 08 010	Surface qualifier (for 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)

(continued)

(Category 07 - continued)

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.

(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
		(Buoy/platform - fixed)
3 08 001	3 01 033	Identification, type, date/time, position (high accuracy)
	3 02 011	Basic surface report
	0 22 042	Sea-surface temperature
		(Buoy/platform - fixed)
3 08 002	3 01 034	Identification, type, date/time, position (coarse accuracy)
	3 02 011	Basic surface report
	0 22 042	Sea-surface temperature
		(Buoy/platform - moving) (see Note 4)
3 08 003	3 01 035	Identification, movement, type, date/time, position (coarse accuracy)
	3 02 011	Basic surface report
	0 22 042	Sea-surface temperature
		(Ship)
3 08 004	3 01 036	Identification, movement, type, date/time, position (coarse accuracy)
	3 02 011	Basic surface report
	0 22 042	Sea-surface temperature
3 08 005	3 08 004	Basic ship report
	3 02 024	Wind waves 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 temperature
3 08 007	3 01 055	Identification, movement type, date/time, position (high accuracy)
	3 02 011	Basic surface report
	0 07 062	Depth below sea/water surface
	0 22 042	Sea/water temperature
		(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 data
	3 02 054	Ship "instantaneous" data
	0 08 002	Vertical significance
	3 02 055	Icing and ice
	3 02 057	Ship marine data
	3 02 060	Ship "period" data

(continued)

(Category 07 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
		(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	Date
	3 01 012	Time
	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's call sign
	0 02 001	Type of station
	3 01 011	Date (see Note 1)
	3 01 012	Time (see Note 1)
	3 01 023	Latitude (coarse accuracy), longitude (coarse accuracy)
	0 07 030	Height of station platform 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 displacement (= UTC - LST) (see Note 1)
	0 04 023	Time period (= number of days in the month)
	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 marine deck platform (for temperature measurement) (see Note 3)
	0 07 033	Height of sensor above water surface (for temperature measurement) (see Note 3)
	0 12 101	Temperature/air temperature
	0 13 004	Vapour pressure
	0 07 032	Height of sensor above marine deck platform (set to missing to cancel the previous value)
	0 07 033	Height of sensor above water surface (set to missing to cancel the previous value)
	3 02 056	Sea surface temperature, method of measurement, and depth below sea surface
	0 08 023	First-order statistics (= 63; missing value)

(continued)

(Category 08 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
3 08 011		*Precipitation:*
(continued)	0 04 003	Day (= 1) (see Note 2)
	0 04 004	Hour (= 6) (see Note 2)
	0 04 023	Time period (= number of days in the month) (see Note 2)
	0 07 032	Height of sensor above marine deck 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 marine deck platform (set to missing to cancel the previous value)
		(Monthly normals from an ocean weather station)
3 08 012	0 04 001	Year (of beginning of the reference period)
	0 04 001	Year (of ending of the reference period)
	0 04 002	Month
	0 04 003	Day (= 1) (see Note 1)
	0 04 004	Hour (= 0) (see Note 1)
	0 04 074	Short time displacement (= UTC - LST) (see Note 1)
	0 04 022	Time period (= 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 marine deck platform (for temperature measurement) (see Note 3)
	0 07 033	Height of sensor above water surface (for temperature measurement) (see Note 3)
	0 12 101	Temperature/air temperature
	0 13 004	Vapour pressure
	0 07 032	Height of sensor above marine deck platform (set to missing to cancel the previous value)
	0 07 033	Height of sensor above water surface (set to missing to cancel the previous value)
	3 02 056	Sea surface temperature, method of measurement, and depth below sea surface
	0 08 023	First-order statistics (= 63; missing value)
	0 04 001	Year (of beginning of the reference period)
	0 04 001	Year (of ending of the reference period)
	0 04 002	Month
	0 04 003	Day (= 1) (see Note 2)
	0 04 004	Hour (= 6) (see Note 2)
	0 04 022	Time period (= 1)
		Normals of precipitation:
	0 07 032	Height of sensor above marine deck platform (for precipitation measurement) (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 (= 63; missing value)

(continued)

(Category 08 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
3 08 013	 3 08 011 3 08 012	(Representation of CLIMAT SHIP data of the actual month and for monthly normals) Monthly values from an ocean weather station 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
		(Vertical wind profile)
3 09 001	3 01 037	Identification, etc. (land station, high accuracy position)
	1 01 000	Delayed replication of 1 descriptor
	0 31 001	Replication factor
	3 03 011	Winds at heights
		(Vertical wind profile)
3 09 002	3 01 038	Identification, etc. (land station, coarse accuracy position)
	1 01 000	Delayed replication of 1 descriptor
	0 31 001	Replication factor
	3 03 011	Winds at heights
		(Vertical wind profile)
3 09 003	3 01 037	Identification, etc. (land station, high accuracy position)
	1 01 000	Delayed replication of 1 descriptor
	0 31 001	Replication factor
	3 03 012	Winds at pressure levels
		(Vertical wind profile)
3 09 004	3 01 038	Identification, etc. (land station, coarse accuracy position)
	1 01 000	Delayed replication of 1 descriptor
	0 31 001	Replication factor
	3 03 012	Winds at pressure levels
		(Vertical sounding with relative humidity)
3 09 005	3 01 037	Identification, etc. (land station, high accuracy position)
	3 02 004	Significant cloud information
	1 01 000	Delayed replication of 1 descriptor
	0 31 001	Replication factor
	3 03 013	Pressure, geopotential, temperature and wind data
		(Vertical sounding with relative humidity)
3 09 006	3 01 038	Identification, etc. (land station, coarse accuracy position)
	3 02 004	Significant cloud information
	1 01 000	Delayed replication of 1 descriptor
	0 31 001	Replication factor
	3 03 013	Pressure, geopotential, temperature and wind data
		(Vertical sounding with dew-point data)
3 09 007	3 01 037	Identification, etc. (land station, high accuracy position)
	3 02 004	Significant cloud information
	1 01 000	Delayed replication of 1 descriptor
	0 31 001	Replication factor
	3 03 014	Pressure, geopotential, temperature and wind data

(continued)

(Category 09 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
		(Vertical sounding with dew-point data)
3 09 008	3 01 038	Identification, etc. (land station, coarse accuracy position)
	3 02 004	Significant cloud information
	1 01 000	Delayed replication of 1 descriptor
	0 31 001	Replication factor
	3 03 014	Pressure, geopotential, temperature and wind data
		(Vertical wind profile)
3 09 011	3 01 039	Ship's identification, etc.
	1 01 000	Delayed replication of 1 descriptor
	0 31 001	Replication factor
	3 03 011	Winds at heights
		(Vertical wind profile)
3 09 012	3 01 039	Ship's identification, etc.
	1 01 000	Delayed replication of 1 descriptor
	0 31 001	Replication factor
	3 03 012	Winds at pressure levels
		(Vertical sounding with relative humidity)
3 09 013	3 01 039	Ship's identification, etc.
	3 02 004	Significant cloud information
	1 01 000	Delayed replication of 1 descriptor
	0 31 001	Replication factor
	3 03 013	Pressure, geopotential, temperature and wind data
		(Vertical sounding with dew-point data)
3 09 014	3 01 039	Ship's identification, etc.
	3 02 004	Significant cloud information
	1 01 000	Delayed replication of 1 descriptor
	0 31 001	Replication factor
	3 03 014	Pressure, geopotential, temperature and wind data
		(Vertical wind profile)
3 09 015	3 01 040	Ship's identification, etc.
	1 01 000	Delayed replication of 1 descriptor
	0 31 001	Replication factor
	3 03 011	Winds at heights
		(Vertical wind profile)
3 09 016	3 01 040	Ship's identification, etc.
	1 01 000	Delayed replication of 1 descriptor
	0 31 001	Replication factor
	3 03 012	Winds at pressure levels

(continued)

(Category 09 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
		(Vertical sounding with relative humidity)
3 09 017	3 01 040	Ship's identification, etc.
	3 02 004	Significant cloud information
	1 01 000	Delayed replication of 1 descriptor
	0 31 001	Replication factor
	3 03 013	Pressure, geopotential, temperature and wind data
		(Vertical sounding with dew-point data)
3 09 018	3 01 040	Ship's identification, etc.
	3 02 004	Significant cloud information
	1 01 000	Delayed replication of 1 descriptor
	0 31 001	Replication factor
	3 03 014	Pressure, geopotential, temperature and wind data
		(Wind profiler - wind data sounding)
3 09 019	3 01 031	Identification, etc.
	0 02 003	Type of measuring equipment used
	1 01 000	Delayed replication of 1 descriptor
	0 31 001	Replication factor
	3 03 011	Winds at heights
		(Wind profiler - Cartesian coordinates)
3 09 020	3 01 031	Identification, etc.
	0 02 003	Type of measuring equipment used
	1 04 000	Delayed replication of 4 descriptors
	0 31 001	Replication factor
	0 07 003	Geopotential
	0 11 003	u-component
	0 11 004	v-component
	0 11 005	w-component
		(Ozone sonde flight data)
3 09 030	0 15 004	Ozone sounding correction factor
	0 15 005	Ozone p
	1 04 000	Delayed replication of 4 descriptors
	0 31 001	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
		(Ozone sonde flight data)
3 09 031	0 15 004	Ozone sounding correction factor
	0 15 005	Ozone p
	1 04 000	Delayed replication of 4 descriptors
	0 31 001	Replication factor

