

## BUFR TABLES RELATIVE TO SECTION 3

**BUFR/CREX Table B - Classification of elements**

F	X	Class	Comments	Status
0	00	BUFR/CREX table entries		Operational
0	01	Identification	Identifies origin and type of data	Operational
0	02	Instrumentation	Defines instrument types used	Operational
0	03	Reserved		Operational
0	04	Location (time)	Defines time and time derivatives	Operational
0	05	Location (horizontal - 1)	Defines geographical position, including horizontal derivatives, in association with class 06 (first dimension of horizontal space)	Operational
0	06	Location (horizontal - 2)	Defines geographical position, including horizontal derivatives, in association with class 05 (second dimension of horizontal space)	Operational
0	07	Location (vertical)	Defines height, altitude, pressure level, including vertical derivatives of position	Operational
0	08	Significance qualifiers	Defines special character of data	Operational
0	09	Reserved		Operational
0	10	Vertical elements and pressure	Height, altitude, pressure and derivatives observed or measured, not defined as a vertical location	Operational
0	11	Wind and turbulence	Wind speed, direction, etc.	Operational
0	12	Temperature		Operational
0	13	Hydrographic and hydrological elements	Humidity, rainfall, snowfall, etc.	Operational
0	14	Radiation and radiance		Operational
0	15	Physical/chemical constituents		Operational
0	19	Synoptic features		Operational
0	20	Observed phenomena	Defines present/past weather, special phenomena, etc.	Operational
0	21	Radar data		Operational
0	22	Oceanographic elements		Operational
0	23	Dispersal and transport		Operational
0	24	Radiological elements		Operational
0	25	Processing information		Operational
0	26	Non-coordinate location (time)	Defines time and time derivatives that are not coordinates	Operational
0	27	Non-coordinate location (horizontal - 1)	Defines geographical positions, in conjunction with class 28, that are not coordinates	Operational
0	28	Non-coordinate location (horizontal - 2)	Defines geographical positions, in conjunction with class 27, that are not coordinates	Operational
0	29	Map data		Operational
0	30	Image		Operational
0	31*	Data description operator qualifiers	Elements used in conjunction with data description	Operational
0	33	Quality information		Operational
0	35	Data monitoring information		Operational
0	40	Satellite data		Operational

Notes: (see)

## Class 00 - BUFR/CREX table entries

TABLE REFERENCE F X Y	ELEMENT NAME	UNIT	SCALE	BUFR		DATA WIDTH (Bits)	UNIT	CREX		Status
				REFERENCE VALUE				SCALE	DATA WIDTH (Characters)	
0 00 001	Table A: entry	CCITT IA5	0	0		24	Character	0	3	Operational
0 00 002	Table A: data category description, line 1	CCITT IA5	0	0		256	Character	0	32	Operational
0 00 003	Table A: data category description, line 2	CCITT IA5	0	0		256	Character	0	32	Operational
0 00 004	BUFR/CREX Master table (see Note 1)	CCITT IA5	0	0		16	Character	0	2	Operational
0 00 005	BUFR/CREX edition number	CCITT IA5	0	0		24	Character	0	3	Operational
0 00 006	BUFR Master table Version number (see Note 2)	CCITT IA5	0	0		16	Character	0	2	Operational
0 00 007	CREX Master table version number (see Note 3)	CCITT IA5	0	0		16	Character	0	2	Operational
0 00 008	BUFR Local table version number (see Note 4)	CCITT IA5	0	0		16	Character	0	2	Operational
0 00 010	F descriptor to be added or defined	CCITT IA5	0	0		8	Character	0	1	Operational
0 00 011	X descriptor to be added or defined	CCITT IA5	0	0		16	Character	0	2	Operational
0 00 012	Y descriptor to be added or defined	CCITT IA5	0	0		24	Character	0	3	Operational
0 00 013	Element name, line 1	CCITT IA5	0	0		256	Character	0	32	Operational
0 00 014	Element name, line 2	CCITT IA5	0	0		256	Character	0	32	Operational
0 00 015	Units name	CCITT IA5	0	0		192	Character	0	24	Operational
0 00 016	Units scale sign	CCITT IA5	0	0		8	Character	0	1	Operational
0 00 017	Units scale	CCITT IA5	0	0		24	Character	0	3	Operational
0 00 018	Units reference sign	CCITT IA5	0	0		8	Character	0	1	Operational
0 00 019	Units reference value	CCITT IA5	0	0		80	Character	0	10	Operational
0 00 020	Element data width	CCITT IA5	0	0		24	Character	0	3	Operational
0 00 030	Descriptor defining sequence	CCITT IA5	0	0		48	Character	0	6	Operational

Notes: (see)

## Class 01 - Identification

TABLE REFERENCE F X Y	ELEMENT NAME	UNIT	SCALE	BUFR	DATA WIDTH (Bits)	UNIT	CREX	DATA WIDTH (Characters)	Status
				REFERENCE VALUE			SCALE		
0 01 001	WMO block number	Numeric	0	0	7	Numeric	0	2	Operational
0 01 002	WMO station number	Numeric	0	0	10	Numeric	0	3	Operational
0 01 003	WMO Region number/geographical area	Code table	0	0	3	Code table	0	1	Operational
0 01 004	WMO Region sub-area (see Note 9)	Numeric	0	0	3	Numeric	0	1	Operational
0 01 005	Buoy/platform identifier	Numeric	0	0	17	Numeric	0	5	Operational
0 01 006	Aircraft flight number	CCITT IA5	0	0	64	Character	0	8	Operational
0 01 007	Satellite identifier	Code table	0	0	10	Code table	0	4	Operational
0 01 008	Aircraft registration number or other identification	CCITT IA5	0	0	64	Character	0	8	Operational
0 01 009	Type of commercial aircraft	CCITT IA5	0	0	64	Character	0	8	Operational
0 01 010	Stationary buoy platform identifier; e.g. C-MAN buoys	CCITT IA5	0	0	64	Character	0	8	Operational
0 01 011	Ship or mobile land station identifier	CCITT IA5	0	0	72	Character	0	9	Operational
0 01 012	Direction of motion of moving observing platform *	degree true	0	0	9	degree true	0	3	Operational
0 01 013	Speed of motion of moving observing platform *	m s-1	0	0	10	m s-1	0	3	Operational
0 01 014	Platform drift speed (high precision)	m s-1	2	0	10	m s-1	2	4	Operational
0 01 015	Station or site name	CCITT IA5	0	0	160	Character	0	20	Operational
0 01 018	Short station or site name	CCITT IA5	0	0	40	Character	0	5	Operational
0 01 019	Long Station or site name	CCITT IA5	0	0	256	Character	0	32	Operational
0 01 020	WMO Region sub-area	Numeric	0	0	4	Numeric	0	2	Operational
0 01 021	Synoptic feature identifier	Numeric	0	0	14	Numeric	0	4	Operational
0 01 022	Name of feature (see Note 11)	CCITT IA5	0	0	224	Character	0	28	Operational
0 01 023	Observation sequence number	Numeric	0	0	9	Numeric	0	3	Operational
0 01 024	Wind Speed source	Code table	0	0	5	Code table	0	2	Operational
0 01 025	Storm identifier (see Note 1)	CCITT IA5	0	0	24	Character	0	3	Operational
0 01 026	WMO storm name *	CCITT IA5	0	0	64	Character	0	8	Operational
0 01 027	WMO long storm name *	CCITT IA5	0	0	80	Character	0	10	Operational

TABLE REFERENCE F X Y	ELEMENT NAME	UNIT	SCALE	BUFR		DATA WIDTH (Bits)	CREX		DATA WIDTH (Characters)	Status
				REFERENCE VALUE			UNIT	SCALE		
0 01 028	Aerosol optical Depth (AOD) source	Code table	0	0		5	Code table	0	2	Operational
0 01 029	SSI Source	Code table	0	0		5	Code table	0	2	Operational
0 01 030	Numerical model identifier (see Note 13)	CCITT IA5	0	0		128	Character	0	16	Operational
0 01 031	Identification of originating/generating centre (see Note 10)	Code table	0	0		16	Code table	0	5	Operational
0 01 032	Generating application	Code table defined by originating/gene- rating centre (Notes 3, 4 and 5)	0	0		8	Code table	0	3	Operational
0 01 033	Identification of originating/generating centre	Common Code table C-1	0	0		8	Common Code table C-1	0	3	Operational
0 01 034	Identification of originating/generating sub-centre	Common Code table C-12	0	0		8	Common Code table C-12	0	3	Operational
0 01 035	Originating Centre	Common Code table C-11	0	0		16	Common Code Table C-11	0	5	Operational
0 01 036	Agency in charge of operating the observing platform	Code table	0	0		20	Code table	0	7	Operational
0 01 037	SIGMET sequence identifier	CCITT IA5	0	0		24	Character	0	3	Operational
0 01 038	Source of Sea Ice Fraction	Code table	0	0		5	Code table	0	2	Operational
0 01 039	Graphical Area Forecast (GFA) sequence identifier	CCITT IA5	0	0		40	Character	0	5	Operational
0 01 041	Absolute platform velocity - first component (see Note 6)	m s-1	5	-1073741824		31	m s-1	5	10	Operational
0 01 042	Absolute platform velocity - second component (see Note 6)	m s-1	5	-1073741824		31	m s-1	5	10	Operational
0 01 043	Absolute platform velocity - third component (see Note 6)	m s-1	5	-1073741824		31	m s-1	5	10	Operational
0 01 050	Platform transmitter ID number	Numeric	0	0		17	Numeric	0	6	Operational
0 01 051	Platform transmitter ID number	CCITT IA5	0	0		96	Character	0	12	Operational
0 01 052	Platform transmitter ID	Code table	0	0		3	Code table	0	1	Pre-operational
0 01 053	Tsunami report sequence number triggered by a tsunami event	Numeric	0	0		7	Numeric	0	2	Pre-operational
0 01 060	Aircraft reporting point (Beacon identifier)	CCITT IA5	0	0		64	Character	0	8	Operational
0 01 062	Short ICAO location indicator	CCITT IA5	0	0		32	Character	0	4	Operational
0 01 063	ICAO location indicator	CCITT IA5	0	0		64	Character	0	8	Operational
0 01 064	Runway designator	CCITT IA5	0	0		32	Character	0	4	Operational

TABLE REFERENCE F X Y	ELEMENT NAME	UNIT	SCALE	BUFR		DATA WIDTH (Bits)	CREX		DATA WIDTH (Characters)	Status
				REFERENCE VALUE			SCALE			
0 01 065	ICAO region identifier	CCITT IA5	0	0		256	0		32	Operational
0 01 075	Tide station identification	CCITT IA5	0	0		40	0		5	Operational
0 01 080	Ship line number according to SOOP	CCITT IA5	0	0		32	0		4	Operational
0 01 081	Radiosonde serial number	CCITT IA5	0	0		160	0		20	Operational
0 01 082	Radiosonde ascension number (see Note 12)	Numeric	0	0		14	0		4	Operational
0 01 083	Radiosonde release number (see Note 12)	Numeric	0	0		3	0		1	Operational
0 01 085	Observing platform manufacturer's model	CCITT IA5	0	0		160	0		20	Operational
0 01 086	Observing platform manufacturer's serial number	CCITT IA5	0	0		256	0		32	Operational
0 01 087	WMO Marine observing platform extended identifier	Numeric	0	0		23	0		7	Operational
0 01 090	Technique for making up initial perturbations	Code table	0	0		8	0		3	Operational
0 01 091	Ensemble member number	Numeric	0	0		10	0		4	Operational
0 01 092	Type of ensemble forecast	Code table	0	0		8	0		3	Operational
0 01 093	Balloon lot number	CCITT IA5	0	0		96	0		12	Operational
0 01 094	WBAN Number	Numeric	0	0		17	0		5	Operational
0 01 095	Observer identification	CCITT IA5	0	0		32	0		4	Operational
0 01 096	Station acquisition	CCITT IA5	0	0		160	0		20	Operational
0 01 097	Star catalog number	Numeric	0	0		13	0		4	Validation
0 01 098	Type of product	Code table	0	0		12	0		4	Validation
0 01 099	Unique product definition	CCITT IA5	0	0		2048	0		256	Validation
0 01 101	State identifier	Code table	0	0		10	0		3	Operational
0 01 102	National station number	Numeric	0	0		30	0		9	Operational
0 01 103	IMO Number. Unique Lloyd's registry	Numeric	0	0		14	0		5	Validation
0 01 110	Aircraft tail number	CCITT IA5	0	0		48	0		6	Validation
0 01 111	Origination airport	CCITT IA5	0	0		24	0		3	Validation
0 01 112	Destination airport	CCITT IA5	0	0		24	0		3	Validation
0 01 124	Grid point identifier	Numeric	0	0		24	0		8	Operational
0 01 144	Snapshot identifier	Numeric	0	0		31	0		10	Operational

Notes: (see)

## Class 02 - Instrumentation

TABLE REFERENCE F X Y	ELEMENT NAME	UNIT	SCALE	BUFR	DATA WIDTH (Bits)	UNIT	CREX	DATA WIDTH (Characters)	Status
				REFERENCE VALUE			SCALE		
0 02 001	Type of station	Code table	0	0	2	Code table	0	1	Operational
0 02 002	Type of instrumentation for wind measurement	Flag table	0	0	4	Flag table	0	2	Operational
0 02 003	Type of measuring equipment used	Code table	0	0	4	Code table	0	2	Operational
0 02 004	Type of instrumentation for evaporation measurement or type of crop for which evapotranspiration is reported	Code table	0	0	4	Code table	0	2	Operational
0 02 005	Precision of temperature observation	K	2	0	7	K	2	3	Operational
0 02 007	Type of sensor for water level measuring instrument	Code table	0	0	4	Code table	0	2	Validation
0 02 011	Radiosonde type	Code table	0	0	8	Code table	0	3	Operational
0 02 012	Radiosonde computational method	Code table	0	0	4	Code table	0	2	Operational
0 02 013	Solar and infrared radiation correction	Code table	0	0	4	Code table	0	2	Operational
0 02 014	Tracking technique/status of system used	Code table	0	0	7	Code table	0	3	Operational
0 02 015	Radiosonde completeness	Code table	0	0	4	Code table	0	2	Operational
0 02 016	Radiosonde configuration	Flag table	0	0	5	Flag table	0	2	Operational
0 02 019	Satellite instruments	Code table	0	0	11	Code table	0	4	Operational
0 02 020	Satellite classification	Code table	0	0	9	Code table	0	3	Operational
0 02 021	Satellite instrument data used in processing *	Flag table	0	0	9	Flag table	0	3	Operational
0 02 022	Satellite data-processing technique used	Flag table	0	0	8	Flag table	0	3	Operational
0 02 023	Satellite derived wind computation method	Code table	0	0	4	Code table	0	2	Operational
0 02 024	Integrated mean humidity computational method	Code table	0	0	4	Code table	0	2	Operational
0 02 025	Satellite channel(s) used in computation	Flag table	0	0	25	Flag table	0	9	Operational
0 02 026	Cross-track resolution	m	2	0	12	m	2	4	Operational
0 02 027	Along-track resolution	m	2	0	12	m	2	4	Operational
0 02 028	Segment size at nadir in x-direction	m	0	0	18	m	0	6	Operational
0 02 029	Segment size at nadir in y-direction	m	0	0	18	m	0	6	Operational
0 02 030	Method of current measurement	Code table	0	0	3	Code table	0	1	Operational
0 02 031	Duration and time of current measurement	Code table	0	0	5	Code table	0	2	Operational

TABLE REFERENCE F X Y	ELEMENT NAME	UNIT	SCALE	BUFR REFERENCE VALUE	DATA WIDTH (Bits)	UNIT	SCALE	DATA WIDTH (Characters)	Status
0 02 032	Indicator for digitization	Code table	0	0	2	Code table	0	1	Operational
0 02 033	Method of salinity/depth measurement	Code table	0	0	3	Code table	0	1	Operational
0 02 034	Drogue type	Code table	0	0	5	Code table	0	2	Operational
0 02 035	Cable length	m	0	0	9	m	0	3	Operational
0 02 036	Buoy type	Code table	0	0	2	Code table	0	1	Operational
0 02 037	Method of tidal observation	Code table	0	0	3	Code table	0	1	Operational
0 02 038	Method of water temperature and/or salinity measurement	Code table	0	0	4	Code table	0	2	Operational
0 02 039	Method of wet-bulb temperature measurement	Code table	0	0	3	Code table	0	1	Operational
0 02 040	Method of removing velocity and motion of platform from current	Code table	0	0	4	Code table	0	2	Operational
0 02 041	Method for estimating reports related to synoptic features	Code table	0	0	6	Code table	0	2	Operational
0 02 042	Indicator for sea-surface current speed	Code table	0	0	2	Code table	0	1	Operational
0 02 044	Indicator for method of calculating spectral wave data	Code table	0	0	4	Code table	0	2	Operational
0 02 045	Indicator for type of platform	Code table	0	0	4	Code table	0	2	Operational
0 02 046	Wave measurement instrumentation	Code table	0	0	4	Code table	0	2	Operational
0 02 047	Deep-ocean tsunameter type	Code table	0	0	7	Code table	0	2	Pre-operational
0 02 048	Satellite sensor indicator	Code table	0	0	4	Code table	0	2	Operational
0 02 049	Geostationary satellite data-processing technique used	Flag table	0	0	8	Flag table	0	3	Operational
0 02 050	Geostationary sounder satellite channels used	Flag table	0	0	20	Flag table	0	7	Operational
0 02 051	Indicator to specify observing method for extreme temperatures	Code table	0	0	4	Code table	0	2	Operational
0 02 052	Geostationary imager satellite channels used	Flag table	0	0	6	Flag table	0	2	Operational
0 02 053	GOES-I/M brightness temperature characteristics	Code table	0	0	4	Code table	0	2	Operational
0 02 054	GOES-I/M soundings parameter characteristics	Code table	0	0	4	Code table	0	2	Operational
0 02 055	Geostationary soundings statistical parameters	Code table	0	0	4	Code table	0	2	Operational
0 02 056	Geostationary soundings accuracy statistics	Code table	0	0	4	Code table	0	2	Operational
0 02 057	Origin of first guess information for GOES-I/M soundings	Code table	0	0	4	Code table	0	2	Operational
0 02 058	Valid times of first guess information for GOES-I/M soundings	Code table	0	0	4	Code table	0	2	Operational
0 02 059	Origin of analysis information for GOES-I/M soundings	Code table	0	0	4	Code table	0	2	Operational
0 02 060	Origin of surface information for GOES-I/M soundings	Code table	0	0	4	Code table	0	2	Operational

TABLE REFERENCE F X Y	ELEMENT NAME	UNIT	SCALE	BUFR REFERENCE VALUE	DATA WIDTH (Bits)	UNIT	SCALE	CREX DATA WIDTH (Characters)	Status
0 02 061	Aircraft navigational system	Code table	0	0	3	Code table	0	1	Operational
0 02 062	Type of aircraft data relay system	Code table	0	0	4	Code table	0	2	Operational
0 02 063	Aircraft roll angle	degree	2	-18000	16	degree	2	5	Operational
0 02 064	Aircraft roll angle quality	Code table	0	0	2	Code table	0	1	Operational
0 02 065	ACARS ground-receiving station	CCITT IA5	0	0	40	Character	0	5	Operational
0 02 066	Radiosonde ground receiving system	Code table	0	0	6	Code table	0	2	Operational
0 02 067	Radiosonde operating frequency	Hz	-5	0	15	Hz	-5	5	Operational
0 02 070	Original specification of latitude/longitude	Code table	0	0	4	Code table	0	2	Operational
0 02 071	Spectrographic wavelength	m	13	0	30	m	13	10	Operational
0 02 072	Spectrographic width	m	13	0	30	m	13	10	Validation
0 02 080	Balloon manufacturer	Code table	0	0	6	Code table	0	2	Operational
0 02 081	Type of balloon	Code table	0	0	5	Code table	0	2	Operational
0 02 082	Weight of balloon	kg	3	0	12	kg	3	4	Operational
0 02 083	Type of balloon shelter	Code table	0	0	4	Code table	0	2	Operational
0 02 084	Type of gas used in balloon	Code table	0	0	4	Code table	0	2	Operational
0 02 085	Amount of gas used in balloon	kg	3	0	13	kg	3	4	Operational
0 02 086	Balloon flight train length	m	1	0	10	m	1	4	Operational
0 02 091	Entry sensor 4/20 mA	A	4	0	10	A	4	3	Operational
0 02 095	Type of pressure sensor	Code table	0	0	5	Code table	0	2	Operational
0 02 096	Type of temperature sensor	Code table	0	0	5	Code table	0	2	Operational
0 02 097	Type of humidity sensor	Code table	0	0	5	Code table	0	2	Operational
0 02 098	Type of wave sensor	Code table	0	0	4	Code table	0	2	Validation
0 02 099	Polarisation	Code table	0	0	3	Code table	0	1	Operational
0 02 100	Radar constant *	dB	1	0	12	dB	1	4	Operational
0 02 101	Type of antenna	Code table	0	0	4	Code table	0	2	Operational
0 02 102	Antenna height above tower base	m	0	0	8	m	0	3	Operational
0 02 103	Radome	Flag table	0	0	2	Flag table	0	1	Operational
0 02 104	Antenna polarisation	Code table	0	0	4	Code table	0	2	Operational



