

## CODE TABLES AND FLAG TABLES ASSOCIATED WITH BUFR/CREX TABLE B

Note: In developing code tables associated with BUFR/CREX Table B to specify units of elements, the following principles should be applied:

- (a) Code tables specifying the units for an element which is defined, in the *Manual on Codes*, by a single symbolic letter shall be compatible with the relevant existing WMO code tables;
- (b) Code tables combining two or more existing WMO code tables to specify the units for an element which is defined, in the *Manual on Codes*, by a group of symbolic letters shall be compatible with the combined code figures of the relevant group of symbolic letters;
- (c) Code tables combining two or more existing WMO code tables to specify the units for an element which is defined, in the *Manual on Codes*, by different symbolic letters shall be compatible with the code figures of the relevant symbolic letters, with successive tens or hundreds values added, as appropriate;
- (d) Code tables and flag tables should only be used for reporting qualitative information. Quantitative information should be reported as observed using entries in Table B. "Data description operators" from Table C should be applied when a "scale change" or "data width change" is required;
- (e) Reference to existing specification(s) and code table(s) in the *Manual on Codes*, with explanation of possible deviations, shall be given in an additional table annexed to the code tables associated with BUFR/CREX Table B.



**0 01 003*****WMO Region number/geographical area***

Code figure		Status
0	Antarctica	Operational
1	Region I	Operational
2	Region II	Operational
3	Region III	Operational
4	Region IV	Operational
5	Region V	Operational
6	Region VI	Operational
7	Missing value	Operational

**0 01 007*****Satellite identifier****(See common Code table C-5 Part C/c.)***0 01 024*****Wind speed source***

Code figure		Status
0	No wind speed data available	Operational
1	AMSR-E data	Operational
2	TMI data	Operational
3	NWP: ECMWF	Operational
4	NWP: UK Met Office	Operational
5	NWP: NCEP	Operational
6	Reference climatology	Operational
7	ERS Scatterometer	Operational
8-30	Reserved for future use	Operational
31	Missing value	Operational

**0 01 028*****Aerosol optical depth (AOD) source***

Code figure		Status
0	No AOD data available	Operational
1	NESDIS	Operational
2	NAVOCEANO	Operational
3	NAAPS	Operational
4	MERIS	Operational
5	AATSR	Operational
6-30	Reserved for future use	Operational
31	Missing value	Operational

**0 01 029****SSI\* source**

Code figure		Status
0	No SSI data available	Operational
1	MSG SEVIRI	Operational
2	GOES East	Operational
3	GOES West	Operational
4	ECMWF	Operational
5	NCEP	Operational
6	UK Met Office	Operational
7-30	Reserved for future use	Operational
31	Missing value	Operational

\* Surface solar irradiance

**0 01 031****Identification of originating/generating centre**

(See common Code table C-1 in Part C/c.)

**0 01 033****Identification of originating/generating centre**

(See common Code table C-1 in Part C/c.)

**0 01 034****Identification of originating/generating sub-centre**

(To be defined by centres themselves -  
See common Code table C-12 in Part C/c.)

**0 01 036****Agency in charge of operating the observing platform**

(The first three digits represent the ISO country code)

Code figure		Status
0-36000	Reserved	Operational
36001	Australia, Bureau of Meteorology (BOM)	Operational
36002	Australia, Joint Australian Facility for Ocean Observing Systems (JAFOOS)	Operational
36003	Australia, the Commonwealth Scientific and Industrial Research Organization (CSIRO)	Operational
36004-124000	Reserved	Operational
124001	Canada, Marine Environmental Data Service (MEDS)	Operational

(continued)

(Code table 0 01 036 - continued)

Code figure		Status
124002	Canada, Institute of Ocean Sciences (IOS)	Operational
124003-156000	Reserved	Operational
156001	China, The State Oceanic Administration	Operational
156002	China, Second Institute of Oceanography, State Oceanic Administration	Operational
156003	China, Institute of Ocean Technology	Operational
156004-250000	Reserved	Operational
250001	France, Institut de Recherche pour le Développement (IRD)	Operational
250002	France, Institut Français de Recherche pour l'Exploitation de la mer (IFREMER)	Operational
250003-276000	Reserved	Operational
276001	Germany, Bundesamt fuer Seeschifffahrt und Hydrographie (BSH)	Operational
276002	Germany, Institut fuer Meereskunde, Kiel	Operational
276003-356000	Reserved	Operational
356001	India, National Institute of Oceanography (NIO)	Operational
356002	India, National Institute for Ocean Technology (NIOT)	Operational
356003	India, National Centre for Ocean Information Service	Operational
356004-392000	Reserved	Operational
392001	Japan, Japan Meteorological Agency (JMA)	Operational
392002	Japan, Frontier Observational Research System for Global Change	Operational
392003	Japan, Japan Marine Science and Technology Centre (JAMSTEC)	Operational
392004-410000	Reserved	Operational
410001	Republic of Korea, Seoul National University	Operational
410002	Republic of Korea, Korea Ocean Research and Development Institute (KORDI)	Operational
410003	Republic of Korea, Meteorological Research Institute	Operational
410004-540000	Reserved	Operational
540001	New Caledonia, Institut de Recherche pour le Développement (IRD)	Operational
540002-554000	Reserved	Operational
554001	New Zealand, National Institute of Water and Atmospheric Research (NIWA)	Operational
554002-643000	Reserved	Operational
643001	Russian Federation, State Oceanographic Institute of Roshydromet	Operational
643002	Russian Federation, Federal Service for Hydrometeorology and Environmental Monitoring	Operational
643003-724000	Reserved	Operational
724001	Spain, Instituto Español de Oceanografía	Operational
724002-826000	Reserved	Operational
826001	United Kingdom, Hydrographic Office	Operational
826002	United Kingdom, Southampton Oceanography Centre (SOC)	Operational
826003-840000	Reserved	Operational
840001	USA, NOAA Atlantic Oceanographic and Meteorological Laboratories (AOML)	Operational
840002	USA, NOAA Pacific Marine Environmental Laboratories (PMEL)	Operational
840003	USA, Scripps Institution of Oceanography (SIO)	Operational
840004	USA, Woods Hole Oceanographic Institution (WHOI)	Operational
840005	USA, University of Washington	Operational
840006	USA, Naval Oceanographic Office	Operational
840007-1048574	Reserved	Operational
1048575	Missing value	Operational

**0 01 038*****Source of sea ice fraction***

Code figure		Status
0	No sea ice set	Operational
1	NSIDC SSM/I Cavalieri et al. (1992)	Operational
2	AMSR-E	Operational
3	ECMWF	Operational
4	CMS (France) cloud mask used by Medspiration	Operational
5	EUMETSAT OSI-SAF	Operational
6-30	Reserved for future use	Operational
31	Missing value	Operational

**0 01 052*****Platform transmitter ID***

Code figure		Status
0	Primary	Operational
1	Secondary	Operational
2	Reserved	Operational
3	Missing value	Operational

**0 01 090*****Technique for making up initial perturbations***

Code figure		Status
0	Lagged-average forecasting (LAF)	Operational
1	Breeding	Operational
2	Singular vectors	Operational
3	Multiple analysis cycles	Operational
4-191	Reserved	Operational
192-254	Reserved for local use	Operational
255	Missing value	Operational

**0 01 092*****Type of ensemble forecast***

Code figure		Status
0	Unperturbed high-resolution control forecast	Operational
1	Unperturbed low-resolution control forecast	Operational
2	Negatively perturbed forecast	Operational
3	Positively perturbed forecast	Operational
4-191	Reserved	Operational
192-254	Reserved for local use	Operational
255	Missing value	Operational

**0 01 101*****State identifier***

Code figure		Status
0-99	Reserved	Operational
100	Algeria	Operational
101	Angola	Operational
102	Benin	Operational
103	Botswana	Operational
104	Burkina Faso	Operational
105	Burundi	Operational
106	Cameroon	Operational
107	Cape Verde	Operational
108	Central African Republic	Operational
109	Chad	Operational
110	Comoros	Operational
111	Congo	Operational
112	Cote d'Ivoire	Operational
113	Democratic Republic of the Congo	Operational
114	Djibouti	Operational
115	Egypt	Operational
116	Eritrea	Operational
117	Ethiopia	Operational
118	France (RA I)	Operational
119	Gabon	Operational
120	Gambia	Operational
121	Ghana	Operational
122	Guinea	Operational
123	Guinea-Bissau	Operational
124	Kenya	Operational
125	Lesotho	Operational
126	Liberia	Operational
127	Libyan Arab Jamahiriya	Operational
128	Madagascar	Operational
129	Malawi	Operational
130	Mali	Operational
131	Mauritania	Operational
132	Mauritius	Operational
133	Morocco	Operational
134	Mozambique	Operational
135	Namibia	Operational
136	Niger	Operational
137	Nigeria	Operational
138	Portugal (RA I)	Operational
139	Rwanda	Operational
140	Sao Tome and Principe	Operational

*(continued)*

*(Code table 0 01 101 - continued)*

Code figure		Status
141	Senegal	Operational
142	Seychelles	Operational
143	Sierra Leone	Operational
144	Somalia	Operational
145	South Africa	Operational
146	Spain (RA I)	Operational
147	Sudan	Operational
148	Swaziland	Operational
149	Togo	Operational
150	Tunisia	Operational
151	Uganda	Operational
152	United Kingdom of Great Britain and Northern Ireland (RA I)	Operational
153	United Republic of Tanzania	Operational
154	Zambia	Operational
155	Zimbabwe	Operational
156-199	Reserved for Region I (Africa)	Operational
200	Afghanistan	Operational
201	Bahrain	Operational
202	Bangladesh	Operational
203	Bhutan	Operational
204	Cambodia	Operational
205	China	Operational
206	Democratic People's Republic of Korea	Operational
207	Hong Kong, China	Operational
208	India	Operational
209	Iran, Islamic Republic of	Operational
210	Iraq	Operational
211	Japan	Operational
212	Kazakhstan	Operational
213	Kuwait	Operational
214	Kyrgyzstan	Operational
215	Lao People's Democratic Republic	Operational
216	Macao, China	Operational
217	Maldives	Operational
218	Mongolia	Operational
219	Myanmar	Operational
220	Nepal	Operational
221	Oman	Operational
222	Pakistan	Operational
223	Qatar	Operational
224	Republic of Korea	Operational
225	Yemen	Operational
226	Russian Federation (RA II)	Operational
227	Saudi Arabia	Operational

*(continued)*



*(Code table 0 01 101 - continued)*

Code figure		Status
228	Sri Lanka	Operational
229	Tajikistan	Operational
230	Thailand	Operational
231	Turkmenistan	Operational
232	United Arab Emirates	Operational
233	Uzbekistan	Operational
234	Viet Nam	Operational
235-299	Reserved for Region II (Asia)	Operational
300	Argentina	Operational
301	Bolivia (Plurinational State of)	Operational
302	Brazil	Operational
303	Chile	Operational
304	Colombia	Operational
305	Ecuador	Operational
306	France (RA III)	Operational
307	Guyana	Operational
308	Paraguay	Operational
309	Peru	Operational
310	Suriname	Operational
311	Uruguay	Operational
312	Venezuela (Bolivarian Republic of)	Operational
313-399	Reserved for Region III (South America)	Operational
400	Antigua and Barbuda	Operational
401	Bahamas	Operational
402	Barbados	Operational
403	Belize	Operational
404	British Caribbean Territories	Operational
405	Canada	Operational
406	Colombia	Operational
407	Costa Rica	Operational
408	Cuba	Operational
409	Dominica	Operational
410	Dominican Republic	Operational
411	El Salvador	Operational
412	France (RA IV)	Operational
413	Guatemala	Operational
414	Haiti	Operational
415	Honduras	Operational
416	Jamaica	Operational
417	Mexico	Operational
418	Netherlands Antilles and Aruba	Operational
419	Nicaragua	Operational
420	Panama	Operational
421	Saint Lucia	Operational

*(continued)*

*(Code table 0 01 101 - continued)*

Code figure		Status
422	Trinidad and Tobago	Operational
423	United Kingdom of Great Britain and Northern Ireland (RA IV)	Operational
424	United States of America (RA IV)	Operational
425	Venezuela (Bolivarian Republic of)	Operational
426-499	Reserved for Region IV (North America, Central America and the Caribbean)	Operational
500	Australia	Operational
501	Brunei Darussalam	Operational
502	Cook Islands	Operational
503	Fiji	Operational
504	French Polynesia	Operational
505	Indonesia	Operational
506	Kiribati	Operational
507	Malaysia	Operational
508	Micronesia, Federated States of	Operational
509	New Caledonia	Operational
510	New Zealand	Operational
511	Niue	Operational
512	Papua New Guinea	Operational
513	Philippines	Operational
514	Samoa	Operational
515	Singapore	Operational
516	Solomon Islands	Operational
517	Tonga	Operational
518	United Kingdom of Great Britain and Northern Ireland (RA V)	Operational
519	United States of America (RA V)	Operational
520	Vanuatu	Operational
521-599	Reserved for Region V (South-West Pacific)	Operational
600	Albania	Operational
601	Armenia	Operational
602	Austria	Operational
603	Azerbaijan	Operational
604	Belarus	Operational
605	Belgium	Operational
606	Bosnia and Herzegovina	Operational
607	Bulgaria	Operational
608	Croatia	Operational
609	Cyprus	Operational
610	Czech Republic	Operational
611	Denmark	Operational
612	Estonia	Operational
613	Finland	Operational
614	France (RA VI)	Operational
615	Georgia	Operational
616	Germany	Operational

*(continued)*

*(Code table 0 01 101 - continued)*

Code figure		Status
617	Greece	Operational
618	Hungary	Operational
619	Iceland	Operational
620	Ireland	Operational
621	Israel	Operational
622	Italy	Operational
623	Jordan	Operational
624	Kazakhstan	Operational
625	Latvia	Operational
626	Lebanon	Operational
627	Lithuania	Operational
628	Luxembourg	Operational
629	Malta	Operational
630	Monaco	Operational
631	Montenegro	Operational
632	Netherlands	Operational
633	Norway	Operational
634	Poland	Operational
635	Portugal (RA VI)	Operational
636	Republic of Moldova	Operational
637	Romania	Operational
638	Russian Federation (RA VI)	Operational
639	Serbia	Operational
640	Slovakia	Operational
641	Slovenia	Operational
642	Spain (RA VI)	Operational
643	Sweden	Operational
644	Switzerland	Operational
645	Syrian Arab Republic	Operational
646	The former Yugoslav Republic of Macedonia	Operational
647	Turkey	Operational
648	Ukraine	Operational
649	United Kingdom of Great Britain and Northern Ireland (RA VI)	Operational
650-699	Reserved for Region VI (Europe)	Operational
700-999	Reserved	Operational
1000-1022	Not used	Operational
1023	Missing value	Operational



**0 02 001*****Type of station***

Code figure		Status
0	Automatic	Operational
1	Manned	Operational
2	Hybrid: both manned and automatic	Operational
3	Missing value	Operational

**0 02 002*****Type of instrumentation for wind measurement***

Bit No.	Type of Instrumentation and original units for wind measurement (measured in $\text{m s}^{-1}$ unless otherwise indicated)	Status
1	Certified Instruments	Operational
2	Originally measured in knots	Operational
3	Originally measured in $\text{km h}^{-1}$	Operational
All 4	Missing value	Operational

**0 02 003*****Type of measuring equipment used***

Code figure		Status
0	Pressure Instrument associated with wind measuring equipment	Operational
1	Optical theodolite	Operational
2	Radio theodolite	Operational
3	Radar	Operational
4	VLF-Omega	Operational
5	Loran C	Operational
6	Wind profiler	Operational
7	Satellite navigation	Operational
8	Radio-acoustic Sounding System (RASS)	Operational
9	Sodar	Operational
10-13	Reserved	Operational
14	Pressure instrument associated with wind measuring equipment but pressure element failed during ascent	Operational
15	Missing value	Operational

**0 02 004*****Type of instrumentation for evaporation measurement or type of crop for which evapotranspiration is reported***

Code figure			Status
0	USA open pan evaporimeter (without cover)	Evaporation	Operational
1	USA open pan evaporimeter (mesh covered)		Operational
2	GGI-3000 evaporimeter (sunken)		Operational
3	20 m <sup>2</sup> tank		Operational
4	Others		Operational
5	Rice	Evapotranspiration	Operational
6	Wheat		Operational
7	Maize		Operational
8	Sorghum		Operational
9	Other crops		Operational
10-14	Reserved		Operational
15	Missing value		Operational

**0 02 011*****Radiosonde type****(See common Code table C-2 in Part C/c.)***0 02 012*****Radiosonde computational method****(To be developed)***0 02 013*****Solar and infrared radiation correction***

Code figure		Status
0	No correction	Operational
1	CIMO solar corrected and CIMO infrared corrected	Operational
2	CIMO solar corrected and infrared corrected	Operational
3	CIMO solar corrected only	Operational
4	Solar and infrared corrected automatically by radiosonde system	Operational
5	Solar corrected automatically by radiosonde system	Operational
6	Solar and infrared corrected as specified by country	Operational
7	Solar corrected as specified by country	Operational
8-14	Reserved	Operational
15	Missing value	Operational

**0 02 014*****Tracking technique/status of system used****(See common Code table C-7 in Part C/c.)***0 02 015*****Radiosonde completeness***

Code figure		Status
0	Reserved	Operational
1	Pressure only radiosonde	Operational
2	Pressure only radiosonde plus transponder	Operational
3	Pressure only radiosonde plus radar reflector	Operational
4	No-pressure radiosonde plus transponder	Operational
5	No-pressure radiosonde plus radar reflector	Operational
6-14	Reserved	Operational
15	Missing value	Operational

**0 02 016*****Radiosonde configuration***

Bit No.		Status
1	Train regulator	Operational
2	Light unit	Operational
3	Parachute	Operational
4	Rooftop release	Operational
All 5	Missing value	Operational

**0 02 019*****Satellite instruments****(See common Code table C-8 in Part C/c.)*

**0 02 020*****Satellite classification***

Code figure		Status
0	Nimbus	Operational
1	VTPR	Operational
2	Tiros 1 (Tiros, NOAA-6 to NOAA-13)	Operational
3	Tiros 2 (NOAA-14 onwards)	Operational
10	EOS	Operational
31	DMSP	Operational
61	EUMETSAT Polar System (EPS)	Operational
91	ERS	Operational
121	ADEOS	Operational
241	GOES	Operational
261	JASON	Operational
271	GMS	Operational
272	MTSAT	Operational
301	INSAT	Operational
331	METEOSAT Operational Programme (MOP)	Operational
332	METEOSAT Transitional Programme (MTP)	Operational
333	METEOSAT Second Generation Programme (MSG)	Operational
351	GOMS	Operational
380	FY-1	Operational
381	FY-2	Operational
382-400	Reserved	Operational
401	GPS	Operational
402	GLONASS	Operational
403	GALILEO	Operational
404-510	Reserved	Operational
511	Missing value	Operational

**0 02 021*****Satellite instrument data used in processing***

Bit No.		Status
1	High resolution Infrared sounder (HIRS)	Operational
2	Microwave sounding unit (MSU)	Operational
3	Stratospheric sounding unit (SSU)	Operational
4	AMI (Advanced microwave instrument) wind mode	Operational
5	AMI (Advanced microwave instrument) wave mode	Operational
6	AMI (Advanced microwave instrument) image mode	Operational
7	RADAR altimeter	Operational
8	ATSR (along-track scanning radiometer)	Operational
All 9	Missing value	Operational



**0 02 022*****Satellite data-processing technique used***

Bit flags denoting the elements included in processing sounding data.

Bit No.		Status
1	Processing technique not defined	Operational
2	Automated statistical regression	Operational
3	Clear path	Operational
4	Partly cloudy path	Operational
5	Cloudy path	Operational
6-7	Reserved	Operational
All 8	Missing value	Operational

## Notes:

- (1) Clear path means the sounding has been generated from clear radiances derived from actual clear spot measurements. Tropospheric and stratospheric HIRS data, as well as MSU and SSU data, have been used.
- (2) Partly cloudy path means the sounding has been generated from clear radiances which have been calculated from partly cloudy spots. Tropospheric and stratospheric HIRS data, as well as MSU and SSU data, have been used.
- (3) Cloudy path means the sounding has been generated only from stratospheric HIRS data, MSU data and SSU data. Tropospheric HIRS data have not been used because of cloudy conditions.

**0 02 023*****Satellite derived wind computation method***

Code figure		Status
0	Reserved	Operational
1	Wind derived from cloud motion observed in the infrared channel	Operational
2	Wind derived from cloud motion observed in the visible channel	Operational
3	Wind derived from cloud motion observed in the water vapour channel	Operational
4	Wind derived from motion observed in a combination of spectral channels	Operational
5	Wind derived from motion observed in the water vapour channel in clear air	Operational
6	Wind derived from motion observed in the ozone channel	Operational
7	Wind derived from motion observed in water vapour channel (cloud or clear air not specified)	Operational
8-12	Reserved	Operational
13	Root-mean-square	Operational
14	Reserved	Operational
15	Missing value	Operational

**0 02 024*****Integrated mean humidity computational method***

Code figure		Status
0	Reserved	Operational
1	Table with full range of humidity variation in layer	Operational
2	Regression technique on 2 humidity values in layer	Operational
3-14	Reserved	Operational
15	Missing value	Operational

**0 02 025*****Satellite channel(s) used in computation***

Bit flags denoting the instrument and/or channels used in obtaining various physical parameters. If, in any grouping of parameters, all bits = 0, then no retrieval was made for that parameter or set of parameters.

Bit No.	Instrument (channels)	Status
1	Reserved	Operational
	<i>Group 1</i> - Layer precipitable water for the layers: surface to 700 hPa, 700 to 500 hPa, and 500 to 300 hPa	Operational
2	HIRS	Operational
3	MSU	Operational
4-5	Reserved	Operational
	<i>Group 2</i> - Tropopause temperature and pressure	Operational
6	HIRS	Operational
7	MSU	Operational
8-9	Reserved	Operational
	<i>Group 3</i> - Total ozone	Operational
10	HIRS (1, 2, 3, 8, 9, 16, 17)	Operational
11	HIRS (1, 2, 3, 9, 17)	Operational
12	MSU	Operational
13-14	Reserved	Operational
	<i>Group 4</i> - Mean temperature for the layers: surface to 850 hPa, 850 to 700 hPa, 700 to 500 hPa, 500 to 400 hPa, 400 to 300 hPa, 300 to 200 hPa, and 200 to 100 hPa	Operational
15	HIRS	Operational
16	HIRS*	Operational
17	MSU	Operational
18	SKINTK (ocean only)	Operational
19-20	Reserved	Operational

(continued)

(Code table 0 02 025 - continued)

Bit No.	Instrument (channels)	Status
	<i>Group 5</i> - Channel combinations used to obtain mean temperatures for the layers 100 to 70 hPa, 70 to 50 hPa, 50 to 30 hPa, 30 to 10 hPa, 10 to 5 hPa, 5 to 2 hPa, 2 to 1 hPa, 1 to 0.4 hPa	Operational
21	HIRS*	Operational
22	SSU	Operational
23	MSU (3, 4)	Operational
24	Reserved	Operational
All 25	Missing value	Operational

Note: HIRS\* is equivalent to:

HIRS channels	1	(669 cm <sup>-1</sup> )
	2	(679 cm <sup>-1</sup> )
	3	(690 cm <sup>-1</sup> )
	4	(2358 cm <sup>-1</sup> )

**0 02 030*****Method of current measurement***

Code figure		Status
0	Reserved	Operational
1*	ADCP (Acoustic Doppler Current Profiler)	Operational
2	GEK (Geomagnetic ElectroKinetograph)	Operational
3	Ship's set and drift determined by fixes 3-6 hours apart	Operational
4	Ship's set and drift determined by fixes more than 6 hours but less than 12 hours apart	Operational
5	Drift of buoy	Operational
6	ADCP (Acoustic Doppler Current Profiler)	Operational
7	Missing value	Operational

\* Value deprecated. Code figure 6 should be used instead.

**0 02 031*****Duration and time of current measurement***

Code figure			Status
0	Reserved		Operational
1	Instantaneous	} between H-1 and H	Operational
2	Averaged over 3 minutes or less		Operational
3	Averaged over more than 3 minutes, but 6 at the most		Operational
4	Averaged over more than 6 minutes, but 12 at the most		Operational
5	Instantaneous	} between H-2 and H-1	Operational
6	Averaged over 3 minutes or less		Operational
7	Averaged over more than 3 minutes, but 6 at the most		Operational
8	Averaged over more than 6 minutes, but 12 at the most		Operational
9	Vector or Doppler current profiling method not used		Operational
10	Reserved		Operational

(continued)

(Code table 0 02 031 - continued)

Code figure		Status
11	1 hour or less	Operational
12	More than 1 hour but 2 at the most	Operational
13	More than 2 hours but 4 at the most	Operational
14	More than 4 hours but 8 at the most	Operational
15	More than 8 hours but 12 at the most	Operational
16	More than 12 hours but 18 at the most	Operational
17	More than 18 hours but 24 at the most	Operational
18	Reserved	Operational
19	Drift method not used	Operational
20-30	Reserved	Operational
31	Missing value	Operational

Notes:

- (1) Code figures 1-9: Duration and time of current measurement (vector or Doppler current profiling method).
- (2) Code figures 11-19: Period of current measurement (drift method).
- (3) H = Time of observation.