(continued)

(Category 09 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
3 09 031 *(continued)*	0 04 025	Time displacement (since launch time) in minutes
	0 08 006	Ozone vertical sounding significance
	0 07 004	Pressure
	0 15 003	Measured ozone partial pressure
		(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
	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
		(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
	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
		(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, dew-point and wind data at a pressure level
	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

(continued)

(Category 09 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
		(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, dew-point and wind data at a pressure level
	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
		(Sequence for representation of CLIMAT TEMP and CLIMAT TEMP SHIP data)
3 09 054	3 01 001	Identification of launch site
	0 01 011	Ship's call sign
	3 01 011	Date
	3 01 012	Time
	3 01 021	Horizontal and vertical coordinates
	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 (= number of days in the month)
	0 04 059	Times of observations used to compute the reported mean values
	1 15 000	Delayed replication of 15 descriptors
	0 31 001	Delayed descriptor replication factor
	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	Dew-point 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 (= 63; missing value)
	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 (days)
	0 08 050	Qualifier for number of missing values in calculation of statistic (= 9; wind)
	0 08 020	Total number of missing entities (days)

(continued)

(Category 09 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
		(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 correction
	0 07 004	Pressure
	2 02 000	Cancel change scale
	2 01 000	Cancel change data width
	0 33 007	Per cent confidence (for pressure)
	0 33 035	Manual/automatic quality control (for pressure)
	0 33 015	Data quality-check indicator (for pressure)
	0 13 009	Relative humidity
	0 33 007	Per cent confidence (for relative humidity)
	0 33 035	Manual/automatic quality control (for relative humidity)
	0 33 015	Data quality-check indicator (for relative humidity)
	0 02 013	Solar and infrared radiation correction
	0 12 101	Temperature/air temperature
	0 33 007	Per cent confidence (for temperature)
	0 33 035	Manual/automatic quality control (for temperature)
	0 33 015	Data quality-check indicator (for 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 (for latitude)
	0 33 015	Data quality-check indicator (for latitude)
	0 06 001	Longitude (high accuracy)
	0 33 035	Manual/automatic quality control (for longitude)
	0 33 015	Data quality-check indicator (for longitude)
	0 07 007	Height
	0 33 035	Manual/automatic quality control (for height)
	0 33 015	Data quality-check indicator (for height)
	0 11 003	u-component
	0 33 035	Manual/automatic quality control (for u-component)
	0 33 015	Data quality-check indicator (for u-component)
	0 11 004	v-component
	0 33 035	Manual/automatic quality control (for v-component)
	0 33 015	Data quality-check indicator (for v-component)
	0 33 007	Per cent confidence (for raw GPS unsmoothed wind)

(continued)

(Category 09 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
		(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) sequence
	0 05 001	Latitude (high accuracy)
	0 33 035	Manual/automatic quality control (for latitude)
	0 33 015	Data quality-check indicator (for latitude)
	0 06 001	Longitude (high accuracy)
	0 33 035	Manual/automatic quality control (for longitude)
	0 33 015	Data quality-check indicator (for longitude)
	0 07 007	Height
	0 33 035	Manual/automatic quality control (for height)
	0 33 015	Data quality-check indicator (for height)
	0 11 003	u-component
	0 33 035	Manual/automatic quality control (for u-component)
	0 33 015	Data quality-check indicator (for u-component)
	0 11 004	v-component
	0 33 035	Manual/automatic quality control (for v-component)
	0 33 015	Data quality-check indicator (for v-component)
	0 33 007	Per cent confidence (for raw GPS smoothed wind)
		(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 correction
	0 07 004	Pressure
	0 33 035	Manual/automatic quality control (for pressure)
	0 33 015	Data quality-check indicator (for pressure)
	0 13 003	Relative humidity
	0 33 035	Manual/automatic quality control (for relative humidity)
	0 33 015	Data quality-check indicator (for relative humidity)
	2 02 000	Cancel change scale
	2 01 000	Cancel change data width
	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 (for temperature)
	0 33 015	Data quality-check indicator (for temperature)
	0 12 103	Dew-point temperature
	0 33 035	Manual/automatic quality control (for dew-point temperature)
	0 33 015	Data quality-check indicator (for dew-point temperature)
	0 10 009	Geopotential height
	0 33 035	Manual/automatic quality control (for geopotential height)
	0 33 015	Data quality-check indicator (for geopotential height)

(continued)

(Category 09 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
		(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 (for latitude)
	0 33 015	Data quality-check indicator (for latitude)
	0 06 001	Longitude (high accuracy)
	0 33 035	Manual/automatic quality control (for longitude)
	0 33 015	Data quality-check indicator (for longitude)
	0 07 007	Height
	0 33 035	Manual/automatic quality control (for height)
	0 33 015	Data quality-check indicator (for height)
	0 11 003	u-component
	0 33 035	Manual/automatic quality control (for u-component)
	0 33 015	Data quality-check indicator (for u-component)
	0 11 004	v-component
	0 33 035	Manual/automatic quality control (for v-component)
	0 33 015	Data quality-check indicator (for v-component)
		(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 correction
	0 07 004	Pressure
	0 13 003	Relative humidity
	2 02 000	Cancel change scale
	2 01 000	Cancel change data width
	0 02 013	Solar and infrared radiation correction
	0 12 101	Temperature/air temperature
	0 12 103	Dew-point temperature
	0 10 009	Geopotential height
	0 10 007	Height
	0 11 002	Wind speed
	0 11 001	Wind direction

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

Category 10 - Vertical sounding sequences (satellite data)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
		(Satellite - brightness temperature)
3 10 001	3 01 042	Identification, method, date/time
	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	Identification, method, date/time
	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	Identification, method, date/time
	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	Identification, method, date/time
	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	Identification, method, date/time
	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	Identification, method, date/time
	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
3 10 007	3 01 042	Identification, method, date/time
	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

(continued)

(Category 10 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
		(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 width
	0 05 041	Scan line number
	2 01 000	Change 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
	0 04 003	Day
	0 04 004	Hour
	0 04 005	Minute
	2 02 131	Change scale
	2 01 138	Change width
	0 04 006	Second
	2 01 000	Change width
	2 02 000	Change scale
	0 05 001	Latitude
	0 06 001	Longitude

(continued)

(Category 10 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
3 10 011 *(continued)*	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	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 width
	2 02 129	Change scale
	0 12 063	Brightness temperature
	2 02 000	Change scale
	2 01 000	Change width
		(AVHRR (GAC) report)
3 10 013	0 01 007	Satellite ID
	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
	0 04 006	Second
	0 05 001	Latitude
	0 06 001	Longitude
	0 07 025	Solar zenith angle
	0 05 043	Field of view number
	0 25 085	Fraction of clear pixels in HIRS field of view
	2 01 131	Change 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

(continued)

(Category 10 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
3 10 013 *(continued)*	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 width
	2 01 132	Change 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
	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 width
		(Satellite - geostationary wind data)
3 10 014	3 01 072	Satellite identification, date, time, latitude, longitude
	3 03 041	Wind sequence
	3 04 011	GOES-I/M information

continued)

(Category 10 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
		(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 next 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 next 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 next 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 next descriptor 12 times
	3 04 033	Clear sky radiance
		(Ozone data)
3 10 018	0 01 007	Satellite identifier
	0 05 040	Orbit number
	0 04 001	Year
	0 04 043	Day of 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	Cancel increase scale, reference value and data width
	0 05 002	Latitude
	0 06 002	Longitude
	0 33 072	Ozone error
	0 07 025	Solar zenith angle
	0 05 022	Solar azimuth angle
	2 07 002	Increase scale, reference value and data width
	0 15 001	Total ozone
	2 07 000	Cancel increase scale, reference value and data width
	0 08 003	Vertical significance (0 = Surface)

(continued)

(Category 10 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
3 10 018 *(continued)*	2 07 001	Increase scale, reference value and data width
	0 10 004	Pressure (terrain)
	2 07 000	Cancel increase scale, reference value and data width
	0 08 003	Vertical significance (Missing = Cancel)
	0 08 003	Vertical significance (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	Cancel increase scale, reference value and data width
	2 07 002	Increase scale, reference value and data width
	0 15 001	Total ozone (below cloud top pressure)
	2 07 000	Cancel increase scale, reference value and data width
	0 08 003	Vertical significance (Missing = Cancel)
	2 07 002	Increase scale, reference value and data width
	0 20 081	Cloud amount in segment (cloud fraction)
	2 07 000	Cancel increase scale, reference value and data width
	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	Cancel increase scale, reference value and data width
	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	Date
	3 01 013	Time
	3 01 023	Latitude/longitude
	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 (Missing = Cancel)
	0 08 029	Surface type
	0 05 040	Orbit number
	0 08 075	Ascending/descending orbit qualifier
	0 08 003	Vertical significance (0 = Surface)
	0 10 004	Pressure (terrain)
	0 08 003	Vertical significance (Missing = Cancel)
	2 07 002	Increase scale, reference value and data width
	0 15 001	Total ozone
	2 07 000	Cancel increase scale, reference value and data width
	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	Cancel increase scale, reference value and data width
	0 08 003	Vertical significance (2 = Cloud top)