TABLE REFERENCE F X Y	ELEMENT NAME	UNIT	SCALE	BUFR	DATA WIDTH (Bits)	UNIT	CREX	DATA WIDTH (Characters)	Status
				REFERENCE VALUE			SCALE		
0 02 105	Maximum antenna gain	dB	0	0	6	dB	0	2	Operational
0 02 106	3-dB beamwidth	degree	1	0	6	degree	1	2	Operational
0 02 107	Sidelobe suppression	dB	0	0	6	dB	0	2	Operational
0 02 108	Crosspol discrimination (on axis)	dB	0	0	6	dB	0	2	Operational
0 02 109	Antenna speed (azimuth)	degree s-1	2	0	12	degree s-1	2	4	Operational
0 02 110	Antenna speed (elevation)	degree s-1	2	0	12	degree s-1	2	4	Operational
0 02 111	Radar incidence angle	degree	1	0	10	degree	1	4	Operational
0 02 112	Radar look angle	degree	1	0	12	degree	1	4	Operational
0 02 113	Number of azimuth looks	Numeric	0	0	4	Numeric	0	2	Operational
0 02 114	Antenna effective surface area	m2	0	0	15	m2	0	5	Operational
0 02 115	Type of surface observing equipment	Code table	0	0	5	Code table	0	2	Operational
0 02 116	Percentage of 320 MHz band processed	%	0	0	7	%	0	3	Operational
0 02 117	Percentage of 80 MHz band processed	%	0	0	7	%	0	3	Operational
0 02 118	Percentage of 20 MHz band processed	%	0	0	7	%	0	3	Operational
0 02 119	RA-2 instrument operations	Code table	0	0	3	Code table	0	1	Operational
0 02 120	Ocean wave frequency	Hz	3	0	10	Hz	3	4	Operational
0 02 121	Mean frequency	Hz	-8	0	7	Hz	-8	3	Operational
0 02 122	Frequency agility range	Hz	-6	-128	8	Hz	-6	3	Operational
0 02 123	Peak power	W	-4	0	7	W	-4	3	Operational
0 02 124	Average power	W	-1	0	7	W	-1	3	Operational
0 02 125	Pulse repetition frequency	Hz	-1	0	8	Hz	-1	3	Operational
0 02 126	Pulse width	s	7	0	6	s	7	2	Operational
0 02 127	Receiver intermediate frequency	Hz	-6	0	7	Hz	-6	3	Operational
0 02 128	Intermediate frequency bandwidth	Hz	-5	0	6	Hz	-5	2	Operational
0 02 129	Minimum detectable signal	dB	0	-150	5	dB	0	3	Operational
0 02 130	Dynamic range	dB	0	0	7	dB	0	3	Operational
0 02 131	Sensitivity time control (STC)	Flag table	0	0	2	Flag table	0	1	Operational
0 02 132	Azimuth pointing accuracy	degree	2	0	6	degree	2	2	Operational

TABLE REFERENCE F X Y	ELEMENT NAME	UNIT	SCALE	BUFR	DATA WIDTH (Bits)	UNIT	CREX	DATA WIDTH (Characters)	Status
				REFERENCE VALUE			SCALE		
0 02 133	Elevation pointing accuracy	degree	2	0	6	degree	2	2	Operational
0 02 134	Antenna beam azimuth	degree	2	0	16	degree	2	5	Operational
0 02 135	Antenna elevation	degree	2	-9000	15	degree	2	5	Operational
0 02 136	Range processed by range attenuation correction	m	-3	0	16	m	-3	5	Operational
0 02 137	Radar Dual PRF ratio	Code table	0	0	4	Code table	0	2	Validation
0 02 138	Antenna rotation direction	Code table	0	0	2	Code table	0	1	Validation
0 02 140	Satellite radar beam azimuth angle	degree	0	0	9	degree	0	3	Operational
0 02 141	Measurement type	CCITT IA5	0	0	24	Character	0	3	Operational
0 02 142	Ozone instrument serial number/identification	CCITT IA5	0	0	32	Character	0	4	Operational
0 02 143	Ozone instrument type	Code table	0	0	7	Code table	0	3	Operational
0 02 144	Light source type for Brewer spectrophotometer	Code table	0	0	4	Code table	0	2	Operational
0 02 145	Wave length setting for Dobson instruments	Code table	0	0	4	Code table	0	2	Operational
0 02 146	Source conditions for Dobson instruments	Code table	0	0	4	Code table	0	2	Operational
0 02 147	Method of transmission to collection centre	Code table	0	0	7	Code table	0	2	Validation
0 02 148	Data collection and/or location system	Code table	0	0	5	Code table	0	2	Operational
0 02 149	Type of data buoy	Code table	0	0	6	Code table	0	2	Operational
0 02 150	TOVS/ATOVS/AVHRR instrumentation channel number	Code table	0	0	6	Code table	0	2	Operational
0 02 151	Radiometer identifier	Code table	0	0	11	Code table	0	4	Operational
0 02 152	Satellite instrument used in data processing (see Note 6)	Flag table	0	0	31	Flag table	0	10	Operational
0 02 153	Satellite channel centre frequency	Hz	-8	0	26	Hz	-8	8	Operational
0 02 154	Satellite channel band width	Hz	-8	0	26	Hz	-8	8	Operational
0 02 156	Percentage of valid KU ocean retracker measurements	%	0	0	7	%	0	3	Operational
0 02 157	Percentage of valid S ocean retracker measurements	%	0	0	7	%	0	3	Operational
0 02 158	RA-2 instrument	Flag table	0	0	9	Flag table	0	3	Operational
0 02 159	MWR instrument	Flag table	0	0	8	Flag table	0	3	Operational
0 02 160	Wave length of the radar	Code table	0	0	4	Code table	0	2	Operational
0 02 163	Height assignment method	Code table	0	0	4	Code table	0	2	Operational
0 02 164	Tracer correlation method	Code table	0	0	3	Code table	0	1	Operational

TABLE REFERENCE F X Y	ELEMENT NAME	UNIT	SCALE	BUFR	DATA WIDTH (Bits)	UNIT	CREX	DATA WIDTH (Characters)	Status
				REFERENCE VALUE			SCALE		
0 02 165	Radiance type flags	Flag table	0	0	15	Flag table	0	5	Pre-operational
0 02 166	Radiance type	Code table	0	0	4	Code table	0	2	Operational
0 02 167	Radiance computational method	Code table	0	0	4	Code table	0	2	Operational
0 02 168	Hydrostatic pressure of lower end of cable (thermistor string)	Pa	-3	0	16	kPa	0	5	Operational
0 02 169	Anemometer type	Code table	0	0	4	Code table	0	2	Operational
0 02 171	Instrument serial number for water temperature profile	CCITT IA5	0	0	64	CCITT IA5	0	8	Validation
0 02 172	Product type for retrieved atmospheric gases	Code table	0	0	8	Code table	0	3	Operational
0 02 173	Square of the off-nadir angle (see Note 7)	degree2	4	0	10	degree2	4	4	Operational
0 02 174	Mean across track pixel number	Numeric	0	0	9	Numeric	0	3	Operational
0 02 175	Method of precipitation measurement	Code table	0	0	4	Code table	0	2	Operational
0 02 176	Method of state of ground measurement	Code table	0	0	4	Code table	0	2	Operational
0 02 177	Method of snow depth measurement	Code table	0	0	4	Code table	0	2	Operational
0 02 178	Method of liquid content measurement of precipitation	Code table	0	0	4	Code table	0	2	Operational
0 02 179	Type of sky condition algorithm	Code table	0	0	4	Code table	0	2	Operational
0 02 180	Main present weather detecting system	Code table	0	0	4	Code table	0	2	Operational
0 02 181	Supplementary present weather sensor	Flag table	0	0	21	Flag table	0	7	Operational
0 02 182	Visibility measurement system	Code table	0	0	4	Code table	0	2	Operational
0 02 183	Cloud detection system	Code table	0	0	4	Code table	0	2	Operational
0 02 184	Type of lightning detection sensor	Code table	0	0	4	Code table	0	2	Operational
0 02 185	Method of evaporation measurement	Code table	0	0	4	Code table	0	2	Operational
0 02 186	Capability to detect precipitation phenomena	Flag table	0	0	30	Flag table	0	10	Operational
0 02 187	Capability to detect other weather phenomena	Flag table	0	0	18	Flag table	0	6	Operational
0 02 188	Capability to detect obscuration	Flag table	0	0	21	Flag table	0	7	Operational
0 02 189	Capability to discriminate lightning strikes	Flag table	0	0	12	Flag table	0	4	Operational
0 02 190	Lagrangian drifter submergence (% time submerged)	%	0	0	7	%	0	3	Operational

Notes: (see)

## Class 04 - Location (time)

TABLE REFERENCE F X Y	ELEMENT NAME	UNIT	SCALE	BUFR	DATA WIDTH (Bits)	UNIT	SCALE	DATA WIDTH (Characters)	Status
				REFERENCE VALUE					
0 04 001	Year	Year	0	0	12	Year	0	4	Operational
0 04 002	Month	Month	0	0	4	Month	0	2	Operational
0 04 003	Day	Day	0	0	6	Day	0	2	Operational
0 04 004	Hour	Hour	0	0	5	Hour	0	2	Operational
0 04 005	Minute	Minute	0	0	6	Minute	0	2	Operational
0 04 006	Second	Second	0	0	6	Second	0	2	Operational
0 04 007	Seconds within a minute (microsecond accuracy)	Second	6	0	26	Second	6	8	Operational
0 04 008	Seconds Within a Minute (high accuracy)	Second	7	0	30	Second			Validation
0 04 011	Time increment	Year	0	-1024	11	Year	0	4	Operational
0 04 012	Time increment	Month	0	-1024	11	Month	0	4	Operational
0 04 013	Time increment	Day	0	-1024	11	Day	0	4	Operational
0 04 014	Time increment	Hour	0	-1024	11	Hour	0	4	Operational
0 04 015	Time increment	Minute	0	-2048	12	Minute	0	4	Operational
0 04 016	Time increment	Second	0	-4096	13	Second	0	4	Operational
0 04 017	Reference time period for accumulated or extreme data	Minute	0	-1440	12	Minute	0	4	Operational
0 04 021	Time period or displacement	Year	0	-1024	11	Year	0	4	Operational
0 04 022	Time period or displacement	Month	0	-1024	11	Month	0	4	Operational
0 04 023	Time period or displacement	Day	0	-1024	11	Day	0	4	Operational
0 04 024	Time period or displacement	Hour	0	-2048	12	Hour	0	4	Operational
0 04 025	Time period or displacement	Minute	0	-2048	12	Minute	0	4	Operational
0 04 026	Time period or displacement	Second	0	-4096	13	Second	0	4	Operational
0 04 031	Duration of time relating to following value	Hour	0	0	8	Hour	0	3	Operational
0 04 032	Duration of time relating to following value	Minute	0	0	6	Minute	0	2	Operational
0 04 041	Time difference, UTC - LMT (see Note 6)	Minute	0	-1440	12	Minute	0	4	Operational
0 04 043	Day of the year	Day	0	0	9	Day	0	3	Operational

TABLE REFERENCE F X Y	ELEMENT NAME	UNIT	SCALE	BUFR		DATA WIDTH (Bits)	UNIT	CREX		DATA WIDTH (Characters)	Status
				REFERENCE VALUE				SCALE			
0 04 051	Principal time of daily reading of maximum temperature	Hour	0	0		5	Hour	0		2	Operational
0 04 052	Principal time of daily reading of minimum temperature	Hour	0	0		5	Hour	0		2	Operational
0 04 053	Number of days with precipitation equal to or more than 1 mm	Numeric	0	0		6	Numeric	0		2	Operational
0 04 059	Times of observation used to compute the reported mean values	Flag table	0	0		6	Flag table	0		2	Operational
0 04 065	Short time increment	Minute	0	-128		8	Minute	0		2	Operational
0 04 066	Short time increment	Second	0	-128		8	Second	0		2	Pre-operational
0 04 073	Short time period or displacement	Day	0	-128		8	Day	0		2	Operational
0 04 074	Short time period or displacement	Hour	0	-128		8	Hour	0		2	Operational
0 04 075	Short time period or displacement	Minute	0	-128		8	Minute	0		2	Operational
0 04 080	Averaging period for following value	Code table	0	0		4	Code table	0		2	Operational
0 04 086	Long time period or displacement	Second	0	-8192		15	Second	0		5	Operational

Notes: (see)

## Class 05 - Location (horizontal - 1)

TABLE REFERENCE F X Y	ELEMENT NAME	UNIT	SCALE	BUFR	DATA WIDTH (Bits)	UNIT	CREX	DATA WIDTH (Characters)	Status
				REFERENCE VALUE			SCALE		
0 05 001	Latitude (high accuracy)	degree	5	-9000000	25	degree	5	7	Operational
0 05 002	Latitude (coarse accuracy)	degree	2	-9000	15	degree	2	4	Operational
0 05 011	Latitude increment (high accuracy)	degree	5	-9000000	25	degree	5	7	Operational
0 05 012	Latitude increment (coarse accuracy)	degree	2	-9000	15	degree	2	4	Operational
0 05 015	Latitude displacement (high accuracy)	degree	5	-9000000	25	degree	5	7	Operational
0 05 016	Latitude displacement (coarse accuracy)	degree	2	-9000	15	degree	2	4	Operational
0 05 021	Bearing or azimuth	degree true	2	0	16	degree true	2	5	Operational
0 05 022	Solar azimuth	degree true	2	0	16	degree true	2	5	Operational
0 05 023	Sun to satellite azimuth difference	degree	1	-1800	12	degree	1	4	Operational
0 05 030	Direction (spectral)	degree	0	0	12	degree	0	4	Operational
0 05 031	Row number	Numeric	0	0	12	Numeric	0	4	Operational
0 05 033	Pixel size on horizontal - 1	m	-1	0	16	m	-1	5	Operational
0 05 034	Along track row number	Numeric	0	0	11	Numeric	0	4	Operational
0 05 035	Maximum size of X-dimension	Numeric	0	0	12	Numeric	0	4	Validation
0 05 036	Ship transect number according to SOOP	Numeric	0	0	7	Numeric	0	2	Operational
0 05 040	Orbit number	Numeric	0	0	24	Numeric	0	8	Operational
0 05 041	Scan line number	Numeric	0	0	8	Numeric	0	3	Operational
0 05 042	Channel number	Numeric	0	0	6	Numeric	0	2	Operational
0 05 043	Field of view number	Numeric	0	0	8	Numeric	0	3	Operational
0 05 044	Satellite cycle number	Numeric	0	0	11	Numeric	0	4	Operational
0 05 045	Field of regard number	Numeric	0	0	8	Numeric	0	3	Pre-operational
0 05 052	Channel number increment	Numeric	0	0	5	Numeric	0	2	Operational
0 05 053	Field of view number increment	Numeric	0	0	5	Numeric	0	2	Operational
0 05 060	Y angular position from centre of gravity	degree	6	-8000000	24	degree	6	8	Operational
0 05 061	Z angular position from centre of gravity	degree	6	-8000000	24	degree	6	8	Operational

## Class 06 - Location (horizontal - 2)

TABLE REFERENCE F X Y	ELEMENT NAME	UNIT	SCALE	BUFR		DATA WIDTH (Bits)	UNIT	CREX		Status
				REFERENCE VALUE				SCALE	DATA WIDTH (Characters)	
0 06 001	Longitude (high accuracy)	degree	5	-18000000		26	degree	5	8	Operational
0 06 002	Longitude (coarse accuracy)	degree	2	-18000		16	degree	2	5	Operational
0 06 011	Longitude increment (high accuracy)	degree	5	-18000000		26	degree	5	8	Operational
0 06 012	Longitude increment (coarse accuracy)	degree	2	-18000		16	degree	2	5	Operational
0 06 015	Longitude displacement (high accuracy)	degree	5	-18000000		26	degree	5	8	Operational
0 06 016	Longitude displacement (coarse accuracy)	degree	2	-18000		16	degree	2	5	Operational
0 06 021	Distance	m	-1	0		13	m	-1	4	Operational
0 06 029	Wave number	m-1	1	0		22	m-1	1	7	Pre-operational
0 06 030	Wave number (spectral)	rad m-1	5	0		13	rad m-1	5	4	Operational
0 06 031	Column number	Numeric	0	0		12	Numeric	0	4	Operational
0 06 033	Pixel size on horizontal - 2	m	-1	0		16	m	-1	5	Operational
0 06 034	Cross-track cell number	Numeric	0	0		7	Numeric	0	3	Operational
0 06 035	Maximum size of Y-dimension	Numeric	0	0		12	Numeric	0	4	Validation
0 06 040	Radius of confidence	m	0	0		13	m	0	4	Operational

## Class 07 - Location (vertical)

TABLE REFERENCE F X Y	ELEMENT NAME	UNIT	SCALE	BUFR	DATA WIDTH (Bits)	UNIT	CREX	DATA WIDTH (Characters)	Status
				REFERENCE VALUE			SCALE		
0 07 001	Height of station (see Note 1)	m	0	-400	15	m	0	5	Operational
0 07 002	Height or altitude	m	-1	-40	16	m	-1	5	Operational
0 07 003	Geopotential	m2 s-2	-1	-400	17	m2 s-2	1	6	Operational
0 07 004	Pressure	Pa	-1	0	14	Pa	-1	5	Operational
0 07 005	Height increment	m	0	-400	12	m	0	4	Operational
0 07 006	Height above station	m	0	0	15	m	0	5	Operational
0 07 007	Height	m	0	-1000	17	m	0	6	Operational
0 07 008	Geopotential	m2 s-2	0	-10000	20	m2 s-2	0	7	Operational
0 07 009	Geopotential height	gpm	0	-1000	17	gpm	0	5	Operational
0 07 010	Flight level	m	0	-1024	16	ft	-1	5	Operational
0 07 011	Pressure (high precision)	Pa	0	0	30	Pa	0	10	Validation
0 07 012	Grid point altitude	m	2	-50000	20	m	2	7	Operational
0 07 021	Elevation (see Note 2)	degree	2	-9000	15	degree	2	5	Operational
0 07 022	Solar elevation	degree	2	-9000	15	degree	2	5	Operational
0 07 024	Satellite zenith angle	degree	2	-9000	15	degree	2	5	Operational
0 07 025	Solar zenith angle	degree	2	-9000	15	degree	2	5	Operational
0 07 026	Satellite zenith angle	degree	4	-900000	21	degree	4	7	Operational
0 07 030	Height of station ground above mean sea level (see Note 3)	m	1	-4000	17	m	1	5	Operational
0 07 031	Height of barometer above mean sea level (see Note 4)	m	1	- 4000	17	m	1	5	Operational
0 07 032	Height of sensor above local ground (or deck of marine platform)	m	2	0	16	m	2	5	Operational
0 07 033	Height of sensor above water surface (see Note 6)	m	1	0	12	m	1	4	Operational
0 07 035	Maximum size of Z-dimension	Numeric	0	0	12	Numeric	0	4	Validation
0 07 036	Level index of Z	Numeric	0	0	12	Numeric	0	4	Validation
0 07 040	Impact parameter (see Note 7)	m	1	62000000	22	m	1	8	Operational
0 07 061	Depth below land surface	m	2	0	14	m	2	5	Operational