**0 02 032*****Indicator for digitization***

Code figure		Status
0	Values at selected depths (data points fixed by the instrument or selected by any other method)	Operational
1	Values at selected depths (data points taken from traces at significant depths)	Operational
2	Reserved	Operational
3	Missing value	Operational

**0 02 033*****Method of salinity/depth measurement***

Code figure		Status
0	No salinity measured	Operational
1	In situ sensor, accuracy better than 0.02 ‰	Operational
2	In situ sensor, accuracy less than 0.02 ‰	Operational
3	Sample analysis	Operational
4-6	Reserved	Operational
7	Missing value	Operational

**0 02 034*****Drogue type***

Code figure		Status
0	Unspecified drogue	Operational
1	Holey sock	Operational
2	TRISTAR	Operational
3	Window shade	Operational
4	Parachute	Operational
5	Non-Lagrangian sea anchor	Operational
6-30	Reserved (to be developed)	Operational
31	Missing value	Operational

**0 02 036*****Buoy type***

Code figure		Status
0	Drifting buoy	Operational
1	Fixed buoy	Operational
2	Sub-surface float (moving)	Operational
3	Missing value	Operational

**0 02 037*****Method of tidal observation***

Code figure		Status
0	Reserved	Operational
1	Manual reading from vertical tide staff	Operational
2	Manual reading from single automatic recorder at station	Operational
3	Manual reading from multiple automatic recorders at station	Operational
4	Automatic reading from single automatic recorder at station without level reference check	Operational
5	Automatic reading from a single automatic recorder at station with level reference check, or from multiple automatic recorders	Operational
6	Reserved	Operational
7	Missing value	Operational

**0 02 038*****Method of water temperature and/or salinity measurement***

Code figure		Status
0	Ship intake	Operational
1	Bucket	Operational
2	Hull contact sensor	Operational
3	Reversing thermometer	Operational
4	STD/CTD sensor	Operational
5	Mechanical BT	Operational
6	Expendable BT	Operational
7	Digital BT	Operational
8	Thermistor chain	Operational
9	Infrared scanner	Operational
10	Microwave scanner	Operational
11	Infrared radiometer	Operational
12	In-line thermosalinograph	Operational
13	Towed body	Operational
14	Other	Operational
15	Missing value	Operational

**0 02 039*****Method of wet-bulb temperature measurement***

Code figure		Status
0	Measured wet-bulb temperature	Operational
1	Iced bulb measured wet-bulb temperature	Operational
2	Computed wet-bulb temperature	Operational
3	Iced bulb computed wet-bulb temperature	Operational
4-6	Reserved	Operational
7	Missing value	Operational

**0 02 040*****Method of removing velocity and motion of platform from current***

Code figure			Status
0	Ships motion removed by averaging	} Ship's velocity removed by bottom tracking	Operational
1	Ships motion removed by motion compensation		Operational
2	Ships motion not removed	} Ship's velocity removed by navigation	Operational
3	Ships motion removed by averaging		Operational
4	Ships motion removed by motion compensation		Operational
5	Ships motion not removed		Operational
6	Doppler current profiling method not used		Operational
7-14	Reserved		Operational
15	Missing value		Operational

**0 02 041*****Method for estimating reports related to synoptic features***

Code figure		Status
0	Information based on manual analysis	Operational
1	Information based on computer analysis	Operational
2	Information based on data assimilation	Operational
3	Information based on computer analysis or data assimilation manually modified	Operational
4-9	Reserved	Operational
10	Information based on the numerical weather prediction	Operational
11-62	Reserved for future use	Operational
63	Missing value	Operational

**0 02 042*****Indicator for sea surface current speed***

Code figure		Status
0	Value originally reported in m/s	Operational
1	Value originally reported in knots	Operational
2	No sea current data available	Operational
3	Missing value	Operational

**0 02 044*****Indicator for method of calculating spectral wave data***

Code figure		Status
0	Reserved for future use	Operational
1	Longuet-Higgins (1964)	Operational
2	Longuet-Higgins (F3 method)	Operational
3	Maximum likelihood method	Operational
4	Maximum entropy method	Operational
5-14	Reserved	Operational
15	Missing value	Operational

**0 02 045*****Indicator for type of platform***

Code figure		Status
0	Sea station	Operational
1	Automatic data buoy	Operational
2	Aircraft	Operational
3	Satellite	Operational
4-14	Reserved	Operational
15	Missing value	Operational

**0 02 046*****Wave measurement instrumentation***

Code figure		Status
0	Reserved for future use	Operational
1	Heave sensor	Operational
2	Slope sensor	Operational
3-14	Reserved	Operational
15	Missing value	Operational

**0 02 047*****Deep-ocean tsunameter type***

Code figure		Status
0	Reserved	Operational
1	DART II (PMEL)	Operational
2	DART ETD	Operational
3	SAIC Tsunami Buoy (STB)	Operational
4	GFZ - Potsdam	Operational
5	INCOIS (India)	Operational
6	InaBuoy (Indonesia)	Operational
7-14	Reserved	Operational
15	Missing value	Operational

**0 02 048*****Satellite sensor indicator***

Code figure		Status
0	HIRS	Operational
1	MSU	Operational
2	SSU	Operational
3	AMSU-A	Operational
4	AMSU-B	Operational
5	AVHRR	Operational
6	SSM/I	Operational
7	NSCAT	Operational
8	SEAWINDS	Operational
9	POSEIDON	Operational
10	JASON microwave radiometer (JMR)	Operational
11	MHS	Operational
12	ASCAT	Operational
13-14	Reserved	Operational
15	Missing value	Operational



**0 02 049*****Geostationary satellite data-processing technique used***

Bit No.		Status
1	Processing technique not defined	Operational
2	Simultaneous physical retrieval	Operational
3	Clear sounding	Operational
4	Cloudy sounding	Operational
5-7	Reserved for future use	Operational
All 8	Missing value	Operational

## Notes:

- (1) Clear sounding indicates the sounding has been generated from a set of clear radiances using all available sounder radiances.
- (2) Cloudy sounding indicates that sufficient clear radiances could not be identified in the sounding area. The sounding is calculated from the cloud top (cloud pressure greater than or equal to 780 hPa) upwards.

**0 02 050*****Geostationary sounder satellite channels used***

Bit No.	Channel	Central wavelength (micrometers)	Status
1	1	14.71	Operational
2	2	14.37	Operational
3	3	14.06	Operational
4	4	13.64	Operational
5	5	13.37	Operational
6	6	12.66	Operational
7	7	12.02	Operational
8	8	11.03	Operational
9	9	9.71	Operational
10	10	7.43	Operational
11	11	7.02	Operational
12	12	6.51	Operational
13	13	4.57	Operational
14	14	4.52	Operational
15	15	4.45	Operational
16	16	4.13	Operational
17	17	3.98	Operational
18	18	3.74	Operational
19	19	0.969	Operational
All 20	Missing value		Operational

Note: Beginning with the first bit position (high order bit), if the bit position is set to one, then the channel is used. If the bit position is set to zero, then the channel is not used.

**0 02 051*****Indicator to specify observing method for extreme temperatures***

Code figure		Status
0	Reserved	Operational
1	Maximum/minimum thermometers	Operational
2	Automated instruments	Operational
3	Thermograph	Operational
4-14	Reserved	Operational
15	Missing value	Operational

**0 02 052*****Geostationary imager satellite channels used***

Bit No.	Channel	Central wavelength (micrometers)	Status
1	1	0.55 - 0.75	Operational
2	2	3.9	Operational
3	3	6.7	Operational
4	4	10.7	Operational
5	5	12.0	Operational
All 6	Missing value		Operational

Note: Beginning with the first bit position (high order bit), if the bit position is set to one, then the channel is used. If the bit position is set to zero, then the channel is not used.

**0 02 053*****GOES-I/M brightness temperature characteristics***

Code figure		Status
0	Observed brightness temperature	Operational
1	Brightness temperature with bias correction applied	Operational
2	Brightness temperature calculated from first guess	Operational
3	Brightness temperature calculated from sounding	Operational
4-14	Reserved	Operational
15	Missing value	Operational

**0 02 054*****GOES-I/M soundings parameter characteristics***

Code figure		Status
0	Parameter derived using observed sounder brightness temperatures	Operational
1	Parameter derived using observed imager brightness temperatures	Operational
2	Parameter derived using first guess information	Operational
3	Parameter derived using NMC analysis information	Operational
4	Parameter derived using radiosonde information	Operational
5-14	Reserved	Operational
15	Missing value	Operational

**0 02 055*****Geostationary soundings statistical parameters***

Code figure		Status
0	Statistics generated comparing retrieval versus radiosonde	Operational
1	Statistics generated comparing retrieval versus first guess	Operational
2	Statistics generated comparing radiosonde versus first guess	Operational
3	Statistics generated comparing observed versus retrieval	Operational
4	Statistics generated comparing observed versus first guess	Operational
5	Statistics generated comparing radiosonde versus imager	Operational
6	Statistics generated comparing radiosonde versus sounder	Operational
7	Statistics generated for radiosonde	Operational
8	Statistics generated for first guess	Operational
9-14	Reserved	Operational
15	Missing value	Operational

**0 02 056*****Geostationary soundings accuracy statistics***

Code figure		Status
0	Sums of differences	Operational
1	Sums of squared differences	Operational
2	Sample size	Operational
3	Minimum difference	Operational
4	Maximum difference	Operational
5-14	Reserved	Operational
15	Missing value	Operational

**0 02 057*****Origin of first-guess information for GOES-I/M soundings***

Code figure		Status
0	Nested Grid Model (NGM)	Operational
1	Aviation Model (AVN)	Operational
2	Medium Range Forecast (MRF) Model	Operational
3	Global Data Assimilation System (GDAS) Forecast Model	Operational
4	Prior soundings (within 3 hours of current time)	Operational
5	Climatology	Operational
6-14	Reserved	Operational
15	Missing value	Operational

**0 02 058*****Valid times of first-guess information for GOES-I/M soundings***

Code figure		Status
0	12 hour and 18 hour	Operational
1	18 hour and 24 hour	Operational
2	6 hour and 12 hour	Operational
3	Greater than 24 hours	Operational
4-14	Reserved	Operational
15	Missing value	Operational

**0 02 059*****Origin of analysis information for GOES-I/M soundings***

Code figure		Status
0	NCEP Nested Grid Model (NGM) Analysis	Operational
1	NCEP Aviation Model (AVN) Analysis	Operational
2	NCEP Medium Range Forecast (MRF) Model Analysis	Operational
3	NCEP Global Data Assimilation System (GDAS) Forecast Model Analysis	Operational
4-14	Reserved	Operational
15	Missing value	Operational

**0 02 060*****Origin of surface information for GOES-I/M soundings***

Code figure		Status
0	Current surface hourly reports	Operational
1	Current ship reports	Operational
2	Current buoy reports	Operational
3	One hour old surface hourly reports	Operational
4	One hour old ship reports	Operational
5	One hour old buoy reports	Operational
6-14	Reserved	Operational
15	Missing value	Operational

**0 02 061*****Aircraft navigational system***

Code figure		Status
0	Inertial navigation system	Operational
1	OMEGA	Operational
2-6	Reserved	Operational
7	Missing value	Operational

**0 02 062*****Type of aircraft data relay system***

Code figure		Status
0	ASDAR	Operational
1	ASDAR (ACARS also available but not operative)	Operational
2	ASDAR (ACARS also available and operative)	Operational
3	ACARS	Operational
4	ACARS (ASDAR also available but not operative)	Operational
5	ACARS (ASDAR also available and operative)	Operational
6-14	Reserved	Operational
15	Missing value	Operational

**0 02 064*****Aircraft roll angle quality***

Code figure	Meaning	Status
0	Good	Operational
1	Bad	Operational
2	Reserved	Operational
3	Missing value	Operational

Note: Bad is currently defined as a roll angle > 5 degrees from vertical.

**0 02 066*****Radiosonde ground receiving system***

Code figure		Status
0	TRS 2000	Operational
1	IMS 1500C	Operational
2-61	Reserved	Operational
62	Other	Operational
63	Missing value	Operational

**0 02 070*****Original specification of latitude/longitude***

Code figure		Status
0	Actual location in seconds	Operational
1	Actual location in minutes	Operational
2	Actual location in degrees	Operational
3	Actual location in decidegrees	Operational
4	Actual location in centidegrees	Operational
5	Referenced to checkpoint in seconds	Operational
6	Referenced to checkpoint in minutes	Operational
7	Referenced to checkpoint in degrees	Operational
8	Referenced to checkpoint in decidegrees	Operational
9	Referenced to checkpoint in centidegrees	Operational
10	Actual location in tenths of a minute	Operational
11	Referenced to checkpoint in tenths of a minute	Operational
12-14	Reserved	Operational
15	Missing value	Operational

**0 02 080*****Balloon manufacturer***

Code figure		Status
0	Kaysam	Operational
1	Totex	Operational
2	KKS	Operational
3-61	Reserved	Operational
62	Other	Operational
63	Missing value	Operational

**0 02 081*****Type of balloon***

Code figure		Status
0	GP26	Operational
1	GP28	Operational
2	GP30	Operational
3	HM26	Operational
4	HM28	Operational
5	HM30	Operational
6	SV16	Operational
7-29	Reserved	Operational
30	Other	Operational
31	Missing value	Operational

**0 02 083*****Type of balloon shelter***

Code figure		Status
0	High bay	Operational
1	Low bay	Operational
2	Balloon-inflated launch system (BILS)	Operational
3	Roof-top BILS	Operational
4-13	Reserved	Operational
14	Other	Operational
15	Missing value	Operational

**0 02 084*****Type of gas used in balloon***

Code figure		Status
0	Hydrogen	Operational
1	Helium	Operational
2	Natural gas	Operational
3-13	Reserved	Operational
14	Other	Operational
15	Missing value	Operational



**0 02 095*****Type of pressure sensor***

Code figure		Status
0	Capacitance aneroid	Operational
1	Derived from GPS	Operational
2	Resistive strain gauge	Operational
3-29	Reserved	Operational
30	Other	Operational
31	Missing value	Operational

**0 02 096*****Type of temperature sensor***

Code figure		Status
0	Rod thermistor	Operational
1	Bead thermistor	Operational
2	Capacitance bead	Operational
3-29	Reserved	Operational
30	Other	Operational
31	Missing value	Operational

**0 02 097*****Type of humidity sensor***

Code figure		Status
0	VIZ Mark II carbon hygistor	Operational
1	VIZ B2 hygistor	Operational
2	Vaisala A-Humicap	Operational
3	Vaisala H-Humicap	Operational
4	Capacitance sensor	Operational
5	Vaisala RS90	Operational
6	Sippican Mark IIA carbon hygistor	Operational
7-29	Reserved	Operational
30	Other	Operational
31	Missing value	Operational

**0 02 099*****Polarization***

Code figure		Status
0	HH polarization	Operational
1	VV polarization	Operational
2	HV polarization real valued component	Operational
3	HV polarization imaginary valued component	Operational
4-6	Reserved	Operational
7	Missing value	Operational

**0 02 101*****Type of antenna***

Code figure		Status
0	Centre front-fed paraboloid	Operational
1	Offset front-fed paraboloid	Operational
2	Centre Cassegrain paraboloid	Operational
3	Offset Cassegrain paraboloid	Operational
4	Planar array	Operational
5	Coaxial-collinear array	Operational
6	Yagi elements array	Operational
7	Microstrip	Operational
8-13	Reserved	Operational
14	Other	Operational
15	Missing value	Operational

**0 02 103*****Radome***

Bit No.		Status
1	Radar antenna is protected by a radome	Operational
All 2	Missing value	Operational

**0 02 104*****Antenna polarization***

Code figure		Status
0	Horizontal polarization	Operational
1	Vertical polarization	Operational
2	Right circular polarization	Operational
3	Left circular polarization	Operational
4	Horizontal and vertical polarization	Operational
5	Right and left circular polarization	Operational
6	Quasi-horizontal polarization	Operational
7	Quasi-vertical polarization	Operational
8-14	Reserved	Operational
15	Missing value	Operational

**0 02 115*****Type of surface observing equipment***

Code figure		Status
0	PDB	Operational
1	RSOIS	Operational
2	ASOS	Operational
3	Psychrometer	Operational
4	F420	Operational
5-29	Reserved	Operational
30	Other	Operational
31	Missing value	Operational

**0 02 119*****Instrument operations***

Code figure		Status
0	Intermediate frequency calibration mode (IF CAL)	Operational
1	Built-in test equipment digital (BITE DGT)	Operational
2	Built-in test equipment radio frequency (BITE RF)	Operational
3	Preset tracking (PSET TRK)	Operational
4	Preset LOOP OUT	Operational
5	ACQUISITION	Operational
6	TRACKING	Operational
7	Missing value	Operational

**0 02 131*****Sensitivity time control (STC)***

Bit No.		Status
1	STC operational	Operational
All 2	Missing values	Operational

**0 02 137**  
***Radar dual PRF ratio***

Code figure		Status
1	3:2	Operational
2	4:3	Operational
3	5:4	Operational
4-14	Reserved	Operational
15	Missing value	Operational

**0 02 138**  
***Antenna rotation direction***

Code figure		Status
1	Clockwise rotation	Operational
2	Counterclockwise rotation	Operational
3	Missing value	Operational

**0 02 143**  
***Ozone instrument type***

Code figure		Status
0	Reserved	Operational
1	Brewer spectrophotometer	Operational
2	Caver Teichert	Operational
3	Dobson	Operational
4	Dobson (Japan)	Operational
5	Ehmet	Operational
6	Fecker telescope	Operational
7	Hoelper	Operational
8	Jodmeter	Operational
9	Filter Ozonometer M-83	Operational
10	Mast	Operational
11	Oxford	Operational
12	Paetzold	Operational
13	Regener	Operational
14	Reserved for future use	Operational
15	Vassy filter Ozonometer	Operational
16	Carbon iodide	Operational
17	Surface ozone bubbler	Operational
18	Filter Ozonometer M-124	Operational
19	ECC sonde	Operational
20-126	Reserved	Operational
127	Missing value	Operational

**0 02 144*****Light source type for Brewer spectrophotometer***

Code figure		Status
0	Direct sun	Operational
1	Direct sun, attenuator #1	Operational
2	Direct sun, attenuator #2	Operational
3	Focussed moon	Operational
4	Focussed sun	Operational
5	Focussed sun corrected with adjacent sky measurements	Operational
6	Zenith sky	Operational
7-14	Reserved	Operational
15	Missing value	Operational

Note: Entries 1 and 2 should not be used.

**0 02 145*****Wavelength setting for Dobson instruments***

Code figure		Status
0	Wavelengths AD ordinary setting	Operational
1	Wavelengths BD ordinary setting	Operational
2	Wavelengths CD ordinary setting	Operational
3	Wavelengths CC' ordinary setting	Operational
4	Wavelengths AD focussed image	Operational
5	Wavelengths BD focussed image	Operational
6	Wavelengths CD focussed image	Operational
7	Wavelengths CC' focussed image	Operational
8-14	Reserved	Operational
15	Missing value	Operational

**0 02 146*****Source conditions for Dobson instruments***

Code figure		Status
0	On direct sun	Operational
1	On direct moon	Operational
2	On blue zenith sky	Operational
3	On zenith cloud (uniform stratified layer of small opacity)	Operational
4	On zenith cloud (uniform or moderately variable layer of medium opacity)	Operational
5	On zenith cloud (uniform or moderately variable layer of large opacity)	Operational
6	On zenith cloud (highly variable opacity, with or without precipitation)	Operational
7	On zenith cloud (fog)	Operational
8	On zenith haze	Operational
9	On direct sun through thin cloud, fog or haze	Operational
10-14	Reserved	Operational
15	Missing value	Operational

**0 02 148*****Data collection and/or location system***

Code figure		Status
0	Reserved	Operational
1	Argos	Operational
2	GPS	Operational
3	GOES DCP	Operational
4	METEOSAT DCP	Operational
5	ORBCOMM	Operational
6	INMARSAT	Operational
7	Iridium	Operational
8	Iridium and GPS	Operational
9	Argos-3	Operational
10	Argos-4	Operational
11-30	Reserved	Operational
31	Missing value	Operational

**0 02 149*****Type of data buoy***

Code figure		Status
0	Unspecified drifting buoy	Operational
1	Standard Lagrangian drifter (Global Drifter Programme)	Operational
2	Standard FGGE type drifting buoy (non-Lagrangian meteorological drifting buoy)	Operational
3	Wind measuring FGGE type drifting buoy (non-Lagrangian meteorological drifting buoy)	Operational
4	Ice float	Operational
5	SVPG Standard Lagrangian drifter with GPS	Operational
6	SVP-HR drifter with high-resolution temperature or thermistor string	Operational
7	Reserved	Operational
8	Unspecified sub-surface float	Operational
9	SOFAR	Operational
10	ALACE	Operational
11	MARVOR	Operational
12	RAFOS	Operational
13	PROVOR	Operational
14	SOLO	Operational
15	APEX	Operational
16	Unspecified moored buoy	Operational
17	Nomad	Operational
18	3-metre discus	Operational
19	10-12-metre discus	Operational
20	ODAS 30 series	Operational
21	ATLAS (e.g. TAO area)	Operational
22	TRITON buoy	Operational
23	FLEX mooring (e.g. TIP area)	Operational

*(continued)*

(Code table 0 02 149 - continued)

Code figure		Status
24	Omnidirectional waverider	Operational
25	Directional waverider	Operational
26	Sub-surface ARGO float	Operational
27	PALACE	Operational
28	NEMO	Operational
29	NINJA	Operational
30	Ice buoy/float (POPS or ITP)	Operational
31-33	Reserved	Operational
34	Mooring oceanographic	Operational
35	Mooring meteorological	Operational
36	Mooring multidisciplinary (OceanSITES)	Operational
37	Mooring tide gauge or tsunami buoy	Operational
38-62	Reserved	Operational
63	Missing value	Operational

**0 02 150*****TOVS/ATOVS/AVHRR instrumentation channel number***

Code figure		Status
0	Reserved	Operational
1	HIRS 1	Operational
2	HIRS 2	Operational
3	HIRS 3	Operational
4	HIRS 4	Operational
5	HIRS 5	Operational
6	HIRS 6	Operational
7	HIRS 7	Operational
8	HIRS 8	Operational
9	HIRS 9	Operational
10	HIRS 10	Operational
11	HIRS 11	Operational
12	HIRS 12	Operational
13	HIRS 13	Operational
14	HIRS 14	Operational
15	HIRS 15	Operational
16	HIRS 16	Operational
17	HIRS 17	Operational
18	HIRS 18	Operational
19	HIRS 19	Operational
20	HIRS 20	Operational
21	MSU 1	Operational
22	MSU 2	Operational
23	MSU 3	Operational
24	MSU 4	Operational

(continued)

(Code table 0 02 150 - continued)

Code figure		Status
25	SSU 1	Operational
26	SSU 2	Operational
27	SSU 3	Operational
28	AMSU-A 1	Operational
29	AMSU-A 2	Operational
30	AMSU-A 3	Operational
31	AMSU-A 4	Operational
32	AMSU-A 5	Operational
33	AMSU-A 6	Operational
34	AMSU-A 7	Operational
35	AMSU-A 8	Operational
36	AMSU-A 9	Operational
37	AMSU-A 10	Operational
38	AMSU-A 11	Operational
39	AMSU-A 12	Operational
40	AMSU-A 13	Operational
41	AMSU-A 14	Operational
42	AMSU-A 15	Operational
43	AMSU-B 1 / MHS 1	Operational
44	AMSU-B 2 / MHS 2	Operational
45	AMSU-B 3 / MHS 3	Operational
46	AMSU-B 4 / MHS 4	Operational
47	AMSU-B 5 / MHS 5	Operational
48	AVHRR 1	Operational
49	AVHRR 2	Operational
50	AVHRR 3a	Operational
51	AVHRR 3b	Operational
52	AVHRR 4	Operational
53	AVHRR 5	Operational
54-62	Reserved	Operational
63	Missing value	Operational

**0 02 151*****Radiometer identifier***

Code figure		Status
0	HIRS	Operational
1	MSU	Operational
2	SSU	Operational
3	AMSU-A1-1	Operational
4	AMSU-A1-2	Operational
5	AMSU-A2	Operational
6	AMSU-B	Operational
7	AVHRR	Operational

(continued)



(Code table 0 02 151 - continued)

Code figure		Status
8	Reserved	Operational
9	MHS	Operational
10-2046	Reserved	Operational
2047	Missing value	Operational

**0 02 152*****Satellite instrument used in data processing***

Bit No.		Status
1	High-resolution infrared sounder (HIRS)	Operational
2	Microwave sounding unit (MSU)	Operational
3	Stratospheric sounding unit (SSU)	Operational
4	AMI wind mode	Operational
5	AMI wave mode	Operational
6	AMI image mode	Operational
7	RADAR altimeter	Operational
8	ATSR	Operational
9	Geostationary imager	Operational
10	Geostationary sounder	Operational
11	Geostationary earth radiation (GERB)	Operational
12	Multi-channel scanning radiometer	Operational
13	Polar orbiting imager	Operational
14-30	Reserved	Operational
All 31	Missing value	Operational

**0 02 158*****RA-2 instruments***

Bit No.		Status
1	Mismatch in RED VEC HPA	Operational
2	Mismatch in RED VEC RFSS	Operational
3	PTR calibration band 320 MHz (Ku)	Operational
4	PTR calibration band 80 MHz (Ku)	Operational
5	PTR calibration band 20 MHz (Ku)	Operational
6	PTR calibration band 160 MHz (S)	Operational
7	Ku flight calibration parameters available	Operational
8	S flight calibration parameters available	Operational
All 9	Missing value	Operational

Note: PTR = Pulse target response  
 HPA = High power amplifier  
 RFSS = Radio frequency subsystem  
 RED = Redundancy

**0 02 159****MWR** instruments

Bit No.		Status
1	Temperature inconsistency	Operational
2	Data missing	Operational
3	Redundancy channel	Operational
4	Power bus protection	Operational
5	Overvoltage/Overload protection	Operational
6	Reserved	Operational
7	Reserved	Operational
All 8	Missing value	Operational