(continued)

(Category 10 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
3 10 019 *(continued)*	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	Cancel increase scale, reference value and data width
	0 08 003	Vertical significance (Missing = Cancel)
	1 13 021	Repeat next 13 descriptors 21 times
	0 07 004	Pressure (at bottom of layer)
	0 07 004	Pressure (at 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 (Missing = Cancel)
	0 15 005	Ozone p
	0 33 007	% confidence
	2 07 000	Cancel increase scale, reference value and data width
	0 08 026	Matrix significance (0 = Row of averaging kernel matrix)
	1 01 020	Repeat next descriptor 20 times
	0 25 143	Linear coefficient
	0 08 026	Matrix significance (Missing = Cancel)
	0 08 043	Atmospheric chemical type (0 = Ozone)
	1 09 015	Repeat next 9 descriptors 15 times
	0 07 004	Pressure
	0 08 090	Decimal scale of following Table B values
	2 07 006	Increase scale, reference value and data width
	0 15 008	Scaled mixing ratio (volumetric)
	2 07 000	Cancel increase scale, reference value and data width
	0 08 090	Decimal scale of following Table B values (Missing = Cancel)
	2 07 002	Increase scale, reference value and data width
	0 33 007	% confidence
	2 07 000	Cancel increase scale, reference value and data width
	0 08 043	Atmospheric chemical type (Missing = Cancel)
	0 33 071	Profile ozone quality
	1 08 008	Repeat next 8 descriptors 8 times
	2 02 124	Change scale
	2 01 107	Change data width
	0 02 071	Spectrographic wavelength
	2 01 000	Cancel change data width
	2 02 000	Cancel change scale
	2 07 002	Increase scale, reference value and data width
	0 20 081	Cloud amount in segment (cloud fraction)
	2 07 000	Cancel increase scale, reference value and data width
		(Retrieved ozone data)
3 10 020	3 10 022	
	3 01 011	Year, month, day
	3 01 013	Hour, minute, second
	3 01 021	Latitude, longitude (high accuracy)
	3 04 034	
	3 10 021	

(continued)

(Category 10 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
3 10 021	1 08 000	Delayed replication of 8 next 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 back to Table B
	2 01 000	Change data width back to Table B
	0 15 020	Integrated ozone density
	0 10 002	Height
3 10 022	0 01 007	Satellite identifier
	0 02 019	Satellite instrument used
	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
	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 next descriptor 12 times
	3 04 032	Cloud fraction
	1 05 002	Replicate next 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 next descriptor 12 times
	3 04 033	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 next descriptor 3 times
	3 04 032	Cloud fraction
	1 05 002	Replicate next 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

(continued)

(Category 10 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
3 10 024 *(continued)*	0 13 003	Relative humidity
	1 01 003	Replicate next descriptor 3 times
	3 04 033	Radiance
		(SSMIS temperature data record)
3 10 025	0 01 007	Satellite identification
	0 08 021	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	Milliseconds
	2 02 131	
	0 04 006	
	2 02 000	
	2 01 000	
	2 01 132	
	0 05 041	Scan number
	2 01 000	
	2 01 129	
	0 05 043	Scene number
	2 01 000	
	0 05 002	Latitude
	0 06 002	Longitude
	0 13 040	Surface flag
	0 20 029	Rain flag
	1 04 024	Repeat next 4 descriptors 24 times
	0 05 042	Channel number
	0 12 163	Temperature
	0 21 083	Warm target calibration
	0 21 084	Cold target calibration
	1 15 003	Replicate ephemeris data (15 descriptors) 3 times
	0 04 001	Year
	0 04 002	Month
	0 04 003	Day
	2 01 142	Ephemeris milliseconds
	2 02 131	
	0 04 026	
	2 02 000	
	2 01 000	
	0 05 001	Latitude - Ephemeris
	0 06 001	Longitude - Ephemeris
	2 01 138	
	2 02 129	
	0 07 001	Ephemeris height
	2 02 000	
	2 01 000	
	0 08 021	Orbit start
	0 04 001	Year
	0 04 002	Month

(continued)

(Category 10 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
3 10 025 *(continued)*	0 04 003	Day
	0 04 004	Hour
	0 04 005	Minute
	0 05 040	Orbit number
	1 01 003	Replicate 3 times
	0 12 070	Warm load temperature
	0 25 054	SSMIS subframe identification number
	1 01 004	Replicate 4 times
	0 25 055	Multiplexer housekeeping values
	0 08 007	Dimensional significance (line)
	1 04 028	Replicate next 4 descriptors 28 times
	0 05 002	Latitude
	0 06 002	Longitude
	0 02 111	Earth angle
	0 05 021	Azimuth
		(Satellite radio occultation data)
3 10 026	3 10 022	Satellite, instrument and product
	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 width to 16 bits
	2 02 131	Change scale to 3
	0 04 006	Second
	2 02 000	Change scale back to Table B
	2 01 000	Change width back to Table B
	0 33 039	Quality flags for radio occultation data
	0 33 007	Per cent confidence (for whole message)
	3 04 030	Location of platform
	3 04 031	Speed of platform
	0 02 020	Satellite classification
	0 01 050	Platform transmitter identification number
	2 02 127	Change scale to 1
	3 04 030	Location of platform
	2 02 000	Change scale back to Table B
	3 04 031	Speed of platform
	2 01 133	Change width to 18 bits
	2 02 131	Change scale to 3
	0 04 016	Time increment
	2 02 000	Change scale back to Table B
	2 01 000	Change width back to Table B
	3 01 021	Latitude, longitude (high accuracy)
	3 04 030	Location of point
	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	Replication factor (16 bits)
	3 01 021	Latitude, longitude (high accuracy)

(continued)

(Category 10 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
3 10 026 *(continued)*	0 05 021	Bearing or azimuth
	1 08 000	Delayed replication of 8 descriptors
	0 31 001	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 width to 20 bits
	0 15 037	Bending angle
	2 01 000	Change width back to Table B
	0 08 023	First-order statistics (63 = Missing)
	0 33 007	Per cent confidence (all data for current replication)
	1 08 000	Delayed replication of 8 descriptors
	0 31 002	Replication factor (16 bits)
	0 07 007	Height
	0 15 036	Atmospheric refractivity
	0 08 023	First-order statistics (13 = Root-mean-square)
	2 01 123	Change width to 14 bits
	0 15 036	Atmospheric refractivity
	2 01 000	Change width back to Table B
	0 08 023	First-order statistics (63 = Missing)
	0 33 007	Per cent confidence (all data for current height)
	1 16 000	Delayed replication of 16 descriptors
	0 31 002	Replication factor (16 bits)
	0 07 009	Geopotential height
	0 10 004	Pressure
	0 12 001	Temperature
	0 13 001	Specific humidity
	0 08 023	First-order statistics (13 = Root-mean-square)
	2 01 120	Change width to 6 bits
	0 10 004	Pressure
	2 01 000	Change width back to Table B
	2 01 122	Change width to 6 bits
	0 12 001	Temperature
	2 01 000	Change width back to Table B
	2 01 123	Change width to 9 bits
	0 13 001	Specific humidity
	2 01 000	Change width back to Table B
	0 08 023	First-order statistics (63 = Missing)
	0 33 007	Per cent confidence (all data for current height)
	0 08 003	Vertical significance (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 width to 6 bits
	0 10 004	Pressure
	2 01 000	Change width back to Table B
	0 08 023	First-order statistics (63 = Missing)
	0 33 007	Per cent confidence (for surface data)

(continued)