TABLE REFERENCE F X Y	ELEMENT NAME	UNIT	SCALE	BUFR REFERENCE VALUE	DATA WIDTH (Bits)	UNIT	SCALE	DATA WIDTH (Characters)	Status
0 07 062	Depth below sea/water surface	m	1	0	17	m	1	6	Operational
0 07 063	Depth below sea/water surface (cm)	m	2	0	20	m	2	7	Operational
0 07 064	Representative height of sensor above station (see Note 8)	m	0	0	4	m	0	2	Operational
0 07 065	Water pressure	Pa	-3	0	17	Pa	-3	6	Operational
0 07 070	Drogue depth	m	0	0	10	m	0	4	Operational

Notes: (see)

## Class 08 - Significance qualifiers

TABLE REFERENCE F X Y	ELEMENT NAME	UNIT	SCALE	BUFR	DATA WIDTH (Bits)	UNIT	CREX	DATA WIDTH (Characters)	Status
				REFERENCE VALUE			SCALE		
0 08 001	Vertical sounding significance	Flag table	0	0	7	Flag table	0	3	Operational
0 08 002	Vertical significance (surface observations)	Code table	0	0	6	Code table	0	2	Operational
0 08 003	Vertical significance (satellite observations)	Code table	0	0	6	Code table	0	2	Operational
0 08 004	Phase of aircraft flight	Code table	0	0	3	Code table	0	1	Operational
0 08 005	Meteorological attribute significance	Code table	0	0	4	Code table	0	2	Operational
0 08 006	Ozone vertical sounding significance	Flag table	0	0	9	Flag table	0	3	Operational
0 08 007	Dimensional significance	Code table	0	0	4	Code table	0	2	Operational
0 08 008	Radiation vertical sounding significance	Flag table	0	0	9	Flag table	0	3	Operational
0 08 009	Detailed phase of flight	Code table	0	0	4	Code table	0	2	Operational
0 08 010	Surface qualifier (temperature data)	Code table	0	0	5	Code table	0	2	Operational
0 08 011	Meteorological feature	Code table	0	0	6	Code table	0	2	Operational
0 08 012	Land/sea qualifier	Code table	0	0	2	Code table	0	1	Operational
0 08 013	Day/night qualifier	Code table	0	0	2	Code table	0	1	Operational
0 08 014	Qualifier for runway visual range	Code table	0	0	4	Code table	0	2	Operational
0 08 015	Significance qualifier for sensor	Code table	0	0	3	Code table	0	1	Validation
0 08 016	Change qualifier of a trend-type forecast or an aerodrome forecast	Code table	0	0	3	Code table	0	1	Operational
0 08 017	Qualifier of the time when the forecast change is expected	Code table	0	0	2	Code table	0	1	Operational
0 08 018	SEAWINDS land/ice surface type	Flag table	0	0	17	Flag table	0	6	Operational
0 08 019	Qualifier for following centre identifier	Code table	0	0	4	Code table	0	2	Operational
0 08 020	Total number of missing entities (with respect to accumulation or averaged)	Numeric	0	0	16	Numeric	0	5	Operational
0 08 021	Time significance	Code table	0	0	5	Code table	0	2	Operational
0 08 022	Total number (with respect to accumulation or average)	Numeric	0	0	16	Numeric	0	5	Operational
0 08 023	First-order statistics	Code table	0	0	6	Code table	0	2	Operational
0 08 024	Difference statistics	Code table	0	0	6	Code table	0	2	Operational
0 08 025	Time difference qualifier (see Note 5)	Code table	0	0	4	Code table	0	2	Operational

TABLE REFERENCE F X Y	ELEMENT NAME	UNIT	SCALE	BUFR	DATA WIDTH (Bits)	UNIT	CREX	DATA WIDTH (Characters)	Status
				REFERENCE VALUE			SCALE		
0 08 026	Matrix significance	Code table	0	0	6	Code table	0	2	Operational
0 08 027	Matrix geometry	Code table	0	0	6	Code table	0	2	Validation
0 08 029	Surface type	Code table	0	0	8	Code table	0	3	Validation
0 08 030	Manual on Codes (Volume I.1, Section C) Code table from which data are derived	Numeric	0	0	13	Numeric	0	4	Operational
0 08 031	Data category - CREX table A	Numeric	0	0	8	Numeric	0	3	Operational
0 08 032	Status of operation	Code table	0	0	4	Code table	0	2	Validation
0 08 033	Method of derivation of percentage confidence (see Note 6)	Code table	0	0	7	Code table	0	3	Operational
0 08 035	Type of monitoring exercise	Code table	0	0	3	Code table	0	1	Operational
0 08 036	Type of centre or station performing monitoring	Code table	0	0	3	Code table	0	1	Operational
0 08 039	Time significance (Aviation forecast)	Code table	0	0	6	Code table	0	2	Operational
0 08 040	Flight Level significance	Code table	0	0	6	Code table	0	2	Operational
0 08 041	Data significance	Code table	0	0	5	Code table	0	2	Operational
0 08 042	Extended vertical sounding significance	Flag table	0	0	18	Flag table	0	6	Operational
0 08 043	Atmospheric chemical or physical constituent type	Code table	0	0	8	Code table	0	3	Operational
0 08 044	CAS registry number	CCITT IA5	0	0	88	Character	0	11	Validation
0 08 045	Particulate matter characterization	Code table	0	0	8	Code table	0	3	Validation
0 08 046	Atmospheric chemical or physical constituent type	Common Code table C-14	0	0	16	Common Code Table C-14	0	5	Validation
0 08 049	Number of observations	Numeric	0	0	8	Numeric	0	3	Operational
0 08 050	Qualifier for number of missing values in calculation of statistic	Code table	0	0	4	Code table	0	2	Operational
0 08 051	Qualifier for number of missing values in calculation of statistic	Code table	0	0	3	Code table	0	1	Operational
0 08 052	Condition for which number of days of occurrence follows	Code table	0	0	5	Code table	0	2	Operational
0 08 053	Day of occurrence qualifier	Code table	0	0	2	Code table	0	1	Operational
0 08 054	Qualifier for wind speed or wind gusts	Code table	0	0	3	Code table	0	1	Operational
0 08 060	Sample scanning mode significance	Code table	0	0	4	Code table	0	2	Operational
0 08 065	Sun-glint indicator	Code table	0	0	2	Code table	0	1	Operational
0 08 066	Semi-transparency indicator	Code table	0	0	2	Code table	0	1	Operational

TABLE REFERENCE F X Y	ELEMENT NAME	UNIT	SCALE	BUFR	DATA WIDTH (Bits)	UNIT	CREX	DATA WIDTH (Characters)	Status
				REFERENCE VALUE			SCALE		
0 08 070	TOVS/ATOVS product qualifier	Code table	0	0	4	Code table	0	2	Operational
0 08 072	Pixel(s) type	Code table	0	0	3	Code table	0	1	Operational
0 08 074	Altimeter echo type	Code table	0	0	2	Code table	0	1	Operational
0 08 075	Ascending/descending orbit qualifier	Code table	0	0	2	Code table	0	1	Operational
0 08 076	Type of band	Code table	0	0	6	Code table	0	2	Operational
0 08 077	Radiometer sensed surface type	Code table	0	0	7	Code table	0	3	Operational
0 08 079	Product status	Code table	0	0	4	Code table	0	2	Operational
0 08 080	Qualifier for GTSP quality flag	Code table	0	0	6	Code table	0	2	Operational
0 08 081	Type of equipment	Code table	0	0	6	Code table	0	2	Operational
0 08 082	Modification of sensor height to another value	Code table	0	0	3	Code table	0	1	Operational
0 08 083	Nominal value indicator	Flag table	0	0	15	Flag table	0	5	Operational
0 08 085	Beam identifier	Code table	0	0	3	Code table	0	1	Operational
0 08 090	Decimal scale of following significands	Numeric	0	-127	8	Numeric	0	3	Operational

Notes: (see)

## Class 10 - Vertical elements and pressure

TABLE REFERENCE F X Y	ELEMENT NAME	UNIT	SCALE	BUFR		DATA WIDTH (Bits)	UNIT	CREX		Status
				REFERENCE VALUE				SCALE	DATA WIDTH (Characters)	
0 10 001	Height of land surface	m	0	-400		15	m	0	5	Operational
0 10 002	Height	m	-1	-40		16	m	-1	5	Operational
0 10 003	Geopotential	m2 s-2	-1	-400		17	m2 s-2	-1	6	Operational
0 10 004	Pressure	Pa	-1	0		14	Pa	-1	5	Operational
0 10 007	Height	m	0	-1000		17	m	0	6	Operational
0 10 008	Geopotential	m2 s-2	0	-10000		20	m2 s-2	0	7	Operational
0 10 009	Geopotential height	gpm	0	-1000		17	gpm	0	5	Operational
0 10 010	Minimum pressure reduced to mean sea level	Pa	-1	0		14	Pa	-1	5	Operational
0 10 011	Maximum pressure reduced to mean sea level	Pa	-1	0		14	Pa	-1	5	Operational
0 10 012	Density Altitude (see note 5)	m	0	-1525		13	m	0	4	Validation
0 10 031	In direction of the North Pole, distance from the Earth's centre	m	2	-1073741824		31	m	2	10	Operational
0 10 032	Satellite distance to Earth's centre	m	1	0		27	m	2	9	Operational
0 10 033	Altitude (platform to ellipsoid)	m	1	0		27	m	2	9	Operational
0 10 034	Earth radius	m	1	0		27	m	2	9	Operational
0 10 035	Earth's local radius of curvature	m	1	62000000		22	m	1	8	Operational
0 10 036	Geoid undulation (see Note 4)	m	2	-15000		15	m	2	6	Operational
0 10 040	Number of retrieved layers	Numeric	0	0		10	Numeric	0	4	Operational
0 10 050	Standard deviation altitude	m	2	0		16	m	2	5	Operational
0 10 051	Pressure reduced to mean sea level	Pa	-1	0		14	Pa	-1	5	Operational
0 10 052	Altimeter setting (QNH)	Pa	-1	0		14	Pa	-1	5	Operational
0 10 053	Global Navigation Satellite System Altitude	m	0	-1000		17	m	0	5	Validation
0 10 060	Pressure change	Pa	-1	-1024		11	Pa	-1	4	Operational
0 10 061	3-hour pressure change	Pa	-1	-500		10	Pa	-1	4	Operational
0 10 062	24-hour pressure change	Pa	-1	-1000		11	Pa	-1	4	Operational
0 10 063	Characteristic of pressure tendency	Code table	0	0		4	Code table	0	2	Operational

TABLE REFERENCE F X Y	ELEMENT NAME	UNIT	SCALE	BUFR	DATA	UNIT	CREX	DATA	Status
				REFERENCE VALUE	WIDTH (Bits)		SCALE	WIDTH (Characters)	
0 10 064	SIGMET cruising level	Code table	0	0	3	Code table	0	1	Operational
0 10 070	Indicated aircraft altitude	m	0	-400	16	m	0	5	Operational
0 10 080	Viewing zenith angle	degree	2	-9000	15	degree	2	5	Operational
0 10 081	Altitude of COG above reference ellipsoid	m	3	0	31	m	3	10	Operational
0 10 082	Instantaneous altitude rate	m s-1	3	-65536	17	m s-1	3	6	Operational
0 10 083	Squared off nadir angle of the satellite from platform data	degree2	2	0	16	degree2	2	5	Operational
0 10 084	Squared off nadir angle of the satellite from waveform data	degree2	2	0	16	degree2	2	5	Operational
0 10 085	Mean sea surface height	m	3	-131072	18	m	3	6	Operational
0 10 086	Geoid's height	m	3	-131072	18	m	3	6	Operational
0 10 087	Ocean depth/land elevation	m	1	-131072	18	m	1	6	Operational
0 10 088	Total geocentric ocean tide height (solution 1)	m	3	-32768	16	m	3	5	Operational
0 10 089	Total geocentric ocean tide height (solution 2)	m	3	-32768	16	m	3	5	Operational
0 10 090	Long period tide height	m	3	-32768	16	m	3	5	Operational
0 10 091	Tidal loading height	m	3	-32768	16	m	3	5	Operational
0 10 092	Solid Earth tide height	m	3	-32768	16	m	3	5	Operational
0 10 093	Geocentric pole tide height	m	3	-32768	16	m	3	5	Operational
0 10 095	Height of atmosphere used	m	0	0	16	m	0	5	Operational
0 10 096	Mean dynamic topography	m	3	-131072	18	m	3	6	Operational
0 10 097	Mean sea surface height from altimeter only	m	3	-131072	18	m	3	6	Operational
0 10 098	Loading tide height geocentric ocean tide solution 1	m	4	-2000	12	m	4	4	Operational
0 10 099	Loading tide height geocentric ocean tide solution 2	m	4	-2000	12	m	4	4	Operational
0 10 100	Non-equilibrium long period tide height	m	4	-2000	12	m	4	4	Operational
0 10 101	Squared off nadir angle of the satellite from waveform data	degree2	2	-32768	16	degree2	2	5	Operational
0 10 102	Sea surface height anomaly	m	3	-32768	16				Validation

Notes: (see)

## Class 11 - Wind and turbulence

TABLE REFERENCE F X Y	ELEMENT NAME	UNIT	SCALE	BUFR		DATA WIDTH (Bits)	UNIT	CREX		Status
				REFERENCE VALUE				SCALE	DATA WIDTH (Characters)	
0 11 001	Wind direction	degree true	0	0		9	degree true	0	3	Operational
0 11 002	Wind speed	m s-1	1	0		12	m s-1	1	4	Operational
0 11 003	u-component	m s-1	1	-4096		13	m s-1	1	4	Operational
0 11 004	v-component	m s-1	1	-4096		13	m s-1	1	4	Operational
0 11 005	w-component	Pa s-1	1	-512		10	Pa s-1	1	4	Operational
0 11 006	w-component	m s-1	2	-4096		13	m s-1	2	4	Operational
0 11 010	Wind direction associated with wind speed which follows	degree true	0	0		9	degree true	0	3	Operational
0 11 011	Wind direction at 10 m	degree true	0	0		9	degree true	0	3	Operational
0 11 012	Wind speed at 10 m	m s-1	1	0		12	m s-1	1	4	Operational
0 11 013	Wind direction at 5 m	degree true	0	0		9	degree true	0	3	Operational
0 11 014	Wind speed at 5 m	m s-1	1	0		12	m s-1	1	4	Operational
0 11 016	Extreme counterclockwise wind direction of a variable wind	degree true	0	0		9	degree true	0	3	Operational
0 11 017	Extreme clockwise wind direction of a variable wind	degree true	0	0		9	degree true	0	3	Operational
0 11 019	Steadiness of wind (see Note 6)	%	0	0		7	%	0	3	Operational
0 11 021	Relative vorticity	s-1	9	-65536		17	s-1	9	6	Operational
0 11 022	Divergence	s-1	9	-65536		17	s-1	9	6	Operational
0 11 023	Velocity potential	m2 s-1	-2	-65536		17	m2 s-1	-2	6	Operational
0 11 030	Extended degree of turbulence	Code table	0	0		6	Code table	0	2	Operational
0 11 031	Degree of turbulence	Code table	0	0		4	Code table	0	2	Operational
0 11 032	Height of base of turbulence	m	-1	-40		16	m	-1	5	Operational
0 11 033	Height of top of turbulence	m	-1	-40		16	m	-1	5	Operational
0 11 034	Vertical gust velocity	m s-1	1	-1024		11	m s-1	1	4	Operational
0 11 035	Vertical gust acceleration	m s-2	2	-8192		14	m s-2	2	5	Operational
0 11 036	Maximum derived equivalent vertical gust speed	m s-1	1	0		10	m s-1	1	4	Operational
0 11 037	Turbulence index	Code table	0	0		6	Code table	0	2	Operational

TABLE REFERENCE F X Y	ELEMENT NAME	UNIT	SCALE	BUFR REFERENCE VALUE	DATA WIDTH (Bits)	UNIT	CREX SCALE	DATA WIDTH (Characters)	Status
0 11 038	Time of occurrence of peak eddy dissipation rate	Code table	0	0	5	Code table	0	2	Operational
0 11 039	Extended time of occurrence of peak eddy dissipation rate	Code table	0	0	6	Code table	0	2	Operational
0 11 040	Maximum wind speed (mean wind)	m s-1	1	0	12	m s-1	1	4	Operational
0 11 041	Maximum wind gust speed	m s-1	1	0	12	m s-1	1	4	Operational
0 11 042	Maximum wind speed (10-minute mean wind)	m s-1	1	0	12	m s-1	1	4	Operational
0 11 043	Maximum wind gust direction	degree true	0	0	9	degree true	0	3	Operational
0 11 044	Mean wind direction for surface - 1500 m (5000 feet)	degree true	0	0	9	degree true	0	3	Operational
0 11 045	Mean wind speed for surface - 1500 m (5000 feet)	m s-1	1	0	12	m s-1	1	4	Operational
0 11 046	Maximum instantaneous wind speed	m s-1	1	0	12	m s-1	1	4	Operational
0 11 047	Maximum instantaneous wind speed over 10 minutes	m s-1	1	0	12	m s-1	1	4	Operational
0 11 049	Standard deviation of wind direction	degree true	0	0	9	degree true	0	3	Operational
0 11 050	Standard deviation of horizontal wind speed	m s-1	1	0	12	m s-1	1	4	Operational
0 11 051	Standard deviation of vertical wind speed	m s-1	1	0	8	m s-1	1	3	Operational
0 11 052	Formal uncertainty in wind speed	m s-1	2	0	13	m s-1	2	5	Operational
0 11 053	Formal uncertainty in wind direction	degree true	2	0	15	degree true	2	5	Operational
0 11 054	Mean wind direction for 1500 m - 3000 m	degree true	0	0	9	degree true	0	3	Operational
0 11 055	Mean wind speed for 1500 m - 3000 m	m s-1	1	0	12	m s-1	1	4	Operational
0 11 061	Absolute wind shear in 1 km layer below	m s-1	1	0	12	m s-1	1	4	Operational
0 11 062	Absolute wind shear in 1 km layer above	m s-1	1	0	12	m s-1	1	4	Operational
0 11 070	Designator of the runway affected by wind shear (including ALL)	CCITT IA5	0	0	32	Character	0	4	Operational
0 11 071	Turbulent vertical momentum flux	m2 s-2	3	-128	14	m2 s-2	3	5	Operational
0 11 072	Turbulent vertical buoyancy flux	K m s-1	3	-128	11	K m s-1	3	4	Operational
0 11 073	Turbulent kinetic energy	m2 s-2	2	-1024	13	m2 s-2	2	4	Operational
0 11 074	Dissipation energy	m2 s-2	2	-1024	10	m2 s-2	2	4	Operational
0 11 075	Mean turbulence intensity (eddy dissipation rate)	m2/3 s-1	2	0	8	m2/3 s-1	2	3	Operational
0 11 076	Peak turbulence intensity (eddy dissipation rate)	m2/3 s-1	2	0	8	m2/3 s-1	2	3	Operational
0 11 077	Reporting interval or averaging time for eddy dissipation rate	s	0	0	12	s	0	4	Operational
0 11 081	Model wind direction at 10m	degree true	2	0	16	degree true	2	5	Operational



TABLE REFERENCE F X Y	ELEMENT NAME	UNIT	SCALE	BUFR	DATA WIDTH (Bits)	UNIT	CREX	DATA WIDTH (Characters)	Status
				REFERENCE VALUE			SCALE		
0 11 082	Model wind speed at 10m	m s-1	2	0	14	m s-1	2	4	Operational
0 11 083	Wind speed	km h-1	0	0	9	km h-1	0	3	Operational
0 11 084	Wind speed	kt	0	0	8	kt	0	3	Operational
0 11 085	Maximum wind gust speed	km h-1	0	0	9	km h-1	0	3	Operational
0 11 086	Maximum wind gust speed	kt	0	0	8	kt	0	3	Operational
0 11 095	u component of the model wind vector	m s-1	1	-4096	13	m s-1	1	4	Operational
0 11 096	v component of the model wind vector	m s-1	1	-4096	13	m s-1	1	4	Operational
0 11 097	Wind speed from altimeter	m s-1	2	0	12	m s-1	2	4	Operational
0 11 098	Wind speed from radiometer	m s-1	2	0	12	m s-1	2	4	Operational
0 11 100	True aircraft speed	m s-1	1	0	12	m s-1	1	4	Validation
0 11 101	Aircraft velocity u-component	m s-1	1	-4096	13	m s-1	1	4	Validation
0 11 102	Aircraft velocity v-component	m s-1	1	-4096	13	m s-1	1	4	Validation
0 11 103	Aircraft velocity w-component	m s-1	1	-512	10	m s-1	1	4	Validation
0 11 104	Aircraft true heading	degree true	0	0	9	degree true	0	3	Validation
0 11 105	EDR algorithm version	Numeric	0	0	6	Numeric	0	2	Validation
0 11 106	Running minimum confidence	Numeric	1	0	4	Numeric	1	2	Validation
0 11 107	Maximum number bad inputs	Numeric	0	0	5	Numeric	0	2	Validation
0 11 108	Peak Location	Numeric	1	0	4	Numeric	1	2	Validation
0 11 109	Number of good EDR	Numeric	0	0	4	Numeric	0	2	Validation