Note: MWR = Microwave radiometer

**0 02 160*****Wave length of the radar***

Code figure		Status
0	Reserved	Operational
1	10 to less than 20 mm	Operational
2	Reserved	Operational
3	20 to less than 40 mm	Operational
4	Reserved	Operational
5	40 to less than 60 mm	Operational
6	Reserved	Operational
7	60 to less than 90 mm	Operational
8	90 to less than 110 mm	Operational
9	110 mm and greater	Operational
10-14	Not used	Operational
15	Missing value	Operational

**0 02 163*****Height assignment method***

Code figure		Status
0	Auto editor	Operational
1	IRW height assignment	Operational
2	WV height assignment	Operational
3	H <sub>2</sub> O intercept height assignment	Operational
4	CO <sub>2</sub> slicing height assignment	Operational
5	Low pixel max gradient	Operational
6	Higher pixel max gradient	Operational
7	Primary height assignment	Operational
8	Layer thickness assignment	Operational
9	Cumulative contribution function - 10 percent height	Operational
10	Cumulative contribution function - 50 percent height	Operational
11	Cumulative contribution function - 90 percent height	Operational
12	Cumulative contribution function - height of maximum gradient	Operational
13	IR / two WV channel ratioing method	Operational
14	Composite height assignment	Operational
15	Missing value	Operational

**0 02 164*****Tracer correlation method***

Code figure		Status
0	LP - Norms least square minimum	Operational
1	EN - Euclidean norm with radiance correlation	Operational
2	CC - Cross correlation	Operational
3-6	Reserved	Operational
7	Missing value	Operational

**0 02 165*****Radiance type flags***

Bit No.		Status
1	Clear path	Operational
2	Partly cloudy path	Operational
3	Cloudy path	Operational
4	Apodized	Operational
5	Unapodized	Operational
6	Reconstructed	Operational
7	Cloud cleared	Operational
8-14	Reserved	Operational
All 15	Missing value	Operational

**0 02 166*****Radiance type***

Code figure		Status
0	Type not defined	Operational
1	Automated statistical regression	Operational
2	Clear path	Operational
3	Partly cloudy path	Operational
4	Cloudy path	Operational
5-14	Reserved	Operational
15	Missing value	Operational

**0 02 167*****Radiance computational method***

Code figure		Status
0	Method not defined	Operational
1	1b raw radiance	Operational
2	Processed radiance	Operational
3-14	Reserved	Operational
15	Missing value	Operational

**0 02 169*****Anemometer type***

Code figure		Status
0	Cup rotor	Operational
1	Propeller rotor	Operational
2	Wind Observation Through Ambient Noise (WOTAN)	Operational
3	Sonic	Operational
4-14	Reserved	Operational
15	Missing value	Operational

**0 02 172*****Product type for retrieved atmospheric gases***

Code figure		Status
0	Reserved	Operational
1	Retrieval from a nadir sounding	Operational
2	Retrieval from a limb sounding	Operational
3-254	Reserved	Operational
255	Missing value	Operational

**0 02 175*****Method of precipitation measurement***

Code figure		Status
0	Manual measurement	Operational
1	Tipping bucket method	Operational
2	Weighing method	Operational
3	Optical method	Operational
4	Pressure method	Operational
5	Float method	Operational
6	Drop counter method	Operational
7-13	Reserved	Operational
14	Others	Operational
15	Missing value	Operational

**0 02 176*****Method of state of ground measurement***

Code figure		Status
0	Manual observation	Operational
1	Video camera method	Operational
2	Infrared method	Operational
3	Laser method	Operational
4-13	Reserved	Operational
14	Others	Operational
15	Missing value	Operational

**0 02 177*****Method of snow depth measurement***

Code figure		Status
0	Manual observation	Operational
1	Ultrasonic method	Operational
2	Video camera method	Operational
3-13	Reserved	Operational
14	Others	Operational
15	Missing value	Operational

**0 02 178*****Method of liquid content measurement of precipitation***

Code figure		Status
0	Manual observation	Operational
1	Optical method	Operational
2	Capacitive method	Operational
3-13	Reserved	Operational
14	Others	Operational
15	Missing value	Operational

**0 02 179*****Type of sky condition algorithm***

Code figure		Status
0	Manual observation	Operational
1	VAISALA algorithm	Operational
2	ASOS (FAA) algorithm	Operational
3	AWOS (Canada) algorithm	Operational
4-13	Reserved	Operational
14	Others	Operational
15	Missing value	Operational

**0 02 180*****Main present weather detecting system***

Code figure		Status
0	Manual observation	Operational
1	Optical scatter system combined with precipitation occurrence sensing system	Operational
2	Forward and/or backscatter system of visible light	Operational
3	Forward and/or backscatter system of infrared light	Operational
4	Infrared light emitting diode (IRED) system	Operational
5	Doppler radar system	Operational
6-13	Reserved	Operational
14	Others	Operational
15	Missing value	Operational

**0 02 181*****Supplementary present weather sensor***

Bit No.		Status
1	Rain detector	Operational
2	Freezing rain sensor	Operational
3	Ice detection sensor	Operational
4	Hail and ice pellet sensor	Operational
5-19	Reserved	Operational
20	Others	Operational
All 21	Missing value	Operational

**0 02 182*****Visibility measurement system***

Code figure		Status
0	Manual measurement	Operational
1	Transmissometer system (base > 25 m)	Operational
2	Transmissometer system (base < 25 m)	Operational
3	Forward scatter system	Operational
4	Backscatter system	Operational
5-13	Reserved	Operational
14	Others	Operational
15	Missing value	Operational

**0 02 183*****Cloud detection system***

Code figure		Status
0	Manual observation	Operational
1	Ceilometer system	Operational
2	Infrared camera system	Operational
3	Microwave visual camera system	Operational
4	Sky imager system	Operational
5	Video time-lapsed camera system	Operational
6	Micropulse lidar (MPL) system	Operational
7-13	Reserved	Operational
14	Others	Operational
15	Missing value	Operational

**0 02 184*****Type of lightning detection sensor***

Code figure		Status
0	Manual observation	Operational
1	Lightning imaging sensor	Operational
2	Electrical storm identification sensor	Operational
3	Magnetic finder sensor	Operational
4	Lightning strike sensor	Operational
5	Flash counter	Operational
6	ATDnet VLF waveform correlated sensor	Operational
7-13	Reserved	Operational
14	Others	Operational
15	Missing value	Operational

**0 02 185*****Method of evaporation measurement***

Code figure		Status
0	Manual measurement	Operational
1	Balanced floating method	Operational
2	Pressure method	Operational
3	Ultrasonic method	Operational
4	Hydraulic method	Operational
5-13	Reserved	Operational
14	Others	Operational
15	Missing value	Operational

**0 02 186*****Capability to detect precipitation phenomena***

Bit No.		Status
1	Precipitation-unknown type	Operational
2	Liquid precipitation not freezing	Operational
3	Liquid freezing precipitation	Operational
4	Drizzle	Operational
5	Rain	Operational
6	Solid precipitation	Operational
7	Snow	Operational
8	Snow grains	Operational
9	Snow pellets	Operational
10	Ice pellets	Operational
11	Ice crystals	Operational
12	Diamond dust	Operational
13	Small hail	Operational
14	Hail	Operational
15	Glaze	Operational
16	Rime	Operational
17	Soft rime	Operational
18	Hard rime	Operational
19	Clear ice	Operational
20	Wet snow	Operational
21	Hoar frost	Operational
22	Dew	Operational
23	White dew	Operational
24-29	Reserved	Operational
All 30	Missing value	Operational



**0 02 187*****Capability to detect other weather phenomena***

Bit No.		Status
1	Dust/sand whirl	Operational
2	Squalls	Operational
3	Sand storm	Operational
4	Dust storm	Operational
5	Lightning - cloud to surface	Operational
6	Lightning - cloud to cloud	Operational
7	Lightning - distant	Operational
8	Thunderstorm	Operational
9	Funnel cloud not touching surface	Operational
10	Funnel cloud touching surface	Operational
11	Spray	Operational
12-17	Reserved	Operational
All 18	Missing value	Operational

**0 02 188*****Capability to detect obscuration***

Bit No.		Status
1	Fog	Operational
2	Ice fog	Operational
3	Steam fog	Operational
4-6	Reserved	Operational
7	Mist	Operational
8	Haze	Operational
9	Smoke	Operational
10	Volcanic ash	Operational
11	Dust	Operational
12	Sand	Operational
13	Snow	Operational
14-20	Reserved	Operational
All 21	Missing value	Operational

**0 02 189*****Capability to discriminate lightning strikes***

Bit No.		Status
1	Manual observation	Operational
2	All lightning strikes without discrimination	Operational
3	Lightning strikes cloud to ground only	Operational
4	All lightning strikes with discrimination between cloud to ground and cloud to cloud	Operational
5-11	Reserved	Operational
All 12	Missing value	Operational

**0 02 191*****Geopotential height calculation***

<i>Code figure</i>		<i>Status</i>
<i>0</i>	<i>Geopotential height calculated from pressure</i>	<i>Validation</i>
<i>1</i>	<i>Geopotential height calculated from GPS height</i>	<i>Validation</i>
<i>2</i>	<i>Geopotential height calculated from radar height</i>	<i>Validation</i>
<i>3-14</i>	<i>Reserved</i>	<i>Validation</i>
<i>15</i>	<i>Missing value</i>	<i>Validation</i>

**0 04 059*****Times of observation used to compute the reported mean values***

Bit No.		Status
1	0000 UTC	Operational
2	0600 UTC	Operational
3	1200 UTC	Operational
4	1800 UTC	Operational
5	Other hours	Operational
All 6	Missing value	Operational

**0 04 080*****Averaging period for following value***

Code figure		Status
0	Spot values	Operational
1	Less than 15 minutes	Operational
2	From 15 to 45 minutes	Operational
3	More than 45 minutes	Operational
4-8	Reserved	Operational
9	Data not available	Operational
10-14	Not used	Operational
15	Missing value	Operational



**0 08 001*****Vertical sounding significance***

Bit No.		Status
1	Surface	Operational
2	Standard level	Operational
3	Tropopause level	Operational
4	Maximum wind level	Operational
5	Significant level, temperature and/or relative humidity	Operational
6	Significant level, wind	Operational
All 7	Missing value	Operational

**0 08 002*****Vertical significance (surface observations)***

Code figure		Status
0	Observing rules for base of lowest cloud and cloud types of FM 12 SYNOP and FM 13 SHIP apply	Operational
1	First non - Cumulonimbus significant layer	Operational
2	Second non - Cumulonimbus significant layer	Operational
3	Third non - Cumulonimbus significant layer	Operational
4	Cumulonimbus layer	Operational
5	Ceiling	Operational
6	Clouds not detected below the following height(s)	Operational
7	Low cloud	Operational
8	Middle cloud	Operational
9	High cloud	Operational
10	Cloud layer with base below and top above the station	Operational
11	Cloud layer with base and top below the station level	Operational
12-19	Reserved	Operational
20	No clouds detected by the cloud detection system	Operational
21	First instrument detected cloud layer	Operational
22	Second instrument detected cloud layer	Operational
23	Third instrument detected cloud layer	Operational
24	Fourth instrument detected cloud layer	Operational
25-61	Reserved	Operational
62	Value not applicable	Operational
63	Missing value	Operational

**0 08 003*****Vertical significance (satellite observations)***

Code figure		Status
0	Surface	Operational
1	Base of satellite sounding	Operational
2	Cloud top	Operational
3	Tropopause	Operational
4	Precipitable water	Operational
5	Sounding radiances	Operational
6	Mean temperatures	Operational
7	Ozone	Operational
8	Low cloud	Operational
9	Med cloud	Operational
10	High cloud	Operational
11-62	Reserved	Operational
63	Missing value	Operational

**0 08 004*****Phase of aircraft flight***

Code figure		Status
0-1	Reserved	Operational
2	Unsteady (UNS)	Operational
3	Level flight, routine observation (LVR)	Operational
4	Level flight, highest wind encountered (LVW)	Operational
5	Ascending (ASC)	Operational
6	Descending (DES)	Operational
7	Missing value	Operational

**0 08 005*****Meteorological attribute significance***

Code figure		Status
0	Reserved	Operational
1	Storm centre	Operational
2	Outer limit or edge of storm	Operational
3	Location of maximum wind	Operational
4	Location of the storm in the perturbed analysis	Operational
5	Location of the storm in the analysis	Operational
6-14	Reserved	Operational
15	Missing value	Operational

**0 08 006*****Ozone vertical sounding significance***

Bit No.		Status
1	Surface	Operational
2	Standard level	Operational
3	Tropopause level	Operational
4	Prominent maximum level	Operational
5	Prominent minimum level	Operational
6	Minimum pressure level	Operational
7	Reserved	Operational
8	Level of undetermined significance	Operational
All 9	Missing value	Operational

**0 08 007*****Dimensional significance***

Code figure		Status
0	Point	Operational
1	Line	Operational
2	Area	Operational
3	Volume	Operational
4-14	Reserved	Operational
15	Missing value	Operational

Note: A consecutive sequence of 2 or more of location coordinates, such as latitude and longitude pairs, defines a line or polygon. Points shall be joined in the order given in the message. Any area described will fall left of the drawn boundary in the direction established by the order of the points given in the message. This definition is for simple non-intersecting polygons without holes.

**0 08 008*****Radiation vertical sounding significance***

Bit No.		Status
1	Surface	Operational
2	Standard level	Operational
3	Tropopause level	Operational
4	Level of beta radiation maximum	Operational
5	Level of gamma radiation maximum	Operational
6	Minimum pressure level	Operational
7	Reserved	Operational
8	Level of undetermined significance	Operational
All 9	Missing value	Operational

**0 08 009*****Detailed phase of flight***

Code figure		Status
0	Level flight, routine observation, unsteady	Operational
1	Level flight, highest wind encountered, unsteady	Operational
2	Unsteady (UNS)	Operational
3	Level flight, routine observation (LVR)	Operational
4	Level flight, highest wind encountered (LVW)	Operational
5	Ascending (ASC)	Operational
6	Descending (DES)	Operational
7	Ascending, observation intervals selected by time increments	Operational
8	Ascending, observation intervals selected by time increments, unsteady	Operational
9	Ascending, observation intervals selected by pressure increments	Operational
10	Ascending, observation intervals selected by pressure increments, unsteady	Operational
11	Descending, observation intervals selected by time increments	Operational
12	Descending, observation intervals selected by time increments, unsteady	Operational
13	Descending, observation intervals selected by pressure increments	Operational
14	Descending, observation intervals selected by pressure increments, unsteady	Operational
15	Missing value	Operational

**0 08 010*****Surface qualifier (for temperature data)***

Code figure		Status
0	Reserved	Operational
1	Bare soil	Operational
2	Bare rock	Operational
3	Land grass cover	Operational
4	Water (lake, sea)	Operational
5	Flood water underneath	Operational
6	Snow	Operational
7	Ice	Operational
8	Runway or road	Operational
9	Ship or platform deck in steel	Operational
10	Ship or platform deck in wood	Operational
11	Ship or platform deck partly covered with rubber mat	Operational
12-30	Reserved	Operational
31	Missing value	Operational



**0 08 011*****Meteorological feature***

Code figure		Status
0	Quasi-stationary front at the surface	Operational
1	Quasi-stationary front above the surface	Operational
2	Warm front at the surface	Operational
3	Warm front above the surface	Operational
4	Cold front at the surface	Operational
5	Cold front above the surface	Operational
6	Occlusion	Operational
7	Instability line	Operational
8	Intertropical front	Operational
9	Convergence line	Operational
10	Jet stream	Operational
11	Cloud clear	Operational
12	Cloud	Operational
13	Turbulence	Operational
14	Storm	Operational
15	Airframe icing	Operational
16	Phenomenon	Operational
17	Volcano	Operational
18	Atmospherics	Operational
19	Reserved	Operational
20	Special clouds	Operational
21	Thunderstorm	Operational
22	Tropical cyclone	Operational
23	Mountain wave	Operational
24	Duststorm	Operational
25	Sandstorm	Operational
26-62	Reserved	Operational
63	Missing value	Operational

**0 08 012*****Land/sea qualifier***

Code figure		Status
0	Land	Operational
1	Sea	Operational
2	Coast	Operational
3	Missing value	Operational

**0 08 013*****Day/night qualifier***

Code figure		Status
0	Night	Operational
1	Day	Operational
2	Twilight	Operational
3	Missing value	Operational

**0 08 014*****Qualifier for runway visual range***

Code figure		Status
0	10-minute mean value - normal value	Operational
1	10-minute mean value - above the upper limit for assessments of RVR (P)	Operational
2	10-minute mean value - below the lower limit for assessments of RVR (M)	Operational
3	one-minute minimum value - normal value	Operational
4	one-minute minimum value - above the upper limit for assessments of RVR (P)	Operational
5	one-minute minimum value - below the lower limit for assessments of RVR (M)	Operational
6	one-minute maximum value - normal value	Operational
7	one-minute maximum value - above the upper limit for assessments of RVR (P)	Operational
8	one-minute maximum value - below the lower limit for assessments of RVR (M)	Operational
9-14	Reserved	Operational
15	Missing value	Operational

**0 08 016*****Change qualifier of a trend-type forecast or an aerodrome forecast***

Code figure		Status
0	NOSIG	Operational
1	BECMG	Operational
2	TEMPO	Operational
3	FM	Operational
4-6	Reserved	Operational
7	Missing value	Operational

**0 08 017*****Qualifier of the time when the forecast change is expected***

Code figure		Status
0	FM	Operational
1	TL	Operational
2	AT	Operational
3	Missing value	Operational

**0 08 018*****SEAWINDS land/ice surface type***

Bit No.		Status
1	Land is present	Operational
2	Surface ice map indicates ice is present	Operational
3-10	Reserved	Operational
11	Ice map data not available	Operational
12	Attenuation map data not available	Operational
13-16	Reserved	Operational
All 17	Missing value	Operational

**0 08 019*****Qualifier for following centre identifier***

Code figure		Status
0	Reserved	Operational
1	ATS (Air Traffic Service) unit serving FIR (Flight Information Region)	Operational
2	FIR (Flight Information Region)	Operational
3	UIR (Upper Flight Information Region)	Operational
4	CTA (Control Area)	Operational
5	VAAC (Volcanic Ash Advisory Centre)	Operational
6	MWO (Meteorological Watch Office) issuing SIGMET	Operational
7-14	Reserved	Operational
15	Missing value	Operational

**0 08 021*****Time significance***

Code figure		Status
0	Reserved	Operational
1	Time series	Operational
2	Time averaged (see Note 1)	Operational
3	Accumulated	Operational
4	Forecast	Operational
5	Forecast time series	Operational
6	Forecast time averaged	Operational
7	Forecast accumulated	Operational
8	Ensemble mean (see Note 2)	Operational
9	Ensemble mean time series	Operational
10	Ensemble mean time averaged	Operational
11	Ensemble mean accumulated	Operational
12	Ensemble mean forecast	Operational
13	Ensemble mean forecast time series	Operational
14	Ensemble mean forecast time averaged	Operational
15	Ensemble mean forecast accumulated	Operational
16	Analysis	Operational
17	Start of phenomenon	Operational
18	Radiosonde launch time	Operational
19	Start of orbit	Operational
20	End of orbit	Operational
21	Time of ascending node	Operational
22	Time of occurrence of wind shift	Operational
23	Monitoring period	Operational
24	Agreed time limit for report reception	Operational
25	Nominal reporting time	Operational
26	Time of last known position	Operational
27	First guess	Operational
28	Start of scan	Operational
29	End of scan or time of ending	Operational
30	Time of occurrence	Operational
31	Missing value	Operational

**Notes:**

- (1) "Time averaged" indicates that values are continuously averaged over a period of time.
- (2) "Ensemble mean" indicates that a number of distinct values corresponding to a set of time locations are averaged.
- (3) Time significance must be qualified by appropriate time periods being specified.

**0 08 023*****First-order statistics\****

Code figure		Status
0-1	Reserved	Operational
2	Maximum value	Operational
3	Minimum value	Operational
4	Mean value	Operational
5	Median value	Operational
6	Modal value	Operational
7	Mean absolute error	Operational
8	Reserved	Operational
9	Best estimate of standard deviation (N-1)	Operational
10	Standard deviation (N)	Operational
11	Harmonic mean	Operational
12	Root-mean-square vector error	Operational
13	Root-mean-square	Operational
14-31	Reserved	Operational
32	Vector mean	Operational
33-62	Reserved for local use	Operational
63	Missing value	Operational

\* All first-order statistics are in the units defined by the original data descriptors.

**0 08 024*****Difference statistics\****

Code figure		Status
0-1	Reserved	Operational
2	Observed minus maximum	Operational
3	Observed minus minimum	Operational
4	Observed minus mean	Operational
5	Observed minus median	Operational
6	Observed minus mode	Operational
7-10	Reserved	Operational
11	Observed minus climatology (anomaly)	Operational
12	Observed minus analyzed value	Operational
13	Observed minus initialized analyzed value	Operational
14	Observed minus forecast value **	Operational
15-20	Reserved	Operational
21	Observed minus interpolated value	Operational
22	Observed minus hydrostatically calculated value	Operational
23-31	Reserved	Operational
32-62	Reserved for local use	Operational
63	Missing value	Operational

\* Difference statistics are difference values; they have dimensions the same as the corresponding reported values with respect to units, but assume a range centred on zero (e.g., the difference between reported and analysed values, the difference between reported and forecast values, etc.).

\*\* Where observed minus forecast values are represented, the period of the forecast shall be indicated by an appropriate descriptor from class 4.

**0 08 025*****Time difference qualifier***

Code figure		Status
0	Universal Time Coordinated (UTC) minus Local Standard Time (LST)	Operational
1	Local Standard Time	Operational
2	Universal Time Coordinated (UTC) minus Satellite clock	Operational
3-4	Reserved	Operational
5	Time difference from edge of processing segment	Operational
6-14	Reserved	Operational
15	Missing value	Operational

**0 08 026*****Matrix significance***

Code figure		Status
0	Averaging kernel matrix	Operational
1	Correlation matrix (C)	Operational
2	Lower triangular correlation matrix square root ( $L$ from $C=LL^T$ )	Operational
3	Inverse of lower triangular correlation matrix square root ( $L^{-1}$ )	Operational
4-42	Reserved	Operational
43-62	Reserved for local use	Operational
63	Missing or undefined significance	Operational

**0 08 029*****Remotely-sensed surface type***

Code figure		Status
0	Open ocean or semi-enclosed sea	Operational
1	Enclosed sea or lake	Operational
2	Continental ice	Operational
3	Land	Operational
4	Low inland (below sea level)	Operational
5	Mix of land and water	Operational
6	Mix of land and low inland	Operational
7-10	<i>Reserved</i>	<i>Validation</i>
11	<i>river</i>	<i>Validation</i>
12	<i>lake</i>	<i>Validation</i>
13	<i>sea</i>	<i>Validation</i>
14	<i>glacier</i>	<i>Validation</i>
15-254	<i>Reserved</i>	<i>Validation</i>
255	Missing value	Operational

**0 08 033*****Method of derivation of percentage confidence***

Code figure		Status
0	Reserved	Operational
1	Percentage confidence calculated using cloud fraction	Operational
2	Percentage confidence calculated using standard deviation of temperature	Operational
3	Percentage confidence calculated using probability of cloud contamination	Operational
4	Percentage confidence calculated using normality of distribution	Operational
5-126	Reserved	Operational
127	Missing value	Operational

**0 08 035*****Type of monitoring exercise***

Code figure		Status
0	Global	Operational
1	Regional	Operational
2	National	Operational
3	Special	Operational
4	Bilateral	Operational
5	Reserved	Operational
6	Reserved	Operational
7	Missing value	Operational

**0 08 036*****Type of centre or station performing monitoring***

Code figure		Status
0	WMO Secretariat	Operational
1	WMO	Operational
2	RSMC	Operational
3	NMC	Operational
4	RTH	Operational
5	Observing site	Operational
6	Other	Operational
7	Missing value	Operational

**0 08 039*****Time significance (Aviation forecast)***

Code figure		Status
0	Issue time of forecast	Operational
1	Time of commencement of period of the forecast	Operational
2	Time of ending of period of the forecast	Operational
3	Forecast time of maximum temperature	Operational
4	Forecast time of minimum temperature	Operational
5	Time of beginning of the forecast change	Operational
6	Time of ending of the forecast change	Operational
7-62	Reserved	Operational
63	Missing value	Operational



**0 08 040*****Flight level significance***

Code figure		Status
0	High resolution data sample	Operational
1	Within 20 hPa of surface	Operational
2	Pressure less than 10 hPa (i.e., 9, 8, 7, etc.) when no other reason applies	Operational
3	Base pressure level for stability index	Operational
4	Begin doubtful temperature, height data	Operational
5	Begin missing data (all elements)	Operational
6	Begin missing relative humidity data	Operational
7	Begin missing temperature data	Operational
8	Highest level reached before balloon descent because of icing or turbulence	Operational
9	End doubtful temperature, height data	Operational
10	End missing data (all elements)	Operational
11	End missing relative humidity data	Operational
12	End missing temperature data	Operational
13	Zero degrees Celsius crossing(s) for RADAT	Operational
14	Standard pressure level	Operational
15	Operator-added level	Operational
16	Operator-deleted level	Operational
17	Balloon re-ascended beyond previous highest ascent level	Operational
18	Significant relative humidity level	Operational
19	Relative humidity level selection terminated	Operational
20	Surface level	Operational
21	Significant temperature level	Operational
22	Mandatory temperature level	Operational
23	Flight termination level	Operational
24	Tropopause(s)	Operational
25	Aircraft report	Operational
26	Interpolated (generated) level	Operational
27	Mandatory wind level	Operational
28	Significant wind level	Operational
29	Maximum wind level	Operational
30	Incremental wind level (fixed regional)	Operational
31	Incremental height level (generated)	Operational
32	Wind termination level	Operational
33	Pressure 100 to 110 hPa, when no other reason applies	Operational
34	Freezing level base	Operational
35	Freezing level top	Operational
36	Flight level base	Operational
37	Flight level top	Operational
38-39	Reserved	Operational
40	Significant thermodynamic level (inversion)	Operational
41	Significant relative humidity level (according to NCDC criteria)	Operational
42	Significant temperature level (according to NCDC)	Operational
43	Begin missing wind data	Operational

*(continued)*

(Code table 0 08 040 - continued)

Code figure		Status
44	End missing wind data	Operational
45-59	Reserved	Operational
60	Level of 80-knot isotach above jet	Operational
61	Level of 80-knot isotach below jet	Operational
62	Other	Operational
63	Missing value	Operational

**0 08 041*****Data significance***

Code figure		Status
0	Parent site	Operational
1	Observation site	Operational
2	Balloon manufacture date	Operational
3	Balloon launch point	Operational
4	Surface observation	Operational
5	Surface observation displacement from launch point	Operational
6	Flight level observation	Operational
7	Flight level termination point	Operational
8	IFR ceiling and visibility	Operational
9	Mountain obscuration	Operational
10	Strong surface wind	Operational
11	Freezing level	Operational
12	Multiple freezing level	Operational
13	<i>Instrument manufacture date</i>	<i>Validation</i>
14-30	<i>Reserved</i>	<i>Validation</i>
31	Missing value	Operational

**0 08 042*****Extended vertical sounding significance***

Bit No.		Status
1	Surface	Operational
2	Standard level	Operational
3	Tropopause level	Operational
4	Maximum wind level	Operational
5	Significant temperature level	Operational
6	Significant humidity level	Operational
7	Significant wind level	Operational
8	Beginning of missing temperature data	Operational
9	End of missing temperature data	Operational
10	Beginning of missing humidity data	Operational
11	End of missing humidity data	Operational
12	Beginning of missing wind data	Operational
13	End of missing wind data	Operational
14	Top of wind sounding	Operational
15	Level determined by regional decision	Operational
16	Reserved	Operational
17	Pressure level originally indicated by height as the vertical coordinate	Operational
All 18	Missing value	Operational

**0 08 043*****Atmospheric chemical or physical constituent type***

Note: The last column in the table contains the associated registry number from the Chemical Abstracts Service (CAS) of the American Chemical Society.