(Category 10 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
		(All sky radiance product main sequence)
3 10 027	3 01 071	Product information
	3 01 011	Date
	3 01 013	Time
	3 01 021	Latitude / longitude
	0 30 021	Number of pixels per row
	0 30 022	Number of pixels per column
	0 10 002	Orbit height
	3 04 036	All sky radiance cloud coverage
	0 02 152	Satellite instrument used
	0 02 167	Radiance computational method
	1 01 011	Replication operator
	3 04 035	All sky radiance data
		(All sky radiance product main sequence)
3 10 028	3 01 071	Product information
	3 01 011	Date
	3 01 013	Time
	3 01 021	Latitude / longitude
	0 30 021	Number of pixels per row
	0 30 022	Number of pixels per column
	0 10 002	Orbit height
	3 04 036	All sky radiance cloud coverage
	0 02 152	Satellite instrument used
	0 02 167	Radiance computational method
	1 01 011	Replication operator
	3 04 037	All sky radiance data
		(Layer, ozone, height, temperature and water vapour)
3 10 029	1 10 000	Delayed replication
	0 31 001	
	2 01 138	Change data width
	2 02 130	Change scale
	0 07 004	Pressure
	0 07 004	Pressure
	2 02 000	Cancel operator
	2 01 000	Cancel operator
	0 15 020	Integrated ozone density
	0 10 002	Height
	0 12 101	Temperature
	0 13 098	Integrated water vapour density
		(MIPAS or GOMOS instruments reporting)
3 10 030	3 10 022	Satellite identification, product type
	3 01 011	Date
	3 01 013	Time
	3 01 021	Latitude/longitude
	3 04 034	Latitude/longitude, solar elevation, number of layers
	3 10 029	Layer, ozone, height, temperature and water vapour

(continued)

(Category 10 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
		(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
	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	Cancel change data width
	2 01 132	Change data width
	0 25 070	Major frame count
	2 01 000	Cancel change data width
	2 02 126	Change scale
	0 07 001	Height of station
	2 02 000	Cancel change scale
	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	Cancel change data width
	2 02 000	Cancel change scale
	3 01 021	Latitude and 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
		(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	Cancel change data width
	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	Cancel change data width
	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	Cancel change scale
	2 01 000	Cancel change data width
		(Satellite radiance/channel principle 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 components of 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 and bit width
	0 04 006	Second
	2 07 000	Cancel increase scale and bit width
	3 04 030	Location of satellite platform
	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

(continued)

(Category 10 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
3 10 060 *(continued)*	0 08 075	Ascending/descending orbit qualifier
	2 01 133	Increase bit width
	0 05 041	Scan line number
	2 01 000	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	Increase bit width
	0 07 002	Height or altitude
	2 01 000	Cancel increase bit width
	2 02 127	Increase scale
	2 01 125	Increase bit width
	0 21 166	Land fraction
	2 01 000	Cancel increase bit width
	2 02 000	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 (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	Increase bit width
	0 05 042	Channel number
	2 01 000	Cancel increase bit width
	0 14 044	Channel radiance
		(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 and bit width
	0 04 006	Second

(continued)

(Category 10 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
3 10 061 *(continued)*	2 07 000	Cancel increase scale and bit width
	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	Increase bit width
	0 07 002	Height or altitude
	2 01 000	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 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	Increase scale by 3
	0 02 153	Satellite channel centre frequency
	0 02 154	Satellite channel band width
	2 02 000	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
	0 02 020	Satellite classification
	3 01 011	Year, month, day
	3 01 012	Hour, minute
	2 07 003	Increase scale and bit width
	0 04 006	Second
	2 07 000	Cancel increase scale and bit width
	0 05 040	Orbit number
	2 01 133	Increase bit width
	0 05 041	Scan line number
	0 05 043	Field of view number
	2 01 000	Cancel increase bit width
	0 08 076	Type of band
	0 33 082	Geolocation quality flags
	3 01 021	Latitude, longitude (high accuracy)

(continued)

(Category 10 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
3 10 062 *(continued)*	2 01 129	Increase bit width
	0 07 002	Height or altitude
	2 01 000	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

Note: 3 10 027 is deprecated.

Category 11 - Single level report sequences (conventional data)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
		(Aircraft reports)
3 11 001	3 01 051	ASDAR aircraft flight number, navigational system, date/time, position, phase of aircraft flight
	0 07 002	Altitude
	0 12 001	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 identification
	0 01 023	Sequence number
	3 01 021	Latitude and longitude

(continued)

(Category 11 - continued)

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

Category 12 - Single level report sequences (satellite data)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
3 12 001	3 01 043	Satellite identifier, instrumentation, location, date/time
	3 04 001	Cloud top pressure, temperature, wind
3 12 002	3 01 043	Satellite identifier, instrumentation, location, date/time
	3 04 002	Cloud top pressure, wind
3 12 003	3 01 042	Satellite identifier, instrumentation, location, date/time
	3 04 003	Surface temperature
3 12 004	3 01 042	Satellite identifier, instrumentation, location, date/time
	3 04 004	Cloud cover
3 12 005	3 01 042	Satellite identifier, instrumentation, location, date/time
	0 20 014	Height of top of cloud
3 12 006	3 01 044	Satellite identifier, instrumentation, location, date/time
	3 04 005	Layer mean relative humidity
3 12 007	3 01 042	Satellite identifier, instrumentation, location, date/time
	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 instrumentation
	0 05 041	Scan line number
	0 04 001	Year
	0 04 043	Day of year
		(Orbital information, Part II)
3 12 011	2 02 131	Change scale
	2 01 149	Change width
	0 04 006	Second
	2 01 000	Change 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
		(HIRS brightness temperatures - channels 1-19)
3 12 012	2 02 129	Change scale
	2 01 132	Change width
	1 01 019	Replicate 1 descriptor 19 times
	0 12 063	Brightness temperature
	2 01 000	Change width
	2 02 000	Change scale

(continued)

(Category 12 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
		(HIRS brightness temperatures - channel 20)
3 12 013	0 05 042	Channel number
	2 02 129	Change scale
	2 01 135	Change width
	0 12 063	Brightness temperature
	2 01 000	Change 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 and 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 temperature - channel 20
		(MSU brightness temperatures - channels 1-4)
3 12 015	1 09 011	Replicate 9 descriptors 11 times
	3 01 023	Latitude and longitude (coarse accuracy)
	0 05 042	Channel number
	0 05 052	Channel number increment
	2 02 129	Change scale
	2 01 132	Change width
	1 01 004	Replicate 1 descriptor 4 times
	0 12 063	Brightness temperature
	2 02 000	Change scale
	2 01 000	Change 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 and longitude (coarse accuracy)
	0 05 042	Channel number
	0 05 052	Channel number increment
	2 02 129	Change scale
	2 01 132	Change width
	1 01 003	Replicate 1 descriptor 3 times
	0 12 063	Brightness temperature
	2 02 000	Change scale
	2 01 000	Change 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

(continued)

(Category 12 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
		(Wave scatterometer product with width change for wave number (spectral))
3 12 019	3 01 047	Product header
	3 01 048	Radar parameters
	0 15 015	Maximum spectrum composition before normalisation
	0 29 002	Coordinate grid type
	0 21 076	Representation of intensities
	1 06 012	Repeat next 6 descriptors 12 times
	2 01 129	Change width to 14 bits
	0 06 030	Wave number (spectral)
	2 01 000	Change width back to Table B
	1 02 012	Repeat next 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	Product header
	3 01 048	Radar parameters
	0 15 015	Maximum spectrum composition before normalization
	0 29 002	Coordinate grid type
	0 21 076	Representation of intensities
	1 04 012	Repeat next 4 descriptors 12 times
	0 06 030	Wave number (spectral)
	1 02 012	Repeat next 2 descriptors 12 times
	0 05 030	Direction (spectral)
	0 21 075	Spectral intensity
	0 21 066	Wave scatterometer product confidence data
		(Wind scatterometer product)
3 12 021	3 01 047	Product header
	1 01 003	Repeat 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
		(Radar altimeter product)
3 12 022	3 01 047	Product header
	0 08 022	Number in average
	0 11 012	Wind speed
	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 of altitude
	0 21 068	Radar altimeter product confidence data
	0 21 071	Peakiness
	0 21 072	Altimeter calibration status
	0 21 073	Altimeter instrument mode

(continued)

(Category 12 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
3 12 022 *(continued)*	3 12 042 0 21 062 0 15 011	Altitude corrections Backscatter Log 10 of integrated electron density
		(ATSR sea surface temperature product)
3 12 023	3 01 047 1 03 003 0 08 022 0 12 061 0 22 050 0 21 069 0 21 085	Product header Repeat 3 descriptors 3 times Number in average Skin temperature Standard deviation of sea surface temperature SST product confidence data ATSR sea surface temperature across-track band number
		(Wave scatterometer product enhanced)
3 12 024	3 12 020 0 08 060 0 08 022 0 08 060 0 08 022 0 25 014 0 22 101 0 22 097 0 22 098 0 22 099 0 22 100	Wave scatterometer product Sample scanning mode significance - range Number in sample Sample scanning mode significance - horizontal Number in sample Azimuth clutter cut-off Total energy (wavelength > 731 m) Mean wavelength of image spectrum Wavelength spread (wavelength > 731 m) Mean direction (wavelength > 731 m) Direction spread (wavelength > 731 m)
		(Wave scatterometer enhanced product (with change of width for wave number (spectral))
3 12 025	3 12 019 0 08 060 0 08 022 0 08 060 0 08 022 0 25 014 0 22 101 0 22 097 0 22 098 0 22 099 0 22 100	Wave scatterometer product with width change for wave number (spectral) Sample scanning mode significance - range Number in sample Sample scanning mode significance - horizontal Number in sample Azimuth clutter cut-off Total energy (wavelength > 731 m) Mean wavelength of image spectrum Wavelength spread (wavelength > 731 m) Mean direction (wavelength > 731 m) Direction spread (wavelength > 731 m)
		(QUIKSCAT data)
3 12 026	3 01 046 3 01 011 3 01 013 3 01 023 3 12 031 1 01 004 3 12 030	 Date Time Location Replicate 1 descriptor 4 times