Notes: (see)

## Class 12 - Temperature

TABLE REFERENCE F X Y	ELEMENT NAME	UNIT	SCALE	BUFR	DATA WIDTH (Bits)	UNIT	SCALE	DATA WIDTH (Characters)	Status
				REFERENCE VALUE					
0 12 001	Temperature/dry-bulb temperature	K	1	0	12	°C	1	3	Operational
0 12 002	Wet-bulb temperature	K	1	0	12	°C	1	3	Operational
0 12 003	Dew-point temperature	K	1	0	12	°C	1	3	Operational
0 12 004	Dry-bulb temperature at 2 m	K	1	0	12	°C	1	3	Operational
0 12 005	Wet-bulb temperature at 2 m	K	1	0	12	°C	1	3	Operational
0 12 006	Dew-point temperature at 2 m	K	1	0	12	°C	1	3	Operational
0 12 007	Virtual temperature	K	1	0	12	°C	1	3	Operational
0 12 011	Maximum temperature, at height and over period specified	K	1	0	12	°C	1	3	Operational
0 12 012	Minimum temperature, at height and over period specified	K	1	0	12	°C	1	3	Operational
0 12 013	Ground minimum temperature, past 12 hours	K	1	0	12	°C	1	3	Operational
0 12 014	Maximum temperature at 2 m, past 12 hours	K	1	0	12	°C	1	3	Operational
0 12 015	Minimum temperature at 2 m, past 12 hours	K	1	0	12	°C	1	3	Operational
0 12 016	Maximum temperature at 2 m, past 24 hours	K	1	0	12	°C	1	3	Operational
0 12 017	Minimum temperature at 2 m, past 24 hours	K	1	0	12	°C	1	3	Operational
0 12 021	Maximum temperature at 2m	K	2	0	16	°C	2	4	Operational
0 12 022	Minimum temperature at 2m	K	2	0	16	°C	2	4	Operational
0 12 023	Temperature	°C	0	-99	8	°C	0	2	Operational
0 12 024	Dew point temperature	°C	0	-99	8	°C	0	2	Operational
0 12 030	Soil temperature	K	1	0	12	°C	1	3	Operational
0 12 049	Temperature change over specified period	K	0	-30	6	°C	0	2	Operational
0 12 051	Standard deviation temperature	K	1	0	10	°C	1	3	Operational
0 12 052	Highest daily mean temperature	K	1	0	12	°C	1	3	Operational
0 12 053	Lowest daily mean temperature	K	1	0	12	°C	1	3	Operational
0 12 060	AWS enclosure internal temperature	K	1	0	12	°C	1	3	Validation
0 12 061	Skin temperature	K	1	0	12	°C	1	3	Operational

TABLE REFERENCE F X Y	ELEMENT NAME	UNIT	SCALE	BUFR REFERENCE VALUE	DATA WIDTH (Bits)	UNIT	CREX SCALE	DATA WIDTH (Characters)	Status
0 12 062	Equivalent black body temperature	K	1	0	12	°C	1	3	Operational
0 12 063	Brightness temperature	K	1	0	12	°C	1	3	Operational
0 12 064	Instrument temperature	K	1	0	12	K	1	4	Operational
0 12 065	Standard deviation brightness temperature	K	1	0	12	K	1	4	Operational
0 12 066	Antenna temperature	K	2	0	16	°C	2	5	Validation
0 12 070	Warm load temperature	K	2	0	16	K	2	5	Operational
0 12 071	Coldest cluster temperature	K	1	0	12	K	1	4	Operational
0 12 072	Radiance	W m-2 sr-1	6	0	31	W m-2 sr-1	6	9	Operational
0 12 075	Spectral radiance	W m-3 sr-1	-3	0	16	W m-3 sr-1	-3	5	Operational
0 12 076	Radiance (see Note 2)	W m-2 sr-1	3	0	16	W m-2 sr-1	3	5	Operational
0 12 080	Brightness temperature real part	K	2	-10000	16	K	2	5	Operational
0 12 081	Brightness temperature imaginary part	K	2	-10000	16	K	2	5	Operational
0 12 082	Pixel radiometric accuracy	K	2	0	12	K	2	4	Operational
0 12 101	Temperature/dry-bulb temperature	K	2	0	16	°C	2	4	Operational
0 12 102	Wet-bulb temperature	K	2	0	16	°C	2	4	Operational
0 12 103	Dew-point temperature	K	2	0	16	°C	2	4	Operational
0 12 104	Dry-bulb temperature at 2m	K	2	0	16	°C	2	4	Operational
0 12 105	Web-bulb temperature at 2m	K	2	0	16	°C	2	4	Operational
0 12 106	Dew-point temperature at 2m	K	2	0	16	°C	2	4	Operational
0 12 107	Virtual temperature	K	2	0	16	°C	2	4	Operational
0 12 111	Maximum temperature, at height and over period specified	K	2	0	16	°C	2	4	Operational
0 12 112	Minimum temperature, at height and over period specified	K	2	0	16	°C	2	4	Operational
0 12 113	Ground minimum temperature, past 12 hours	K	2	0	16	°C	2	4	Operational
0 12 114	Maximum temperature at 2m, past 12 hours	K	2	0	16	°C	2	4	Operational
0 12 115	Minimum temperature at 2m, past 12 hours	K	2	0	16	°C	2	4	Operational
0 12 116	Maximum temperature at 2m, past 24 hours	K	2	0	16	°C	2	4	Operational
0 12 117	Minimum temperature at 2m, past 24 hours	K	2	0	16	°C	2	4	Operational
0 12 118	Maximum temperature at height specified, past 24 hours	K	2	0	16	°C	2	4	Operational

TABLE REFERENCE F X Y	ELEMENT NAME	UNIT	SCALE	BUFR REFERENCE VALUE	DATA WIDTH (Bits)	UNIT	CREX SCALE	DATA WIDTH (Characters)	Status
0 12 119	Minimum temperature at height specified, past 24 hours	K	2	0	16	°C	2	4	Operational
0 12 120	Ground temperature	K	2	0	16	°C	2	4	Validation
0 12 121	Ground minimum temperature	K	2	0	16	°C	2	4	Operational
0 12 122	Ground minimum temperature of the preceding night	K	2	0	16	°C	2	4	Operational
0 12 130	Soil temperature	K	2	0	16	°C	2	4	Operational
0 12 131	Snow temperature	K	2	0	16	°C	2	4	Validation
0 12 132	Ice surface temperature	K	2	0	16	°C	2	4	Validation
0 12 151	Standard deviation of daily mean temperature	K	2	0	12	°C	2	4	Operational
0 12 152	Highest daily mean temperature	K	2	0	16	°C	2	4	Operational
0 12 153	Lowest daily mean temperature	K	2	0	16	°C	2	4	Operational
0 12 161	Skin temperature	K	2	0	16	°C	2	4	Operational
0 12 162	Equivalent black body temperature	K	2	0	16	°C	2	4	Operational
0 12 163	Brightness temperature	K	2	0	16	°C	2	4	Operational
0 12 164	Instrument temperature	K	2	0	16	K	2	5	Operational
0 12 165	Direct sun brightness temperature	K	0	0	23	K	0	7	Operational
0 12 166	Snapshot accuracy	K	1	-4000	13	K	1	4	Operational
0 12 167	Radiometric accuracy (pure polarisation)	K	1	0	9	K	1	3	Operational
0 12 168	Radiometric accuracy (cross polarisation)	K	1	0	9	K	1	3	Operational
0 12 171	Coldest cluster temperature	K	2	0	16	K	2	5	Operational
0 12 180	Averaged 12 micron BT for all clear pixels at nadir	K	2	0	16	K	2	5	Operational
0 12 181	Averaged 11 micron BT for all clear pixels at nadir	K	2	0	16	K	2	5	Operational
0 12 182	Averaged 3.7 micron BT for all clear pixels at nadir	K	2	0	16	K	2	5	Operational
0 12 183	Averaged 12 micron BT for all clear pixels, forward view	K	2	0	16	K	2	5	Operational
0 12 184	Averaged 11 micron BT for all clear pixels, forward view	K	2	0	16	K	2	5	Operational
0 12 185	Averaged 3.7 micron BT for all clear pixels, forward view	K	2	0	16	K	2	5	Operational
0 12 186	Mean nadir sea surface temperature	K	2	0	16	K	2	5	Operational
0 12 187	Mean dual view sea-surface temperature	K	2	0	16	K	2	5	Operational
0 12 188	Interpolated 23.8 GHz brightness T from MWR	K	2	0	16	K	2	5	Operational

TABLE REFERENCE F X Y	ELEMENT NAME	UNIT	SCALE	BUFR	DATA WIDTH (Bits)	UNIT	CREX	DATA WIDTH (Characters)	Status
				REFERENCE VALUE			SCALE		
0 12 189	Interpolated 36.5 GHz brightness T from MWR	K	2	0	16	K	2	5	Operational

Notes: (see)

### Class 13 - Hygrographic and hydrological elements

TABLE REFERENCE F X Y	ELEMENT NAME	UNIT	SCALE	BUFR		DATA WIDTH (Bits)	UNIT	CREX		Status
				REFERENCE VALUE				SCALE	DATA WIDTH (Characters)	
0 13 001	Specific humidity	kg kg-1	5	0		14	kg kg-1	5	5	Operational
0 13 002	Mixing ratio	kg kg-1	5	0		14	kg kg-1	5	5	Operational
0 13 003	Relative humidity	%	0	0		7	%	0	3	Operational
0 13 004	Vapour pressure	Pa	-1	0		10	Pa	-1	4	Operational
0 13 005	Vapour density	kg m-3	3	0		7	kg m-3	3	3	Operational
0 13 006	Mixing heights	m	-1	-40		16	m	-1	5	Operational
0 13 007	Minimum relative humidity	%	0	0		7	%	0	3	Operational
0 13 008	Maximum relative humidity	%	0	0		7	%	0	3	Operational
0 13 009	Relative humidity (see Note 6)	%	1	-1000		12	%	1	4	Operational
0 13 011	Total precipitation/total water equivalent	kg m-2	1	-1		14	kg m-2	1	5	Operational
0 13 012	Depth of fresh snow	m	2	-2		12	m	2	4	Operational
0 13 013	Total snow depth	m	2	-2		16	m	2	5	Operational
0 13 014	Rainfall/water equivalent of snow (averaged rate)	kg m-2 s-1	4	0		12	kg m-2 s-1	4	4	Operational
0 13 015	Snowfall (averaged rate)	m s-1	7	0		12	m s-1	7	4	Operational
0 13 016	Precipitable water	kg m-2	0	0		7	kg m-2	0	3	Operational
0 13 019	Total precipitation past 1 hour	kg m-2	1	-1		14	kg m-2	1	4	Operational
0 13 020	Total precipitation past 3 hours	kg m-2	1	-1		14	kg m-2	1	5	Operational
0 13 021	Total precipitation past 6 hours	kg m-2	1	-1		14	kg m-2	1	5	Operational
0 13 022	Total precipitation past 12 hours	kg m-2	1	-1		14	kg m-2	1	5	Operational
0 13 023	Total precipitation past 24 hours	kg m-2	1	-1		14	kg m-2	1	5	Operational
0 13 031	Evapotranspiration	kg m-2	0	0		7	kg m-2	0	3	Operational
0 13 032	Evaporation/evapotranspiration (see Note 5)	kg m-2	1	0		8	kg m-2	1	3	Operational
0 13 033	Evaporation/evapotranspiration	kg m-2	1	0		10	kg m-2	1	4	Operational
0 13 038	Superadiabatic indicator	Code table	0	0		2	Code table	0	1	Operational
0 13 039	Terrain type (ice/snow)	Code table	0	0		3	Code table	0	1	Operational

TABLE REFERENCE F X Y	ELEMENT NAME	UNIT	SCALE	BUFR	DATA WIDTH (Bits)	UNIT	CREX	DATA WIDTH (Characters)	Status
				REFERENCE VALUE			SCALE		
0 13 040	Surface flag	Code table	0	0	4	Code table	0	2	Operational
0 13 041	Pasquill-Gifford stability category	Code table	0	0	4	Code table	0	2	Operational
0 13 042	Parcel lifted index (to 500 hPa) (see Notes 3 and 4)	K	0	-20	6	K	0	2	Operational
0 13 043	Best lifted index (to 500 hPa) (see Note 3 and 4)	K	0	-20	6	K	0	2	Operational
0 13 044	K index	K	0	-30	8	K	0	3	Operational
0 13 045	KO index	K	0	-30	8	K	0	3	Operational
0 13 046	Maximum buoyancy	K	0	-30	8	K	0	3	Operational
0 13 047	Modified Showalter stability index (see Note 7)	K	0	-60	6	°C	0	2	Operational
0 13 048	Water fraction	%	1	0	10	%	1	4	Operational
0 13 051	Frequency group, precipitation	Code table	0	0	4	Code table	0	2	Operational
0 13 052	Highest daily amount of precipitation	kg m-2	1	-1	14	kg m-2	1	5	Operational
0 13 055	Intensity of precipitation	kg m-2 s-1	4	0	8	mm h-1	1	4	Operational
0 13 056	Character and intensity of precipitation	Code table	0	0	4	Code table	0	2	Operational
0 13 057	Time of beginning or end of precipitation	Code table	0	0	4	Code table	0	2	Operational
0 13 058	Size of precipitating element	m	4	0	7	mm	1	3	Operational
0 13 059	Number of flashes (thunderstorm)	Numeric	0	0	7	Numeric	0	3	Operational
0 13 060	Total accumulated precipitation	kg m-2	1	-1	17	kg m-2	1	5	Operational
0 13 071	Upstream water level	m	2	0	14	m	2	4	Operational
0 13 072	Downstream water level	m	2	0	14	m	2	4	Operational
0 13 073	Maximum water level	m	2	0	14	m	2	4	Operational
0 13 074	Ground water level	m	2	0	18	m	2	6	Validation
0 13 080	Water pH	pH unit	1	0	10	pH unit	1	3	Operational
0 13 081	Water conductivity	S m-1	3	0	14	S m-1	3	4	Operational
0 13 082	Water temperature	K	1	0	12	K	1	4	Operational
0 13 083	Dissolved oxygen	kg m-3	6	0	15	kg m-3	6	5	Operational
0 13 084	Turbidity	lm	0	0	14	lm	0	4	Operational
0 13 085	Oxydation Reduction Potential (ORP)	V	3	0	14	V	3	4	Operational
0 13 090	Radiometer water vapour content	kg m-2	1	0	10	kg m-2	1	4	Operational

TABLE REFERENCE F X Y	ELEMENT NAME	UNIT	SCALE	BUFR		DATA WIDTH (Bits)	UNIT	CREX		Status
				REFERENCE VALUE				SCALE	DATA WIDTH (Characters)	
0 13 091	Radiometer liquid content	kg m-2	2	0		8	kg m-2	2	3	Operational
0 13 093	Cloud optical thickness	Numeric	0	0		8	Numeric	0	3	Operational
0 13 095	Total column water vapour	kg m-2	4	0		19	kg m-2	4	6	Operational
0 13 096	MWR water vapour content	kg m-2	2	0		14	kg m-2	2	5	Operational
0 13 097	MWR liquid water content	kg m-2	2	0		14	kg m-2	2	5	Operational
0 13 098	Integrated water vapour density	kg m-2	8	0		30	kg m-2	8	10	Operational
0 13 110	Mass mixing ratio	%	0	0		7	%	0	3	Validation
0 13 111	Soil moisture, volumetric or water potential	g kg-1	0	0		10	g kg-1	0	4	Validation
0 13 112	Object wetness duration	s	0	0		17	s	0	5	Validation
0 13 114	Rate of ice accretion	kg m-2 h-1	1	0		11	kg m-2 h-1	1	4	Validation
0 13 115	Ice thickness	m	2	0		19	m	2	6	Validation
0 13 117	Snow density (liquid water content)	kg m-3	0	0		10	kg m-3	0	3	Validation
0 13 155	Intensity of precipitation (high accuracy)	kg m-2 s-1	5	-1		16	mm h-1	1	5	Operational

Notes: (see)



## Class 14 - Radiation and radiance

TABLE REFERENCE F X Y	ELEMENT NAME	UNIT	SCALE	BUFR	DATA WIDTH (Bits)	UNIT	CREX	DATA WIDTH (Characters)	Status
				REFERENCE VALUE			SCALE		
0 14 001	Long-wave radiation, integrated over 24 hours	J m-2	-3	-65536	17	J m-2	-3	5	Operational
0 14 002	Long-wave radiation, integrated over period specified	J m-2	-3	-65536	17	J m-2	-3	5	Operational
0 14 003	Short-wave radiation, integrated over 24 hours	J m-2	-3	-65536	17	J m-2	-3	5	Operational
0 14 004	Short-wave radiation, integrated over period specified	J m-2	-3	-65536	17	J m-2	-3	5	Operational
0 14 011	Net long-wave radiation, integrated over 24 hours	J m-2	-3	-65536	17	J m-2	-3	5	Operational
0 14 012	Net long-wave radiation, integrated over period specified	J m-2	-3	-65536	17	J m-2	-3	5	Operational
0 14 013	Net short-wave radiation, integrated over 24 hours	J m-2	-3	-65536	17	J m-2	-3	5	Operational
0 14 014	Net short-wave radiation, integrated over period specified	J m-2	-3	-65536	17	J m-2	-3	5	Operational
0 14 015	Net radiation, integrated over 24 hours	J m-2	-4	-16384	15	J m-2	-4	5	Operational
0 14 016	Net radiation, integrated over period specified	J m-2	-4	-16384	15	J m-2	-4	5	Operational
0 14 017	Instantaneous long-wave radiation	W m-2	0	-512	10	W m-2	0	4	Operational
0 14 018	Instantaneous short-wave radiation	W m-2	0	-2048	12	W m-2	0	4	Operational
0 14 019	Surface albedo	%	0	0	7	%	0	3	Operational
0 14 020	Global solar radiation, integrated over 24 hours	J m-2	-4	0	15	J m-2	-4	5	Operational
0 14 021	Global solar radiation, integrated over period specified	J m-2	-4	0	15	J m-2	-4	5	Operational
0 14 022	Diffuse solar radiation, integrated over 24 hours	J m-2	-4	0	15	J m-2	-4	5	Operational
0 14 023	Diffuse solar radiation, integrated over period specified	J m-2	-4	0	15	J m-2	-4	5	Operational
0 14 024	Direct solar radiation, integrated over 24 hours	J m-2	-4	0	15	J m-2	-4	5	Operational
0 14 025	Direct solar radiation, integrated over period specified	J m-2	-4	0	15	J m-2	-4	5	Operational
0 14 026	Albedo at the top of clouds	%	0	0	7	%	0	3	Operational
0 14 027	Albedo	%	0	0	7	%	0	3	Operational
0 14 028	Global solar radiation (high accuracy), integrated over period specified	J m-2	-2	0	20	J m-2	-2	6	Operational
0 14 029	Diffuse solar radiation (high accuracy), integrated over period specified	J m-2	-2	0	20	J m-2	-2	6	Operational
0 14 030	Direct solar radiation (high accuracy), integrated over period specified	J m-2	-2	0	20	J m-2	-2	6	Operational
0 14 031	Total sunshine	min	0	0	11	min	0	4	Operational