Code figure	Name	Formula	CAS number (if applicable)	Status
0	Ozone	O <sub>3</sub>	10028-15-6	Operational
1	Water vapour	H <sub>2</sub> O	7732-18-5	Operational
2	Methane	CH <sub>4</sub>	74-82-8	Operational
3	Carbon dioxide	CO <sub>2</sub>	124-38-9	Operational
4	Carbon monoxide	CO	630-08-0	Operational
5	Nitrogen dioxide	NO <sub>2</sub>	10102-44-0	Operational
6	Nitrous oxide	N <sub>2</sub> O	10024-97-2	Operational
7	Formaldehyde	HCHO	50-00-0	Operational
8	Sulfur dioxide	SO <sub>2</sub>	7446-09-5	Operational
9-24	Reserved			Operational
25	Particulate matter < 1.0 microns			Operational
26	Particulate matter < 2.5 microns			Operational
27	Particulate matter < 10 microns			Operational
28	Aerosols (generic)			Operational
29	Smoke (generic)			Operational
30	Crustal material (generic dust)			Operational
31	Volcanic ash			Operational
32-200	Reserved			Operational
201-254	Reserved for local use			Operational
255	Missing value			Operational

**0 08 050*****Qualifier for number of missing values in calculation of statistic***

Code figure		Status
0	Reserved	Operational
1	Pressure	Operational
2	Temperature	Operational
3	Extreme temperature	Operational
4	Vapour pressure	Operational
5	Precipitation	Operational
6	Sunshine duration	Operational
7	Maximum temperature	Operational
8	Minimum temperature	Operational
9	Wind	Operational
10-14	Reserved	Operational
15	Missing value	Operational

**0 08 051*****Qualifier for number of missing values in calculation of statistic***

Code figure		Status
1	Pressure	Operational
2	Temperature	Operational
3	Extreme temperature	Operational
4	Vapour pressure	Operational
5	Precipitation	Operational
6	Sunshine duration	Operational
7	Missing value	Operational

**0 08 052*****Condition for which number of days of occurrence follows***

Code figure		Status
0	Mean wind speed over a 10-minute period observed or recorded equal to or more than $10 \text{ m s}^{-1}$ or 20 knots	Operational
1	Mean wind speed over a 10-minute period observed or recorded equal to or more than $20 \text{ m s}^{-1}$ or 40 knots	Operational
2	Mean wind speed over a 10-minute period observed or recorded equal to or more than $30 \text{ m s}^{-1}$ or 60 knots	Operational
3	Maximum temperature less than 273.15 K	Operational
4	Maximum temperature equal to or more than 298.15 K	Operational
5	Maximum temperature equal to or more than 303.15 K	Operational
6	Maximum temperature equal to or more than 308.15 K	Operational
7	Maximum temperature equal to or more than 313.15 K	Operational
8	Minimum temperature less than 273.15 K	Operational
9	Maximum temperature equal to or more than 273.15 K	Operational
10	Precipitation equal to or more than $1.0 \text{ kg m}^{-2}$	Operational
11	Precipitation equal to or more than $5.0 \text{ kg m}^{-2}$	Operational
12	Precipitation equal to or more than $10.0 \text{ kg m}^{-2}$	Operational
13	Precipitation equal to or more than $50.0 \text{ kg m}^{-2}$	Operational
14	Precipitation equal to or more than $100.0 \text{ kg m}^{-2}$	Operational
15	Precipitation equal to or more than $150.0 \text{ kg m}^{-2}$	Operational
16	Snow depth more than 0.00 m	Operational
17	Snow depth more than 0.01 m	Operational
18	Snow depth more than 0.10 m	Operational
19	Snow depth more than 0.50 m	Operational
20	Horizontal visibility less than 50 m	Operational
21	Horizontal visibility less than 100 m	Operational
22	Horizontal visibility less than 1000 m	Operational
23	Hail	Operational
24	Thunderstorm	Operational
25-30	Reserved	Operational
31	Missing value	Operational

**0 08 053*****Day of occurrence qualifier***

Code figure		Status
0	Value occurred on only one day in the month	Operational
1	Value occurred on more than one day in the month	Operational
2	Reserved	Operational
3	Missing value	Operational

**0 08 054*****Qualifier for wind speed or wind gusts***

Code figure		Status
0	Wind speed or gust is as reported	Operational
1	Wind speed is greater than that reported (P in METAR/TAF/SPECI)	Operational
2-6	Reserved	Operational
7	Missing value	Operational

**0 08 060*****Sample scanning mode significance***

Code figure		Status
0	Reserved	Operational
1	Range	Operational
2	Azimuth	Operational
3	Horizontal	Operational
4	Vertical	Operational
5	North/South	Operational
6	East/West	Operational
7-14	Reserved	Operational
15	Missing value	Operational

**0 08 065*****Sun-glint indicator***

Code figure		Status
0	No sun-glint	Operational
1	Sun-glint	Operational
2	Reserved	Operational
3	Missing value	Operational

**0 08 066*****Semi-transparency indicator***

Code figure		Status
0	Opaque	Operational
1	Semi-transparent	Operational
2	Reserved	Operational
3	Missing value	Operational

**0 08 070*****TOVS/ATOVS product qualifier***

Code figure		Status
0	Reserved	Operational
1	Reserved	Operational
2	Earth located instrument counts, calibration coefficients and housekeeping (level 1b)	Operational
3	Earth located calibrated radiances (level 1c)	Operational
4	Mapped to a common footprint, earth located calibrated radiances (level 1d)	Operational
5-14	Reserved	Operational
15	Missing value	Operational

**0 08 072*****Pixel(s) type***

Code figure		Status
0	Mixed	Operational
1	Clear	Operational
2	Cloudy	Operational
3	Probably clear	Operational
4	Probably cloudy	Operational
5-6	Reserved	Operational
7	Missing value	Operational

**0 08 074*****Altimeter echo type***

Code figure		Status
0	Open ocean or semi-enclosed sea	Operational
1	Non-ocean like	Operational
2	Reserved	Operational
3	Missing value	Operational

**0 08 075*****Ascending/descending orbit qualifier***

Code figure		Status
0	Ascending orbit	Operational
1	Descending orbit	Operational
2	Reserved	Operational
3	Missing value	Operational

**0 08 076*****Type of band***

Code figure		Status
0	Ku	Operational
1	C	Operational
2	Long-wave infrared	Operational
3	Medium-wave infrared	Operational
4	Short-wave infrared	Operational
5	M	Operational
6	I	Operational
7	Day/night	Operational
8-62	Reserved	Operational
63	Missing value	Operational

**0 08 077*****Radiometer sensed surface type***

Code figure		Status
0	Land	Operational
1	Sea	Operational
2	Coastal	Operational
3	Open ocean or semi-enclosed sea	Operational
4	Enclosed sea or lake	Operational
5	Continental ice	Operational
6-126	Reserved	Operational
127	Missing value	Operational

**0 08 079*****Aviation product status***

Code figure		Status
0	Normal issue	Operational
1	Correction to a previously issued product (COR)	Operational
2	Amendment to a previously issued product (AMD)	Operational
3	Correction to a previously issued amended product (COR AMD)	Operational
4	Cancellation of a previously issued product (CNL)	Operational
5	No product available (NIL)	Operational

*(continued)*



(Code table 0 08 079 - continued)

Code figure		Status
6	Special report (SPECI)	Operational
7	Corrected special report (SPECI COR)	Operational
8-14	Reserved	Operational
15	Missing or not applicable	Operational

**0 08 080*****Qualifier for GTSP\* quality flag***

Code figure		Status
0	Total water pressure profile	Operational
1	Total water temperature profile	Operational
2	Total water salinity profile	Operational
3	Total water conductivity profile	Operational
4	<i>Total water depth</i>	<i>Validation</i>
5-9	<i>Reserved</i>	<i>Validation</i>
10	Water pressure at a level	Operational
11	Water temperature at a level	Operational
12	Salinity at a level	Operational
13	<i>Water depth at a level</i>	<i>Validation</i>
14-19	<i>Reserved</i>	<i>Validation</i>
20	Position	Operational
21-62	Reserved	Operational
63	Missing value	Operational

\* GTSP = Global Temperature Salinity Profile Programme

**0 08 081*****Type of equipment***

Code figure		Status
0	Sensor	Operational
1	Transmitter	Operational
2	Receiver	Operational
3	Observing platform	Operational
4-62	Reserved	Operational
63	Missing value	Operational

**0 08 082*****Modification of sensor height to another value***

Code figure		Status
0	Sensor height is not modified	Operational
1	Sensor height is modified to standard level *	Operational
2-6	Reserved	Operational
7	Missing value	Operational

(continued)

(Code table 0 08 082 - continued)

- \* If 0 08 082 = 1, standard level is indicated by the descriptor of class 7, which immediately follows. It is possible to indicate the real height of the sensor by preceding the descriptor by relevant class 7 descriptors.

**0 08 083*****Nominal value indicator***

Bit No.		Status
1	Adjusted <b>to or</b> with respect to representative height of sensor above local ground (or <b>deck</b> of marine platform)	Operational
2	Adjusted <b>to or</b> with respect to representative height of sensor above water surface	Operational
3	Adjusted with respect to standard surface roughness	Operational
4	Adjusted with respect to wind speed	Operational
5	Adjusted with respect to temperature	Operational
6	Adjusted with respect to pressure	Operational
7	Adjusted with respect to humidity	Operational
8	Adjusted with respect to evaporation	Operational
9	Adjusted with respect to wetting losses	Operational
10-14	Reserved	Operational
All 15	Missing value	Operational

**0 08 085*****Beam identifier***

Code figure		Status
0	Fore beam	Operational
1	Mid beam	Operational
2	Aft beam	Operational
3-6	Reserved	Operational
7	Missing value	Operational

**0 08 086*****Vertical significance for NWP***

Bit No.		Status
1	Model "ground" surface	Validation
2	Standard level	Validation
3	Tropopause level	Validation
4	Maximum wind level	Validation
5	Significant temperature level	Validation
6	Significant humidity level	Validation
7	Significant wind level	Validation
8	Vertically interpolated level (This should be set to 1 for points on the vertical profile that fall between the model's native vertical levels).	Validation
9	Virtual station height	Validation
10	Reserved	Validation
11	Reserved	Validation
All 12 bits	Missing value	Validation

**0 10 063*****Characteristic of pressure tendency***

Code figure		Status	
0	Increasing, then decreasing; atmospheric pressure the same or higher than three hours ago	Operational	
1	Increasing, then steady; or increasing, then increasing more slowly	Atmospheric pressure now higher than three hours ago	Operational
2	Increasing (steadily or unsteadily)		Operational
3	Decreasing or steady, then increasing; or increasing, then increasing more rapidly		Operational
4	Steady; atmospheric pressure the same as three hours ago		Operational
5	Decreasing, then increasing; atmospheric pressure the same or lower than three hours ago		Operational
6	Decreasing, then steady; or decreasing, then decreasing more slowly	Atmospheric pressure now lower than three hours ago	Operational
7	Decreasing (steadily or unsteadily)		Operational
8	Steady or increasing, then decreasing; or decreasing, then decreasing more rapidly		Operational
9-14	Reserved		Operational
15	Missing value		Operational

## Notes:

- (1) In reports from automatic stations, code figure 2 shall be used when tendency is positive, 7 when negative, and 4 when the pressure is the same as three hours before.
- (2) In reports from tropical stations reporting 24-hour pressure changes, code figure 2 shall be used when tendency is positive, 7 when negative, and 4 when pressure is the same as 24 hours before.

**0 10 064*****SIGMET cruising level***

Code figure		Status
0	Subsonic	Operational
1	Transonic	Operational
2	Supersonic	Operational
3-6	Reserved	Operational
7	Missing value	Operational



**0 11 030*****Extended degree of turbulence***

Code figure			Status
0	Nil	} in cloud	Operational
1	Light		Operational
2	Moderate		Operational
3	Severe		Operational
4	Nil	} in clear air	Operational
5	Light		Operational
6	Moderate		Operational
7	Severe		Operational
8	Nil	} cloud/clear air not specified	Operational
9	Light		Operational
10	Moderate		Operational
11	Severe		Operational
12	Extreme, in clear air		Operational
13	Extreme, in cloud		Operational
14	Extreme, cloud/clear air not specified		Operational
15	Light, isolated moderate		Operational
16	Light, occasional moderate		Operational
17	Light, frequently moderate		Operational
18	Moderate, isolated severe		Operational
19	Moderate, occasional severe		Operational
20	Moderate, frequently severe		Operational
21	Severe, isolated extreme		Operational
22	Severe, occasional extreme		Operational
23	Severe, frequently extreme		Operational
24-62	Reserved		Operational
63	Missing value		Operational

**0 11 031*****Degree of turbulence***

Code figure			Status
0	Nil	} in cloud	Operational
1	Light		Operational
2	Moderate		Operational
3	Severe		Operational
4	Nil	} in clear air	Operational
5	Light		Operational
6	Moderate		Operational
7	Severe		Operational
8	Nil	} cloud/clear air not specified	Operational
9	Light		Operational
10	Moderate		Operational
11	Severe		Operational

(continued)

*(continued)*

(Code table 0 11 031 - continued)

Code figure		Status
12	Extreme, in clear air	Operational
13	Extreme, in cloud	Operational
14	Extreme, cloud/clear air not specified	Operational
15	Missing value	Operational

**0 11 037*****Turbulence index***

Code figure	Average Value of Eddy Dissipation Rate (ave) ( $\text{m}^{2/3} \text{s}^{-1}$ )	Peak value of eddy dissipation rate (peak) ( $\text{m}^{2/3} \text{s}^{-1}$ )	Status
0	ave <0.1	peak <0.1	Operational
1	ave <0.1	0.1 <= peak <0.2	Operational
2	0.1 <= ave <0.2	0.1 <= peak <0.2	Operational
3	ave <0.1	0.2 <= peak <0.3	Operational
4	0.1 <= ave <0.2	0.2 <= peak <0.3	Operational
5	0.2 <= ave <0.3	0.2 <= peak <0.3	Operational
6	ave <0.1	0.3 <= peak <0.4	Operational
7	0.1 <= ave <0.2	0.3 <= peak <0.4	Operational
8	0.2 <= ave <0.3	0.3 <= peak <0.4	Operational
9	0.3 <= ave <0.4	0.3 <= peak <0.4	Operational
10	ave <0.1	0.4 <= peak <0.5	Operational
11	0.1 <= ave <0.2	0.4 <= peak <0.5	Operational
12	0.2 <= ave <0.3	0.4 <= peak <0.5	Operational
13	0.3 <= ave <0.4	0.4 <= peak <0.5	Operational
14	0.4 <= ave <0.5	0.4 <= peak <0.5	Operational
15	ave <0.1	0.5 <= peak <0.8	Operational
16	0.1 <= ave <0.2	0.5 <= peak <0.8	Operational
17	0.2 <= ave <0.3	0.5 <= peak <0.8	Operational
18	0.3 <= ave <0.4	0.5 <= peak <0.8	Operational
19	0.4 <= ave <0.5	0.5 <= peak <0.8	Operational
20	0.5 <= ave <0.8	0.5 <= peak <0.8	Operational
21	ave <0.1	0.8 <= peak	Operational
22	0.1 <= ave <0.2	0.8 <= peak	Operational
23	0.2 <= ave <0.3	0.8 <= peak	Operational
24	0.3 <= ave <0.4	0.8 <= peak	Operational
25	0.4 <= ave <0.5	0.8 <= peak	Operational
26	0.5 <= ave <0.8	0.8 <= peak	Operational
27	0.8 <= ave	0.8 <= peak	Operational
28	Nil	Nil	Operational
29-62	Reserved	Reserved	Operational
63	Missing value	Missing value	Operational

**0 11 038*****Time of occurrence of peak eddy dissipation rate***

Code figure	Minutes prior to observation time (min)	Status
0	min < 1	Operational
1	1 <= min < 2	Operational
2	2 <= min < 3	Operational
3	3 <= min < 4	Operational
4	4 <= min < 5	Operational
5	5 <= min < 6	Operational
6	6 <= min < 7	Operational
7	7 <= min < 8	Operational
8	8 <= min < 9	Operational
9	9 <= min < 10	Operational
10	10 <= min < 11	Operational
11	11 <= min < 12	Operational
12	12 <= min < 13	Operational
13	13 <= min < 14	Operational
14	14 <= min < 15	Operational
15	No timing information available	Operational
16-30	Reserved	Operational
31	Missing value	Operational

**0 11 039*****Extended time of occurrence of peak eddy dissipation rate***

Code figure	Minutes prior to observation time (min)	Status
0	min < 1	Operational
1	1 <= min < 2	Operational
2	2 <= min < 3	Operational
3	3 <= min < 4	Operational
4	4 <= min < 5	Operational
5	5 <= min < 6	Operational
6	6 <= min < 7	Operational
7	7 <= min < 8	Operational
8	8 <= min < 9	Operational
9	9 <= min < 10	Operational
10	10 <= min < 11	Operational
11	11 <= min < 12	Operational
12	12 <= min < 13	Operational
13	13 <= min < 14	Operational
14	14 <= min < 15	Operational
15-59	As above to 59 <=min < 60	Operational
60	No timing information available	Operational
61-62	Reserved	Operational
63	Missing value	Operational





**0 13 038*****Superadiabatic indicator***

Code figure		Status
0	Not superadiabatic	Operational
1	Superadiabatic	Operational
2	Reserved	Operational
3	Missing value	Operational

**0 13 039*****Terrain type (ice/snow)***

Code figure		Status
0	Sea ice	Operational
1	Snow on land	Operational
2-6	Reserved	Operational
7	Missing value	Operational

**0 13 040*****Surface flag***

Code figure		Status
0	Land	Operational
1	Reserved	Operational
2	Near coast	Operational
3	Ice	Operational
4	Possible ice	Operational
5	Ocean	Operational
6	Coast	Operational
7-14	Reserved	Operational
15	Missing value	Operational

**0 13 041*****Pasquill-Gifford stability category***

Code figure		Status
1	A	Operational
2	A - B	Operational
3	B	Operational
4	B - C	Operational
5	C	Operational
6	D	Operational
7	E	Operational
8	F	Operational
9	G	Operational
10-14	Reserved	Operational
15	Missing value	Operational

**0 13 051*****Frequency group, precipitation***

Code figure		Status
0	Smaller than any value in the 30-year period	Operational
1	In the first quintile	Operational
2	In the second quintile	Operational
3	In the third quintile	Operational
4	In the fourth quintile	Operational
5	In the fifth quintile	Operational
6	Greater than any value in the 30-year period	Operational
7-14	Reserved	Operational
15	Missing value	Operational

**0 13 056*****Character and intensity of precipitation***

Code figure		Status
0	No precipitation	Operational
1	Light intermittent	Operational
2	Moderate intermittent	Operational
3	Heavy intermittent	Operational
4	Very heavy intermittent	Operational
5	Light continuous	Operational
6	Moderate continuous	Operational
7	Heavy continuous	Operational
8	Very heavy continuous	Operational
9	Variable - alternatively light and heavy	Operational
10-14	Reserved	Operational
15	Missing value	Operational

**0 13 057*****Time of beginning or end of precipitation***

Code figure		Status
0	No precipitation	Operational
1	Within the last hour	Operational
2	1 to 2 hours ago	Operational
3	2 to 3 hours ago	Operational
4	3 to 4 hours ago	Operational
5	4 to 5 hours ago	Operational
6	5 to 6 hours ago	Operational
7	6 to 8 hours ago	Operational
8	8 to 10 hours ago	Operational
9	More than 10 hours ago	Operational
10-14	Reserved	Operational
15	Missing value	Operational

**0 15 025*****Type of pollutant***

Code figure		Status
0	Ozone	Operational
1-10	Reserved	Operational
11	Fine particulate matter (diameter < 2.5 microns)	Operational
12	Fine particulate matter (diameter < 10 microns)	Operational
13-14	Reserved	Operational
15	Missing value	Operational



**0 19 001*****Type of synoptic feature***

Code figure		Status
0	Depression or low (extratropical)	Operational
1	Tropical depression	Operational
2	Tropical storm	Operational
3	Severe tropical storm	Operational
4	Typhoon	Operational
5-9	Reserved	Operational
10	Dust/sandstorm	Operational
11-62	Reserved	Operational
63	Missing value	Operational

Note: New local names for storm of various strengths shall be added as necessary.