(continued)

(Category 12 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
3 12 026 *(continued)*	0 21 110	Number of inner-beam sigma-0 (forward of satellite)
	3 01 023	Location
	3 21 027	
	0 21 111	Number of outer-beam sigma-0 (forward of satellite)
	3 01 023	Location
	3 21 027	
	0 21 112	Number of inner-beam sigma-0 (aft of satellite)
	3 01 023	Location
	3 21 027	
	0 21 113	Number of outer-beam sigma-0 (aft of satellite)
	3 01 023	Location
	3 21 027	
		(ATSR SST product (SADIST-2))
3 12 027	3 01 047	ERS product header
	1 05 009	Repeat next 5 descriptors 9 times
	3 01 023	Location (coarse latitude + longitude) of 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 SST 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	
	3 01 011	
	3 01 013	
	3 01 023	
	0 08 025	Time difference qualifier
	2 01 136	Change data width
	0 04 006	Second
	2 01 000	Change data width back to Table B
	3 12 031	
	3 12 032	
	1 01 004	Next descriptor replicated 4 times
	3 12 030	
	1 01 002	Next descriptor replicated 2 times
	3 12 033	
	0 21 110	Number of inner-beam sigma-0 (forward of satellite)
	3 01 023	
	3 21 028	
	0 21 111	Number of outer-beam sigma-0 (forward of satellite)
	3 01 023	
	3 21 028	
	0 21 112	Number of inner-beam sigma-0 (aft of satellite)
	3 01 023	
	3 21 028	

(continued)

(Category 12 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
3 12 028 *(continued)*	0 21 113 3 01 023 3 21 028	Number of outer-beam sigma-0 (aft of satellite)
3 12 030	2 01 130 2 02 129 0 11 012 2 02 000 2 01 000 0 11 052 2 01 135 2 02 130 0 11 011 2 02 000 2 01 000 0 11 053 0 21 104	Change data width Change scale Wind speed at 10 m Change scale back to Table B Change data width back to Table B Formal uncertainty in wind speed Change data width Change scale Wind direction at 10 m Change scale back to Table B Change data width back to Table B Formal uncertainty in wind direction Likelihood computed for solution
3 12 031	0 05 034 0 06 034 0 21 109 0 11 081 0 11 082 0 21 101 0 21 102 0 21 103	Along-track row number Cross-track cell number SEAWINDS wind vector cell quality Model wind direction at 10 m Model wind speed at 10 m Number of vector ambiguities Index of selected wind vector Total number of sigma-0 measurements
3 12 032	0 21 120 0 21 121 0 13 055 0 21 122	Probability of rain SEAWINDS NOF rain index Intensity of precipitation Attenuation correction on sigma-0 (from tB)
3 12 033	0 02 104 0 08 022 0 12 063 0 12 065	Antenna polarization Total number (with respect to accumulation) Brightness temperature Standard deviation brightness temperature
3 12 041	 2 01 141 2 02 130 0 07 001 2 01 000 2 02 000	(Altitude) Change width to 28 bits Change scale to 2 Altitude Change width back to Table B Change scale back to Table B
3 12 042	 0 21 077 0 21 078 0 21 079	(Altitude corrections) Altitude correction, ionosphere Altitude correction, dry troposphere Altitude correction, wet troposphere

(continued)

(Category 12 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
3 12 042 *(continued)*	0 21 080	Altitude correction, calibration constant
	0 21 081	Open loop height-time loop calibration correction
	0 21 082	Open loop automatic gain control calibration correction
		(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	Date
	3 01 013	Time
	3 01 021	Latitude/longitude
	0 07 002	Height or altitude
	0 12 180	Average 12 micron BT for all clear pixels at nadir
	0 12 181	Average 11 micron BT for all clear pixels at nadir
	0 12 182	Average 3.7 micron BT for all clear pixels at nadir
	0 12 183	Average 12 micron BT for all clear pixels, forward view
	0 12 184	Average 11 micron BT for all clear pixels, forward view
	0 12 185	Average 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	ATS confidence
		(MERIS instrument reporting)
3 12 050	0 01 007	Satellite identifier
	0 02 019	Instrument type
	0 01 096	Station acquisition
	0 25 061	Software identification
	0 05 040	Orbit number
	3 01 011	Date
	3 01 013	Time
	3 01 021	Latitude/longitude
	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
	0 07 004	Pressure
	0 13 093	Cloud optical thickness
	0 08 003	Vertical significance
	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
3 12 050 *(continued)*	0 07 004 2 02 000 2 01 000 0 13 095	Pressure Cancel operator Cancel operator Total column water vapour
		(Ocean cross spectra - WVS)
3 12 051	0 01 007 0 02 019 0 01 096 0 25 061 0 05 040 0 08 075 3 01 011 3 01 013 3 01 021 0 01 012 2 01 131 0 01 013 2 01 000 0 10 032 0 10 033 0 10 034 0 07 002 0 08 012 0 25 110 0 25 111 0 25 102 0 02 104 0 25 103 0 25 104 0 25 105 0 25 106 0 25 107 0 25 108 0 02 111 0 02 121 0 02 026 0 02 027 0 21 130 0 21 131 0 21 132 0 21 133 0 21 064 0 25 014 0 21 134 1 07 018 0 05 030 1 05 024	Satellite identifier Satellite instrument type Station acquisition Software identification Orbit number Ascending/descending orbit qualifier Date Time Latitude/longitude Direction of motion of moving observing platform Change data width Speed of motion of moving observing platform Cancel operator Satellite distance to Earth centre Altitude (platform to ellipsoid) Earth radius Height Land/sea qualifier Image processing summary Number of input data gaps Number of missing lines excluding data gaps Antenna polarization Number of directional bins Number of wavelength bins First directional bin Directional bin step First wavelength bin Last wavelength bin Radar incidence angle Mean frequency Cross-track resolution Along-track resolution Spectrum total energy Spectrum maximum energy Direction of spectrum max on higher resolution grid Wavelength of spectrum max on higher resolution grid Clutter noise estimate Azimuth clutter cut-off Range resolution of cross covariance spectrum Replicate next 7 descriptors 18 times Direction (spectral) Replicate 5 descriptors 24 times

(continued)

(Category 12 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
3 12 051 *(continued)*	2 01 130	Change data width
	0 06 030	Wave number (spectral)
	2 01 000	Cancel operator
	0 21 135	Real part of cross spectra
	0 21 136	Imaginary part of cross spectra
	0 33 044	ASAR quality
		(RA2 - radar altimeter-2)
3 12 052	0 01 007	Satellite identifier
	0 02 019	Satellite instrument type
	0 01 096	Station acquisition
	0 25 061	Software identification
	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	Date
	3 01 013	Time
	3 01 021	Latitude/longitude
	0 07 002	Height or altitude
	0 02 119	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	Off nadir angle of the satellite from platform data
	0 10 084	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 significant wave height
	0 22 158	S band significant wave height
	0 22 159	STD 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
	0 21 139	Ku band net instrumental correction for AGC

(continued)

(Category 12 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
3 12 052 *(continued)*	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 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 model wind vector
	0 11 096	v-component of model wind vector
	0 12 188	Interpolated 23.8 GHz brightness temperature from MWR
	0 12 189	Interpolated 36.5 GHz brightness temperature from MWR
	0 02 158	RA2 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 instrument type
	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	Date
	3 01 013	Time
	3 01 021	Latitude/longitude

(continued)

(Category 12 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
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	Cancel operator
	0 10 032	Satellite distance to Earth centre
	0 10 033	Altitude (platform to ellipsoid)
	0 10 034	Earth 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	Cancel operator
	2 01 000	Cancel operator
	0 33 048	Confidence measure for SAR inversion
	0 33 049	Confidence measure for 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
	0 21 133	Wavelength of spectrum max
	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	Cancel operator
	0 22 161	Wave spectra
	0 33 044	ASAR quality
		(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
3 12 055 *(continued)*	0 06 034 0 10 095 0 21 157	Cross track cell number Height of atmosphere used Loss per unit length of atmosphere used
		(Scatterometer wind cell information)
3 12 056	0 25 060 0 01 032 0 11 082 0 11 081 0 20 095 0 20 096 0 21 155 2 01 133 0 21 101 0 21 102 2 01 000	Software identification Generating application Model wind speed at 10 m Model wind direction at 10 m Ice probability Ice age (a-parameter) Wind vector cell quality Increase data width by 5 bits Number of vector ambiguities Index of selected wind vector Cancel change data width
		(Ambiguous wind data)
3 12 057	2 01 130 2 02 129 0 11 012 2 02 000 2 01 000 2 01 131 2 02 129 0 11 011 2 02 000 2 01 000 0 21 156 0 21 104	Increase data width by 2 bits Increase scaling by 10^1 Wind speed at 10 m Cancel change scaling Cancel change data width Increase data width by 3 bits Increase scaling by 10^1 Wind direction at 10 m Cancel change scaling Cancel change data width Backscatter distance Likelihood computed for solution
		(ASCAT level 1b data)
3 12 058	3 01 125 3 01 011 3 01 013 3 01 021 3 12 055 0 21 150 1 01 003 3 21 030	ASCAT header information Date information Time information Position information ASCAT level 1b cell information Beam co-location Repeat next 1 descriptor 3 times ASCAT sigma-0 information
		(Scatterometer wind data)
3 12 059	3 12 056 1 01 000 0 31 001 3 12 057	Scatterometer wind cell information Delayed replication of next 1 descriptor Delayed replication factor Ambiguous wind data