TABLE REFERENCE F X Y	ELEMENT NAME	UNIT	SCALE	BUFR		DATA WIDTH (Bits)	UNIT	CREX		DATA WIDTH (Characters)	Status
				REFERENCE VALUE				SCALE			
0 14 032	Total sunshine	h	0	0		10	h	0		4	Operational
0 14 033	Total sunshine	%	0	0		9	%	0		3	Operational
0 14 034	Sunshine over period specified	min	0	0		11	min	0		4	Operational
0 14 035	Solar Radiation Flux	W m-2	1	0		14	W m-2	1		5	Operational
0 14 042	Bidirectional reflectance	%	0	0		7	%	0		3	Operational
0 14 044	Channel radiance	W m-2 sr-1 cm	7	-100000		22	W m-2 sr-1 cm	7		7	Pre-operational
0 14 045	Channel radiance (see Note 4)	W m-2 sr-1 cm-1	0	0		11	W m-2 sr-1 cm-1	0		4	Operational
0 14 046	Scaled IASI radiance (see Note 6)	W m-2 sr-1 m-1	0	-5000		16	W m-2 sr-1 m-1	0		5	Operational
0 14 047	Scaled mean AVHRR radiance	W m-2 sr-1 m-1	0	0		31	W m-2 sr-1 m-1	0		10	Operational
0 14 048	Scaled standard deviation AVHRR radiance	W m-2 sr-1 m-1	0	0		31	W m-2 sr-1 m-1	0		10	Operational
0 14 050	Emissivity (see Note 5)	%	1	0		10	%	1		4	Operational
0 14 051	Direct solar radiation integrated over last hour	J m-2	-3	0		14	J m-2	-3		4	Operational
0 14 052	Global upward solar radiation, integrated over period specified	J m-2	-2	- 1048574		20	J m-2	-2		7	Validation
0 14 053	Net radiation (high accuracy), integrated over period specified	J m-2	-2	- 1048574		21	J m-2	-2		7	Validation
0 14 054	Photosynthetically active radiation, integrated over period specified	J m-2	-3	0		16	J m-2	-3		5	Validation
0 14 055	Solar activity index	Numeric	0	-32768		16	Numeric	0		5	Operational
0 14 056	Background luminance	Cd m-2	0	0		18	Cd m-2	0		6	Validation
0 14 071	Global UV spectral irradiance (see note 7)	W m-2 nm-1	6	-1048576		21	W m-2 nm-1	6		7	Validation
0 14 072	Global UV irradiation (see note 8)	J m-2	-3	-8192		14	J m-2	-3		4	Validation
0 14 073	Global erythema irradiation (see note 9)	J m-2	-3	-32		6	J m-2	-3		2	Validation

Notes: (see)

## Class 15 - Physical/chemical constituents

TABLE REFERENCE F X Y	ELEMENT NAME	UNIT	SCALE	BUFR	DATA WIDTH (Bits)	UNIT	CREX	DATA WIDTH (Characters)	Status
				REFERENCE VALUE			SCALE		
0 15 001	Total ozone	DU	0	0	10	DU	0	4	Operational
0 15 002	Air mass (slant path at 22 km)	Numeric	2	0	10	Numeric	2	3	Operational
0 15 003	Measured ozone partial pressure (sounding) (see Note 1)	Pa	4	0	9	nbar	0	3	Operational
0 15 004	Ozone sounding correction factor (CF) (see Note 2)	Numeric	3	0	11	Numeric	3	4	Operational
0 15 005	Ozone p (see Note 3)	DU	0	0	10	DU	0	3	Operational
0 15 007	Molecular mass (see Note 8)	u	2	0	15	u	2	5	Validation
0 15 008	Significand of volumetric mixing ratio	Numeric	0	0	10	Numeric	0	4	Operational
0 15 009	Integrated number density	m-2	0	0	10	m-2	0	4	Validation
0 15 010	Partial pressure	Pa	0	0	10	Pa	0	4	Validation
0 15 011	Log 10 of integrated electron density	log (m-2)	3	14000	13	log (m-2)	3	4	Operational
0 15 012	Total electron count per square metre	1/m2	-16	0	6	1/m2	-16	2	Operational
0 15 015	Maximum image spectral component before normalization	Numeric	0	0	31	Numeric	0	10	Operational
0 15 020	Integrated ozone density	kg m-2	8	0	21	kg m-2	8	7	Operational
0 15 021	Integrated mass density	kg m-2	11	0	31	kg m-2	11	10	Operational
0 15 022	Integrated number density	m-3	0	0	10	m-3	0	4	Validation
0 15 023	Mass density	kg m-3	0	0	10	kg m-3	0	4	Validation
0 15 024	Optical depth	Numeric	4	0	24	Numeric	4	8	Operational
0 15 025	Type of pollutant	Code table	0	0	4	Code table	0	2	Operational
0 15 026	Concentration of pollutant (mol mol-1)	mol mol-1	9	0	9	mol mol-1	9	3	Operational
0 15 027	Concentration of pollutant (kg m-3)	kg m-3	9	0	10	kg m-3	9	4	Operational
0 15 028	Photo dissociation rate	s-1	0	0	10	s-1	0	4	Validation
0 15 029	Extinction coefficient	m-1	9	0	30	m-1	9	10	Validation
0 15 030	Aerosol contamination index (see Note 6)	Numeric	2	-1000	12	Numeric	2	4	Operational
0 15 031	Atmospheric path delay in satellite signal	m	4	10000	15	m	4	5	Operational
0 15 032	Estimated error in atmospheric path delay	m	4	0	10	m	4	4	Operational

TABLE REFERENCE F X Y	ELEMENT NAME	UNIT	SCALE	BUFR	DATA	UNIT	CREX	DATA	Status
				REFERENCE VALUE	WIDTH (Bits)		SCALE	WIDTH (Characters)	
0 15 033	Difference in path delays for limb views at extremes of scan	m	5	-10000	15	m	5	5	Operational
0 15 034	Estimated error in path delay difference	m	5	0	14	m	5	5	Operational
0 15 035	Component of zenith path delay due to water vapour	m	4	0	14	m	4	5	Operational
0 15 036	Atmospheric refractivity (see Note 5)	N units	3	0	19	N units	3	6	Operational
0 15 037	Bending angle	rad	8	-100000	23	rad	8	7	Operational
0 15 040	Particulate matter diameter	m	8	0	9	m	8	3	Validation
0 15 042	Reflectance	Numeric	6	0	20	Numeric	6	7	Validation
0 15 043	Number of averaging kernel layers	Numeric	0	0	10	Numeric	0	4	Validation
0 15 044	Averaging kernel value	Numeric	6	-5000000	24	Numeric	6	8	Validation
0 15 051	Meteorological Optical Range	m	0	0	18	m	0	6	Validation

Notes: (see)

## Class 19 - Synoptic features

TABLE REFERENCE F X Y	ELEMENT NAME	UNIT	SCALE	BUFR	DATA WIDTH (Bits)	UNIT	CREX	DATA WIDTH (Characters)	Status
				REFERENCE VALUE			SCALE		
0 19 001	Type of synoptic feature	Code table	0	0	6	Code table	0	2	Operational
0 19 002	Effective radius of feature (see Note 1)	m	-2	0	12	m	-2	4	Operational
0 19 003	Wind speed threshold (see Note 2)	m s-1	0	0	8	m s-1	0	3	Operational
0 19 004	Effective radius with respect to wind speeds above threshold (see Note 2)	m	-2	0	12	m	-2	4	Operational
0 19 005	Direction of motion of feature (see Note 3)	degree true	0	0	9	degree true	0	3	Operational
0 19 006	Speed of motion of feature (see Note 3)	m s-1	2	0	14	m s-1	2	5	Operational
0 19 007	Effective radius of feature	m	-3	0	12	m	-3	4	Operational
0 19 008	Vertical extent of circulation	Code table	0	0	3	Code table	0	1	Operational
0 19 009	Effective radius with respect to wind speeds above threshold (large storms)	m	-3	0	12	m	-3	4	Operational
0 19 010	Method for tracking the centre of synoptic feature	Code table	0	0	4	Code table	0	2	Operational
0 19 100	Time interval to calculate the movement of the tropical cyclone	Code table	0	0	4	Code table	0	2	Operational
0 19 101	Accuracy of the position of the centre of the tropical cyclone	Code table	0	0	4	Code table	0	2	Operational
0 19 102	Shape and definition of the eye of the tropical cyclone	Code table	0	0	3	Code table	0	1	Operational
0 19 103	Diameter of major axis of the eye of the tropical cyclone	Code table	0	0	4	Code table	0	2	Operational
0 19 104	Change in character of the eye during the 30 minutes	Code table	0	0	4	Code table	0	2	Operational
0 19 105	Distance between the end of spiral band and the centre	Code table	0	0	4	Code table	0	2	Operational
0 19 106	Identification number of tropical cyclone	Numeric	0	0	7	Numeric	0	3	Operational
0 19 107	Time interval over which the movement of the tropical cyclone has been calculated	Code table	0	0	4	Code table	0	2	Operational
0 19 108	Accuracy of geographical position of the tropical cyclone	Code table	0	0	3	Code table	0	1	Operational
0 19 109	Mean diameter of the overcast cloud of the tropical cyclone	Code table	0	0	4	Code table	0	2	Operational
0 19 110	Apparent 24-hour change in intensity of the tropical cyclone	Code table	0	0	4	Code table	0	2	Operational
0 19 111	Current Intensity (CI) number of the tropical cyclone	Numeric	1	0	7	Numeric	1	3	Operational

TABLE REFERENCE F X Y	ELEMENT NAME	UNIT	SCALE	BUFR		DATA WIDTH (Bits)	UNIT	CREX		Status
				REFERENCE VALUE				SCALE	DATA WIDTH (Characters)	
0 19 112	Data Tropical (DT) number of the tropical cyclone	Numeric	1	0		7	Numeric	1	3	Operational
0 19 113	Cloud pattern type of the DT-number	Code table	0	0		4	Code table	0	2	Operational
0 19 114	Model Expected Tropical (MET) number of the tropical cyclone	Numeric	1	0		7	Numeric	1	3	Operational
0 19 115	Trend of the past 24-hour change (+: Developed, -: Weakened)	Numeric	1	-30		6	Numeric	1	2	Operational
0 19 116	Pattern Tropical (PT) number of the tropical cyclone	Numeric	1	0		7	Numeric	1	3	Operational
0 19 117	Cloud picture type of the PT-number	Code table	0	0		3	Code table	0	1	Operational
0 19 118	Final Tropical (T) number of the tropical cyclone	Numeric	1	0		7	Numeric	1	3	Operational
0 19 119	Type of the final T-number	Code table	0	0		3	Code table	0	1	Operational
0 19 150	Typhoon International Common Number (Typhoon Committee)	CCITT IA5	0	0		32	Character	0	4	Operational

Notes: (see)

## Class 20 - Observed phenomena

TABLE REFERENCE F X Y	ELEMENT NAME	UNIT	SCALE	BUFR	DATA WIDTH (Bits)	UNIT	CREX	DATA WIDTH (Characters)	Status
				REFERENCE VALUE			SCALE		
0 20 001	Horizontal visibility	m	-1	0	13	m	-1	4	Operational
0 20 002	Vertical visibility	m	-1	0	7	m	-1	3	Operational
0 20 003	Present weather (see Note 1)	Code table	0	0	9	Code table	0	3	Operational
0 20 004	Past weather (1) (see Note 2)	Code table	0	0	5	Code table	0	2	Operational
0 20 005	Past weather (2) (see Note 2)	Code table	0	0	5	Code table	0	2	Operational
0 20 006	Flight Rules	Code table	0	0	3	Code table	0	1	Operational
0 20 008	Cloud distribution for aviation	Code table	0	0	5	Code table	0	2	Operational
0 20 009	General weather indicator (TAF/METAR)	Code table	0	0	4	Code table	0	2	Operational
0 20 010	Cloud cover (total) (see Note 5)	%	0	0	7	%	0	3	Operational
0 20 011	Cloud amount	Code table	0	0	4	Code table	0	2	Operational
0 20 012	Cloud type	Code table	0	0	6	Code table	0	2	Operational
0 20 013	Height of base of cloud	m	-1	-40	11	m	-1	4	Operational
0 20 014	Height of top of cloud	m	-1	-40	11	m	-1	4	Operational
0 20 015	Pressure at base of cloud	Pa	-1	0	14	Pa	-1	5	Operational
0 20 016	Pressure at top of cloud	Pa	-1	0	14	Pa	-1	5	Operational
0 20 017	Cloud top description	Code table	0	0	4	Code table	0	2	Operational
0 20 018	Tendency of runway visual range	Code table	0	0	2	Code table	0	1	Operational
0 20 019	Significant present or forecast weather	CCITT IA5	0	0	72	Character	0	9	Operational
0 20 020	Significant recent weather phenomena	CCITT IA5	0	0	32	Character	0	4	Operational
0 20 021	Type of precipitation	Flag table	0	0	30	Flag table	0	10	Operational
0 20 022	Character of precipitation	Code table	0	0	4	Code table	0	2	Operational
0 20 023	Other weather phenomena	Flag table	0	0	18	Flag table	0	6	Operational
0 20 024	Intensity of phenomena	Code table	0	0	3	Code table	0	1	Operational
0 20 025	Obscuration	Flag table	0	0	21	Flag table	0	7	Operational
0 20 026	Character of obscuration	Code table	0	0	4	Code table	0	2	Operational

TABLE REFERENCE F X Y	ELEMENT NAME	UNIT	SCALE	BUFR	DATA WIDTH (Bits)	UNIT	CREX	DATA WIDTH (Characters)	Status
				REFERENCE VALUE			SCALE		
0 20 027	Phenomena occurrence	Flag table	0	0	9	Flag table	0	3	Operational
0 20 028	Expected change in intensity	Code table	0	0	3	Code table	0	1	Operational
0 20 029	Rain flag	Code table	0	0	2	Code table	0	1	Operational
0 20 031	Ice deposit (thickness)	m	2	0	7	m	2	3	Operational
0 20 032	Rate of ice accretion	Code table	0	0	3	Code table	0	1	Operational
0 20 033	Cause of ice accretion	Flag table	0	0	4	Flag table	0	2	Operational
0 20 034	Sea ice concentration	Code table	0	0	5	Code table	0	2	Operational
0 20 035	Amount and type of ice	Code table	0	0	4	Code table	0	2	Operational
0 20 036	Ice situation	Code table	0	0	5	Code table	0	2	Operational
0 20 037	Ice development	Code table	0	0	5	Code table	0	2	Operational
0 20 038	Bearing of ice edge (see Note 3)	degree true	0	0	12	degree true	0	3	Operational
0 20 039	Ice distance	m	-1	0	13	m	-1	4	Operational
0 20 040	Evolution of drift snow	Code table	0	0	4	Code table	0	2	Operational
0 20 041	Airframe icing	Code table	0	0	4	Code table	0	2	Operational
0 20 042	Airframe icing present	Code table	0	0	2	Code table	0	1	Operational
0 20 043	Peak liquid water content	kg m-3	4	0	7	kg m-3	4	2	Operational
0 20 044	Average liquid water content	kg m-3	4	0	7	kg m-3	4	2	Operational
0 20 045	Supercooled large droplet (SLD) conditions	Code table	0	0	2	Code table	0	1	Operational
0 20 048	Evolution of feature	Code table	0	0	4	Code table	0	2	Operational
0 20 050	Cloud index	Code table	0	0	8	Code table	0	3	Operational
0 20 051	Amount of low clouds	%	0	0	7	%	0	3	Operational
0 20 052	Amount of middle clouds	%	0	0	7	%	0	3	Operational
0 20 053	Amount of high clouds	%	0	0	7	%	0	3	Operational
0 20 054	True direction from which a phenomenon or clouds are moving	degree true	0	0	9	degree true	0	3	Operational
0 20 055	State of sky in the tropics	Code table	0	0	4	Code table	0	2	Operational
0 20 056	Cloud phase	Code table	0	0	3	Code table	0	1	Operational
0 20 058	Visibility seawards from a coastal station	m	-1	0	13	m	-1	4	Operational
0 20 059	Minimum horizontal visibility	m	-1	0	9	m	-1	3	Operational
0 20 060	Prevailing horizontal visibility (see Note 7)	m	-1	0	10	m	-1	4	Operational



TABLE REFERENCE F X Y	ELEMENT NAME	UNIT	SCALE	BUFR	DATA WIDTH (Bits)	UNIT	CREX	DATA WIDTH (Characters)	Status
				REFERENCE VALUE			SCALE		
0 20 061	Runway visual range (RVR)	m	0	0	12	m	0	4	Operational
0 20 062	State of the ground (with or without snow)	Code table	0	0	5	Code table	0	2	Operational
0 20 063	Special phenomena	Code table	0	0	10	Code table	0	4	Operational
0 20 065	Snow cover (see Note 4)	%	0	0	7	%	0	3	Operational
0 20 066	Maximum diameter of hailstones	m	3	0	8	m	3	3	Operational
0 20 067	Diameter of deposit	m	3	0	9	m	3	3	Operational
0 20 070	Minimum number of atmospheric	Numeric	0	0	7	Numeric	0	3	Operational
0 20 071	Accuracy of fix and rate of atmospheric	Code table	0	0	4	Code table	0	2	Operational
0 20 079	Snow/Ice crystals indicator	Flag table	0	0	2	Flag table	0	1	Validation
0 20 080	Cloud amount percentage interval	Code table	0	0	3	Code table	0	1	Validation
0 20 081	Cloud amount in segment	%	0	0	7	%	0	3	Operational
0 20 082	Amount segment cloud free	%	0	0	7	%	0	3	Operational
0 20 083	Amount of segment covered by scene	%	0	0	7	%	0	3	Operational
0 20 085	General condition of runway	Code table	0	0	4	Code table	0	1	Operational
0 20 086	Runway deposits	Code table	0	0	4	Code table	0	1	Operational
0 20 087	Runway contamination	Code table	0	0	4	Code table	0	1	Operational
0 20 088	Depth of runway deposits	m	3	0	12	m	0	4	Operational
0 20 089	Runway friction coefficient	Code table	0	0	7	Code table	0	2	Operational
0 20 090	Special clouds	Code table	0	0	4	Code table	0	2	Operational
0 20 091	Vertical visibility	ft	-2	0	10	ft	-2	3	Operational
0 20 092	Height of base of cloud	ft	-2	0	10	ft	-2	3	Operational
0 20 093	Height of inversion	m	-1	0	8	m	-1	3	Validation
0 20 095	Ice probability	Numeric	3	0	10	Numeric	3	4	Operational
0 20 096	Ice age ("A" parameter)	dB	2	-4096	13	dB	2	4	Operational
0 20 101	Locust (acridian) name	Code table	0	0	4	Code table	0	2	Operational
0 20 102	Locust (maturity) color	Code table	0	0	4	Code table	0	2	Operational
0 20 103	Stage of development of locusts	Code table	0	0	4	Code table	0	2	Operational
0 20 104	Organization state of swarm or band of locusts	Code table	0	0	4	Code table	0	2	Operational

TABLE REFERENCE F X Y	ELEMENT NAME	UNIT	SCALE	BUFR REFERENCE VALUE	DATA WIDTH (Bits)	UNIT	CREX SCALE	DATA WIDTH (Characters)	Status
0 20 105	Size of swarm or band of locusts and duration of passage of swarm	Code table	0	0	4	Code table	0	2	Operational
0 20 106	Locust population density	Code table	0	0	4	Code table	0	2	Operational
0 20 107	Direction of movements of locust swarm	Code table	0	0	4	Code table	0	2	Operational
0 20 108	Extent of vegetation	Code table	0	0	4	Code table	0	2	Operational
0 20 111	X-axis error ellipse major component	m	-1	0	17				Validation
0 20 112	Y-axis error ellipse minor component	m	-1	0	17				Validation
0 20 113	Z-axis error ellipse component	m	-1	0	17				Validation
0 20 114	Angle of X-axis in error ellipse	degree	2	-18000	16				Validation
0 20 115	Angle of Z-axis in error ellipse	degree	2	-18000	16				Validation
0 20 116	Emission Height of Cloud Stroke	m	0	0	16				Validation
0 20 117	Amplitude of Lightning Strike	A	0	0	19				Validation
0 20 118	Lightning Detection Error	m	0	0	19				Validation
0 20 119	Lightning Discharge Polarity	Code table	0	0	2				Validation
0 20 120	Decision Method for Polarity	Code table	0	0	3	Code table	0	1	Validation
0 20 121	Threshold value for Polarity Decision	V	3	0	16				Validation
0 20 122	Threshold value for Polarity Decision	A	0	0	16				Validation
0 20 123	Minimum Threshold for Detection	V m-1	3	0	16				Validation
0 20 124	Lightning Stroke or Flash	Code table	0	0	2				Validation
0 20 125	Modified Residual	Numeric	2	0	13	Numeric	2	4	Validation
0 20 126	Lightning rates of discharge	Numeric	0	0	23	Numeric	0	7	Validation
0 20 127	Lightning - distance from station	m	-3	0	6	m	-3	2	Validation
0 20 128	Lightning - direction from station	degree	0	0	9	degree	0	3	Validation
0 20 130	Cloud hydrometeor concentration	Numeric	0	0	10	Numeric	0	3	Validation
0 20 131	Effective radius of cloud hydrometeors	m	5	0	6	m	5	2	Validation
0 20 132	Cloud liquid water content	kg m-3	5	0	11	kg m-3	5	4	Validation
0 20 133	Hydrometeor radius	m	5	0	6	m	5	2	Validation
0 20 135	Ice mass (on a rod)	kg m-1	1	0	10	kg m-1	1	3	Validation