**0 19 008*****Vertical extent of circulation***

Code figure		Status
0	Reserved	Operational
1	Shallow (top of circulation below 700 hPa level)	Operational
2	Medium (top between 700 hPa and 400 hPa level)	Operational
3	Deep (top above 400 hPa level)	Operational
4-6	Reserved	Operational
7	Missing value	Operational

**0 19 010*****Method for tracking the centre of synoptic feature***

Code figure		Status
1	Minimum value of sea level pressure	Operational
2	Maximum value of 850 hPa relative vorticity	Operational
3-14	Reserved	Operational
15	Missing value	Operational

**0 19 100*****Time interval to calculate the movement of the tropical cyclone***

Code figure		Status
0-2	Not used	Operational
3	During the preceding 15 minutes	Operational
4	During the preceding 30 minutes	Operational
5	During the preceding 1 hour	Operational
6	During the preceding 2 hours	Operational
7	During the preceding 3 hours	Operational
8	During the preceding 6 hours	Operational
9	During a period of more than 6 hours	Operational
10	Undetermined	Operational
11-14	Not used	Operational
15	Missing value	Operational

**0 19 101*****Accuracy of the position of the centre of the tropical cyclone***

Code figure		Status
0	Reserved	Operational
1	Eye visible on radar scope, accuracy good (within 10 km)	Operational
2	Eye visible on radar scope, accuracy fair (within 30 km)	Operational
3	Eye visible on radar scope, accuracy poor (within 50 km)	Operational
4	Position of the centre within the area covered by the radar scope, determination by means of the spiral-band overlay, accuracy good (within 10 km)	Operational
5	Position of the centre within the area covered by the radar scope, determination by means of the spiral-band overlay, accuracy fair (within 30 km)	Operational
6	Position of the centre within the area covered by the radar scope, determination by means of the spiral-band overlay, accuracy poor (within 50 km)	Operational
7	Position of the centre outside the area covered by the radar scope, extrapolation by means of the spiral-band overlay	Operational
8-9	Reserved	Operational
10	Accuracy undetermined	Operational
11-14	Not used	Operational
15	Missing value	Operational

**0 19 102*****Shape and definition of the eye of the tropical cyclone***

Code figure		Status
0	Circular	Operational
1	Elliptical - the minor axis is at least 3/4 the length of the major axis	Operational
2	Elliptical - the minor axis is less than 3/4 the length of the major axis	Operational
3	Apparent double eye	Operational
4	Other shape	Operational
5	Ill defined	Operational
6	Undetermined	Operational
7	Missing value	Operational

} well defined

**0 19 103*****Diameter of major axis of the eye of the tropical cyclone***

Code figure		Status
0	Less than 5 km	Operational
1	5 to less than 10 km	Operational
2	10 to less than 15 km	Operational
3	15 to less than 20 km	Operational
4	20 to less than 25 km	Operational
5	25 to less than 30 km	Operational
6	30 to less than 35 km	Operational
7	35 to less than 40 km	Operational
8	40 to less than 50 km	Operational
9	50 km and greater	Operational
10	Undetermined	Operational
11-14	Not used	Operational
15	Missing value	Operational

**0 19 104*****Change in character of the eye during the 30 minutes***

Code figure		Status
0	Eye has first become visible during the past 30 minutes	Operational
1	No significant change in the characteristics or size of the eye	Operational
2	Eye has become smaller with no other significant change in characteristics	Operational
3	Eye has become larger with no other significant change in characteristics	Operational
4	Eye has become less distinct with no significant change in size	Operational
5	Eye has become less distinct and decreased in size	Operational
6	Eye has become less distinct and increased in size	Operational
7	Eye has become more distinct with no significant change in size	Operational
8	Eye has become more distinct and decreased in size	Operational
9	Eye has become more distinct and increased in size	Operational
10	Change in character and size of eye cannot be determined	Operational
11-14	Not used	Operational
15	Missing value	Operational

**0 19 105*****Distance between the end of spiral band and the centre***

Code figure		Status
0	0 to less than 100 km	Operational
1	100 to less than 200 km	Operational
2	200 to less than 300 km	Operational
3	300 to less than 400 km	Operational
4	400 to less than 500 km	Operational
5	500 to less than 600 km	Operational
6	600 to less than 800 km	Operational
7	800 km or more	Operational
8-9	Reserved	Operational
10	Doubtful or undetermined	Operational
11-14	Not used	Operational
15	Missing value	Operational



**0 19 107*****Time interval over which the movement of the tropical cyclone  
has been calculated***

Code figure		Status
0	Less than 1 hour	Operational
1	1 to less than 2 hours	Operational
2	2 to less than 3 hours	Operational
3	3 to less than 6 hours	Operational
4	6 to less than 9 hours	Operational
5	9 to less than 12 hours	Operational
6	12 to less than 15 hours	Operational
7	15 to less than 18 hours	Operational
8	18 to less than 21 hours	Operational
9	21 to less than 30 hours	Operational
10-14	Not used	Operational
15	Missing value	Operational

**0 19 108*****Accuracy of geographical position of the tropical cyclone***

Code figure		Status
0	Cyclone centre within 10 km of the transmitted	Operational
1	Cyclone centre within 20 km of the transmitted	Operational
2	Cyclone centre within 50 km of the transmitted	Operational
3	Cyclone centre within 100 km of the transmitted	Operational
4	Cyclone centre within 200 km of the transmitted	Operational
5	Cyclone centre within 300 km of the transmitted	Operational
6	Cyclone centre undetermined	Operational
7	Missing value	Operational

**0 19 109*****Mean diameter of the overcast cloud of the tropical cyclone***

Code figure		Status
0	Less than 1° of latitude	Operational
1	1° to less than 2° of latitude	Operational
2	2° to less than 3° of latitude	Operational
3	3° to less than 4° of latitude	Operational
4	4° to less than 5° of latitude	Operational
5	5° to less than 6° of latitude	Operational
6	6° to less than 7° of latitude	Operational
7	7° to less than 8° of latitude	Operational
8	8° to less than 9° of latitude	Operational
9	9° of latitude or more	Operational
10	Undetermined	Operational
11-14	Not used	Operational
15	Missing value	Operational

**0 19 110*****Apparent 24-hour change in intensity of the tropical cyclone***

Code figure		Status
0	Much weakening	Operational
1	Weakening	Operational
2	No change	Operational
3	Intensification	Operational
4	Strong Intensification	Operational
5-8	Reserved	Operational
9	Not observed previously	Operational
10	Undetermined	Operational
11-14	Not used	Operational
15	Missing value	Operational

**0 19 113*****Cloud pattern type of the DT-number***

Code figure	Type	Status
1	Curved Band	Operational
2	Shear	Operational
3	Eye	Operational
4	Banding Eye	Operational
5	Central Dense Overcast (CDO)	Operational
6	Embedded Center	Operational
7	Center Cold Cover (CCC)	Operational
8-14	Reserved	Operational
15	Missing value	Operational

**0 19 117*****Cloud picture type of the PT-number***

Code figure	Type	Status
1	A (Curved Band)	Operational
2	B (CDO)	Operational
3	C (Shear)	Operational
4-6	Reserved	Operational
7	Missing value	Operational

**0 19 119*****Type of the final T-number***

Code figure	Type	Status
1	DT-number	Operational
2	PT-number	Operational
3	MET-number	Operational
4-6	Reserved	Operational
7	Missing value	Operational



**0 20 003*****Present weather***

Code figure		Status	
00-49	No precipitation at the station at the time of observation	Operational	
00-19	No precipitation, fog, ice fog (except for 11 and 12), duststorm, sandstorm, drifting or blowing snow at the station* at the time of observation or, except for 09 and 17, during the preceding hour	Operational	
00-03	No meteors except photometeors	Operational	
00	Cloud development not observed or not observable	} Characteristic change of the state of sky during the past hour	Operational
01	Clouds generally dissolving or becoming less developed		Operational
02	State of sky on the whole unchanged		Operational
03	Clouds generally forming or developing		Operational
04-09	Haze, dust, sand or smoke	Operational	
04	Visibility reduced by smoke, e.g. veldt or forest fires, Industrial smoke or volcanic ashes	Operational	
05	Haze	Operational	
06	Widespread dust in suspension in the air, not raised by wind at or near the station at the time of observation	Operational	
07	Dust or sand raised by wind at or near the station at the time of observation, but no well-developed dust whirl(s) or sand whirl(s), and no duststorm or sandstorm seen; or, in the case of sea stations and coastal stations, blowing spray at the station	Operational	
08	Well developed dust whirl(s) or sand whirl(s) seen at or near the station during the preceding hour or at the same time of observation, but no duststorm or sandstorm	Operational	
09	Duststorm or sandstorm within sight at the time of observation, or at the station during the preceding hour	Operational	
10	Mist	Operational	
11	Patches	} shallow fog or ice fog at the station, whether on land or sea, not deeper than about 2 metres on land or 10 metres at sea	Operational
12	More or less continuous		Operational
13	Lightning visible, no thunder heard	Operational	
14	Precipitation within sight, not reaching the ground or the surface of the sea	Operational	
15	Precipitation within sight, reaching the ground or the surface of the sea, but distant, i.e. estimated to be more than 5 km from the station	Operational	
16	Precipitation within sight, reaching the ground or the surface of the sea, near to, but not at the station	Operational	
17	Thunderstorm, but no precipitation at the time of observation	Operational	
18	Squalls	} at or within sight of the station during the preceding hour or at the time of observation	Operational
19	Funnel cloud(s)**		Operational
20-29	Precipitation, fog, ice fog or thunderstorm at the station during the preceding hour but not at the time of observation	Operational	
20	Drizzle (not freezing) or snow grains	} not falling as shower(s)	Operational
21	Rain (not freezing)		Operational
22	Snow		Operational
23	Rain and snow or ice pellets		Operational
24	Freezing drizzle or freezing rain		Operational
25	Shower(s) of rain		Operational

\* The expression "at the station" refers to a land station or a ship.

\*\* Tornado cloud or waterspout.

(continued)

(Code table 0 20 003 - continued)

Code figure		Status	
26	Shower(s) of snow, or of rain and snow	Operational	
27	Shower(s) of hail*, or of rain and hail*	Operational	
28	Fog or ice fog	Operational	
29	Thunderstorm (with or without precipitation)	Operational	
30-39	Duststorm, sandstorm, drifting or blowing snow	Operational	
30	Slight or moderate duststorm or sandstorm	- has decreased during the preceding hour	Operational
31		- no appreciable change during the preceding hour	Operational
32		- has begun or has increased during the preceding hour	Operational
33	Severe duststorm or sandstorm	- has decreased during the preceding hour	Operational
34		- no appreciable change during the preceding hour	Operational
35		- has begun or has increased during the preceding hour	Operational
36	Slight or moderate drifting snow	generally low (below eye level)	Operational
37	Heavy drifting snow		Operational
38	Slight or moderate blowing snow	generally high (above eye level)	Operational
39	Heavy blowing snow		Operational
40-49	Fog or ice fog at the time of observation	Operational	
40	Fog or ice fog at a distance at the time of observation, but not at the station during the preceding hour, the fog or ice fog extending to a level above that of the observer		Operational
41	Fog or ice fog in patches		Operational
42	Fog or ice fog, sky visible	has become thinner during the preceding hour	Operational
43	Fog or ice fog, sky invisible		Operational
44	Fog or ice fog, sky visible	no appreciable change during the preceding hour	Operational
45	Fog or ice fog, sky invisible		Operational
46	Fog or ice fog, sky visible	has begun or has become thicker during the preceding hour	Operational
47	Fog or ice fog, sky invisible		Operational
48	Fog, depositing rime, sky visible		Operational
49	Fog, depositing rime, sky invisible		Operational
50-99	<i>Precipitation at the station at the time of observation</i>		Operational
50-59	Drizzle		Operational
50	Drizzle, not freezing, intermittent	slight at time of observation	Operational
51	Drizzle, not freezing, continuous		Operational
52	Drizzle, not freezing, intermittent	moderate at time of observation	Operational
53	Drizzle, not freezing, continuous		Operational
54	Drizzle, not freezing, intermittent	heavy (dense) at time of observation	Operational
55	Drizzle, not freezing, continuous		Operational
56	Drizzle, freezing, slight		Operational

\* Hail, small hail, snow pellets.

(continued)

(Code table 0 20 003 - continued)

Code figure			Status
57	Drizzle, freezing, moderate or heavy (dense)		Operational
58	Drizzle and rain, slight		Operational
59	Drizzle and rain, moderate or heavy		Operational
60-69	Rain		Operational
60	Rain, not freezing, intermittent	} slight at time of observation	Operational
61	Rain, not freezing, continuous		Operational
62	Rain, not freezing, intermittent	} moderate at time of observation	Operational
63	Rain, not freezing, continuous		Operational
64	Rain, not freezing, intermittent	} heavy at time of observation	Operational
65	Rain, not freezing, continuous		Operational
66	Rain, freezing, slight		Operational
67	Rain, freezing, moderate or heavy		Operational
68	Rain or drizzle and snow, light		Operational
69	Rain or drizzle and snow, moderate or heavy		Operational
70-79	Solid precipitation not in showers		Operational
70	Intermittent fall of snowflakes	} slight at time of observation	Operational
71	Continuous fall of snowflakes		Operational
72	Intermittent fall of snowflakes	} moderate at time of observation	Operational
73	Continuous fall of snowflakes		Operational
74	Intermittent fall of snowflakes	} heavy at time of observation	Operational
75	Continuous fall of snowflakes		Operational
76	Diamond dust (with or without fog)		Operational
77	Snow grains (with or without fog)		Operational
78	Isolated star like snow crystals (with or without fog)		Operational
79	Ice pellets		Operational
80-99	Showery precipitation, or precipitation with current or recent thunderstorm		Operational
80	Rain shower(s), slight		Operational
81	Rain shower(s), moderate or heavy		Operational
82	Rain shower(s), violent		Operational
83	Shower(s) of rain and snow mixed, slight		Operational
84	Shower(s) of rain and snow mixed, moderate or heavy		Operational
85	Snow shower(s), slight		Operational
86	Snow shower(s), moderate or heavy		Operational
87	Shower(s) of snow pellets or small hail, with or without rain or rain and snow mixed	- slight	Operational
88	Shower(s) of snow pellets or small hail, with or without rain or rain and snow mixed	- moderate or heavy	Operational
89	Shower(s) of hail, with or without rain or rain and snow mixed, not associated with thunder	- slight	Operational
90	Shower(s) of hail, with or without rain or rain and snow mixed, not associated with thunder	- moderate or heavy	Operational
91	Slight rain at time of observation	} Thunderstorm during the preceding hour but not at time of observation	Operational
92	Moderate or heavy rain at time of observation		Operational
93	Slight snow, or rain and snow mixed or hail* at time of observation		Operational
94	Moderate or heavy snow, or rain and snow mixed or hail* at time of observation		Operational

\* Hail, small hail, snow pellets.

(continued)

(Code table 0 20 003 - continued)

Code figure		Status
95	Thunderstorm, slight or moderate, without hail*, but with rain and/or snow at time of observation	Operational
96	Thunderstorm, slight or moderate, with hail* at time of observation	Operational
97	Thunderstorm, heavy, without hail*, but with rain and/or snow at time of observation	Operational
98	Thunderstorm combined with duststorm or sandstorm at time of observation	Operational
99	Thunderstorm, heavy, with hail* at time of observation	Operational
Present weather reported from an automatic weather station		
100	No significant weather observed	Operational
101	Clouds generally dissolving or becoming less developed during the past hour	Operational
102	State of sky on the whole unchanged during the past hour	Operational
103	Clouds generally forming or developing during the past hour	Operational
104	Haze or smoke, or dust in suspension in the air, visibility equal to, or greater than, 1 km	Operational
105	Haze or smoke, or dust in suspension in the air, visibility less than 1 km	Operational
106-109	Reserved	Operational
110	Mist	Operational
111	Diamond dust	Operational
112	Distant lightning	Operational
113-117	Reserved	Operational
118	Squalls	Operational
119	Reserved	Operational
Code figure 120-126 are used to report precipitation, fog (or ice fog) or thunderstorm at the station during the preceding hour but not at the time of observation		
120	Fog	Operational
121	PRECIPITATION	Operational
122	Drizzle (not freezing) or snow grains	Operational
123	Rain (not freezing)	Operational
124	Snow	Operational
125	Freezing drizzle or freezing rain	Operational
126	Thunderstorm (with or without precipitation)	Operational
127	BLOWING OR DRIFTING SNOW OR SAND	Operational
128	Blowing or drifting snow or sand, visibility equal to, or greater than, 1 km	Operational
129	Blowing or drifting snow or sand, visibility less than 1 km	Operational
130	FOG	Operational
131	Fog or ice fog in patches	Operational
132	Fog or ice fog, has become thinner during the past hour	Operational
133	Fog or ice fog, no appreciable change during the past hour	Operational
134	Fog or ice fog, has begun or become thicker during the past hour	Operational
135	Fog, depositing rime	Operational
136-139	Reserved	Operational

\*Hail, small hail, snow pellets.

(continued)



(Code table 0 20 003 - continued)

Code figure		Status
140	PRECIPITATION	Operational
141	Precipitation, slight or moderate	Operational
142	Precipitation, heavy	Operational
143	Liquid precipitation, slight or moderate	Operational
144	Liquid precipitation, heavy	Operational
145	Solid precipitation, slight or moderate	Operational
146	Solid precipitation, heavy	Operational
147	Freezing precipitation, slight or moderate	Operational
148	Freezing precipitation, heavy	Operational
149	Reserved	Operational
150	DRIZZLE	Operational
151	Drizzle, not freezing, slight	Operational
152	Drizzle, not freezing, moderate	Operational
153	Drizzle, not freezing, heavy	Operational
154	Drizzle, freezing, slight	Operational
155	Drizzle, freezing, moderate	Operational
156	Drizzle, freezing, heavy	Operational
157	Drizzle and rain, slight	Operational
158	Drizzle and rain, moderate or heavy	Operational
159	Reserved	Operational
160	RAIN	Operational
161	Rain, not freezing, slight	Operational
162	Rain, not freezing, moderate	Operational
163	Rain, not freezing, heavy	Operational
164	Rain, freezing, slight	Operational
165	Rain, freezing, moderate	Operational
166	Rain, freezing, heavy	Operational
167	Rain (or drizzle) and snow, slight	Operational
168	Rain (or drizzle) and snow, moderate or heavy	Operational
169	Reserved	Operational
170	SNOW	Operational
171	Snow, slight	Operational
172	Snow, moderate	Operational
173	Snow, heavy	Operational
174	Ice pellets, slight	Operational
175	Ice pellets, moderate	Operational
176	Ice pellets, heavy	Operational
177	Snow grains	Operational
178	Ice crystals	Operational
179	Reserved	Operational
180	SHOWER(S) OR INTERMITTENT PRECIPITATION	Operational
181	Rain shower(s) or intermittent rain, slight	Operational
182	Rain shower(s) or intermittent rain, moderate	Operational
183	Rain shower(s) or intermittent rain, heavy	Operational

(continued)

(Code table 0 20 003 - continued)

Code figure		Status
184	Rain shower(s) or intermittent rain, violent	Operational
185	Snow shower(s) or intermittent snow, slight	Operational
186	Snow shower(s) or intermittent snow, moderate	Operational
187	Snow shower(s) or intermittent snow, heavy	Operational
188	Reserved	Operational
189	Hail	Operational
190	THUNDERSTORM	Operational
191	Thunderstorm, slight or moderate, with no precipitation	Operational
192	Thunderstorm, slight or moderate, with rain showers and/or snow showers	Operational
193	Thunderstorm, slight or moderate, with hail	Operational
194	Thunderstorm, heavy, with no precipitation	Operational
195	Thunderstorm, heavy, with rain showers and/or snow showers	Operational
196	Thunderstorm, heavy, with hail	Operational
197-198	Reserved	Operational
199	Tornado	Operational
<hr/>		
Present weather (in addition to present weather report from either a manned or an automatic station)		
<hr/>		
Decile 200-209		
200-203	Not used	Operational
204	Volcanic ash suspended in the air aloft	Operational
205	Not used	Operational
206	Thick dust haze, visibility less than 1 km	Operational
207	Blowing spray at the station	Operational
208	Drifting dust (sand)	Operational
209	Wall of dust or sand in distance (like haboob)	Operational
Decile 210-219		
210	Snow haze	Operational
211	Whiteout	Operational
212	Not used	Operational
213	Lightning, cloud to surface	Operational
214-216	Not used	Operational
217	Dry thunderstorm	Operational
218	Not used	Operational
219	Tornado cloud (destructive) at or within sight of the station during preceding hour or at the time of observation	Operational
Decile 220-229		
220	Deposition of volcanic ash	Operational
221	Deposition of dust or sand	Operational
222	Deposition of dew	Operational
223	Deposition of wet snow	Operational
224	Deposition of soft rime	Operational
225	Deposition of hard rime	Operational

(continued)

(Code table 0 20 003 - continued)

Code figure		Status
226	Deposition of hoar frost	Operational
227	Deposition of glaze	Operational
228	Deposition of ice crust (ice slick)	Operational
229	Not used	Operational
Decile 230-239		
230	Duststorm or sandstorm with temperature below 0 °C	Operational
231-238	Not used	Operational
239	Blowing snow, impossible to determine whether snow is falling or not	Operational
Decile 240-249		
240	Not used	Operational
241	Fog on sea	Operational
242	Fog in valleys	Operational
243	Arctic or Antarctic sea smoke	Operational
244	Steam fog (sea, lake or river)	Operational
245	Steam log (land)	Operational
246	Fog over ice or snow cover	Operational
247	Dense fog, visibility 60-90 m	Operational
248	Dense fog, visibility 30-60 m	Operational
249	Dense fog, visibility less than 30 m	Operational
Decile 250-259		
250	Drizzle, rate of fall - less than 0.10 mm h <sup>-1</sup>	Operational
251	Drizzle, rate of fall - 0.10-0.19 mm h <sup>-1</sup>	Operational
252	Drizzle, rate of fall - 0.20-0.39 mm h <sup>-1</sup>	Operational
253	Drizzle, rate of fall - 0.40-0.79 mm h <sup>-1</sup>	Operational
254	Drizzle, rate of fall - 0.80-1.59 mm h <sup>-1</sup>	Operational
255	Drizzle, rate of fall - 1.60-3.19 mm h <sup>-1</sup>	Operational
256	Drizzle, rate of fall - 3.20-6.39 mm h <sup>-1</sup>	Operational
257	Drizzle, rate of fall - 6.4 mm h <sup>-1</sup> or more	Operational
258	Not used	Operational
259	Drizzle and snow	Operational
Decile 260-269		
260	Rain, rate of fall - less than 1.0 mm h <sup>-1</sup>	Operational
261	Rain, rate of fall - 1.0-1.9 mm h <sup>-1</sup>	Operational
262	Rain, rate of fall - 2.0- 3.9 mm h <sup>-1</sup>	Operational
263	Rain, rate of fall - 4.0- 7.9 mm h <sup>-1</sup>	Operational
264	Rain, rate of fall - 8.0-15.9 mm h <sup>-1</sup>	Operational
265	Rain, rate of fall - 16.0-31.9 mm h <sup>-1</sup>	Operational
266	Rain, rate of fall - 32.0-63.9 mm h <sup>-1</sup>	Operational
267	Rain, rate of fall - 64.0 mm h <sup>-1</sup> or more	Operational
268-269	Not used	Operational

(continued)

(Code table 0 20 003 - continued)

Code figure		Status
Decile 270-279		
270	Snow, rate of fall - less than 1.0 cm h <sup>-1</sup>	Operational
271	Snow, rate of fall - 1.0-1.9 cm h <sup>-1</sup>	Operational
272	Snow, rate of fall - 2.0-3.9 cm h <sup>-1</sup>	Operational
273	Snow, rate of fall - 4.0-7.9 cm h <sup>-1</sup>	Operational
274	Snow, rate of fall - 8.0-15.9 cm h <sup>-1</sup>	Operational
275	Snow, rate of fall - 16.0-31.9 cm h <sup>-1</sup>	Operational
276	Snow, rate of fall - 32.0-63.9 cm h <sup>-1</sup>	Operational
277	Snow, rate of fall - 64.0 cm h <sup>-1</sup> or more	Operational
278	Snow or ice crystal precipitation from a clear sky	Operational
279	Wet snow, freezing on contact	Operational
Decile 280-289		
280	Precipitation of rain	Operational
281	Precipitation of rain, freezing	Operational
282	Precipitation of rain and snow mixed	Operational
283	Precipitation of snow	Operational
284	Precipitation of snow pellets or small hail	Operational
285	Precipitation of snow pellets or small hail, with rain	Operational
286	Precipitation of snow pellets or small hail, with rain and snow mixed	Operational
287	Precipitation of snow pellets or small hail, with snow	Operational
288	Precipitation of hail	Operational
289	Precipitation of hail, with rain	Operational
290	Precipitation of hail, with rain and snow mixed	Operational
291	Precipitation of hail, with snow	Operational
292	Shower(s) or thunderstorm over sea	Operational
293	Shower(s) or thunderstorm over mountains	Operational
294-299	Not used	Operational
300-507	Reserved	Operational
508	No significant phenomenon to report, present and past weather omitted	Operational
509	No observation, data not available, present and past weather omitted	Operational
510	Present and past weather missing, but expected	Operational
511	Missing value	Operational

## Notes:

- (1) The middle portion of this code table (code figures 100 199) includes terms on several levels to cover simple and increasingly complex automatic stations.
- (2) Generic terms for weather (e.g. fog, drizzle) are intended for use at automatic stations capable of determining types of weather but no other information. Generic terms are included in the code table using all capital letters.
- (3) Code figures for generic precipitation (code figures 140-148) are arranged in order of increasing complexity. For example, a very simple station that can sense only the presence or absence of precipitation would use code figure 140 (precipitation). At the next level, an automatic station capable of sensing amount but not type would use code figure 141 or 142. An automatic station capable of sensing gross type (liquid, solid, freezing) and amount would use code figures 143-148. An automatic station capable of reporting actual types of precipitation (e.g. drizzle rain), but not the amount, would use the appropriate whole decile number (e.g. 150 for generic drizzle, 160 for generic rain).

**0 20 004/0 20 005*****Past weather (1) and (2)***

Code figure		Status
0	Cloud covering 1/2 or less of the sky throughout the appropriate period	Operational
1	Cloud covering more than 1/2 of the sky during part of the appropriate period and covering 1/2 or less during part of the period	Operational
2	Cloud covering more than 1/2 of the sky throughout the appropriate period	Operational
3	Sandstorm, duststorm or blowing snow	Operational
4	Fog or ice fog or thick haze	Operational
5	Drizzle	Operational
6	Rain	Operational
7	Snow, or rain and snow mixed	Operational
8	Shower(s)	Operational
9	Thunderstorm(s) with or without precipitation	Operational
10	No significant weather observed	Operational
11	VISIBILITY REDUCED (see Note)	Operational
12	Blowing phenomena, visibility reduced	Operational
13	FOG (see Note)	Operational
14	PRECIPITATION (see Note)	Operational
15	Drizzle	Operational
16	Rain	Operational
17	Snow or ice pellets	Operational
18	Showers or intermittent precipitation	Operational
19	Thunderstorm	Operational
20-30	Reserved	Operational
31	Missing value	Operational

Note: The weather descriptions in code figures 10 to 19 are progressively complex, to accommodate the different levels of weather discrimination capability of various automatic stations. Stations having only basic sensing capability may use the lower code figures and basic generic descriptions (shown in capital letters). Stations with progressively higher discrimination capability shall use the more detailed descriptions (higher codes).