(continued)

(Category 12 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
		(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	Extrapolated backscatter at 40 deg incidence angle (sigma0_40)
	0 21 151	Estimated error in sigma 0 at 40 deg incidence angle
	0 21 152	Slope at 40 deg incidence angle
	0 21 153	Estimated error in slope at 40 deg incidence angle
	0 21 154	Soil moisture sensitivity
	0 21 062	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
	0 13 048	Water fraction

(continued)

(Category 12 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
3 12 070 *(continued)*	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

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
		(Radar reflectivity values)
3 13 009	0 21 001	Horizontal reflectivity
	1 01 000	Delayed replication of 1 descriptor
	0 31 001	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	Replication factor
	0 21 036	Radar rainfall intensity
		(Non run-length encoded row for Pixel value (4 bits))
3 13 031	0 06 002	First longitude location minus one increment
	0 06 012	Longitude increment
	1 01 000	Delayed replication of 1 descriptor
	0 31 002	Extended 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	First latitude location minus one increment
	0 05 012	Latitude increment (signed value so cannot cross pole)
	1 01 000	Delayed replication of 1 descriptor
	0 31 002	Extended replication factor
	3 13 031	Non run-length encoded row
		(Run-length encoded row for Pixel value (4 bits))
3 13 041	0 06 002	First longitude location minus one increment
	1 10 000	Delayed replication of 10 descriptors
	0 31 001	Replication factor
	1 04 000	Delayed replication of 4 descriptors
	0 31 001	Replication factor
	0 06 012	Longitude increment
	1 01 000	Delayed replication of 1 descriptor
	0 31 012	Repetition factor
	0 30 001	Pixel value (4 bits)
	0 06 012	Longitude increment
	1 01 000	Delayed replication of 1 descriptor
	0 31 001	Replication factor
	0 30 001	Pixel value (4 bits)
		(Run-length encoded picture data for Pixel value (4 bits))
3 13 042	0 05 002	First latitude location minus one increment
	0 05 012	Latitude increment (signed value so cannot cross pole)
	1 01 000	Delayed replication of 1 descriptor
	0 31 002	Extended replication factor
	3 13 041	Run-length encoded row

(continued)

(Category 13 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
3 13 043		(Run-length encoded picture data for pixel value (4 bits), regular grid)
	0 06 002	First longitude location minus one increment
	0 05 002	First latitude location minus one increment
	0 05 012	Latitude increment
	1 12 000	Delayed replication of 12 descriptors
	0 31 001	Replication factor
	1 10 000	Delayed replication of 10 descriptors
	0 31 001	Replication factor
	1 04 000	Delayed replication of 4 descriptors
	0 31 001	Replication factor
	0 06 012	Longitude increment
	1 01 000	Delayed replication of 1 descriptor
	0 31 011	Repetition factor
	0 30 001	Pixel value (4 bits)
	0 06 012	Longitude increment
	1 01 000	Delayed replication of 1 descriptor
	0 31 001	Replication factor
	0 30 001	Pixel value (4 bits)

Category 15 - Oceanographic report sequences

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
		(Typically reported underwater sounding without optional fields)
3 15 001	0 01 011	Ship's call sign
	3 01 011	Date
	3 01 012	Time
	3 01 023	Latitude and longitude (coarse accuracy)
	3 06 001	Depth, temperature
		(Typically reported underwater sounding without optional fields)
3 15 002	0 01 011	Ship's call sign
	3 01 011	Date
	3 01 012	Time
	3 01 023	Latitude and 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 manufacturers model
	0 01 086	Observing platform manufacturers 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	Date
	3 01 012	Time
	3 01 021	Latitude and longitude (high accuracy)
	0 08 080	Qualifier for quality class
	0 33 050	GTSPP quality class
	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 quality class
	0 33 050	GTSPP quality class
	0 22 045	Subsurface sea temperature
	0 08 080	Qualifier for quality class
	0 33 050	GTSPP quality class
	0 22 064	Salinity
	0 08 080	Qualifier for quality class
	0 33 050	GTSPP quality class

Category 16 - Synoptic feature sequences

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
3 16 001	3 01 011	Year, month, day
	0 04 004	Hour
	3 01 023	Latitude and 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	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	Originating/generating centre
	0 08 021	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	Flight level (altitude) (base of chart layer)
	0 07 002	Flight level (altitude) (top of chart layer)
		(Jet stream)
3 16 003	1 10 000	Delayed replication
	0 31 001	Replication
	0 08 011	Meteorological feature (jet stream value)
	0 08 007	Dimensional significance (value for line)
	1 04 000	Delayed replication
	0 31 001	Replication
	0 05 002	Latitude (coarse)
	0 06 002	Longitude (coarse)
	0 10 002	Flight level (altitude)
	0 11 002	Wind speed
	0 08 007	Dimensional significance (cancel)
	0 08 011	Meteorological feature (cancel/end of object)
		(Turbulence)
3 16 004	1 11 000	Delayed replication
	0 31 001	Replication
	0 08 011	Meteorological feature (value for turbulence)
	0 08 007	Dimensional significance (value for area)
	0 07 002	Flight level (altitude) (base of layer)
	0 07 002	Flight level (altitude) (top of layer)
	1 02 000	Delayed replication
	0 31 001	Replication

(continued)

(Category 16 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
3 16 004 *(continued)*	0 05 002	Latitude (coarse)
	0 06 002	Longitude (coarse)
	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
	0 31 001	Replication
	0 08 005	Meteorological attribute significance (storm centre)
	0 08 007	Dimensional significance (value for point)
	0 05 002	Latitude (coarse)
	0 06 002	Longitude (coarse)
	0 01 026	WMO storm name (use "UNKNOWN" for a sandstorm)
	0 19 001	Synoptic features (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
	0 31 001	Replication
	0 08 011	Meteorological feature (value for cloud)
	0 08 007	Dimensional significance (value for area)
	0 07 002	Flight level (altitude) (base of layer)
	0 07 002	Flight level (altitude) (top of layer)
	1 02 000	Delayed replication
	0 31 001	Replication
	0 05 002	Latitude (coarse)
	0 06 002	Longitude (coarse)
	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)
		(Front)
3 16 007	1 10 000	Delayed replication
	0 31 001	Replication
	0 08 011	Meteorological feature (value for type of front) (see Note 3)
	0 08 007	Dimensional significance (value for line)
	1 04 000	Delayed replication
	0 31 001	Replication
	0 05 002	Latitude (coarse)
	0 06 002	Longitude (coarse)
	0 19 005	Direction of feature
	0 19 006	Speed 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
	0 31 001	Replication

(continued)

(Category 16 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
3 16 008 *(continued)*	0 08 001	Vertical significance (bit 3 set for tropopause)
	0 08 007	Dimensional significance (value for point)
	0 08 023	Statistic (type of tropopause value) (see Note 4)
	1 03 000	Delayed replication
	0 31 001	Replication
	0 05 002	Latitude (coarse)
	0 06 002	Longitude (coarse)
	0 10 002	Height/altitude
	0 08 023	Statistic (cancel)
	0 08 007	Dimensional significance (cancel)
	0 08 001	Vertical significance (cancel/end of object)
		(Airframe icing area)
3 16 009	1 11 000	Delayed replication
	0 31 001	Replication
	0 08 011	Meteorological feature (value for airframe icing)
	0 08 007	Dimensional significance (value for area)
	0 07 002	Flight level (altitude) (base of layer)
	0 07 002	Flight level (altitude) (top of layer)
	1 02 000	Delayed replication
	0 31 001	Replication
	0 05 002	Latitude (coarse)
	0 06 002	Longitude (coarse)
	0 20 041	Airframe icing (type of airframe icing)
	0 08 007	Dimensional significance (cancel)
	0 08 011	Meteorological feature (cancel/end of object)
		(Name of feature)
3 16 010	1 07 000	Delayed replication
	0 31 001	Replication
	0 08 011	Meteorological feature
	0 08 007	Dimensional significance (value for point)
	0 01 022	Name of feature
	0 05 002	Latitude (coarse)
	0 06 002	Longitude (coarse)
	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
	0 31 001	Replication
	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
	0 31 001	Replication
	0 05 002	Latitude (coarse)
	0 06 002	Longitude (coarse)
	0 08 021	Time significance (eruption starting time)
	0 04 001	Year