Notes: (see)

## Class 21 - Radar data

TABLE REFERENCE F X Y	ELEMENT NAME	UNIT	SCALE	BUFR		DATA WIDTH (Bits)	UNIT	CREX		Status
				REFERENCE VALUE				SCALE	DATA WIDTH (Characters)	
0 21 001	Horizontal reflectivity	dB	0	-64		7	dB	0	3	Operational
0 21 002	Vertical reflectivity	dB	0	-64		7	dB	0	3	Operational
0 21 003	Differential reflectivity	dB	1	-5		7	dB	1	3	Operational
0 21 005	Linear depolarization ratio	dB	0	-65		6	dB	0	2	Operational
0 21 006	Circular depolarization ratio	dB	0	-65		6	dB	0	2	Operational
0 21 011	Doppler mean velocity in x-direction	m s-1	0	-128		8	m s-1	0	3	Operational
0 21 012	Doppler mean velocity in y-direction	m s-1	0	-128		8	m s-1	0	3	Operational
0 21 013	Doppler mean velocity in z-direction	m s-1	0	-128		8	m s-1	0	3	Operational
0 21 014	Doppler mean velocity (radial)	m s-1	1	-4096		13	m s-1	1	4	Operational
0 21 017	Doppler velocity spectral width	m s-1	1	0		8	m s-1	1	3	Operational
0 21 018	Extended NYQUIST velocity	m s-1	1	0		10	m s-1	1	4	Validation
0 21 019	High NYQUIST velocity	m s-1	1	0		10	m s-1	1	3	Validation
0 21 021	Echo tops	m	-3	0		4	m	-3	2	Operational
0 21 022	Range bin offset	m	1	0		14	m	1	5	Validation
0 21 023	Range bin size	m	0	0		14	m	0	5	Validation
0 21 024	Azimuth offset	degree	1	0		12	degree	1	4	Validation
0 21 025	Azimuthal resolution	degree	1	0		8	degree	1	3	Validation
0 21 030	Signal to noise ratio	dB	0	-32		8	dB	0	3	Operational
0 21 031	Vertically-integrated liquid-water content	kg m-2	0	0		7	kg m-2	0	3	Operational
0 21 036	Radar rainfall intensity	m s-1	7	0		12	m s-1	7	4	Operational
0 21 041	Bright-band height	m	-2	0		8	m	-2	3	Operational
0 21 051	Signal power above 1 mW	dB	0	-256		8	dB	0	3	Operational
0 21 062	Backscatter	dB	2	-5000		13	dB	2	4	Operational
0 21 063	Radiometric resolution (noise value)	%	1	0		10	%	1	4	Operational
0 21 064	Clutter noise estimate	Numeric	0	0		8	Numeric	0	3	Operational

TABLE REFERENCE F X Y	ELEMENT NAME	UNIT	SCALE	BUFR REFERENCE VALUE	DATA WIDTH (Bits)	UNIT	SCALE	CREX SCALE	DATA WIDTH (Characters)	Status
0 21 065	Missing packet counter	Numeric	0	-127	8	Numeric	0	0	3	Operational
0 21 066	Wave scatterometer product confidence data	Flag table	0	0	12	Flag table	0	0	4	Operational
0 21 067	Wind product confidence data	Flag table	0	0	13	Flag table	0	0	5	Operational
0 21 068	Radar altimeter product confidence data	Flag table	0	0	8	Flag table	0	0	3	Operational
0 21 069	SST product confidence data	Flag table	0	0	10	Flag table	0	0	4	Operational
0 21 070	SST product confidence data (SADIST-2)	Flag table	0	0	23	Flag table	0	0	6	Operational
0 21 071	Peakiness	Numeric	0	0	16	Numeric	0	0	5	Operational
0 21 072	Satellite altimeter calibration status	Flag table	0	0	4	Flag table	0	0	2	Operational
0 21 073	Satellite altimeter instrument mode	Flag table	0	0	9	Flag table	0	0	3	Operational
0 21 075	Image spectrum intensity	Numeric	0	0	8	Numeric	0	0	3	Operational
0 21 076	Representation of intensities	Code table	0	0	3	Code table	0	0	1	Operational
0 21 077	Altitude correction (ionosphere)	m	3	0	14	m	3	3	5	Operational
0 21 078	Altitude correction (dry troposphere)	m	3	0	9	m	3	3	3	Operational
0 21 079	Altitude correction (wet troposphere)	m	3	2000	10	m	3	3	4	Operational
0 21 080	Altitude correction (calibration constant)	m	3	0	11	m	3	3	4	Operational
0 21 081	Open loop correction (height-time loop)	m	3	0	10	m	3	3	4	Operational
0 21 082	Open loop correction (auto gain control)	dB	3	-3000	14	dB	3	3	5	Operational
0 21 083	Warm target calibration	Numeric	0	0	16	Numeric	0	0	5	Operational
0 21 084	Cold target calibration	Numeric	0	0	16	Numeric	0	0	5	Operational
0 21 085	ATSR sea surface temperature across-track band number	Numeric	0	0	4	Numeric	0	0	2	Operational
0 21 086	Number of pixels in Nadir only, average	Numeric	0	0	9	Numeric	0	0	3	Operational
0 21 087	Number of pixels in dual view, average	Numeric	0	0	9	Numeric	0	0	3	Operational
0 21 088	Wet backscatter	dB	2	-5000	13	dB	2	2	4	Operational
0 21 091	Radar signal Doppler spectrum 0th moment	dB	0	-100	8	dB	0	0	3	Operational
0 21 092	RASS signal Doppler spectrum 0th moment, referring to RASS	dB	0	-100	8	dB	0	0	3	Operational
0 21 093	Ku band peakiness	Numeric	3	0	16	Numeric	3	3	5	Operational
0 21 094	S band peakiness	Numeric	3	0	16	Numeric	3	3	5	Operational
0 21 101	Number of vector ambiguities	Numeric	0	0	3	Numeric	0	0	1	Operational

TABLE REFERENCE F X Y	ELEMENT NAME	UNIT	SCALE	BUFR	DATA WIDTH (Bits)	UNIT	CREX	DATA WIDTH (Characters)	Status
				REFERENCE VALUE			SCALE		
0 21 102	Index of selected wind vector	Numeric	0	0	3	Numeric	0	1	Operational
0 21 103	Total number of sigma-0 measurements	Numeric	0	0	5	Numeric	0	2	Operational
0 21 104	Likelihood computed for solution	Numeric	3	-30000	15	Numeric	3	5	Operational
0 21 105	Normalized radar cross-section	dB	2	-10000	14	dB	2	5	Operational
0 21 106	Kp variance coefficient (alpha)	Numeric	3	0	14	Numeric	3	5	Operational
0 21 107	Kp variance coefficient (beta)	Numeric	8	0	16	Numeric	8	5	Operational
0 21 109	SEAWINDS wind vector cell quality	Flag table	0	0	17	Flag table	0	6	Operational
0 21 110	Number of inner-beam sigma-0 (forward of satellite)	Numeric	0	0	6	Numeric	0	2	Operational
0 21 111	Number of outer-beam sigma-0 (forward of satellite)	Numeric	0	0	6	Numeric	0	2	Operational
0 21 112	Number of inner-beam sigma-0 (aft of satellite)	Numeric	0	0	6	Numeric	0	2	Operational
0 21 113	Number of outer-beam sigma-0 (aft of satellite)	Numeric	0	0	6	Numeric	0	2	Operational
0 21 114	Kp variance coefficient (gamma)	dB	3	-140000	18	dB	3	6	Operational
0 21 115	SEAWINDS sigma-0 quality	Flag table	0	0	17	Flag table	0	6	Operational
0 21 116	SEAWINDS sigma-0 mode	Flag table	0	0	17	Flag table	0	6	Operational
0 21 117	Sigma-0 variance quality control	Numeric	2	0	16	Numeric	2	5	Operational
0 21 118	Attenuation correction on sigma-0	dB	2	-10000	14	dB	2	5	Operational
0 21 119	Wind scatterometer geophysical model function	Code table	0	0	6	Code table	0	2	Operational
0 21 120	Probability of rain	Numeric	3	0	10	Numeric	3	4	Operational
0 21 121	SEAWINDS NOF* rain index	Numeric	0	0	8	Numeric	0	3	Operational
0 21 122	Attenuation correction of sigma-0 (from tB)	dB	2	-10000	14	dB	2	5	Operational
0 21 123	SEAWINDS normalized radar cross-section	dB	2	-30000	15	dB	2	5	Operational
0 21 128	Number of valid points per second used to derive previous parameters	Numeric	0	0	8	Numeric	0	3	Operational
0 21 130	Spectrum total energy	Numeric	6	0	28	Numeric	6	9	Operational
0 21 131	Spectrum max energy	Numeric	6	0	28	Numeric	6	9	Operational
0 21 132	Direction of spectrum max on higher resolution grid	degree	3	0	19	degree	3	6	Operational
0 21 133	Wavelength of spectrum max on higher resolution grid	m	3	0	29	m	3	9	Operational
0 21 134	Range resolution of cress covariance spectrum	rad m-1	3	0	19	rad m-1	3	6	Operational
0 21 135	Real part of cross spectra polar grid number of bins	Numeric	3	-524288	20	Numeric	3	7	Operational

TABLE REFERENCE F X Y	ELEMENT NAME	UNIT	SCALE	BUFR	DATA	UNIT	CREX	DATA	Status
				REFERENCE VALUE	WIDTH (Bits)		SCALE	WIDTH (Characters)	
0 21 136	Imaginary part of cross spectra polar grid number of bins	Numeric	3	-524288	20	Numeric	3	7	Operational
0 21 137	Ku band corrected ocean backscatter coefficient	dB	2	-32768	16	dB	2	5	Operational
0 21 138	Std Ku band corrected ocean backscatter coefficient	dB	2	-32768	16	dB	2	5	Operational
0 21 139	Ku band net instrumental correction for AGC	dB	2	-2048	12	dB	2	4	Operational
0 21 140	S band corrected ocean backscatter coefficient	dB	2	-32768	16	dB	2	5	Operational
0 21 141	Std S band corrected ocean backscatter coefficient	dB	2	-32768	16	dB	2	5	Operational
0 21 142	S band net instrumental correction for AGC	dB	2	-1024	11	dB	2	4	Operational
0 21 143	Ku band rain attenuation	dB	2	-1073741824	31	dB	2	10	Operational
0 21 144	Altimeter rain flag	Flag table	0	0	2	Flag table	0	1	Operational
0 21 145	Ku band automatic gain control	dB	2	0	13	dB	2	4	Operational
0 21 146	RMS Ku band automatic gain control	dB	2	0	8	dB	2	3	Operational
0 21 147	Number of valid points for Ku band automatic gain control	Numeric	0	0	5	Numeric	0	2	Operational
0 21 150	Beam collocation	Code table	0	0	2	Code table	0	1	Operational
0 21 151	Estimated error in sigma-0 at 40 degrees incidence angle	dB	2	0	9	dB	2	3	Operational
0 21 152	Slope at 40 degrees incidence angle	dB degree-1	2	-80	7	dB degree-1	2	2	Operational
0 21 153	Estimated error in slope at 40 degrees incidence angle	dB degree-1	2	-40	6	dB degree-1	2	2	Operational
0 21 154	Soil moisture sensitivity	dB	2	0	12	dB	2	4	Operational
0 21 155	Wind vector cell quality	Flag table	0	0	24	Flag table	0	8	Operational
0 21 156	Backscatter distance	Numeric	1	-4096	13	Numeric	1	4	Operational
0 21 157	Loss per unit length of atmosphere used	dB m-1	10	0	22	dB m-1	10	7	Operational
0 21 158	ASCAT kp estimate quality	Code table	0	0	2	Code table	0	1	Operational
0 21 159	ASCAT sigma-0 usability	Code table	0	0	2	Code table	0	1	Operational
0 21 160	ASCAT use of synthetic data	Numeric	3	0	10	Numeric	3	4	Operational
0 21 161	ASCAT synthetic data quality	Numeric	3	0	10	Numeric	3	4	Operational
0 21 162	ASCAT satellite orbit and attitude quality	Numeric	3	0	10	Numeric	3	4	Operational
0 21 163	ASCAT solar array reflection contamination	Numeric	3	0	10	Numeric	3	4	Operational
0 21 164	ASCAT telemetry presence and quality	Numeric	3	0	10	Numeric	3	4	Operational
0 21 165	ASCAT extrapolated reference function presence	Numeric	3	0	10	Numeric	3	4	Operational

TABLE REFERENCE F X Y	ELEMENT NAME	UNIT	SCALE	BUFR	DATA WIDTH (Bits)	UNIT	CREX	DATA WIDTH (Characters)	Status
				REFERENCE VALUE			SCALE		
0 21 166	Land fraction	Numeric	3	0	10	Numeric	3	4	Pre-operational
0 21 169	Ice presence indicator	Code table	0	0	2	Code table	0	1	Operational
0 21 170	C band corrected ocean backscatter coefficient	dB	2	-32768	16	dB	2	5	Operational
0 21 171	RMS C band corrected ocean backscatter coefficient	dB	2	-32768	16	dB	2	5	Operational
0 21 172	C band net instrumental correction for AGC	dB	2	-2048	12	dB	2	4	Operational
0 21 173	C band automatic gain control	dB	2	0	13	dB	2	4	Operational
0 21 174	RMS C band automatic gain control	dB	2	0	9	dB	2	3	Operational
0 21 175	Number of valid points for C band automatic gain control	Numeric	0	0	10	Numeric	0	4	Operational

Notes: (see)

## Class 22 - Oceanographic elements

TABLE REFERENCE F X Y	ELEMENT NAME	UNIT	SCALE	BUFR		DATA WIDTH (Bits)	UNIT	CREX		Status
				REFERENCE VALUE				SCALE	DATA WIDTH (Characters)	
0 22 001	Direction of waves	degree true	0	0		9	degree true	0	3	Operational
0 22 002	Direction of wind waves	degree true	0	0		9	degree true	0	3	Operational
0 22 003	Direction of swell waves	degree true	0	0		9	degree true	0	3	Operational
0 22 004	Direction of current (see Note 7)	degree true	0	0		9	degree true	0	3	Operational
0 22 005	Direction of sea surface current	degree true	0	0		9	degree true	0	3	Operational
0 22 011	Period of waves	s	0	0		6	s	0	2	Operational
0 22 012	Period of wind waves	s	0	0		6	s	0	2	Operational
0 22 013	Period of swell waves	s	0	0		6	s	0	2	Operational
0 22 021	Height of waves	m	1	0		10	m	1	4	Operational
0 22 022	Height of wind waves	m	1	0		10	m	1	4	Operational
0 22 023	Height of swell waves	m	1	0		10	m	1	4	Operational
0 22 025	Standard deviation wave height	m	2	0		10	m	2	4	Operational
0 22 026	Standard deviation of significant wave height	m	2	0		10	m	2	4	Operational
0 22 031	Speed of current	m s-1	2	0		13	m s-1	2	4	Operational
0 22 032	Speed of sea surface current	m s-1	2	0		13	m s-1	2	4	Operational
0 22 035	Tidal elevation with respect to local chart datum	m	2	0		14	m	2	4	Operational
0 22 036	Meteorological residual tidal elevation (surge or offset)	m	2	0		14	m	2	4	Operational
0 22 037	Tidal elevation with respect to national land datum	m	3	-10000		15	m	3	5	Operational
0 22 038	Tidal elevation with respect to local chart datum	m	3	-10000		15	m	3	5	Operational
0 22 039	Meteorological residual tidal elevation (surge or offset) (see Note 4)	m	3	-5000		13	m	3	4	Operational
0 22 040	Meteorological residual tidal elevation (surge or offset) (see Note 4)	m	3	-5000		14	m	3	5	Operational
0 22 041	Sea-surface temperature (15-day running mean)	K	1	0		12	K	1	4	Operational
0 22 042	Sea/water temperature	K	1	0		12	K	1	4	Operational
0 22 043	Sea/water temperature	K	2	0		15	K	2	5	Operational
0 22 044	Sound velocity	m s-1	1	0		14	m s-1	1	5	Operational



TABLE REFERENCE F X Y	ELEMENT NAME	UNIT	SCALE	BUFR		DATA WIDTH (Bits)	UNIT	CREX		Status
				REFERENCE VALUE				SCALE	DATA WIDTH (Characters)	
0 22 045	Sea/water temperature	K	3	0		19	K	3	6	Operational
0 22 046	Sea Ice Fraction	Numeric	2	0		7	Numeric	2	3	Operational
0 22 049	Sea surface temperature	K	2	0		15	K	2	5	Operational
0 22 050	Standard deviation sea-surface temperature	K	2	0		8	K	2	3	Operational
0 22 055	Float cycle number	Numeric	0	0		10	Numeric	0	3	Operational
0 22 056	Direction of profile	Code table	0	0		2	Code table	0	1	Operational
0 22 059	Sea surface salinity	Part per thousand	2	0		14	Part per thousand	2	5	Operational
0 22 060	Lagrangian drifter drogue status	Code table	0	0		3	Code table	0	1	Operational
0 22 061	State of the sea	Code table	0	0		4	Code table	0	2	Operational
0 22 062	Salinity	Part per thousand	2	0		14	Part per thousand	2	5	Operational
0 22 063	Total water depth	m	0	0		14	m	0	5	Operational
0 22 064	Salinity	Part per thousand	3	0		17	Part per thousand	3	6	Operational
0 22 065	Water pressure	Pa	-3	0		17	Pa	-3	6	Operational
0 22 066	Water conductivity	S m-1	6	0		26	S m-1	6	8	Operational
0 22 067	Instrument type for water temperature profile measurement	Code table	0	0		10	Code table	0	4	Operational
0 22 068	Water temperature profile recorder types	Code table	0	0		7	Code table	0	3	Operational
0 22 069	Spectral wave density	m2 Hz-1	3	0		22	m2 Hz-1	3	7	Operational
0 22 070	Significant wave height	m	2	0		13	m	2	4	Operational
0 22 071	Spectral peak wave period	s	1	0		9	s	1	3	Operational
0 22 072	Spectral peak wave length	m	0	0		13	m	0	4	Operational
0 22 073	Maximum wave height	m	2	0		13	m	2	4	Operational
0 22 074	Average wave period	s	1	0		9	s	1	3	Operational
0 22 075	Average wave length	m	0	0		13	m	0	4	Operational
0 22 076	Direction from which dominant waves are coming	degree true	0	0		9	degree true	0	3	Operational
0 22 077	Directional spread of dominant wave	degree	0	0		9	degree	0	3	Operational
0 22 078	Duration of wave record	s	0	0		12	s	0	4	Operational