**0 20 006*****Flight rules***

Code figure		Status
0	Low instrument flight rules - Ceiling < 500 feet and/or visibility < 1 mile	Operational
1	Instrument flight rules - Ceiling < 1000 feet and/or visibility < 3 miles	Operational
2	Marginal visual flight rules - 1000 feet =< Ceiling < 3000 feet and/or 3 miles =< visibility < 5 miles	Operational
3	Visual flight rules - Ceiling >= 3000 feet and/or visibility >= 5 miles	Operational
4-6	Reserved	Operational
7	Missing value	Operational

**0 20 008*****Cloud distribution for aviation***

Code figure			Status
0	Sky clear		Operational
1	Few		Operational
2	Scattered		Operational
3	Broken		Operational
4	Overcast		Operational
5	Reserved		Operational
6	Scattered/broken	(Many forecasts use scattered/broken or broken/overcast followed by cloud type(s))	Operational
7	Broken/overcast	(Many forecasts use scattered/broken or broken/overcast followed by cloud type(s))	Operational
8	Isolated	(Used on aviation charts to describe the cloud type Cb)	Operational
9	Isolated embedded	(Used on aviation charts to describe the cloud type Cb)	Operational
10	Occasional	(Used on aviation charts to describe the cloud type Cb)	Operational
11	Occasional embedded	(Used on aviation charts to describe the cloud type Cb)	Operational
12	Frequent	(Used on aviation charts to describe the cloud type Cb)	Operational
13	Dense	(Used on aviation charts to describe cloud that would cause sudden changes in visibility (less than 1 000 m))	Operational
14	Layers		Operational
15	Obscured (OBSC)		Operational
16	Embedded (EMBD)		Operational
17	Frequent embedded		Operational
18-30	Reserved		Operational
31	Missing value		Operational

**0 20 009*****General weather indicator (TAF/METAR)***

Code figure		Status
0	Reserved	Operational
1	NSC Nil Significant Cloud	Operational
2	CAVOK	Operational
3	SKC Sky Clear	Operational
4	NSW Nil Significant Weather	Operational
5-14	Reserved	Operational
15	Missing value	Operational

**0 20 011*****Cloud amount***

Code figure			Status
0	0	0	Operational
1	1 okta or less, but not zero	1/10 or less, but not zero	Operational
2	2 oktas	2/10 - 3/10	Operational
3	3 oktas	4/10	Operational
4	4 oktas	5/10	Operational

*(continued)*

(Code table 0 20 011 - continued)

Code figure			Status
5	5 oktas	6/10	Operational
6	6 oktas	7/10 - 8/10	Operational
7	7 oktas or more, but not 8 oktas	9/10 or more, but not 10/10	Operational
8	8 oktas	10/10	Operational
9	Sky obscured by fog and/or other meteorological phenomena		Operational
10	Sky partially obscured by fog and/or other meteorological phenomena		Operational
11	Scattered		Operational
12	Broken		Operational
13	Few		Operational
14	Reserved		Operational
15	Cloud cover is indiscernible for reasons other than fog or other meteorological phenomena, or observation is not made		Operational

Notes:

- (1) For use of code figure 15, see Regulation 12.1.4.
- (2) "Clear" and "overcast" are coded by 0 and 8, respectively.

**0 20 012****Cloud type**

Code figure		Status
0	Cirrus (Ci)	Operational
1	Cirrocumulus (Cc)	Operational
2	Cirrostratus (Cs)	Operational
3	Alto cumulus (Ac)	Operational
4	Altostratus (As)	Operational
5	Nimbostratus (Ns)	Operational
6	Stratocumulus (Sc)	Operational
7	Stratus (St)	Operational
8	Cumulus (Cu)	Operational
9	Cumulonimbus (Cb)	Operational
10	No C <sub>H</sub> clouds	Operational
11	Cirrus fibratus, sometimes uncinus, not progressively invading the sky	Operational
12	Cirrus spissatus, in patches or entangled sheaves, which usually do not increase and sometimes seem to be the remains of the upper part of a Cumulonimbus; or Cirrus castellanus or floccus	Operational
13	Cirrus spissatus cumulonimbogenitus	Operational
14	Cirrus uncinus or fibratus, or both, progressively invading the sky; they generally thicken as a whole	Operational
15	Cirrus (often in bands) and Cirrostratus, or Cirrostratus alone, progressively invading the sky; they generally thicken as a whole, but the continuous veil does not reach 45 degrees above the horizon	Operational
16	Cirrus (often in bands) and Cirrostratus, or Cirrostratus alone, progressively Invading the sky; they generally thicken as a whole; the continuous veil extends more than 45 degrees above the horizon, without the sky being totally covered	Operational
17	Cirrostratus covering the whole sky	Operational

(continued)

(Code table 0 20 012 - continued)

Code figure		Status
18	Cirrostratus not progressively invading the sky and not entirely covering it	Operational
19	Cirrocumulus alone, or Cirrocumulus predominant among the C <sub>H</sub> clouds	Operational
20	No C <sub>M</sub> clouds	Operational
21	Altostratus translucidus	Operational
22	Altostratus opacus or Nimbostratus	Operational
23	Alto cumulus translucidus at a single level	Operational
24	Patches (often lenticular) of Alto cumulus translucidus, continually changing and occurring at one or more levels	Operational
25	Alto cumulus translucidus in bands, or one or more layers of Alto cumulus translucidus or opacus, progressively invading the sky; these Alto cumulus clouds generally thicken as a whole	Operational
26	Alto cumulus cumulogenitus (or cumulonimbogenitus)	Operational
27	Alto cumulus translucidus or opacus In two or more layers, or Alto cumulus opacus In a single layer, not progressively invading the sky, or Alto cumulus with Altostratus or Nimbostratus	Operational
28	Alto cumulus castellanus or floccus	Operational
29	Alto cumulus of a chaotic sky, generally at several levels	Operational
30	No C <sub>L</sub> clouds	Operational
31	Cumulus humilis or Cumulus fractus other than of bad weather,* or both	Operational
32	Cumulus mediocris or congestus, Towering cumulus (TCU), with or without Cumulus of species fractus or humilis or Stratocumulus, all having their bases at the same level	Operational
33	Cumulonimbus calvus, with or without Cumulus, Stratocumulus or Stratus	Operational
34	Stratocumulus cumulogenitus	Operational
35	Stratocumulus other than Stratocumulus cumulogenitus	Operational
36	Stratus nebulosus or Stratus fractus other than of bad weather,* or both	Operational
37	Stratus fractus or Cumulus fractus of bad weather,* or both (pannus), usually below Altostratus or Nimbostratus	Operational
38	Cumulus and Stratocumulus other than Stratocumulus cumulogenitus, with bases at different levels	Operational
39	Cumulonimbus capillatus (often with an anvil), with or without Cumulonimbus calvus, Cumulus, Stratocumulus, Stratus or pannus	Operational
40	C <sub>H</sub>	Operational
41	C <sub>M</sub>	Operational
42	C <sub>L</sub>	Operational
43-58	Reserved	Operational
59	Cloud not visible owing to darkness, fog, duststorm, sandstorm, or other analogous phenomena	Operational
60	C <sub>H</sub> clouds invisible owing to darkness, fog, blowing dust or sand, or other similar phenomena, or because of a continuous layer of lower clouds	Operational
61	C <sub>M</sub> clouds invisible owing to darkness, fog, blowing dust or sand, or other similar phenomena, or because of continuous layer of lower clouds	Operational
62	C <sub>L</sub> clouds invisible owing to darkness, fog, blowing dust or sand, or other similar phenomena	Operational
63	Missing value	Operational

\* "Bad weather" denotes the conditions which generally exist during precipitation and a short time before and after.



**0 20 017*****Cloud top description***

Code figure		Status	
0	Isolated cloud fragments of clouds	Operational	
1	Continuous cloud	Operational	
2	Broken cloud - small breaks	} flat tops	Operational
3	Broken cloud - large breaks		Operational
4	Continuous cloud	} undulating tops	Operational
5	Broken cloud - small breaks		Operational
6	Broken cloud - large breaks		Operational
7	Continuous or almost continuous waves with towering clouds above the top of the layer	Operational	
8	Groups of waves with towering clouds above the top of the layer	Operational	
9	Two or more layers at different levels	Operational	
10-14	Reserved	Operational	
15	Missing value	Operational	

**0 20 018*****Tendency of runway visual range***

Code figure		Status
0	Increasing (U)	Operational
1	Decreasing (D)	Operational
2	No distinct change (N)	Operational
3	Missing value	Operational

**0 20 021*****Type of precipitation***

Bit No.		Status
1	Precipitation-unknown type	Operational
2	Liquid precipitation not freezing	Operational
3	Liquid freezing precipitation	Operational
4	Drizzle	Operational
5	Rain	Operational
6	Solid precipitation	Operational
7	Snow	Operational
8	Snow grains	Operational
9	Snow pellets	Operational
10	Ice pellets	Operational
11	Ice crystals	Operational
12	Diamond dust	Operational
13	Small hail	Operational
14	Hail	Operational

*(continued)*

(Code table 0 20 021 - continued)

Bit No.		Status
15	Glaze	Operational
16	Rime	Operational
17	Soft rime	Operational
18	Hard rime	Operational
19	Clear ice	Operational
20	Wet snow	Operational
21	Hoar frost	Operational
22	Dew	Operational
23	White dew	Operational
24-29	Reserved	Operational
All 30	Missing value	Operational

Note: Mixed precipitation is indicated by setting to one the bits of all the observed single types of precipitation.

**0 20 022*****Character of precipitation***

Code figure		Status
0	No precipitation	Operational
1	Continuous	Operational
2	Intermittent	Operational
3	Shower	Operational
4	Not reaching ground	Operational
5	Deposition	Operational
6-14	Reserved	Operational
15	Missing value	Operational

**0 20 023*****Other weather phenomena***

Bit No.		Status
1	Dust/sand whirl	Operational
2	Squalls	Operational
3	Sandstorm	Operational
4	Duststorm	Operational
5	Lightning - cloud to surface	Operational
6	Lightning - cloud to cloud	Operational
7	Lightning - distant	Operational
8	Thunderstorm	Operational
9	Funnel cloud not touching surface	Operational
10	Funnel cloud touching surface	Operational
11	Spray	Operational
12	Water-spout	Operational
13	Wind shear	Operational
14	Dust devils	Operational
15-17	Reserved	Operational
All 18	Missing value	Operational

**0 20 024*****Intensity of phenomena***

Code figure		Status
0	No phenomena	Operational
1	Light	Operational
2	Moderate	Operational
3	Heavy	Operational
4	Violent	Operational
5	Severe	Operational
6	Very severe	Operational
7	Missing value	Operational

**0 20 025*****Obscuration***

Bit No.		Status
1	Fog	Operational
2	Ice fog	Operational
3	Steam fog	Operational
4-6	Reserved	Operational
7	Mist	Operational
8	Haze	Operational
9	Smoke	Operational
10	Volcanic ash	Operational
11	Dust	Operational
12	Sand	Operational
13	Snow	Operational
14	Cloud	Operational
15	Precipitation	Operational
16	Impossible to determine whether snow is falling or not	Operational
17-20	Reserved	Operational
All 21	Missing value	Operational

**0 20 026*****Character of obscuration***

Code figure		Status
0	No change	Operational
1	Shallow	Operational
2	Patches	Operational
3	Partial	Operational
4	Freezing	Operational
5	Low drifting	Operational
6	Blowing	Operational
7	Increasing	Operational
8	Decreasing	Operational
9	In suspension in the air	Operational
10	Wall	Operational
11	Dense	Operational
12	Whiteout	Operational
13	Drifting and blowing	Operational
14	Reserved	Operational
15	Missing value	Operational

**0 20 027*****Phenomena\* occurrence***

Bit No.		Status
1	At time of observation	Operational
2	In past hour	Operational
3	In time period for past weather $W_1W_2$	Operational
4	In time period specified	Operational
5	Reserved	Operational
6	Below station level	Operational
7	At the station (see Note 1)	Operational
8	In the vicinity (see Note 2)	Operational
7	At the station	Operational
8	In the vicinity	Operational
All 9	Missing value	Operational

\* Phenomenon in this flag table means any phenomenon, including precipitation and obscuration.

**Notes:**

- (1) In conjunction with the observation of water spouts or funnel clouds i.e. within 3 km of station.
- (2) In conjunction with the observation of water spouts or funnel clouds i.e. more than 3 km from station.

**0 20 028*****Expected change in intensity***

Code figure		Status
0	No change (NC)	Operational
1	Forecast to weaken (WKN)	Operational
2	Forecast to intensify (INTSF)	Operational
3-6	Reserved	Operational
7	Missing value	Operational

**0 20 029*****Rain flag***

Code figure		Status
0	No rain	Operational
1	Rain	Operational
2	Reserved	Operational
3	Missing value	Operational

**0 20 032*****Rate of ice accretion***

Code figure		Status
0	Ice not building up	Operational
1	Ice building up slowly	Operational
2	Ice building up rapidly	Operational
3	Ice melting or breaking up slowly	Operational
4	Ice melting or breaking up rapidly	Operational
5-6	Reserved	Operational
7	Missing value	Operational

**0 20 033*****Cause of ice accretion***

Bit No.		Status
1	Icing from ocean spray	Operational
2	Icing from fog	Operational
3	Icing from rain	Operational
All 4	Missing value	Operational

**0 20 034*****Sea ice concentration***

Code figure		Status
0	No sea ice in sight	Operational
1	Ship in open lead more than 1.0 nautical mile wide, or ship in fast ice with boundary beyond limit of visibility	Operational
2	Sea ice present in concentrations less than 3/10 (3/8), open water or very open pack ice	Operational
3	4/10 to 6/10 (3/8 to less than 6/8), open pack ice	Operational
4	7/10 to 8/10 (6/8 to less than 7/8), close pack ice	Operational
5	9/10 or more, but not 10/10 (7/8 to less than 8/8), very close pack ice	Operational
6	Strips and patches of pack ice with open water between	Operational
7	Strips and patches of close or very close pack ice with areas of lesser concentration between	Operational
8	Fast ice with open water, very open or open pack ice to seaward of the ice boundary	Operational
9	Fast ice with close or very close pack ice to seaward of the boundary	Operational
10-13	Reserved	Operational
14	Unable to report, because of darkness, lack of visibility, or because ship is more than 0.5 nautical mile away from ice edge	Operational
15-30	Reserved	Operational
31	Missing value	Operational

**0 20 035*****Amount and type of ice***

Code figure		Status
0	No ice of land origin	Operational
1	1-5 icebergs, no growlers or bergy bits	Operational
2	6-10 icebergs, no growlers or bergy bits	Operational
3	11-20 icebergs, no growlers or bergy bits	Operational
4	Up to and including 10 growlers and bergy bits - no icebergs	Operational
5	More than 10 growlers and bergy bits - no icebergs	Operational
6	1-5 icebergs, with growlers and bergy bits	Operational
7	6-10 icebergs, with growlers and bergy bits	Operational
8	11-20 icebergs, with growlers and bergy bits	Operational
9	More than 20 icebergs, with growlers and bergy bits - a major hazard to navigation	Operational
10-13	Reserved	Operational
14	Unable to report, because of darkness, lack of visibility or because only sea ice is visible	Operational
15	Missing value	Operational

**0 20 036*****Ice situation***

Code figure		Status
0	Ship in open water with floating ice in sight	Operational
1	Ship in easily penetrable ice; conditions improving	Operational
2	Ship in easily penetrable ice; conditions not changing	Operational
3	Ship in easily penetrable ice; conditions worsening	Operational
4	Ship in ice difficult to penetrate; conditions improving	Operational
5	Ship in ice difficult to penetrate; conditions not changing	Operational
6	Ship in ice difficult to penetrate and conditions worsening. Ice forming and floes freezing together	Operational
7	Ship in ice difficult to penetrate and conditions worsening. Ice under slight pressure	Operational
8	Ship in ice difficult to penetrate and conditions worsening. Ice under moderate or severe pressure	Operational
9	Ship in ice difficult to penetrate and conditions worsening. Ship beset	Operational
10-29	Reserved	Operational
30	Unable to report, because of darkness or lack of visibility	Operational
31	Missing value	Operational

**0 20 037*****Ice development***

Code figure		Status
0	New ice only (frazil ice, grease ice, slush, shuga)	Operational
1	Nilas or ice rind, less than 10 cm thick	Operational
2	Young ice (grey ice, grey-white ice), 10-30 cm thick	Operational
3	Predominantly new and/or young ice with some first-year ice	Operational
4	Predominantly thin first year-ice with some new and/or young ice	Operational
5	All thin first-year ice (30-70 cm thick)	Operational
6	Predominantly medium first-year ice (70-120 cm thick) and thick first-year ice (>120 cm thick) with some thinner (younger) first-year ice	Operational
7	All medium and thick first-year ice	Operational
8	Predominantly medium and thick first-year ice with some old ice (usually more than 2 metres thick)	Operational
9	Predominantly old ice	Operational
10-29	Reserved	Operational
30	Unable to report, because of darkness, lack of visibility or because only ice of land origin is visible or because ship is more than 0.5 nautical mile away from ice edge	Operational
31	Missing value	Operational

**0 20 040*****Evolution of drift snow***

Code figure		Status
0	Drift snow ended before the hour of observation	Operational
1	Intensity diminishing	Operational
2	No change	Operational
3	Intensity increasing	Operational
4	Continues, apart from interruption lasting less than 30 minutes	Operational
5	General drift snow has become drift snow near the ground	Operational
6	Drift snow near the ground has become general drift snow	Operational
7	Drift snow has started again after an interruption of more than 30 minutes	Operational
8 -14	Reserved	Operational
15	Missing value	Operational

**0 20 041*****Airframe icing***

Code figure		Status
0	No icing	Operational
1	Light icing	Operational
2	Light icing in cloud	Operational
3	Light icing in precipitation	Operational
4	Moderate icing	Operational
5	Moderate icing in cloud	Operational
6	Moderate icing in precipitation	Operational
7	Severe icing	Operational
8	Severe icing in cloud	Operational
9	Severe icing in precipitation	Operational
10	Trace of icing	Operational
11	Trace of icing in cloud	Operational
12	Trace of icing in precipitation	Operational
13-14	Reserved	Operational
15	Missing value	Operational

**0 20 042*****Airframe icing present***

Code figure		Status
0	No icing	Operational
1	Icing present	Operational
2	Reserved	Operational
3	Missing value	Operational



**0 20 045*****Supercooled large droplet (SLD) conditions***

Code figure		Status
0	No SLD conditions present	Operational
1	SLD conditions present	Operational
2	Reserved	Operational
3	Missing value	Operational

**0 20 048*****Evolution of feature***

Code figure		Status
0	Stability	Operational
1	Diminution	Operational
2	Intensification	Operational
3	Unknown	Operational
4-14	Reserved	Operational
15	Missing value	Operational

**0 20 050*****Cloud index***

Code figure		Status
0	Reserved	Operational
1	1st low cloud	Operational
2	2nd low cloud	Operational
3	3rd low cloud	Operational
4	1st medium cloud	Operational
5	2nd medium cloud	Operational
6	3rd medium cloud	Operational
7	1st high cloud	Operational
8	2nd high cloud	Operational
9-254	Reserved	Operational
255	Missing value	Operational

**0 20 055*****State of sky in the tropics***

Code figure		Status
0	Cumulus, if any, are quite small; generally less than 2/8 coverage, except on windward slopes of elevated terrain; average width of cloud is at least as great as its vertical thickness	Operational
1	Cumulus of intermediate size with cloud cover less than 5/8; average cloud width is more than its vertical thickness; towers are vertical with little or no evidence of precipitation, except along slopes of elevated terrain; a general absence of middle and upper clouds	Operational
2	Swelling Cumulus with rapidly growing tall turrets which decrease in size with height and whose tops tend to separate from the longer cloud body and evaporate within minutes of the separation	Operational
3	Swelling Cumulus with towers having a pronounced tilt in a downwind direction; vertical cloud thickness is more than one and a half times that of its average width	Operational
4	Swelling Cumulus with towers having a pronounced tilt in an upwind direction; vertical cloud thickness is more than one and a half times that of its average width	Operational
5	Tall Cumulus congestus with vertical thickness more than twice the average width; not organized in clusters or lines; one or more layers of clouds extend out from the cloud towers, although no continuous cloud layers exist (see Note)	Operational
6	Isolated Cumulonimbus or large clusters of Cumulus turrets separated by wide areas in which clouds are absent; cloud bases are generally dark with showers observed in most cells; some scattered middle and upper clouds may be present; individual Cumulus cells are one to two times higher than they are wide	Operational
7	Numerous Cumulus extending through the middle troposphere with broken to overcast sheets of middle clouds and/or Cirrostratus; Cumulus towers do not decrease generally in size with height; ragged dark cloud bases with some showers present	Operational
8	Continuous dense middle clouds and/or Cirrostratus cloud sheets with some large isolated Cumulonimbus or Cumulus congestus clouds penetrating these sheets; light rain occasionally observed from the Altostratus; Cumulonimbus bases ragged and dark with showers visible (see Note)	Operational
9	Continuous sheets of middle clouds and/or Cirrostratus with Cumulonimbus and Cumulus congestus in organized lines or cloud bands; rain is generally observed from Altostratus sheets and heavy showers from Cumulonimbus; wind has a squally character	Operational
10	State of sky unknown or not described by any of the above	Operational
11-14	Reserved	Operational
15	Missing value	Operational

Note: In the event of obscuration of clouds due to heavy rain, the observer should use code 5 or 8. Code 5 should be used if the rain is localized or is brief in duration; Code 8 should be used if the rain is widespread or lasts for longer periods of time.

**0 20 056*****Cloud phase***

Code figure		Status
0	Unknown	Operational
1	Water	Operational
2	Ice	Operational
3	Mixed	Operational
4	Clear	Operational
5-6	Reserved	Operational
7	Missing value	Operational

**0 20 062*****State of the ground (with or without snow)***

Code figure		Status
0	Surface of ground dry (without cracks and no appreciable amount of dust or loose sand)	Operational
1	Surface of ground moist	Operational
2	Surface of ground wet (standing water in small or large pools on surface)	Operational
3	Flooded	without snow Operational
4	Surface of ground frozen	or measurable Operational
5	Glaze on ground	ice cover Operational
6	Loose dry dust or sand not covering ground completely	Operational
7	Thin cover of loose dry dust or sand covering ground completely	Operational
8	Moderate or thick cover of loose dry dust or sand covering ground completely	Operational
9	Extremely dry with cracks	Operational
10	Ground predominantly covered by ice	Operational
11	Compact or wet snow (with or without ice) covering less than one half of the ground	Operational
12	Compact or wet snow (with or without ice) covering at least one half of the ground but ground not completely covered	Operational
13	Even layer of compact or wet snow covering ground completely	with snow or Operational
14	Uneven layer of compact or wet snow covering ground completely	measurable Operational
15	Loose dry snow covering less than one half of the ground	ice cover Operational
16	Loose dry snow covering at least one half of the ground but ground not completely covered	Operational
17	Even layer of loose dry snow covering ground completely	Operational
18	Uneven layer of loose dry snow covering ground completely	Operational
19	Snow covering ground completely; deep drifts	Operational
20-30	Reserved	Operational
31	Missing value	Operational

**Notes:**

- (1) The definitions in code numbers 0 to 2 and 4 apply to representative bare ground and numbers 3, 5 to 9 and 10 to 19 to an open representative area.
- (2) In all instances the highest code figures applicable are to be reported.
- (3) In the above code table, whenever reference is made to ice, it also includes solid precipitation other than snow.

**0 20 063*****Special phenomena***

Code figure		Status
0	Reserved	Operational
1	Highest wind speed gusts greater than 11.5 m/s	Operational
2	Highest mean wind speed greater than 17.5 m/s	Operational
3-6	Reserved	Operational
7	Visibility greater than 100000 m	Operational

*(continued)*

(Code table 0 20 063 - continued)

Code figure		Status
8-9	Reserved	Operational
	<i>10-19 Mirage</i>	Operational
10	Mirage - No specification	Operational
11	Mirage - Image of distant object raised (looming)	Operational
12	Mirage - Image of distant object raised clear above the horizon	Operational
13	Mirage - Inverted image of distant object	Operational
14	Mirage - Complex, multiple images of distant object (images not inverted)	Operational
15	Mirage - Complex, multiple images of distant object (some images being inverted)	Operational
16	Mirage - Sun or moon seen appreciably distorted	Operational
17	Mirage - Sun visible, although astronomically below the horizon	Operational
18	Mirage - Moon visible, although astronomically below the horizon	Operational
19	Reserved	Operational
	<i>20-22 Day darkness, worst in direction specified</i>	Operational
20	Day darkness, bad, worst in direction specified	Operational
21	Day darkness, very bad, worst in direction specified	Operational
22	Day darkness, black, worst in direction specified	Operational
23-30	Reserved	Operational
	<i>31-39 Coloration and/or convergence of clouds associated with a tropical disturbance</i>	Operational
31	Slight coloration of clouds at sunrise associated with a tropical disturbance	Operational
32	Deep-red coloration of clouds at sunrise associated with a tropical disturbance	Operational
33	Slight coloration of clouds at sunset associated with a tropical disturbance	Operational
34	Deep-red coloration of clouds at sunset associated with a tropical disturbance	Operational
35	Convergence of C <sub>H</sub> clouds at a point below 45° forming or increasing and associated with a tropical disturbance	Operational
36	Convergence of C <sub>H</sub> clouds at a point above 45° associated with a tropical disturbance	Operational
37	Convergence of C <sub>H</sub> clouds at a point below 45° dissolving or diminishing and associated with a tropical disturbance	Operational
38	Convergence of C <sub>H</sub> clouds at a point above 45° associated with a tropical disturbance	Operational
39	Reserved	Operational
	<i>40-43 Hoar frost or coloured precipitation</i>	Operational
40	Hoar frost on horizontal surfaces	Operational
41	Hoar frost on horizontal and vertical surfaces	Operational
42	Precipitation containing sand or desert dust	Operational
43	Precipitation containing volcanic ash	Operational
44-49	Reserved	Operational
	<i>50-59 Nature and/or type of squall</i>	Operational
50	Calm or light wind followed by a squall	Operational

(continued)

(Code table 0 20 063 - continued)

Code figure		Status
51	Calm or light wind followed by a succession of squalls	Operational
52	Gusty weather followed by a squall	Operational
53	Gusty weather followed by a succession of squalls	Operational
54	Squall followed by gusty weather	Operational
55	General gusty weather with squall at intervals	Operational
56	Squall approaching station	Operational
57	Line squall	Operational
58	Squall with drifting or blowing dust or sand	Operational
59	Line squall with drifting or blowing dust or sand	Operational
<i>60-69 Variation of temperature during the period specified, associated with glaze or rime</i>		Operational
60	Temperature steady	Operational
61	Temperature falling, without going below 0°C	Operational
62	Temperature rising, without going above 0°C	Operational
63	Temperature falling to a value below 0°C	Operational
64	Temperature rising to a value above 0°C	Operational
65	Irregular variation, oscillations of temperature passing through 0°C	Operational
66	Irregular variation, oscillations of temperature not passing through 0°C	Operational
67	Variation of temperature not observed	Operational
68	Not allocated	Operational
69	Variation of temperature unknown owing to lack of thermograph	Operational
<i>70-79 Variation of visibility during the period specified</i>		Operational
70	Visibility has not varied (sun* visible) towards direction specified	Operational
71	Visibility has not varied (sun* invisible) towards direction specified	Operational
72	Visibility has increased (sun* visible) towards direction specified	Operational
73	Visibility has increased (sun* invisible) towards direction specified	Operational
74	Visibility has decreased (sun* visible) towards direction specified	Operational
75	Visibility has decreased (sun* invisible) towards direction specified	Operational
76	Fog coming from direction specified	Operational
77	Fog has lifted, without dissipating	Operational
78	Fog has dispersed without regard to direction	Operational
79	Moving patches or banks of fog	Operational
<i>80-89 Optical phenomena</i>		Operational
80	Brocken spectre	Operational
81	Rainbow	Operational
82	Solar or lunar halo	Operational
83	Parhelia or anthelia	Operational
84	Sun pillar	Operational
85	Corona	Operational
86	Twilight glow	Operational
87	Twilight glow on the mountains (Alpenglügen)	Operational

(continued)

(Code table 0 20 063 - continued)

Code figure		Status
88	Mirage	Operational
89	Zodiacal light	Operational
90	St. Elmo's fire	Operational
91-1022	Reserved	Operational
1023	Missing value	Operational

\* Or sky (if sun is low), or moon or stars at night.