(continued)

(Category 16 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
3 16 011 *(continued)*	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)
		(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 feature
	0 19 001	Type of synoptic feature
	0 19 010	Method for tracing of the centre of synoptic feature
	1 18 000	Delayed replication of 18 descriptors
	0 31 001	Replication factor
	0 08 021	Time significance (forecast)
	0 04 014	Time increment (hour)
	0 08 005	Surface synoptic feature significance
	3 01 023	Latitude (coarse accuracy), 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 speed (gust: e.g. used in the United States)
	0 08 021	Time significance (forecast time averaged)
	0 04 075	Time period (minutes)
	0 11 040	Maximum wind speed (mean wind)
	0 19 008	Vertical extent of feature
	1 05 004	Replicate 5 descriptors 4 times
	0 05 021	Starting bearing or azimuth
	0 05 021	Ending bearing or azimuth
	1 02 002	Replicate 2 descriptors 2 times
	0 19 003	Wind speed threshold
	0 19 004	Effective radius with respect to wind speed above threshold
		(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 location identifier, 1 = ATS unit serving FIR
	0 01 062	Short ICAO location identifier
	0 08 019	Qualifier for location identifier, 2 = FIR, 3 = UIR, 4 = CTA
	0 01 065	ICAO region identifier
	0 08 019	Qualifier for location identifier, 6 = MWO
	0 01 062	Short ICAO location identifier
	0 08 019	Qualifier for location identifier, 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

(continued)

(Category 16 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
3 16 031 *(continued)*	3 01 012	Hour, minute
	3 01 027	Description of feature
	0 19 005	Direction of motion
	0 19 006	Speed of motion
	0 20 028	Expected change in intensity
	0 08 021	Time significance, 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 feature
	0 08 021	Time significance, Missing = Cancel
		(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	Replication factor
	3 01 027	Description of feature
	0 08 021	Time significance, 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	Location
	0 08 007	Dimensional significance, 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 replication factor
	3 16 032	SIGMET forecast position
	1 01 000	Delayed replication of 1 descriptor
	0 31 001	Replication factor
	3 16 033	SIGMET outlook
	0 08 011	Meteorological feature, Missing = Cancel
	0 08 079	Product status, 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 15 = OBSC, 16 = EMBD, 12 = FRQ, 31 = Missing
	3 16 031	SIGMET observed or forecast location and motion

(continued)

(Category 16 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
3 16 035 *(continued)*	0 08 011 0 08 079	Meteorological feature, Missing = Cancel Product status, Missing = Cancel
		(Tropical cyclone SIGMET)
3 16 036	0 08 079 3 16 030 0 08 011 0 01 027 3 16 031 1 01 000 0 31 000 3 16 032 1 01 000 0 31 001 3 16 033 0 08 011 0 08 079	Product status, 0 = Normal issue, 1 = Correction SIGMET header Meteorological feature, 22 = Tropical cyclone WMO long storm name SIGMET observed or forecast location and motion Delayed replication of 1 descriptor Short replication factor SIGMET forecast position Delayed replication of 1 descriptor Replication factor SIGMET outlook Meteorological feature, Missing = Cancel Product status, Missing = Cancel
		(Turbulence SIGMET)
3 16 037	0 08 079 3 16 030 0 08 011 0 11 031 3 16 031 0 08 011 0 08 079	Product status, 0 = Normal issue, 1 = Correction SIGMET header Meteorological feature, 13 = Turbulence Degree of turbulence, 10 = Moderate, 11 = Severe SIGMET observed or forecast location and motion Meteorological feature, Missing = Cancel Product status, Missing = Cancel
		(Icing SIGMET)
3 16 038	0 08 079 3 16 030 0 08 011 0 20 041 0 20 021 3 16 031 0 08 011 0 08 079	Product status, 0 = Normal issue, 1 = Correction SIGMET header Meteorological feature, 15 = Airframe icing Airframe icing, 7 = Severe Type of precipitation, bit 3 = Liquid freezing or all 30 bits = Missing SIGMET observed or forecast location and motion Meteorological feature, Missing = Cancel Product status, Missing = Cancel
		(Mountain wave, duststorm or sandstorm SIGMET)
3 16 039	0 08 079 3 16 030 0 08 011 0 20 024 3 16 031 0 08 011 0 08 079	Product status, 0 = Normal issue, 1 = Correction SIGMET header Meteorological feature, 23 = Mountain wave, 24 = Duststorm, 25 = Sandstorm Intensity of phenomena, 3 = Heavy, 5 = Severe SIGMET observed or forecast location and motion Meteorological feature, Missing = Cancel Product status, Missing = Cancel
		(Cancellation of SIGMET)
3 16 040	3 16 030 0 08 079	SIGMET header Product status, 4 = Cancellation

(continued)

(Category 16 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
3 16 040 *(continued)*	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, Missing = Cancel
		(RADOB template - Part A: Information on tropical cyclone)
3 16 050	3 01 001	WMO block and station number
	3 01 011	Date
	3 01 012	Time
	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	Cancel meteorological attribute significance
	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	Date
	3 01 012	Time
	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)
	0 06 002	Longitude (coarse accuracy)
	0 08 005	Cancel meteorological attribute significance
	0 19 107	Time interval of the tropical cyclone analysis
	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

(continued)

(Category 16 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
3 16 052 (continued)	0 19 117 0 19 118 0 19 119	Cloud picture type of the PT-number Final Tropical (T) number of the tropical cyclone Type of the final T-number
		(Graphical AIRMET Sierra)
3 16 071	3 01 014 1 01 000 0 31 002 3 16 075 1 01 000 0 31 002 3 16 076	Time period (for which AIRMET is valid) Delayed replication Replication factor GFA IFR ceiling and visibility Delayed replication Replication factor GFA mountain obscuration
		(Graphical AIRMET Tango)
3 16 072	3 01 014 1 01 000 0 31 002 3 16 077 1 01 000 0 31 002 3 16 078 1 01 000 0 31 002 3 16 079	Time period (for which AIRMET is valid) Delayed replication Replication factor GFA turbulence Delayed replication Replication factor GFA strong surface wind Delayed replication Replication factor GFA low-level wind shear
		(Graphical AIRMET Zulu)
3 16 073	3 01 014 1 01 000 0 31 002 3 16 080 1 01 000 0 31 002 3 16 081	Time period (for which AIRMET is valid) Delayed replication Replication factor GFA icing Delayed replication Replication factor GFA freezing level
		(GFA identifier and observed/forecast location)
3 16 074	0 01 039 0 08 021 3 01 014 3 01 027 0 08 021	GFA sequence identifier Time significance, 4 = Forecast, 16 = Analysis Time period (for which hazard is being observed/forecast) Description of feature Time significance, Missing = Cancel
		(GFA IFR ceiling and visibility)
3 16 075	0 08 079 0 08 041 3 16 074 0 20 006 0 33 042 0 20 013	Product status, 0 = Normal, 1 = COR, 2 = AMD, 3 = COR AMD, 4 = CNL Data significance, 8 = IFR ceiling and visibility GFA identifier and observed/forecast location Flight rules, 1 = IFR Type of limit represented by following (cloud base) value, 2 = Exclusive upper limit, 7 = Missing Height of base of cloud

(continued)

(Category 16 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
3 16 075 *(continued)*	0 33 042	Type of limit represented by following (visibility) 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, Missing = Cancel
	0 08 079	Product status, 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
	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, Missing = Cancel
	0 08 079	Product status, 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, Missing = Cancel
	0 08 079	Product status, 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 (wind speed) value, 0 = Exclusive lower limit
	0 11 012	Wind speed at 10 m
	0 08 041	Data significance, Missing = Cancel
	0 08 079	Product status, 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, Missing = Cancel
	0 08 079	Product status, Missing = Cancel

(continued)

(Category 16 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
		(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, Missing = Cancel
	0 08 079	Product status, Missing = Cancel
		(GFA freezing level)
3 16 081	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, Missing = Cancel
	0 08 079	Product status, 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
3 18 001	3 01 025	Latitude and longitude (coarse accuracy), day and time
	0 24 011	Dose
3 18 003	3 01 026	Latitude and longitude (high accuracy), time periods in days, hours and minutes
	0 24 005	Isotope mass
	0 24 004	Element name
	0 24 021	Air concentration
3 18 004	3 01 025	Latitude and longitude (coarse accuracy), day and 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