TABLE REFERENCE F X Y	ELEMENT NAME	UNIT	SCALE	BUFR	DATA WIDTH (Bits)	UNIT	CREX	DATA WIDTH (Characters)	Status
				REFERENCE VALUE			SCALE		
0 22 079	Length of wave record	m	0	0	16	m	0	5	Operational
0 22 080	Waveband central frequency	Hz	3	0	10	Hz	3	4	Operational
0 22 081	Waveband central wave number	m-1	5	0	13	m-1	5	4	Operational
0 22 082	Maximum non-directional spectral wave density	m2 s	2	0	20	m2 s	2	7	Operational
0 22 083	Maximum non-directional spectral wave number	m3	2	0	20	m3	2	7	Operational
0 22 084	Band containing maximum non-directional spectral wave density	Numeric	0	0	7	Numeric	0	3	Operational
0 22 085	Spectral wave density ratio	Numeric	0	0	7	Numeric	0	3	Operational
0 22 086	Mean direction from which waves are coming	degree true	0	0	9	degree true	0	3	Operational
0 22 087	Principal direction from which waves are coming	degree true	0	0	9	degree true	0	3	Operational
0 22 088	First normalized polar coordinate from Fourier coefficients	Numeric	2	0	7	Numeric	2	3	Operational
0 22 089	Second normalized polar coordinate from Fourier coefficients	Numeric	2	0	7	Numeric	2	3	Operational
0 22 090	Non-directional spectral estimate by wave frequency	m2 s	2	0	20	m2 s	2	7	Operational
0 22 091	Non-directional spectral estimate by wave number	m3	2	0	20	m3	2	7	Operational
0 22 092	Directional spectral estimate by wave frequency	m2 rad-1 s	2	0	20	m2 rad-1 s	2	7	Operational
0 22 093	Directional spectral estimate by wave number	m4	2	0	20	m4	2	7	Operational
0 22 094	Total number of wave bands	Numeric	0	0	7	Numeric	0	3	Operational
0 22 095	Directional spread of individual waves	degree	0	0	8	degree	0	3	Operational
0 22 096	Spectral band width	s-1	3	0	4	s-1	3	2	Operational
0 22 097	Mean wavelength > 731 m of image spectrum at low wave numbers	m	0	0	14	m	0	5	Operational
0 22 098	Wavelength spread (wavelength > 731 m) at low wave numbers	m	0	0	14	m	0	5	Operational
0 22 099	Mean direction at low wave numbers (wavelength > 731 m)	degree true	0	0	9	degree true	0	3	Operational
0 22 100	Direction spread at low wave numbers (wavelength > 731 m)	degree	0	0	9	degree	0	3	Operational
0 22 101	Total energy (wavelength > 731m) at low wave numbers	Numeric	0	0	31	Numeric	0	10	Operational
0 22 120	Tide station automated water level check	Code table	0	0	5	Code table	0	2	Operational
0 22 121	Tide station manual water level check	Code table	0	0	5	Code table	0	2	Operational
0 22 122	Tide station automated meteorological data check	Code table	0	0	5	Code table	0	2	Operational
0 22 123	Tide station manual meteorological data check	Code table	0	0	5	Code table	0	2	Operational
0 22 141	Sea-surface temperature (15-day running mean)	K	2	0	15	K	2	5	Operational

TABLE REFERENCE F X Y	ELEMENT NAME	UNIT	SCALE	BUFR	DATA WIDTH (Bits)	UNIT	CREX	DATA WIDTH (Characters)	Status
				REFERENCE VALUE			SCALE		
0 22 150	Number of 18 Hz valid points for Ku band	Numeric	0	0	10	Numeric	0	4	Operational
0 22 151	Ku band ocean range	m	3	0	31	m	3	10	Operational
0 22 152	STD of 18 Hz Ku band ocean range	m	3	0	16	m	3	5	Operational
0 22 153	Number of 18 Hz valid points for S band	Numeric	0	0	10	Numeric	0	4	Operational
0 22 154	S band ocean range	m	3	0	31	m	3	10	Operational
0 22 155	STD of 18 Hz S band ocean range	m	3	0	16	m	3	5	Operational
0 22 156	Ku band significant wave height	m	3	0	16	m	3	5	Operational
0 22 157	STD of 18Hz Ku band ocean range	m	3	0	16	m	3	5	Operational
0 22 158	S band significant wave height	m	3	0	16	m	3	5	Operational
0 22 159	STD of 18Hz S band significant wave height	m	3	0	16	m	3	5	Operational
0 22 160	Normalized inverse wave age	Numeric	6	0	21	Numeric	6	7	Operational
0 22 161	Wave spectra	m4	4	0	27	m4	4	9	Operational
0 22 162	RMS of 20 Hz Ku band ocean range	m	3	0	16	m	3	5	Operational
0 22 163	Number of 20Hz valid points for Ku band	Numeric	0	0	10	Numeric	0	4	Operational
0 22 164	RMS 20 Hz Ku band significant wave height	m	3	0	16	m	3	5	Operational
0 22 165	Number of 20Hz valid points for Ku band significant wave height	Numeric	0	0	10	Numeric	0	4	Operational
0 22 166	Ku band net instrumental correction for significant wave height	m	3	-1000	11	m	3	4	Operational
0 22 167	Number of valid points for Ku band backscatter	Numeric	0	0	10	Numeric	0	4	Operational
0 22 168	C band ocean range	m	3	0	31	m	3	10	Operational
0 22 169	RMS of C band ocean range	m	3	0	16	m	3	5	Operational
0 22 170	Number of 20Hz valid points for C band	Numeric	0	0	10	Numeric	0	4	Operational
0 22 171	C band significant wave height	m	3	0	16	m	3	5	Operational
0 22 172	RMS 20Hz C band significant wave height	m	3	0	16	m	3	5	Operational
0 22 173	Number of 20Hz valid points for C band significant wave height	Numeric	0	0	10	Numeric	0	4	Operational
0 22 174	C band net instrumental correction for significant wave height	m	3	-1000	11	m	3	4	Operational
0 22 175	Number of valid points for C band backscatter	Numeric	0	0	10	Numeric	0	4	Operational
0 22 176	Unique identifier for the profile	CCITT IA5	0	0	72	Character	0	72	Validation
0 22 177	Height of XBT/XCTD Launcher	m	1	0	9	m	0	3	Validation

TABLE REFERENCE F X Y	ELEMENT NAME	UNIT	SCALE	BUFR	DATA WIDTH (Bits)	UNIT	CREX	DATA WIDTH (Characters)	Status
				REFERENCE VALUE			SCALE		
0 22 178	XBТ/XCTD launcher Type	Code table	0	0	8	Code table	0	3	Validation
0 22 179	Software version of profile recorder	CCITT IA5	0	0	256	Character	0	256	Validation
0 22 180	Auto launcher software version number	CCITT IA5	0	0	256	Character	0	256	Validation
0 22 181	Instrument manufacturer's serial number	CCITT IA5	0	0	32	Character	0	32	Validation
0 22 182	Water column height (see Note 9)	m	3	0	23	m	3	7	Pre-operational
0 22 184	Water column height deviation from the reference value	m	3	-2000	12	m	3	4	Pre-operational
0 22 185	BPR transmission count	Numeric	0	0	10	Numeric	0	3	Pre-operational
0 22 186	Direction from which waves are coming	degree true	0	0	9	degree true	0	3	Validation
0 22 187	Directional spread of wave	degree	0	0	9	degree	0	3	Validation

Notes: (see)

### Class 23 - Dispersal and transport

TABLE REFERENCE F X Y	ELEMENT NAME	UNIT	SCALE	BUFR		DATA WIDTH (Bits)	UNIT	CREX		Status
				REFERENCE VALUE				SCALE	DATA WIDTH (Characters)	
0 23 001	Accident early notification - article applicable	Code table	0	0		3	Code table	0	1	Operational
0 23 002	Activity or facility involved in incident	Code table	0	0		5	Code table	0	2	Operational
0 23 003	Type of release	Code table	0	0		3	Code table	0	1	Operational
0 23 004	Countermeasures taken near border	Code table	0	0		3	Code table	0	1	Operational
0 23 005	Cause of incident	Code table	0	0		2	Code table	0	1	Operational
0 23 006	Incident situation	Code table	0	0		3	Code table	0	1	Operational
0 23 007	Characteristics of release	Code table	0	0		3	Code table	0	1	Operational
0 23 008	State of current release	Code table	0	0		2	Code table	0	1	Operational
0 23 009	State of expected release	Code table	0	0		2	Code table	0	1	Operational
0 23 016	Possibility of significant chemical toxic health effect	Code table	0	0		2	Code table	0	1	Operational
0 23 017	Flow discharge of major recipient	m3 s-1	6	0		20	m3 s-1	6	7	Operational
0 23 018	Release behaviour over time	Code table	0	0		3	Code table	0	1	Operational
0 23 019	Actual release height	m	0	-15000		17	m	0	6	Operational
0 23 021	Effective release height	m	0	-15000		17	m	0	6	Operational
0 23 022	Distance of release point or site of incident	m	0	0		24	m	0	8	Operational
0 23 023	Main transport speed in the atmosphere	m s-1	1	0		12	m s-1	1	4	Operational
0 23 024	Main transport speed in water	m s-1	2	0		13	m s-1	2	4	Operational
0 23 025	Main transport speed in ground water	m s-1	2	0		13	m s-1	2	4	Operational
0 23 027	Main transport direction in the atmosphere	degree true	0	0		9	degree true	0	3	Operational
0 23 028	Main transport direction in water	degree true	0	0		9	degree true	0	3	Operational
0 23 029	Main transport direction in ground water	degree true	0	0		9	degree true	0	3	Operational
0 23 031	Possibility that plume will encounter precipitation in State in which incident occurred	Code table	0	0		2	Code table	0	1	Operational
0 23 032	Plume will encounter change in wind direction and/or speed flag	Code table	0	0		2	Code table	0	1	Operational
0 23 040	Flow discharge - river	m3 s-1	1	0		22	m3 s-1	1	7	Validation
0 23 041	Flow discharge - well	m3 s-1	3	0		16	m3 s-1	3	5	Validation

## Class 24 - Radiological elements

TABLE REFERENCE F X Y	ELEMENT NAME	UNIT	SCALE	BUFR		DATA WIDTH (Bits)	UNIT	CREX		Status
				REFERENCE VALUE				SCALE	DATA WIDTH (Characters)	
0 24 001	Estimate of amount of radioactivity released up to specified time	Bq *	-11	0		28	Bq	-11	9	Operational
0 24 002	Estimated maximum potential release	Bq	-11	0		28	Bq	-11	9	Operational
0 24 003	Composition of release	Code table	0	0		5	Code table	0	2	Operational
0 24 004	Element name	CCITT IA5	0	0		16	Character	0	2	Operational
0 24 005	Isotope mass	Numeric	0	0		9	Numeric	0	3	Operational
0 24 011	Dose	mSv **	2	0		32	mSv	2	10	Operational
0 24 012	Trajectory dose (defined location and expected time of arrival)	mSv	2	0		32	mSv	2	10	Operational
0 24 013	Gamma dose in air along the main transport path (defined location and time period)	mSv	2	0		32	mSv	2	10	Operational
0 24 014	Gamma radiation dose rate	nSv h-1	1	0		14	nSv h-1	1	4	Validation
0 24 021	Air concentration (of named isotope type including gross beta)	Bq m-3	2	0		32	Bq m-3	2	10	Operational
0 24 022	Concentration in precipitation (of names isotope type)	Bq l-1	2	0		32	Bq l-1	2	10	Operational
0 24 023	Pulse rate of beta radiation	s-1	1	0		14	s-1	1	4	Operational
0 24 024	Pulse rate of gamma radiation	s-1	1	0		14	s-1	1	4	Operational

Notes: (see)

## Class 25 - Processing information

TABLE REFERENCE F X Y	ELEMENT NAME	UNIT	SCALE	BUFR		DATA WIDTH (Bits)	UNIT	CREX		DATA WIDTH (Characters)	Status
				REFERENCE VALUE				SCALE			
0 25 001	Range-gate length	m	-1	0		6	m	-1		2	Operational
0 25 002	Number of gates averaged	Numeric	0	0		4	Numeric	0		2	Operational
0 25 003	Number of integrated pulses	Numeric	0	0		8	Numeric	0		3	Operational
0 25 004	Echo processing	Code table	0	0		2	Code table	0		1	Operational
0 25 005	Echo integration	Code table	0	0		2	Code table	0		1	Operational
0 25 006	Z to R conversion	Code table	0	0		3	Code table	0		1	Operational
0 25 007	Z to R conversion factor	Numeric	0	0		12	Numeric	0		4	Operational
0 25 008	Z to R conversion exponent	Numeric	2	0		9	Numeric	2		3	Operational
0 25 009	Calibration method (see Note 3)	Flag table	0	0		4	Flag table	0		2	Operational
0 25 010	Clutter treatment	Code table	0	0		4	Code table	0		2	Operational
0 25 011	Ground occultation correction (screening)	Code table	0	0		2	Code table	0		1	Operational
0 25 012	Range attenuation correction	Code table	0	0		2	Code table	0		1	Operational
0 25 013	Bright-band correction	Flag table	0	0		2	Flag table	0		1	Operational
0 25 014	Azimuth clutter cut-off (see Note 1)	Numeric	0	0		12	Numeric	0		4	Operational
0 25 015	Radome attenuation correction	Flag table	0	0		2	Flag table	0		1	Operational
0 25 016	Clear-air attenuation correction	dB m-1	5	0		6	dB m-1	5		2	Operational
0 25 017	Precipitation attenuation correction	Flag table	0	0		2	Flag table	0		1	Operational
0 25 018	A to Z law for attenuation factor	Numeric	7	0		6	Numeric	7		2	Operational
0 25 019	A to Z law for attenuation exponent	Numeric	2	0		7	Numeric	2		3	Operational
0 25 020	Mean speed estimation	Code table	0	0		2	Code table	0		1	Operational
0 25 021	Wind computation enhancement	Flag table	0	0		8	Flag table	0		3	Operational
0 25 022	GHRSSST Rejection Flag	Flag table	0	0		9	Flag table	0		3	Operational
0 25 023	GHRSSST Confidence Flag	Flag table	0	0		9	Flag table	0		3	Operational
0 25 024	GHRSSST data quality	Code table	0	0		4	Code table	0		2	Operational
0 25 025	Battery voltage	V	1	0		9	V	1		3	Operational

TABLE REFERENCE F X Y	ELEMENT NAME	UNIT	SCALE	BUFR	DATA WIDTH (Bits)	UNIT	CREX	DATA WIDTH (Characters)	Status
				REFERENCE VALUE			SCALE		
0 25 026	Battery voltage (large range)	V	1	0	12	V	1	4	Operational
0 25 028	Operator or manufacturer defined parameter	Numeric	1	-16384	15	Numeric	1	5	Operational
0 25 029	Calibration method (see Note 3)	Flag table	0	0	6	Flag table	0	2	Operational
0 25 030	Running mean sea-surface temperature usage	Code table	0	0	2	Code table	0	1	Operational
0 25 032	Wind profiler mode information (see Note 2)	Code table	0	0	2	Code table	0	1	Operational
0 25 033	Wind profiler submode information (see Note 2)	Code table	0	0	2	Code table	0	1	Operational
0 25 034	Wind profiler quality control test results (see Note 2)	Flag table	0	0	4	Flag table	0	2	Operational
0 25 035	Decision Method for Polarity	Code table	0	0	3				Validation
0 25 036	Atmospherics location method	Code table	0	0	4	Code table	0	2	Operational
0 25 037	SST bias	K	2	-127	8	K	2	3	Operational
0 25 038	Difference between SST and analysis	K	1	-127	8	K	1	3	Operational
0 25 040	CO2 wind product derivation	Code table	0	0	4	Code table	0	2	Operational
0 25 041	Moving platform direction reporting method	Code table	0	0	2	Code table	0	1	Operational
0 25 042	Moving platform speed reporting method	Code table	0	0	2	Code table	0	1	Operational
0 25 043	Wave sampling interval (time)	s	4	0	15	s	4	5	Operational
0 25 044	Wave sampling interval (space)	m	2	0	14	m	2	5	Operational
0 25 045	HIRS channel combination	Flag table	0	0	21	Flag table	0	7	Operational
0 25 046	MSU channel combination	Flag table	0	0	5	Flag table	0	2	Operational
0 25 047	SSU channel combination	Flag table	0	0	4	Flag table	0	2	Operational
0 25 048	AMSU-A channel combination	Flag table	0	0	16	Flag table	0	6	Operational
0 25 049	AMSU-B channel combination	Flag table	0	0	6	Flag table	0	2	Operational
0 25 050	Principal component score	Numeric	4	-131072	18	Numeric	4	6	Operational
0 25 051	AVHRR channel combination	Flag table	0	0	7	Flag table	0	3	Operational
0 25 052	Log-10 of principal components normalized fit to data	Numeric	4	0	15	Numeric	4	5	Operational
0 25 053	Observation quality	Flag table	0	0	12	Flag table	0	4	Operational
0 25 054	SSMIS subframe ID number	Numeric	0	0	5	Numeric	0	2	Operational
0 25 055	Multiplexer housekeeping	K	2	0	16	K	2	5	Operational
0 25 060	Software identification (see Note 2)	Numeric	0	0	14	Numeric	0	5	Operational



TABLE REFERENCE F X Y	ELEMENT NAME	UNIT	SCALE	BUFR		DATA WIDTH (Bits)	UNIT	CREX		Status
				REFERENCE VALUE				SCALE	DATA WIDTH (Characters)	
0 25 061	Software identification and version number	CCITT IA5	0	0		96	Character	0	12	Operational
0 25 062	Database identification	Numeric	0	0		14	Numeric	0	5	Operational
0 25 063	Central Processor or system Identifier	Code table	0	0		8				Validation
0 25 065	Orientation correction (azimuth)	degree	2	-1000		11	degree	2	4	Operational
0 25 066	Orientation correction (elevation)	degree	2	-1000		11	degree	2	4	Operational
0 25 067	Radiosonde release point pressure correction	Pa	0	-8000		14	Pa	0	4	Operational
0 25 068	Number of archive recomputes	Numeric	0	0		7	Numeric	0	3	Operational
0 25 069	Flight level pressure corrections	Flag table	0	0		8	Flag table	0	3	Operational
0 25 070	Major frame count	Numeric	0	0		4	Numeric	0	2	Operational
0 25 071	Frame count	Numeric	0	0		5	Numeric	0	2	Operational
0 25 075	Satellite antenna corrections version number	Numeric	0	0		5	Numeric	0	2	Operational
0 25 076	Log-10 of (Temperature-radiance central wave number) for ATOVS	log (m-1)	8	0		30	log (m-1)	8	10	Operational
0 25 077	Bandwidth correction coefficient 1 for ATOVS	Numeric	5	-100000		18	Numeric	5	7	Operational
0 25 078	Bandwidth correction coefficient 2 for ATOVS	Numeric	5	0		17	Numeric	5	6	Operational
0 25 079	Albedo-radiance solar filtered irradiance for ATOVS	W m-2	4	0		24	W m-2	4	8	Operational
0 25 080	Albedo-radiance equivalent filter width for ATOVS	m	10	0		14	m	10	5	Operational
0 25 081	Incidence angle	degree	3	0		17	degree	3	6	Operational
0 25 082	Azimuth angle	degree	3	0		19	degree	3	6	Operational
0 25 083	Faraday rotational angle	degree	3	0		19	degree	3	6	Operational
0 25 084	Geometric rotational angle	degree	5	0		26	degree	5	8	Operational
0 25 085	Fraction of clear pixels in HIRS FOV	Numeric	0	0		7	Numeric	0	3	Operational
0 25 086	Depth correction indicator	Code table	0	0		2	Code table	0	1	Operational
0 25 090	Orbit state flag	Code table	0	0		4	Code table	0	2	Operational
0 25 091	Structure constant of the refraction index (Cn2)	dB	3	-18192		13	dB	3	5	Operational
0 25 092	Acoustic propagation velocity	m s-1	2	28000		14	m s-1	2	5	Operational
0 25 093	RASS computation correction	Flag table	0	0		8	Flag table	0	3	Operational
0 25 095	Altimeter state flag	Flag table	0	0		2	Flag table	0	1	Operational
0 25 096	Radiometer state flag	Flag table	0	0		5	Flag table	0	2	Operational