**0 20 071*****Accuracy of fix and rate of atmospherics***

Code figure	Accuracy of fix (estimated error)	Repetition rate	Status
0	No assessment	No assessment	Operational
1	Less than 50 km	Less than 1 per second	Operational
2	Between 50 and 200 km	Less than 1 per second	Operational
3	More than 200 km	Less than 1 per second	Operational
4	Less than 50 km	1 or more per second	Operational
5	Between 50 and 200 km	1 or more per second	Operational
6	More than 200 km	1 or more per second	Operational
7	Less than 50 km	Rate so rapid number cannot be counted	Operational
8	Between 50 and 200 km	Rate so rapid number cannot be counted	Operational
9	More than 200 km	Rate so rapid number cannot be counted	Operational
10-14	Reserved		Operational
15	Missing value		Operational

**0 20 085*****General condition of runway***

Code figure		Status
0	Cleared (CLR D//)	Operational
1	All runways closed (SNO CLO)	Operational
2-14	Reserved	Operational
15	Missing value	Operational

**0 20 086*****Runway deposits***

Code figure		Status
0	Clear and dry	Operational
1	Damp	Operational
2	Wet with water patches	Operational
3	Rime and frost covered (depth normally less than 1 mm)	Operational
4	Dry snow	Operational
5	Wet snow	Operational
6	Slush	Operational
7	Ice	Operational
8	Compacted or rolled snow	Operational
9	Frozen ruts or ridges	Operational
10-14	Reserved	Operational
15	Missing or not reported (e.g. due to runway clearance in progress)	Operational

**0 20 087*****Runway contamination***

Code figure		Status
0	Reserved	Operational
1	Less than 10% of runway covered	Operational
2	11% to 25% of runway covered	Operational
3-4	Reserved	Operational
5	25% to 50% of runway covered	Operational
6-8	Reserved	Operational
9	51% to 100% of runway covered	Operational
10-14	Reserved	Operational
15	Missing or not reported (e.g. due to runway clearance in progress)	Operational

**0 20 089*****Runway friction coefficient***

Code figure		Status
0	0.00	Operational
1	0.01	Operational
2-88	0.02...0.88	Operational
89	0.89	Operational
90	0.90	Operational
91	Braking action poor	Operational
92	Braking action medium to poor	Operational
93	Braking action medium	Operational
94	Braking action medium to good	Operational
95	Braking action good	Operational
96-98	Reserved	Operational
99	Unreliable	Operational
100-126	Reserved	Operational
127	Missing, not reported and/or runway not operational.	Operational

**0 20 090*****Special clouds***

Code figure		Status
0	Reserved	Operational
1	Nacreous clouds	Operational
2	Noctilucent clouds	Operational
3	Clouds from waterfalls	Operational
4	Clouds from fires	Operational
5	Clouds from volcanic eruptions	Operational
6-14	Reserved	Operational
15	Missing value	Operational



**0 20 101*****Locust (acridian) name***

Code figure		Status
0	Reserved	Operational
1	Schistocerca gregaria	Operational
2	Locusta migratoria	Operational
3	Nomadacris septemfasciata	Operational
4	Oedaleus senegalensis	Operational
5	Anracridium spp	Operational
6	Other locusts	Operational
7	Other grasshoppers	Operational
8	Other crickets	Operational
9	Spodoptera exempta	Operational
10-14	Reserved	Operational
15	Missing value	Operational

**0 20 102*****Locust (maturity) colour***

Code figure		Status
0	Green	Operational
1	Green or black	Operational
2	Black	Operational
3	Yellow and black	Operational
4	Straw/grey	Operational
5	Pink	Operational
6	Dark red/brown	Operational
7	Mixed red and yellow	Operational
8	Yellow	Operational
9	Other	Operational
10-14	Reserved	Operational
15	Missing value	Operational

**0 20 103*****Stage of development of locusts***

Code figure		Status
0	Hoppers (nymphs, larvae), stage 1	Operational
1	Hoppers (nymphs, larvae), stage 2 or mixed 1, 2 instars (stages)	Operational
2	Hoppers (nymphs, larvae), stage 3 or mixed 2, 3 instars	Operational
3	Hoppers (nymphs, larvae), stage 4 or mixed 3, 4 instars	Operational
4	Hoppers (nymphs, larvae), stage 5 or mixed 4, 5 instars	Operational
5	Hoppers (nymphs, larvae), stage mixed, all or many instars	Operational
6	Fledglings (wings too soft for sustained flight)	Operational
7	Immature adults	Operational
8	Mixed maturity adults	Operational
9	Mature adults	Operational
10-14	Reserved	Operational
15	Missing value	Operational

**0 20 104*****Organization state of swarm or band of locusts***

Code figure		Status
0	Hoppers only, mainly in bands or clusters	Operational
1	Winged adults in the vicinity more than 10 kilometres from point of observation	Operational
2	Locusts in flight, a few seen at the station	Operational
3	Locusts at the station, most of them on the ground	Operational
4	Locusts, some on ground and others in flight at a height less than 10 metres	Operational
5	Locusts, some on ground and others in flight at a height greater than 10 metres	Operational
6	Locusts, most in flight at a height less than 10 metres	Operational
7	Locusts, most in flight at a height greater than 10 metres	Operational
8	Locusts, all over inflicting severe damage to vegetation, no extermination operation	Operational
9	Locusts, all over inflicting severe damage to vegetation, extermination operation in progress	Operational
10-14	Reserved	Operational
15	Missing value	Operational

**0 20 105*****Size of swarm or band of locusts and duration of passage of swarm***

Code figure		Status
When 0 20 104 (Organizational state of swarm or band of locusts) = 0		Operational
0	Reserved	Operational
1	Area covered by isolated bands < 10 m <sup>2</sup>	Operational
2	Area covered by isolated bands 10 - 100 m <sup>2</sup>	Operational
3	Area covered by isolated bands 100 - 1000 m <sup>2</sup>	Operational
4	Area covered by isolated bands 1 000 - 10000 m <sup>2</sup>	Operational
5	Area covered by isolated bands 1 - 10 ha	Operational
6	Area covered by isolated bands > 10 ha	Operational
7	Area covered by dispersed bands < 100 km <sup>2</sup>	Operational
8	Area covered by dispersed bands 100 - 1000 km <sup>2</sup>	Operational
9	Area covered by dispersed bands > 1000 km <sup>2</sup>	Operational
10-14	Reserved	Operational
15	Missing value	Operational
When 0 20 104 (Organizational state of swarm or band of locusts) = 1 to 9		Operational
0	Small swarm less than 1 km <sup>2</sup> or adults in ground, tens or hundreds of individuals visible simultaneously, duration of passage less than 1 hour ago	Operational
1	Small swarm less than 1 km <sup>2</sup> or adults in ground, tens or hundreds of individuals visible simultaneously, duration of passage 1 to 6 hours ago	Operational
2	Small swarm less than 1 km <sup>2</sup> or adults in ground, tens or hundreds of individuals visible simultaneously, duration of passage over 6 hours ago	Operational
3	Medium swarm or scattered adults, several visible simultaneously, duration of passage less than 1 hour ago	Operational
4	Medium swarm or scattered adults, several visible simultaneously, duration of passage 1 to 6 hours ago	Operational

*(continued)*

(Code table 0 20 105 - continued)

Code figure		Status
5	Medium swarm or scattered adults, several visible simultaneously, duration of passage over 6 hours ago	Operational
6	Large swarm or isolated adults, seen singly, duration of passage less than 1 hour ago	Operational
7	Large swarm or isolated adults, seen singly, duration of passage 1 to 6 hours ago	Operational
8	Large swarm or isolated adults, seen singly, duration of passage over 6 hours ago	Operational
9	More than one swarm of locusts	Operational
10	Size of swarm and/or duration of passage not determined owing to darkness or similar phenomena	Operational
11-14	Reserved	Operational
15	Missing value	Operational

**0 20 106*****Locust population density***

Code figure		Status
0	Reserved	Operational
1	Thin density swarm (swarm visible only when near enough for individual locusts to be discerned)	Operational
2	Medium density swarm	Operational
3	Dense swarm (obscuring nearby features, e.g. trees)	Operational
4	Isolated hoppers seen singly	Operational
5	Scattered hoppers, several visible simultaneously	Operational
6-14	Reserved	Operational
15	Missing value	Operational

**0 20 107*****Direction of movements of locust swarm***

Code figure		Status
0	Reserved	Operational
1	Generally in the direction NE	Operational
2	Generally in the direction E	Operational
3	Generally in the direction SE	Operational
4	Generally in the direction S	Operational
5	Generally in the direction SW	Operational
6	Generally in the direction W	Operational
7	Generally in the direction NW	Operational
8	Generally in the direction N	Operational
9	Specific direction indeterminable	Operational
10-14	Reserved	Operational
15	Missing value	Operational

**0 20 108*****Extent of vegetation***

Code figure		Status
0	Bare ground	Operational
1	Dry, presence of few and isolated shrubs	Operational
2	Sparse vegetation (sprouting)	Operational
3	Dense vegetation (sprouting)	Operational
4	Sparse vegetation (growing)	Operational
5	Dense vegetation (growing)	Operational
6	Sparse vegetation in flower	Operational
7	Dense vegetation in flower	Operational
8-14	Reserved	Operational
15	Missing value	Operational

**0 20 119*****Lightning discharge polarity***

Code figure		Status
0	Not defined	Operational
1	Positive	Operational
2	Negative	Operational
3	Missing value	Operational

**0 20 124*****Lightning stroke or flash***

Code figure		Status
0	Not defined	Operational
1	Lightning stroke	Operational
2	Lightning flash, by manual observation, or if equipment insensitive to stroke resolution	Operational
3	Missing value	Operational

**0 20 136*****Supplementary cloud type***

Code figure		Status
	<i>0-7 Nature of clouds of vertical development</i>	<i>Validation</i>
0	<i>Isolated cumulus humilis and/or cumulus mediocris of vertical development</i>	<i>Validation</i>
1	<i>Numerous cumulus humilis and/or cumulus mediocris of vertical development</i>	<i>Validation</i>
2	<i>Isolated cumulus congestus of vertical development</i>	<i>Validation</i>
3	<i>Numerous cumulus congestus of vertical development</i>	<i>Validation</i>
4	<i>Isolated cumulonimbus of vertical development</i>	<i>Validation</i>
5	<i>Numerous cumulonimbus of vertical development</i>	<i>Validation</i>
6	<i>Isolated cumulus and cumulonimbus of vertical development</i>	<i>Validation</i>

(continued)

(Code table 0 20 136 - continued)

Code figure		Status
7	Numerous cumulus and cumulonimbus of vertical development	Validation
8-9	Reserved	Validation
10-19	Orographic clouds	Validation
11	Isolated orographic clouds, pileus, incus, forming	Validation
12	Isolated orographic clouds, pileus, incus, not changing	Validation
13	Isolated orographic clouds, pileus, incus, dissolving	Validation
14	Irregular banks of orographic cloud, föhn bank, etc., forming	Validation
15	Irregular banks of orographic cloud, föhn bank, etc., not changing	Validation
16	Irregular banks of orographic cloud, föhn bank, etc., dissolving	Validation
17	Compact layer of orographic cloud, föhn bank, etc., forming	Validation
18	Compact layer of orographic cloud, föhn bank, etc., not changing	Validation
19	Compact layer of orographic cloud, föhn bank, etc., dissolving	Validation
20-29	Cloud conditions over mountains and passes	Validation
20	All mountains open, only small amounts of cloud present	Validation
21	Mountains partly covered with detached clouds (not more than half the peaks can be seen)	Validation
22	All mountain slopes covered, peaks and passes free	Validation
23	Mountains open on observer's side (only small amounts of cloud present), but a continuous wall of cloud on the other side	Validation
24	Clouds low above the mountains, but all slopes and mountains open (only small amounts of cloud on the slopes)	Validation
25	Clouds low above the mountains, peaks partly covered by precipitation trails or clouds	Validation
26	All peaks covered but passes open, slopes either open or covered	Validation
27	Mountains generally covered but some peaks free, slopes wholly or partially covered	Validation
28	All peaks, passes and slopes covered	Validation
29	Mountains cannot be seen owing to darkness, fog, snowstorm, precipitation, etc.	Validation
30-34	Reserved	Validation
35-39	Condensation trails	Validation
35	Non-persistent condensation trails	Validation
36	Persistent condensation trails covering less than 1/8 of the sky	Validation
37	Persistent condensation trails covering 1/8 of the sky	Validation
38	Persistent condensation trails covering 2/8 of the sky	Validation
39	Persistent condensation trails covering 3/8 or more of the sky	Validation
40-49	Cloud conditions observed from a higher level	Validation
40	No cloud or mist observed from a higher level	Validation
41	Mist, clear above observed from a higher level	Validation
42	Fog patches observed from a higher level	Validation
43	Layer of slight fog observed from a higher level	Validation
44	Layer of thick fog observed from a higher level	Validation
45	Some isolated clouds observed from a higher level	Validation
46	Isolated clouds and fog below observed from a higher level	Validation
47	Many isolated clouds observed from a higher level	Validation
48	Sea of clouds observed from a higher level	Validation
49	Bad visibility obscuring the downward view observed from a higher level	Validation
50-510	Reserved	Validation
511	Missing value	Validation

**0 20 137*****Evolution of clouds***

<i>Code figure</i>		<i>Status</i>
0	<i>No change</i>	<i>Validation</i>
1	<i>Cumulification</i>	<i>Validation</i>
2	<i>Slow elevation</i>	<i>Validation</i>
3	<i>Rapid elevation</i>	<i>Validation</i>
4	<i>Elevation and stratification</i>	<i>Validation</i>
5	<i>Slow lowering</i>	<i>Validation</i>
6	<i>Rapid lowering</i>	<i>Validation</i>
7	<i>Stratification</i>	<i>Validation</i>
8	<i>Stratification and lowering</i>	<i>Validation</i>
9	<i>Rapid change</i>	<i>Validation</i>
10-14	<i>Reserved</i>	<i>Validation</i>
15	<i>Missing value</i>	<i>Validation</i>

**0 21 066*****Wave scatterometer product confidence data***

Bit No.		Status
1	Process equipment not working	Operational
2	Equipment failed	Operational
3	PRF code changed during image generation	Operational
4	Sampling window changed during image generation	Operational
5	Gain changed during image generation	Operational
6	Chirp replica exceeds specified value	Operational
7	Input data mean and standard deviation of in-phase and quadrature out of range	Operational
8	Doppler centroid confidence > MMCC value	Operational
9	Doppler centroid absolute value > PRF/2	Operational
10	Doppler ambiguity confidence < MMCC value	Operational
11	Output data mean and standard deviation =< MMCC value	Operational
All 12	Missing value	Operational

## Notes:

- (1) MMCC is Mission Management Control Centre.  
 (2) PRF is Pulse Repetition Frequency.

**0 21 067*****Wind product confidence data***

Bit No.		Status
1	No forebeam calculation	Operational
2	No midbeam calculation	Operational
3	No aftbeam calculation	Operational
4	Forebeam arcing detected	Operational
5	Midbeam arcing detected	Operational
6	Aftbeam arcing detected	Operational
7	Any beam noise content above or equal to threshold	Operational
8	Land (any land in cell footprint)	Operational
9	Autonomous ambiguity removal not used	Operational
10	Meteorological background not used	Operational
11	Minimum residual exceeded threshold	Operational
12	Frame checksum error detected	Operational
All 13	Missing value	Operational

**0 21 068*****Radar altimeter product confidence data***

Bit No.		Status
1	Standard deviation of wind speed outside MMCC limit	Operational
2	Standard deviation of significant wave height outside MMCC limit	Operational
3	Standard deviation of altitude outside MMCC limit	Operational
4	Mean peakiness outside MMCC limit	Operational
5	Frame checksum error detected	Operational
6	Height-time loop time constant correction not performed	Operational
7	Not enough measurements ( $N < 10$ )	Operational
All 8	Missing value	Operational

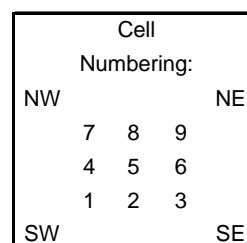
Note: MMCC is Mission Management Control Centre.

**0 21 069*****SST product confidence data***

Bit No.		Status
1	12.0 $\mu\text{m}$ channel present in source data	Operational
2	11.0 $\mu\text{m}$ channel present in source data	Operational
3	3.7 $\mu\text{m}$ channel present in source data	Operational
4	1.6 $\mu\text{m}$ channel present in source data	Operational
5	Cloud identification used 1.6 $\mu\text{m}$ histogram reflectance cloud test	Operational
6	1.6 $\mu\text{m}$ histogram reflectance cloud test used dynamic threshold	Operational
7	Sun glint detected by 1.6 $\mu\text{m}$ reflectance cloud test	Operational
8	3.7 $\mu\text{m}$ channel used in sea-surface temperature retrieval	Operational
9	Sea-surface temperature derivation used daytime data (night-time if zero)	Operational
All 10	Missing value	Operational

**0 21 070*****SST product confidence data (SADIST-2)***

Bit No.		Status
	1-9 Nadir-only view SST retrieval used 3.7 micron channel (one bit per 10-arcmin cell)	Operational
1	Cell 1: nadir-only view SST used 3.7 micron channel	Operational
2	Cell 2: nadir-only view SST used 3.7 micron channel	Operational
3	Cell 3: nadir-only view SST used 3.7 micron channel	Operational
4	Cell 4: nadir-only view SST used 3.7 micron channel	Operational
5	Cell 5: nadir-only view SST used 3.7 micron channel	Operational
6	Cell 6: nadir-only view SST used 3.7 micron channel	Operational
7	Cell 7: nadir-only view SST used 3.7 micron channel	Operational
8	Cell 8: nadir-only view SST used 3.7 micron channel	Operational
9	Cell 9: nadir-only view SST used 3.7 micron channel	Operational

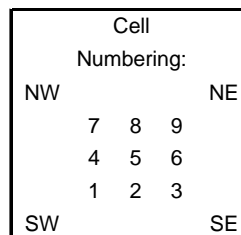


(continued)



(Code table 0 21 070 - continued)

	10-18	Dual view SST retrieval used 3.7 micron channel (one bit per 10-arcmin cell)	Operational
10	Cell 1:	dual view SST used 3.7 micron channel	Operational
11	Cell 2:	dual view SST used 3.7 micron channel	Operational
12	Cell 3:	dual view SST used 3.7 micron channel	Operational
13	Cell 4:	dual view SST used 3.7 micron channel	Operational
14	Cell 5:	dual view SST used 3.7 micron channel	Operational
15	Cell 6:	dual view SST used 3.7 micron channel	Operational
16	Cell 7:	dual view SST used 3.7 micron channel	Operational
17	Cell 8:	dual view SST used 3.7 micron channel	Operational
18	Cell 9:	dual view SST used 3.7 micron channel	Operational
19	Nadir view	contains day-time data (night if zero)	Operational
20	Forward view	contains day-time data (night if zero)	Operational
21	Record	contains contributions from instrument scans acquired when ERS platform not in yaw-steering mode	Operational
22	Record	contains contributions from instrument scans for which product confidence data show quality is poor or unknown	Operational
All 23	Missing value		Operational

**0 21 072****Satellite altimeter calibration status**

Bit No.		Status
1	Height error correction applied instead of open loop calibration	Operational
2	Microwave sounder used for troposphere correction	Operational
3	AGC output correction applied instead of open loop calibration	Operational
All 4	Missing value	Operational

**0 21 073****Satellite altimeter instrument mode**

Bit No.		Status
1	Blank data record	Operational
2	Test	Operational
3	Calibration (closed loop)	Operational
4	BITE	Operational
5	Acquisition on ice	Operational
6	Acquisition on ocean	Operational
7	Tracking on ice	Operational
8	Tracking on ocean	Operational
All 9	Missing value	Operational

**0 21 076*****Representation of intensities***

Code figure		Status
0	Linear	Operational
1	Logarithmic (base e)	Operational
2	Logarithmic (base 10)	Operational
3-6	Reserved	Operational
7	Missing value	Operational

**0 21 109*****SEAWINDS wind vector cell quality***

Bit No.		Status
1	Not enough good sigma-0 available for wind retrieval	Operational
2	Poor azimuth diversity among sigma-0 for wind retrieval	Operational
3-7	Reserved	Operational
8	Some portion of wind vector cell is over land	Operational
9	Some portion of wind vector cell is over ice	Operational
10	Wind retrieval not performed for wind vector cell	Operational
11	Reported wind speed is greater than 30 m s <sup>-1</sup>	Operational
12	Reported wind speed is less than or equal to 3 m s <sup>-1</sup>	Operational
13-16	Reserved	Operational
All 17	Missing value	Operational

**0 21 115*****SEAWINDS sigma-0 quality***

Bit No.		Status
1	Sigma-0 measurement is not usable	Operational
2	Signal to noise ratio is low	Operational
3	Sigma-0 is negative	Operational
4	Sigma-0 is outside of acceptable range	Operational
5	Scatterometer pulse quality is not acceptable	Operational
6	Sigma-0 cell location algorithm does not converge	Operational
7	Frequency shift lies beyond the range of the x factor table	Operational
8	Spacecraft temperature is beyond calibration coefficient range	Operational
9	No applicable altitude records were found for this sigma-0	Operational
10	Interpolated ephemeris data are not acceptable for this sigma-0	Operational
11-16	Reserved	Operational
All 17	Missing value	Operational

**0 21 116*****SEAWINDS sigma-0 mode***

Bit No.		Status
1	Calibration/measurement pulse flag (1)	Operational
2	Calibration/measurement pulse flag (2)	Operational
3	Outer antenna beam	Operational
4	Sigma-0 cell is aft of spacecraft	Operational
5	Current mode (1)	Operational
6	Current mode (2)	Operational
7	Effective gate width - slice resolution (1)	Operational
8	Effective gate width - slice resolution (2)	Operational
9	Effective gate width - slice resolution (3)	Operational
10	Low resolution mode - whole pulse data	Operational
11	Scatterometer electronic subsystem B	Operational
12	Alternate spin rate - 19.8 rpm	Operational
13	Receiver protection on	Operational
14	Slices per composite flag (1)	Operational
15	Slices per composite flag (2)	Operational
16	Slices per composite flag (3)	Operational
All 17	Missing value	Operational

**0 21 119*****Wind scatterometer geophysical model function***

Code figure		Status
0	Reserved	Operational
1	SASS	Operational
2	SASS2	Operational
3	NSCAT0	Operational
4	NSCAT1	Operational
5	NSCAT2	Operational
6	QSCAT0	Operational
7	QSCAT1	Operational
8-30	Reserved	Operational
31	CMOD1	Operational
32	CMOD2	Operational
33	CMOD3	Operational
34	CMOD4	Operational
35	CMOD5	Operational
36-62	Reserved	Operational
63	Missing value	Operational

**0 21 144*****Altimeter rain flag***

Bit No.		Status
1	Rain	Operational
All 2	Missing value	Operational

**0 21 150*****Beam co-location***

Code figure		Status
0	Data from single ground station (no co-location)	Operational
1	Data from multiple ground station (co-located data)	Operational
2	Reserved	Operational
3	Missing value	Operational

**0 21 155*****Wind vector cell quality***

Bit No.		Status
1	Not enough good sigma-0 available for wind retrieval	Operational
2	Poor azimuth diversity among sigma-0 for wind retrieval	Operational
3	Any beam noise content above threshold	Operational
4	Product monitoring not used	Operational
5	Product monitoring flag	Operational
6	KNMI quality control fails	Operational
7	Variational quality control fails	Operational
8	Some portion of wind vector cell is over land	Operational
9	Some portion of wind vector cell is over ice	Operational
10	Wind retrieval not performed for wind vector cell	Operational
11	Reported wind speed is greater than 30 m/s	Operational
12	Reported wind speed is less than or equal to 3 m/s	Operational
13	Rain flag for the wind vector cell is not usable	Operational
14	Rain flag algorithm detects rain	Operational
15	No meteorological background used	Operational
16	Data are redundant	Operational
17-23	Reserved	Operational
All 24	Missing value	Operational

**0 21 158*****ASCAT  $K_p$  quality estimate***

Code figure		Status
0	Acceptable	Operational
1	Not acceptable	Operational
2	Reserved	Operational
3	Missing value	Operational

**0 21 159*****ASCAT sigma-0 usability***

Code figure		Status
0	Good	Operational
1	Usable	Operational
2	Bad	Operational
3	Missing value	Operational

**0 21 169*****Ice presence indicator***

Code figure		Status
0	No ice present	Operational
1	Ice present	Operational
2	Reserved	Operational
3	Missing value	Operational



**0 22 056*****Direction of profile***

Code figure		Status
0	Upwards profile	Operational
1	Downwards profile	Operational
2	Horizontal	Operational
3	Missing value	Operational

**0 22 060*****Lagrangian drifter drogue status***

Code figure		Status
0	Drogue is detached	Operational
1	Drogue is attached	Operational
2	Drogue status unknown	Operational
3-6	Reserved	Operational
7	Missing value	Operational

**0 22 061*****State of the sea***

Code figure		Height in metres	Status
0	Calm (glassy)	0	Operational
1	Calm (rippled)	0 - 0.1	Operational
2	Smooth (wavelets)	0.1 - 0.5	Operational
3	Slight	0.5 - 1.25	Operational
4	Moderate	1.25 - 2.5	Operational
5	Rough	2.5 - 4	Operational
6	Very rough	4 - 6	Operational
7	High	6 - 9	Operational
8	Very high	9 - 14	Operational
9	Phenomenal	Over 14	Operational
10-14	Reserved		Operational
15	Missing value		Operational

**Notes:**

- (1) These values refer to well-developed wind waves of the open sea. While priority shall be given to the descriptive terms, these height values may be used for guidance by the observer when reporting the total state of agitation of the sea resulting from various factors such as wind, swell, currents, angle between swell and wind, etc.
- (2) The exact bounding height shall be assigned for the lower code figure; e.g., a height of 4 m is coded as 5.