Category 21 - Radar report sequences

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
		(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, type, date/time, position (high accuracy), height
	0 02 003	Type of measuring equipment used
	1 01 000	Delayed replication of 1 descriptor
	0 31 001	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
		(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
	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
		(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	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	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 width to 8 bits
	0 02 106	3-dB beamwidth
	2 01 000	Change width back to table B
	2 01 132	Change width to 11 bits
	2 02 130	Change scale to -6
	0 02 121	Mean frequency
	2 02 000	Change scale back to table B
	2 01 000	Change width back to table B
	2 01 133	Change width to 11 bits
	2 02 129	Change scale to 0
	0 25 001	Range-gate length
	2 02 000	Change scale back to table B
	2 01 000	Change width back to table B

(continued)

(Category 21 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
		(Wind profiler: processed-data winds)
3 21 022	0 07 007	Height
	2 04 001	Add associated field of 1 bit in length
	0 31 021	Associated field significance
	0 11 001	Wind direction
	2 04 000	Cancel add associated field
	0 11 002	Wind speed
	2 04 001	Add associated field of 1 bit in length
	0 31 021	Associated field significance
	0 11 006	w-component
	2 04 000	Cancel add associated field
	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 to 2
	0 21 014	Doppler mean velocity (radial)
	2 01 129	Change width to 9 bits
	0 21 017	Doppler velocity spectral width
	2 02 000	Change scale back to table B
	2 01 000	Change width back to table B
		(RASS-mode: processed-data RASS)
3 21 024	0 07 007	Height
	2 04 001	Add associated field of 1 bit in length
	0 31 021	Associated field significance
	0 12 007	Virtual temperature
	0 11 006	w-component
	2 04 000	Cancel add associated field
	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 to 2
	0 21 014	Doppler mean velocity (radial)
	2 01 129	Change width to 9 bits
	0 21 017	Doppler velocity spectral width
	2 02 000	Change scale back to table B
	2 01 000	Change width back to table B
	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 width to 9 bits
	2 02 129	Change scale to 2
	0 21 017	Doppler velocity spectral width, referring to RASS signal
	2 02 000	Change scale back to table B
	2 01 000	Change width back to table B

(continued)

(Category 21 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
		(RASS data - fluxes)
3 21 026	0 07 007	Height
	2 04 001	Add associated field of 1 bit in length
	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	Cancel add associated field
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 back to Table B
	2 01 131	Change data width
	0 02 111	Radar incidence angle
	2 01 000	Change data width back to Table B
	2 02 000	Change scale back to Table B
	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
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 back to Table B
	2 01 131	Change data width
	0 02 111	Radar incidence angle
	2 01 000	Change data width back to Table B
	2 02 000	Change scale back to table B
	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 flag
	0 21 116	SEAWINDS sigma-0 mode flag
	0 08 018	SEAWINDS land/ice surface flag
	0 21 117	Sigma-0 variance quality control

(continued)

(Category 21 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
3 21 030		(ASCAT sigma-0 information)
	0 08 085	Beam identifier
	2 02 129	Increase scaling by 10^1
	2 01 131	Increase data width by 3 bits
	0 02 111	Radar incidence angle
	2 01 000	Cancel change data width
	2 02 000	Cancel change scaling
	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 synthetic data quality
	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
	0 21 166	Land fraction

Category 22 - Chemical and aerosol sequences

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
3 22 028		(METOP GOME-2)
	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
		(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	Add 3 to scale
	2 01 138	Add 10 to width
	0 04 006	Second
	2 01 000	Reset width
	2 02 000	Reset scale
	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	Add 5 to width
	0 05 041	Scan line number
	2 01 000	Reset width
	2 01 132	Add 4 to width
	0 25 070	Major frame count
	2 01 000	Reset width
	2 02 126	Subtract 2 from scale
	0 07 001	Height of station
	2 02 000	Reset scale
	0 33 060	GqisFlagQual
	0 33 061	GqisQualIndex
	0 33 062	GqisQualIndexLoc
	0 33 063	GqisQualIndexRad
	0 33 064	GqisQualIndexSpect
	0 33 065	GqisSysTecSondQual
	1 01 010	Repeat next 1 descriptor 10 times
	3 40 002	IASI Level 1c band description
	1 01 087	Repeat next 1 descriptor 87 times
	3 40 003	IASI Level 1c 100 channel sequence
	0 02 019	Satellite instruments
	0 25 051	AVHRR channel combination
	1 01 007	Repeat next 1 descriptor 7 times
	3 40 004	IASI Level 1c AVHRR single scene sequence

(continued)

(Category 40 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
		(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	Repeat next 4 descriptors 100 times
	2 01 136	Add 8 to width
	0 05 042	Channel number
	2 01 000	Reset width
	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	Repeat next 5 descriptor 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 std dev AVHRR radiance
		(JASON2 OGDR data)
3 40 005	0 01 007	Satellite identifier
	0 02 019	Satellite instruments
	0 01 096	Acquisition station identifier
	0 25 061	Software identification
	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
		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
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
		Radiometer
	0 02 153	Satellite channel centre frequency

(continued)

(Category 40 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
3 40 005 *(continued)*	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	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	Geocentric ocean tide height solution 1
	0 10 089	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	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
3 40 007		(IASI Level 1c data (all channels))
	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	Add 3 to scale
	2 01 138	Add 10 to width
	0 04 006	Second
	2 01 000	Reset width
	2 02 000	Reset scale
	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	Add 5 to width
	0 05 041	Scan line number
	2 01 000	Reset width
	2 01 132	Add 4 to width
	0 25 070	Major frame count
	2 01 000	Reset width
	2 02 126	Subtract 2 from scale
	0 07 001	Height of station
	2 02 000	Reset scale
	1 03 003	Repeat next 3 descriptors 3 times
	0 25 140	Start channel
	0 25 141	End channel
	0 33 060	GqisFlagQual
	0 33 061	GqisQualIndex
	0 33 062	GqisQualIndexLoc
	0 33 063	GqisQualIndexRad
	0 33 064	GqisQualIndexSpect
	0 33 065	GqisSysTecSondQual
	0 40 020	GqisFlagQualDetailed - quality flag for the system
	1 01 010	Repeat next 1 descriptor 10 times
	3 40 002	IASI Level 1c band description
	1 01 087	Repeat next 1 descriptor 87 times
	3 40 003	IASI Level 1c 100 channel sequence
	0 02 019	Satellite instruments
	0 25 051	AVHRR channel combination
	1 01 007	Repeat next 1 descriptor 7 times

(continued)

(Category 40 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
3 40 007 *(continued)*	3 40 004	IASI Level 1c AVHRR single scene sequence
	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	GIacAvgImagIIS -average of imager measurements
	0 40 019	GIacVarImagIIS -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	Add 3 to scale
	2 01 138	Add 10 to width
	0 04 006	Second
	2 01 000	Reset width
	2 02 000	Reset scale
		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	Add 5 to width
	0 05 041	Scan line number
	2 01 000	Reset width
	2 01 132	Add 4 to width
	0 25 070	Major frame count
	2 01 000	Reset width
	2 02 126	Subtract 2 from scale
	0 07 001	Height of station
	2 02 000	Reset scale
		Quality information
	1 03 003	Repeat next 3 descriptors 3 times
	0 25 140	Start channel
	0 25 141	End channel

(continued)

(Category 40 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
3 40 008 *(continued)*	0 33 060	GqisFlagQual
	0 33 061	GqisQualIndex
	0 33 062	GqisQualIndexLoc
	0 33 063	GqisQualIndexRad
	0 33 064	GqisQualIndexSpect
	0 33 065	GqisSysTecSondQual
	0 40 020	GqisFlagQualDetailed - quality flag for the system
		IASI subset of channels
	1 01 010	Repeat next 1 descriptor 10 times
	3 40 002	IASI Level 1c band description
	1 04 000	Delayed replication of next 4 descriptors
	0 31 002	Extended delayed replication factor
	2 01 136	Add 8 to width
	0 05 042	Channel number
	2 01 000	Reset width
	0 14 046	Scaled IASI radiance
		Instrument band definition
	1 08 003	Repeat next 8 descriptors 3 times
	0 25 140	Start channel
	0 25 141	End channel
	0 40 026	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 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	Repeat next 1 descriptor 7 times
	3 40 004	IASI Level 1c AVHRR single scene sequence
	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	Average of imager measurements
	0 40 019	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

(continued)

(Category 40 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
		(Normalized differential vegetation index (NDVI))
3 40 009	0 01 007	Satellite identifier
	0 01 031	Generating centre
	0 02 019	Satellite instrument
	0 02 020	Satellite classification
	3 01 011	Date
	3 01 013	Time
	0 05 040	Orbit number
	2 01 136	Add 8 bits to width of next descriptor
	0 05 041	Scan line number
	2 01 000	Reset descriptor width
	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	Repeat next 7 descriptors 64 times
	1 06 032	Repeat next 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	Acquisition station identifier
	0 25 061	Software identification
	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
		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
3 40 010 *(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
	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
	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

(continued)

(Category 40 - continued)

TABLE REFERENCE F X Y	TABLE REFERENCES	ELEMENT NAME
3 40 010 *(continued)*	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	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	Geocentric ocean tide height solution 1
	0 10 089	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	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.