TABLE REFERENCE F X Y	ELEMENT NAME	UNIT	SCALE	BUFR	DATA WIDTH (Bits)	UNIT	CREX	DATA WIDTH (Characters)	Status
				REFERENCE VALUE			SCALE		
0 25 097	Three-dimensional error estimate of the navigator orbit	Code table	0	0	4	Code table	0	2	Operational
0 25 098	Altimeter data quality flag	Flag table	0	0	9	Flag table	0	3	Operational
0 25 099	Altimeter correction quality flag	Flag table	0	0	9	Flag table	0	3	Operational
0 25 100	XBT/XCTD fall rate equation coefficient a	Numeric	5	0	20	Numeric	5	6	Operational
0 25 101	XBT/XCTD fall rate equation coefficient b	Numeric	5	-500000	21	Numeric	5	6	Operational
0 25 102	Number of missing lines excluding data gaps	Numeric	0	0	8	Numeric	0	3	Operational
0 25 103	Number of directional bins	Numeric	0	0	8	Numeric	0	3	Operational
0 25 104	Number of wave-length bins	Numeric	0	0	8	Numeric	0	3	Operational
0 25 105	First directional bin	degree	3	0	19	degree	3	6	Operational
0 25 106	Directional bin step	degree	3	0	19	degree	3	6	Operational
0 25 107	First wavelength bin	m	3	0	29	m	3	9	Operational
0 25 108	Last wavelength bin	m	3	0	29	m	3	9	Operational
0 25 110	Image processing summary	Flag table	0	0	10	Flag table	0	4	Operational
0 25 111	Number of input data gaps	Numeric	0	0	8	Numeric	0	3	Operational
0 25 120	RA2-L2-processing flag	Code table	0	0	2	Code table	0	1	Operational
0 25 121	RA2-L2-processing quality	%	0	0	7	%	0	3	Operational
0 25 122	Hardware configuration for RF	Code table	0	0	2	Code table	0	1	Operational
0 25 123	Hardware configuration for HPA	Code table	0	0	2	Code table	0	1	Operational
0 25 124	MWR-L2-processing flag	Code table	0	0	2	Code table	0	1	Operational
0 25 125	MWR-L2-processing quality	%	0	0	7	%	0	3	Operational
0 25 126	Model dry tropospheric correction	m	3	-32768	16	m	3	5	Operational
0 25 127	Inverted barometer correction	m	3	-32768	16	m	3	5	Operational
0 25 128	Model wet tropospheric correction	m	3	-32768	16	m	3	5	Operational
0 25 129	MWR derived wet tropospheric correction	m	3	-32768	16	m	3	5	Operational
0 25 130	RA2 ionospheric correction on Ku band	m	3	-32768	16	m	3	5	Operational
0 25 131	Ionospheric correction from Doris on Ku band	m	3	-32768	16	m	3	5	Operational
0 25 132	Ionospheric correction from model on Ku band	m	3	-32768	16	m	3	5	Operational
0 25 133	Sea state bias correction on Ku band	m	3	-32768	16	m	3	5	Operational

TABLE REFERENCE F X Y	ELEMENT NAME	UNIT	SCALE	BUFR		CREX			Status
				REFERENCE VALUE	DATA WIDTH (Bits)	UNIT	SCALE	DATA WIDTH (Characters)	
0 25 134	RA2 ionospheric correction on S band	m	3	-32768	16	m	3	5	Operational
0 25 135	Ionospheric correction from Doris on S band	m	3	-32768	16	m	3	5	Operational
0 25 136	Ionospheric correction from model on S band	m	3	-32768	16	m	3	5	Operational
0 25 137	Sea state bias correction on S band	m	3	-32768	16	m	3	5	Operational
0 25 138	Average signal-to-noise ratio	Numeric	0	-2048	12	Numeric	0	4	Operational
0 25 140	Start channel	Numeric	0	0	14	Numeric	0	5	Operational
0 25 141	End channel	Numeric	0	0	14	Numeric	0	5	Operational
0 25 142	Channel scale factor	Numeric	0	0	6	Numeric	0	2	Operational
0 25 143	Linear coefficient	Numeric	6	-5000000	24	Numeric	6	8	Operational
0 25 144	Matrix dimension (i axis)	Numeric	0	0	9	Numeric	0	3	Validation
0 25 145	Matrix dimension (j axis)	Numeric	0	0	9	Numeric	0	3	Validation
0 25 150	Method of tropical cyclone intensity analysis using satellite data	Code table	0	0	4	Code table	0	2	Operational
0 25 151	Star relative magnitude	Numeric	3	-20000	14	Numeric	3	5	Validation
0 25 152	Star brightness temperature	K	0	0	17	K	0	6	Validation
0 25 153	Limb	Code table	0	0	2	Code table	0	1	Validation
0 25 160	Ku band net instrumental correction	m	4	-120000	18	m	4	6	Operational
0 25 161	C band net instrumental correction	m	4	-120000	18	m	4	6	Operational
0 25 162	Sea state bias correction on C band	m	4	-6000	13	m	4	4	Operational
0 25 163	Altimeter ionospheric correction on Ku band	m	3	-32768	16	m	3	5	Operational
0 25 164	Radiometer wet tropospheric correction	m	4	-5000	13	m	4	4	Operational
0 25 170	Sampling interval (time)	Second	0	0	10	Second	0	4	Pre-operational
0 25 171	Sample averaging period	Second	0	0	10	Second	0	4	Pre-operational
0 25 172	Number of samples	Numeric	0	0	10	Numeric	0	4	Pre-operational
0 25 174	SMOS information flag	Flag table	0	0	14	Flag table	0	5	Operational
0 25 175	Modified Residual	Numeric	2	0	13				Validation

Notes: (see)

### Class 26 - Non-coordinate location (time)

TABLE REFERENCE F X Y	ELEMENT NAME	UNIT	SCALE	BUFR		UNIT	CREX		Status
				REFERENCE VALUE	DATA WIDTH (Bits)		SCALE	DATA WIDTH (Characters)	
0 26 001	Principal time of daily reading in UTC of maximum temperature	Hour	1	0	12	Hour	1	3	Operational
0 26 002	Principal time of daily reading in UTC of minimum temperature	Hour	1	0	12	Hour	1	3	Operational
0 26 003	Time difference	Minute	0	-1440	12	Minute	0	4	Operational
0 26 010	Hours included	Flag table	0	0	26	Flag table	0	9	Operational
0 26 020	Duration of precipitation	Minute	0	0	11	Minute	0	4	Operational
0 26 030	Measurement integration time	Second	2	0	8	Second	2	3	Operational

### Class 27 - Non-coordinate location (horizontal - 1)

TABLE REFERENCE F X Y	ELEMENT NAME	UNIT	SCALE	BUFR		DATA WIDTH (Bits)	UNIT	CREX		Status
				REFERENCE VALUE				SCALE	DATA WIDTH (Characters)	
0 27 001	Latitude (high accuracy)	degree	5	-9000000		25	degree	5	7	Operational
0 27 002	Latitude (coarse accuracy)	degree	2	-9000		15	degree	2	4	Operational
0 27 003	Alternate latitude (coarse accuracy)	degree	2	-9000		15	degree	2	4	Operational
0 27 004	Alternate latitude (high accuracy)	degree	5	-9000000		25	degree	5	7	Operational
0 27 010	Footprint axis 1	m	-1	0		14	m	-1	5	Operational
0 27 020	Satellite location counter	Numeric	0	0		16	Numeric	0	5	Operational
0 27 021	Satellite sublocation dimension	Numeric	0	0		16	Numeric	0	5	Operational
0 27 031	In direction of 0 degrees longitude, distance from the Earth's centre	m	2	-1073741824		31	m	2	10	Operational
0 27 080	Viewing azimuth angle	degree true	2	0		16	degree true	0	5	Operational

### Class 28 - Non-coordinate location (horizontal - 2)

TABLE REFERENCE F X Y	ELEMENT NAME	UNIT	SCALE	BUFR		DATA WIDTH (Bits)	UNIT	CREX		Status
				REFERENCE VALUE				SCALE	DATA WIDTH (Characters)	
0 28 001	Longitude (high accuracy)	degree	5	-18000000		26	degree	5	8	Operational
0 28 002	Longitude (coarse accuracy)	degree	2	-18000		16	degree	2	5	Operational
0 28 003	Alternate longitude (coarse accuracy)	degree	2	-18000		16	degree	2	5	Operational
0 28 004	Alternate longitude (high accuracy)	degree	5	-18000000		26	degree	5	8	Operational
0 28 010	Footprint axis 2	m	-1	0		14	m	-1	5	Operational
0 28 031	In direction 90 degrees East, distance from the Earth's centre	m	2	-1073741824		31	m	2	10	Operational

## Class 29 - Map data

TABLE REFERENCE F X Y	ELEMENT NAME	UNIT	SCALE	BUFR	DATA WIDTH (Bits)	UNIT	SCALE	DATA WIDTH (Characters)	Status
				REFERENCE VALUE					
0 29 001	Projection type	Code table	0	0	3	Code table	0	1	Operational
0 29 002	Co-ordinate grid type	Code table	0	0	3	Code table	0	1	Operational

### Class 30 - Image

TABLE REFERENCE F X Y	ELEMENT NAME	UNIT	SCALE	BUFR		DATA WIDTH (Bits)	UNIT	CREX		Status
				REFERENCE VALUE				SCALE	DATA WIDTH (Characters)	
0 30 001	Pixel value (4 bits)	Numeric	0	0		4	Numeric	0	2	Operational
0 30 002	Pixel value (8 bits)	Numeric	0	0		8	Numeric	0	3	Operational
0 30 004	Pixel value (16 bits)	Numeric	0	0		16	Numeric	0	5	Operational
0 30 010	Number of grid points	Numeric	0	0		13	Numeric	0	4	Operational
0 30 021	Number of pixels per row	Numeric	0	0		12	Numeric	0	4	Operational
0 30 022	Number of pixels per column	Numeric	0	0		12	Numeric	0	4	Operational
0 30 031	Picture type	Code table	0	0		4	Code table	0	2	Operational
0 30 032	Combination with other data	Flag table	0	0		16	Flag table	0	6	Operational
0 30 033	Number of bins along the radial	Numeric	0	0		12	Numeric	0	4	Validation
0 30 034	Number of azimuths	Numeric	0	0		12	Numeric	0	4	Validation



### Class 31 - Data description operator qualifiers

TABLE REFERENCE F X Y	ELEMENT NAME	UNIT	SCALE	BUFR		UNIT	CREX		Status
				REFERENCE VALUE	DATA WIDTH (Bits)		SCALE	DATA WIDTH (Characters)	
0 31 000	Short delayed descriptor replication factor	Numeric	0	0	1				Operational
0 31 001	Delayed descriptor replication factor	Numeric	0	0	8				Operational
0 31 002	Extended delayed descriptor replication factor	Numeric	0	0	16				Operational
0 31 011	Delayed descriptor and data repetition factor	Numeric	0	0	8				Operational
0 31 012	Extended delayed descriptor and data repetition factor	Numeric	0	0	16				Operational
0 31 021	Associated field significance	Code table	0	0	6				Operational
0 31 031	Data present indicator	Flag table	0	0	1				Operational

### Class 33 - Quality information

TABLE REFERENCE F X Y	ELEMENT NAME	UNIT	SCALE	BUFR	DATA WIDTH (Bits)	UNIT	CREX	DATA WIDTH (Characters)	Status
				REFERENCE VALUE			SCALE		
0 33 002	Quality information	Code table	0	0	2	Code table	0	1	Operational
0 33 003	Quality information	Code table	0	0	3	Code table	0	1	Operational
0 33 005	Quality information (AWS data)	Flag table	0	0	30	Flag table	0	10	Operational
0 33 006	Internal measurement status information (AWS)	Code table	0	0	3	Code table	0	1	Operational
0 33 007	Percent confidence	%	0	0	7	%	0	3	Operational
0 33 009	Relative error	%	2	0	14	%	2	5	Validation
0 33 015	Data quality check indicator	Code table	0	0	6	Code table	0	2	Operational
0 33 020	Quality control indication of following value	Code table	0	0	3	Code table	0	1	Operational
0 33 021	Quality of following value	Code table	0	0	2	Code table	0	1	Operational
0 33 022	Quality of buoy satellite transmission	Code table	0	0	2	Code table	0	1	Operational
0 33 023	Quality of buoy location	Code table	0	0	2	Code table	0	1	Operational
0 33 024	Station elevation quality mark (for mobile stations)	Code table	0	0	4	Code table	0	2	Operational
0 33 025	ACARS interpolated values	Code table	0	0	3	Code table	0	1	Operational
0 33 026	Moisture quality	Code table	0	0	6	Code table	0	2	Operational
0 33 027	Location quality class (range of radius of 66 % confidence)	Code table	0	0	3	Code table	0	1	Operational
0 33 028	Snapshot overall quality	Code table	0	0	3	Code table	0	1	Operational
0 33 030	Scan line status flags for ATOVS	Flag table	0	0	24	Flag table	0	8	Operational
0 33 031	Scan line quality flags for ATOVS	Flag table	0	0	24	Flag table	0	8	Operational
0 33 032	Channel quality flags for ATOVS	Flag table	0	0	24	Flag table	0	8	Operational
0 33 033	Field of view quality flags for ATOVS	Flag table	0	0	24	Flag table	0	8	Operational
0 33 035	Manual/automatic quality control	Code table	0	0	4	Code table	0	2	Operational
0 33 036	Nominal confidence threshold	%	0	0	7	%	0	3	Operational
0 33 037	Wind correlation error	Flag table	0	0	20	Flag table	0	7	Operational
0 33 038	Quality flags for ground-based GNSS data	Flag table	0	0	10	Flag table	0	4	Operational
0 33 039	Quality flags for radio occultation data	Flag table	0	0	16	Flag table	0	6	Operational

TABLE REFERENCE F X Y	ELEMENT NAME	UNIT	SCALE	BUFR	DATA WIDTH (Bits)	UNIT	CREX	DATA WIDTH (Characters)	Status
				REFERENCE VALUE			SCALE		
0 33 040	Confidence interval	%	0	0	7	%	0	3	Operational
0 33 041	Attribute of following value	Code table	0	0	2	Code table	0	1	Operational
0 33 042	Type of limit represented by following value	Code table	0	0	3	Code table	0	1	Operational
0 33 043	AST confidence	Flag table	0	0	8	Flag table	0	3	Operational
0 33 044	ASAR quality information	Flag table	0	0	15	Flag table	0	5	Operational
0 33 045	Probability of following event (see Notes 1 and 3)	%	0	0	7	%	0	3	Operational
0 33 046	Conditional probability of following event with respect to specified conditioning event (see Notes 1, 2 and 3)	%	0	0	7	%	0	3	Operational
0 33 047	Measurement confidence data	Flag table	0	0	31	Flag table	0	11	Operational
0 33 048	Confidence measure of SAR inversion	Code table	0	0	2	Code table	0	1	Operational
0 33 049	Confidence measure of wind retrieval	Code table	0	0	2	Code table	0	1	Operational
0 33 050	Global GTSP quality flag	Code table	0	0	4	Code table	0	2	Operational
0 33 052	S band ocean retracking quality	Flag table	0	0	21	Flag table	0	7	Operational
0 33 053	Ku band ocean retracking quality	Flag table	0	0	21	Flag table	0	7	Operational
0 33 060	GqisFlagQual - individual IASI-System quality flag	Code table	0	0	2	Code table	0	1	Operational
0 33 061	GqisQualIndex - indicator for instrument noise performance	%	0	0	7	%	0	3	Operational
0 33 062	GqisQualIndexLoc - indicator for geometric quality index	%	0	0	7	%	0	3	Operational
0 33 063	GqisQualIndexRad - indicator for instrument noise performance	%	0	0	7	%	0	3	Operational
0 33 064	GqisQualIndexSpect - indicator for instrument noise performance	%	0	0	7	%	0	3	Operational
0 33 065	GqisSysTecSondQual - output of system TEC (Technical Expertise Centre) quality function	Numeric	0	0	24	Numeric	0	8	Operational
0 33 070	Total ozone quality	Code table	0	0	4	Code table	0	2	Operational
0 33 071	Profile ozone quality	Code table	0	0	4	Code table	0	2	Operational
0 33 072	Ozone error	Code table	0	0	5	Code table	0	2	Operational
0 33 075	Scan-level quality flags	Flag table	0	0	13	Flag table	0	5	Pre-operational
0 33 076	Calibration quality flags	Flag table	0	0	9	Flag table	0	3	Pre-operational
0 33 077	Field-of-view quality flags	Flag table	0	0	19	Flag table	0	7	Pre-operational
0 33 078	Geolocation quality	Code table	0	0	4	Code table	0	2	Pre-operational

TABLE REFERENCE F X Y	ELEMENT NAME	BUFR			DATA WIDTH (Bits)	CREX			Status
		UNIT	SCALE	REFERENCE VALUE		UNIT	SCALE	DATA WIDTH (Characters)	
0 33 079	Granule level quality flags	Flag table	0	0	16	Flag table	0	6	Validation
0 33 080	Scan level quality flags	Flag table	0	0	20	Flag table	0	7	Validation
0 33 081	Channel data quality flags	Flag table	0	0	12	Flag table	0	4	Validation

Notes: (see)

### Class 35 - Data monitoring information

TABLE REFERENCE F X Y	ELEMENT NAME	UNIT	SCALE	BUFR		DATA WIDTH (Bits)	UNIT	CREX		Status
				REFERENCE VALUE				SCALE	DATA WIDTH (Characters)	
0 35 000	FM and regional code number	Code table	0	0		10	Code table	0	3	Operational
0 35 001	Time-frame for monitoring	Code table	0	0		3	Code table	0	1	Operational
0 35 011	Number of reports actually received	Numeric	0	0		14	Numeric	0	4	Operational
0 35 021	Bulletin being monitored (TTAAii)	CCITT IA5	0	0		48	Character	0	6	Operational
0 35 022	Bulletin being monitored (YYGGgg)	CCITT IA5	0	0		48	Character	0	6	Operational
0 35 023	Bulletin being monitored (CCCC)	CCITT IA5	0	0		32	Character	0	4	Operational
0 35 024	Bulletin being monitored (BBB)	CCITT IA5	0	0		24	Character	0	3	Operational
0 35 030	Discrepancies in the availability of expected data	Code table	0	0		4	Code table	0	1	Operational
0 35 031	Qualifier on monitoring results	Code table	0	0		7	Code table	0	2	Operational
0 35 032	Cause of missing data	Code table	0	0		4	Code table	0	1	Operational
0 35 033	Observation and collection deficiencies	Code table	0	0		7	Code table	0	2	Operational
0 35 034	Statistical trends for availability of data (during the survey period(s))	Code table	0	0		3	Code table	0	1	Operational
0 35 035	Reason for termination	Code table	0	0		5	Code table	0	2	Operational

## Class 40 - Satellite data

TABLE REFERENCE F X Y	ELEMENT NAME	UNIT	SCALE	BUFR	DATA WIDTH (Bits)	UNIT	SCALE	DATA WIDTH (Characters)	Status
				REFERENCE VALUE					
0 40 001	Surface soil moisture (ms)	%	1	0	10	%	1	4	Operational
0 40 002	Estimated error in surface soil moisture	%	1	0	10	%	1	4	Operational
0 40 003	Mean surface soil moisture	Numeric	3	0	10	Numeric	3	4	Operational
0 40 004	Rain fall detection	Numeric	3	0	10	Numeric	3	4	Operational
0 40 005	Soil moisture correction flag	Flag table	0	0	8	Flag table	0	3	Operational
0 40 006	Soil moisture processing flag	Flag table	0	0	16	Flag table	0	6	Operational
0 40 007	Soil moisture quality	%	1	0	10	%	1	4	Operational
0 40 008	Frozen land surface fraction	%	1	0	10	%	1	4	Operational
0 40 009	Inundation and wetland fraction	%	1	0	10	%	1	4	Operational
0 40 010	Topographic complexity	%	1	0	10	%	1	4	Operational
0 40 011	Interpolation flag	Flag table	0	0	8	Flag table	0	3	Operational
0 40 012	Radiometer data quality flag	Flag table	0	0	8	Flag table	0	3	Operational
0 40 013	Radiometer brightness temperature interpretation flag	Code table	0	0	3	Code table	0	1	Operational
0 40 014	High frequency fluctuations of the sea surface topography	m	4	-3000	13	m	4	4	Operational
0 40 015	Normalised differential vegetation index (NDVI)	Numeric	2	-100	8				Validation
0 40 016	Residual RMS in band	Numeric	3	0	14	Numeric	0	5	Validation
0 40 017	Non-normalised principal component score	Numeric	0	-1073741824	31	Numeric	0	10	Validation
0 40 018	GlacAvgImagIIS - Average of imager measurements	W m-2 sr-1 m	6	0	24	W m-2 sr-1 m	6	8	Validation
0 40 019	GlacVarImagIIS - Variance of imager measurements	W m-2 sr-1 m	6	0	24	W m-2 sr-1 m	6	8	Validation
0 40 020	GQisFlagQualDetailed - Quality flag for the system	Flag table	0	0	17	Flag table	0	6	Validation
0 40 021	Fraction of weighted AVHRR pixel in IASI FOV (Field of View) covered with snow/ice	%	0	0	7	%	0	3	Validation
0 40 022	Number of missing, bad or failed AVHRR pixels	Numeric	0	0	7	Numeric	0	3	Validation
0 40 023	Auxiliary altimeter state flags	Flag table	0	0	5				Validation
0 40 024	Meteorological map availability	Code table	0	0	3				Validation
0 40 025	Interpolation flag for mean diurnal tide	Code table	0	0	2				Validation