**0 22 067*****Instrument type for water temperature profile measurement****(See common Code Table C-3)***0 22 068*****Water temperature profile recorder types****(See common Code Table C-4)***0 22 120*****Tide station automated water level check***

Code figure		Status
0	Good data	Operational
1	Maximum (high) water level limit exceeded	Operational
2	Minimum (low) water level limit exceeded	Operational
3	Rate of change limit for water level exceeded	Operational
4	Flat limit for water level exceeded	Operational
5	Observed minus predicted water level value limit exceeded	Operational
6	Observed value from primary water level sensor minus backup water level sensor	Operational
7	Value exceeded specified tolerance from expected value	Operational
8	Water level QA parameter (sigmas and/or outliers) limits exceeded	Operational
9	Sea temperature outside of expected range	Operational
10	Multiple QC checks (above) failed	Operational
11	No automated water level checks performed	Operational
12-30	Reserved	Operational
31	Missing value	Operational



**0 22 121*****Tide station manual water level check***

Code figure		Status
0	Operational	Operational
1	Possible clogging problem or otherwise degraded water level data	Operational
2	Possible datum shift	Operational
3	Unknown status of water level sensor	Operational
4	Suspected or known sea temperature sensor problem	Operational
5	Multiple possible problems (above)	Operational
6	Bad data - DO NOT DISSEMINATE!	Operational
7	No manual water level checks performed	Operational
8-30	Reserved	Operational
31	Missing value	Operational

**0 22 122*****Tide station automated meteorological data check***

Code figure		Status
0	Good data from all sensors	Operational
1	Wind direction outside of allowable range	Operational
2	Wind speed outside of expected range	Operational
3	Barometric pressure outside of expected range	Operational
4	Air temperature outside of expected range	Operational
5	Multiple sensors failed QC checks	Operational
6	No automated meteorological data checks performed	Operational
7-30	Reserved	Operational
31	Missing value	Operational

**0 22 123*****Tide station manual meteorological data check***

Code figure		Status
0	Operational	Operational
1	Suspected or known problem with wind sensor	Operational
2	Suspected or known problem with barometric pressure sensor	Operational
3	Suspected or known problem with air temperature sensor	Operational
4	Unknown status of all sensors	Operational
5	Suspected or known problems with multiple sensors	Operational
6	Bad data - DO NOT DISSEMINATE!	Operational
7	No manual meteorological data checks performed	Operational
8-30	Reserved	Operational
31	Missing value	Operational

**0 22 178*****XBT/XCTD launcher Type***

<i>Code figure</i>		<i>Status</i>
0	<i>Unknown</i>	<i>Validation</i>
1	<i>LM-2A Deck-mounted</i>	<i>Validation</i>
2	<i>LM-3A Hand-Held</i>	<i>Validation</i>
3	<i>LM-4A Thru-Hull</i>	<i>Validation</i>
4-9	<i>Reserved</i>	<i>Validation</i>
10	<i>AL-12 TSK Autolauncher (up to 12 Probes)</i>	<i>Validation</i>
11-19	<i>Reserved</i>	<i>Validation</i>
20	<i>SIO XBT Autolauncher (up to 6 probes)</i>	<i>Validation</i>
21-29	<i>Reserved</i>	<i>Validation</i>
30	<i>AOML XBT V6 Autolauncher (up to 6 Deep Blue probes)</i>	<i>Validation</i>
31	<i>AOML XBT V8.0 Autolauncher (up to 8 Deep Blue probes)</i>	<i>Validation</i>
32	<i>AOML XBT V8.1 Autolauncher (up to 8 Deep Blue and Fast Deep probes)</i>	<i>Validation</i>
33-89	<i>Reserved</i>	<i>Validation</i>
90	<i>CSIRO Devil Autolauncher</i>	<i>Validation</i>
91-99	<i>Reserved</i>	<i>Validation</i>
100	<i>MFSTEP Autolauncher (Mediterranean)</i>	<i>Validation</i>
101-254	<i>Reserved</i>	<i>Validation</i>
255	<i>Missing</i>	<i>Validation</i>

**0 23 001*****Accident early notification - article applicable***

Code figure		Status
0	Reserved	Operational
1	Articles 1 and 2	Operational
2	Article 3	Operational
3	Article 5.2	Operational
4-6	Reserved	Operational
7	Missing value	Operational

**0 23 002*****Activity or facility involved in incident***

Code figure		Status
0	Reserved	Operational
1	Nuclear reactor on ground	Operational
2	Nuclear reactor at sea	Operational
3	Nuclear reactor in space	Operational
4	Nuclear fuel facility	Operational
5	Radioactive waste management facility	Operational
6	Transport of nuclear fuel or radioactive waste	Operational
7	Storage of nuclear fuel or radioactive waste	Operational
8	Manufacture of radio-isotopes	Operational
9	Use of radio-isotopes	Operational
10	Storage of radio-isotopes	Operational
11	Disposal of radio-isotopes	Operational
12	Transport of radio-isotopes	Operational
13	Use of radio-isotopes for power generation	Operational
14-29	Reserved	Operational
30	Other	Operational
31	Missing value	Operational

**0 23 003*****Type of release***

Code figure		Status
0	No release	Operational
1	Release to atmosphere	Operational
2	Release to water	Operational
3	Release to both atmosphere and water	Operational
4	Expected release to atmosphere	Operational
5	Expected release to water	Operational
6	Expected release to both atmosphere and water	Operational
7	Missing value	Operational

**0 23 004*****Countermeasures taken near border***

Code figure		Status
0	No countermeasures	Operational
1	Evacuation	Operational
2	Sheltering	Operational
3	Prophylaxis	Operational
4	Water	Operational
5-6	Reserved	Operational
7	Missing value	Operational

**0 23 005*****Cause of incident***

Code figure		Status
0	Incident State does not understand what happened	Operational
1	Incident State knows the cause of the incident	Operational
2	Reserved	Operational
3	Missing value	Operational

**0 23 006*****Incident situation***

Code figure		Status
0	No improvement	Operational
1	Unstable	Operational
2	No deterioration	Operational
3	Improving	Operational
4	Stable	Operational
5	Deteriorating	Operational
6	Reserved	Operational
7	Missing value	Operational

**0 23 007*****Characteristics of release***

Code figure		Status
0	No release	Operational
1	Release has stopped	Operational
2	Release	Operational
3	Release is continuing	Operational
4-6	Reserved	Operational
7	Missing value	Operational

**0 23 008/0 23 009*****State of current or expected release***

Code figure		Status
0	Gaseous	Operational
1	Particulate	Operational
2	Mixture of gaseous and particulate	Operational
3	Missing value	Operational

**0 23 016*****Possibility of significant chemical toxic health effect***

Code figure		Status
0	No significant chemical toxic health effect	Operational
1	Significant chemical toxic health effect possible	Operational
2	Reserved	Operational
3	Missing value	Operational

**0 23 018*****Release behaviour over time***

Code figure		Status
0	Release no longer occurring	Operational
1	Release still occurring	Operational
2	Release expected to increase in next six hours	Operational
3	Release expected to remain constant in next six hours	Operational
4	Release expected to decrease in next six hours	Operational
5-6	Reserved	Operational
7	Missing value	Operational

**0 23 031*****Possibility that plume will encounter precipitation  
in State in which incident occurred***

Code figure		Status
0	Plume will not encounter rain in incident State	Operational
1	Plume will encounter rain in incident State	Operational
2	Reserved	Operational
3	Missing value	Operational

**0 23 032*****Plume will encounter change in wind direction and/or speed flag***

Code figure		Status
0	No significant change expected within the next six hours	Operational
1	Anticipated significant change expected within the next six hours	Operational
2	Reserved	Operational
3	Missing value	Operational

**0 24 003*****Composition of release***

Code figure		Status
0	Noble gases	Operational
1	Iodides	Operational
2	Caesiums	Operational
3	Transuranics	Operational
4-30	Reserved	Operational
31	Missing value	Operational





**0 25 004*****Echo processing***

Code figure		Status
0	Incoherent	Operational
1	Coherent (Doppler)	Operational
2	Reserved	Operational
3	Missing value	Operational

**0 25 005*****Echo integration***

Code figure		Status
0	Logarithm - 2.5 dB	Operational
1	Linear	Operational
2	Special	Operational
3	Missing value	Operational

**0 25 006*****Z to R conversion***

Code figure		Status
0	ZH to R conversion	Operational
1	(ZH, ZDR) to (NO, DO) to R	Operational
2	(Z (F1), Z (F2)) to attenuation to R	Operational
3-5	Reserved	Operational
6	Other	Operational
7	Missing value	Operational

**0 25 009*****Calibration method***

Bit No.		Status
1	None	Operational
2	Calibration target or signal	Operational
3	Against raingauges	Operational
4	Against other Instruments (distrometer - attenuation)	Operational
All 5	Missing value	Operational

**0 25 010*****Clutter treatment***

Code figure		Status
0	None	Operational
1	Map	Operational
2	Insertion of higher elevation data and map	Operational
3	Analysis of the fluctuating logarithm signal (clutter detection)	Operational
4	Extraction of the fluctuating part of linear signal (clutter suppression)	Operational
5	Clutter suppression - Doppler	Operational
6	Multi parameter analysis	Operational
7-14	Reserved	Operational
15	Missing value	Operational

**0 25 011*****Ground occultation correction (screening)***

Code figure		Status
0	None	Operational
1	Map of correction factors	Operational
2	Interpolation (azimuth or elevation)	Operational
3	Missing value	Operational

**0 25 012*****Range attenuation correction***

Code figure		Status
0	Hardware	Operational
1	Software	Operational
2	Hardware and software	Operational
3	Missing value	Operational

**0 25 013*****Bright-band correction***

Bit No.		Status
1	Bright-band correction	Operational
All 2	Missing value	Operational

**0 25 015*****Radome attenuation correction***

Bit No.		Status
1	Radome attenuation correction	Operational
All 2	Missing value	Operational

**0 25 017*****Precipitation attenuation correction***

Bit No.		Status
1	Precipitation attenuation correction	Operational
All 2	Missing value	Operational

**0 25 020*****Mean speed estimation***

Code figure		Status
0	FFT (fast Fourier transform)	Operational
1	PPP (pulse-pair processing)	Operational
2	VPC (vector-phase change)	Operational
3	Missing value	Operational

**0 25 021*****Wind computation enhancement***

Bit No.		Status
1	Simple average	Operational
2	Consensus average	Operational
3	Median check	Operational
4	Vertical consistency check	Operational
5	Other	Operational
6-7	Reserved	Operational
All 8	Missing value	Operational

**0 25 022*****GHR SST\* rejection flag***

Bit No.		Status
1	Unprocessed	Operational
2	Land suspected	Operational
3	Wind speed too large	Operational
4	Ice detected	Operational
5	Rain detected (Microwave retrievals only)	Operational
6	Cloudy detected (Infra-red retrievals only)	Operational
7	Cosmetic value	Operational
8	SST out of range	Operational
All 9	Missing value	Operational

\* GHR SST = GODAE high-resolution sea-surface temperature

**0 25 023*****GHR SST confidence flag***

Bit No.		Status
1	Default confidence value has been used	Operational
2	Default bias and standard deviation have been used	Operational
3	Sun glint suspected	Operational
4	Sea ice retrieval for microwave data	Operational
5	High wind speed retrieval	Operational
6	Inaccurate SST due to low SST (< 285K) (Only applies to the TMI instrument)	Operational
7	Relaxed rain contamination suspected	Operational
8	Potential side lobe contamination	Operational
All 9	Missing value	Operational

**0 25 024*****GHR SST data quality***

Code figure		Status
0	Unprocessed infrared retrieval	Operational
1	Cloudy retrievals	Operational
2	Bad: Data that are probably contaminated by cloud	Operational
3	Suspect data	Operational
4	Acceptable data	Operational
5	Excellent data	Operational
6	Cool skin suspected	Operational
7-9	Reserved	Operational
10	Unprocessed microwave retrieval	Operational
11	Questionable microwave retrieval that may be contaminated	Operational
12	Acceptable microwave retrieval	Operational
13	High probability of diurnal variability	Operational
14	Reserved	Operational
15	Missing value	Operational

**0 25 029*****Calibration method***

Bit No.		Status
1	Reserved	Operational
2	Calibration target or signal	Operational
3	Against raingauges	Operational
4	Against other instruments (disdrometer - attenuation)	Operational
5	Reserved	Operational
All 6	Missing value	Operational

**0 25 030*****Running mean sea-surface temperature usage***

Code figure		Status
0	Running mean sea-surface temperature not used because usage criteria not met	Operational
1	Running mean sea-surface temperature not used because data not available	Operational
2	Running mean sea-surface temperature used as predictor	Operational
3	Missing value	Operational

**0 25 031*****NWP-generated vertical profile thinning method***

Code figure	Meaning	Status
0	<i>Reserved</i>	<i>Validation</i>
1	<i>No thinning applied (all native model levels are included from base to top of pseudo-sounding).</i>	<i>Validation</i>
2	<i>Native model levels are present only if they are significant levels as per regulations B/C 25 for conventional TEMP soundings</i>	<i>Validation</i>
3	<i>A predefined subset of native model levels is present</i>	<i>Validation</i>
4	<i>No native model levels are present. All profile levels are interpolated to a predefined set of pressure coordinate levels</i>	<i>Validation</i>
5-6	<i>Reserved</i>	<i>Validation</i>
7	<i>Missing value</i>	<i>Validation</i>

**0 25 032*****Wind profiler mode information***

Code figure		Status
0	Reserved	Operational
1	Data from low mode	Operational
2	Data from high mode	Operational
3	Missing value	Operational

**0 25 033*****Wind profiler submode information***

Code figure		Status
0	Wind profiler operating in submode A	Operational
1	Wind profiler operating in submode B	Operational
2	Reserved	Operational
3	Missing value	Operational

**0 25 034*****Wind profiler quality control test results***

Bit No.	Meaning (1=true, 0=false)	Status
1	Test A performed and failed	Operational
2	Test B performed and failed	Operational
3	Test results inconclusive	Operational
All 4	Missing value	Operational

**0 25 035*****Decision method for polarity***

Code figure		Status
0	Not defined	Operational
1	Individual voltage deflection	Operational
2	Current based, above a threshold	Operational
3	Voltage based, above a threshold	Operational
4	Consensus of sensors, current above a threshold	Operational
5	Consensus of sensors, voltage above a threshold	Operational
6	Reserved	Operational
7	Missing value	Operational

**0 25 036*****Atmospherics location method***

Code figure		Status
0	Network of several direction-finders operating on the same individual atmospherics	Operational
1	Network of several arrival-time stations operating on the same individual atmospherics	Operational
2-5	Reserved	Operational
6	Single station range bearing technique	Operational
7-14	Reserved	Operational
15	Missing value	Operational

**0 25 040*****CO<sub>2</sub> wind product derivation***

Code figure		Status
0	Non-specific mode	Operational
1	First guess data	Operational
2	Cloud data	Operational
3	Average vector data	Operational
4	Primary data	Operational
5	Guess data	Operational
6	Vector data	Operational
7	Tracer data; this image	Operational
8	Tracer data to next image	Operational
9-14	Reserved	Operational
15	Missing value	Operational

**0 25 041*****Moving platform direction reporting method***

Code figure		Status
0	Direction originally reported in true degrees	Operational
1	Direction originally reported using Code table 0700, FM 13	Operational
2	Reserved	Operational
3	Missing value	Operational

Note: Where the original reporting method is as indicated by code figure 1, the following conversion is recommended to obtain a suitable data value corresponding to descriptor 0 01 012:

Reported value	Data value
0	0
1	45
2	90
3	135
4	180
5	225
6	270
7	315
8	360
9	511

**0 25 042*****Moving platform speed reporting method***

Code figure		Status
0	Speed originally reported in metres per second	Operational
1	Speed originally reported using Code table 4451, FM 13	Operational
2	Reserved	Operational
3	Missing value	Operational

Note: Where the original reporting method is as indicated by code figure 1, the following conversion is recommended to obtain a suitable data value corresponding to descriptor 0 01 013:

Reported value	Data value
0	0
1	1
2	4
3	7
4	9
5	12
6	14
7	17
8	19
9	21
/	1023

**0 25 045*****HIRS channel combination***

Bit No.		Status
1-20	Beginning with first bit position (high order bit), if bit position is set to 1, then channel is present, if bit position is set to 0, then channel is not present	Operational
All 21	Missing value	Operational

**0 25 046****MSU channel combination**

Bit No.		Status
1-4	Beginning with first bit position (high order bit), if bit position is set to 1, then channel is present, if bit position is set to 0, then channel is not present	Operational
All 5	Missing value	Operational

**0 25 047****SSU channel combination**

Bit No.		Status
1-3	Beginning with first bit position (high order bit), if bit position is set to 1, then channel is present; if bit position is set to 0, then channel is not present	Operational
All 4	Missing value	Operational

**0 25 048****AMSU-A channel combination**

Bit No.		Status
1-15	Beginning with first bit position (high order bit), if bit position is set to 1, then channel is present, if bit position is set to 0, then channel is not present	Operational
All 16	Missing value	Operational

**0 25 049****AMSU-B channel combination**

Bit No.		Status
1-5	Beginning with first bit position (high order bit), if bit position is set to 1, then channel is present, if bit position is set to 0, then channel is not present	Operational
All 6	Missing value	Operational

**0 25 051****AVHRR channel combination**

Bit No.		Status
1-6	Beginning with first bit position (high order bit), if bit position is set to 1, then channel is present, if bit position is set to 0, then channel is not present	Operational
All 7	Missing value	Operational



**0 25 053*****Observation quality***

Bit No.		Status
1	Good	Operational
2	Redundant	Operational
3	Questionable	Operational
4	Bad	Operational
5	Experimental	Operational
6	Precipitating	Operational
7-11	Reserved	Operational
All 12	Missing value	Operational

**0 25 063*****Central processor or system identifier***

Code figure		Status
0	Not defined	Operational
1	Main processor	Operational
2	Backup processor	Operational
3-254	Reserved	Operational
255	Missing value	Operational

**0 25 069*****Flight level pressure corrections***

Bit No.		Status
1	Smoothed	Operational
2	Baseline adjusted	Operational
3	Normalized time interval	Operational
4	Outlier checked	Operational
5	Plausibility checked	Operational
6	Consistency checked	Operational
7	Interpolated	Operational
All 8	Missing value	Operational

**0 25 086*****Depth correction indicator***

Code figure		Status
0	Depths are not corrected	Operational
1	Depths are corrected	Operational
2	Reserved	Operational
3	Missing value	Operational

**0 25 090*****Orbit state flag***

Code figure		Status
0	Orbit computed during a manoeuvre	Operational
1	Adjusted mission operations orbit	Operational
2	Extrapolated mission operations orbit	Operational
3	Adjusted (preliminary/precise) orbit	Operational
4	(Preliminary/precise) orbit is estimated during a manoeuvre period	Operational
5	(Preliminary/precise) orbit is interpolated over a tracking data gap	Operational
6	(Preliminary/precise) orbit is extrapolated for a duration less than 1 day	Operational
7	(Preliminary/precise) orbit is extrapolated for a duration that ranges from 1 day to 2 days	Operational
8	(Preliminary/precise) orbit is extrapolated for a duration larger than 2 days, or that the orbit is extrapolated just after a manoeuvre	Operational
9	DORIS* DIODE** navigator orbit	Operational
10-14	Reserved	Operational
15	Missing value	Operational

\* DORIS stands for "Doppler Orbitography and Radio-positioning Integrated by Satellite".

\*\* DIODE means "Détermination Immédiate d'Orbite par Doris Embarqué" or immediate onboard orbit determination by DORIS. It is part of the DORIS instrument, which calculates the satellite's position and velocity.

**0 25 093*****RASS computation correction***

Bit No.		Status
1	No correction	Operational
2	Vertical velocity correction	Operational
3-6	Reserved	Operational
7	All corrections	Operational
All 8	Missing value	Operational

**0 25 095*****Altimeter state flag***

Bit No.		Status
1	Altimeter operating (set to 0 if nominal, set to 1 if backup)	Operational
All 2	Missing value	Operational

**0 25 096*****Radiometer state flag***

Bit No.		Status
1	Mode indicator (0 if mode 2, 1 if mode 1)	Operational
2	Mode 1 calibration sequence indicator (0 if normal data taking either mode 1 or 2, 1 if mode 1 calibration sequence)	Operational
	Bits 3 and 4 indicate active 23.8 GHz channel(s):	
3	Channel 2 (0 if on, 1 if off)	Operational
4	Channel 3 (0 if on, 1 if off)	Operational
All 5	Missing value	Operational

**0 25 097*****Three-dimensional error estimate of the navigator orbit***

Code figure		Status
0	Ranges between 0 and 30 cm	Operational
1	Ranges between 30 and 60 cm	Operational
2	Ranges between 60 and 90 cm	Operational
3	Ranges between 90 and 120 cm	Operational
4	Ranges between 120 and 150 cm	Operational
5	Ranges between 150 and 180 cm	Operational
6	Ranges between 180 and 210 cm	Operational
7	Ranges between 210 and 240 cm	Operational
8	Ranges between 240 and 270 cm	Operational
9	Ranges larger than 270 cm	Operational
10-14	Reserved	Operational
15	Missing value	Operational

**0 25 098*****Altimeter data quality flag***

Bit No.	(0 is good, 1 is bad)	Status
1	Ku band range	Operational
2	C band range	Operational
3	Ku band SWH*	Operational
4	C band SWH*	Operational
5	Ku band backscatter coefficient	Operational
6	C band backscatter coefficient	Operational
7	Off nadir angle from Ku band waveform parameters	Operational
8	Off nadir angle from platform	Operational
All 9	Missing value	Operational

\* SWH = Significant wave height

**0 25 099*****Altimeter correction quality flag***

Bit No.	(0 is good, 1 is bad)	Status
1	Ku band range instrumental correction	Operational
2	C band range instrumental correction	Operational
3	Ku band SWH* instrumental correction	Operational
4	C band SWH* instrumental correction	Operational
5	Ku band backscatter coefficient instrumental correction	Operational
6	C band backscatter coefficient instrumental correction	Operational
7-8	Reserved	Operational
All 9 bits	Missing value	Operational

\* SWH = Significant wave height

**0 25 110*****Image processing summary***

Bit No.		Status
1	Raw data analysis used for raw data correction. Correction done using default parameters	Operational
2	Raw data analysis used for raw data correction. Correction done using raw data analysis results	Operational
3	Antenna elevation pattern correction applied	Operational
4	Nominal chirp replica used	Operational
5	Reconstructed chirp used	Operational
6	Slant range to ground range conversion applied	Operational
7-9	Reserved	Operational
All 10	Missing value	Operational

**0 25 120*****RA2-L2-processing flag***

Code figure		Status
0	Percentage of DSRs* free of processing errors during Level 2 processing is greater than the acceptable threshold	Operational
1	Percentage of DSRs free of processing errors during Level 2 processing is less than the acceptable threshold	Operational
2	Reserved	Operational
3	Missing value	Operational

\* DSR = Data set record

**0 25 122*****Hardware configuration for RF \****

Code figure		Status
0	Hardware configuration for RF is A	Operational
1	Hardware configuration for RF is B	Operational
2	Reserved	Operational
3	Missing value	Operational

\* RF = Radio frequency

**0 25 123*****Hardware configuration for HPA \****

Code figure		Status
0	Hardware configuration for HPA is A	Operational
1	Hardware configuration for HPA is B	Operational
2	Reserved	Operational
3	Missing value	Operational

\* HPA = High power amplifier

**0 25 124*****MWR\*-L2-processing flag***

Code figure		Status
0	Percentage of DSRs** free of processing errors during Level 2 processing is greater than the acceptable threshold	Operational
1	Percentage of DSRs free of processing errors during Level 2 processing is less than the acceptable threshold	Operational
2	Reserved	Operational
3	Missing value	Operational

\* MWR = Microwave radiometer"

\*\* DSR = Data set record

**0 25 150*****Method of tropical cyclone intensity analysis using satellite data***

Code figure		Status
1	The Dvorak's VIS (VISual imagery) intensity analysis	Operational
2	The Dvorak's EIR (Enhanced InfraRed imagery) intensity analysis	Operational
3-14	Reserved	Operational
15	Missing value	Operational

**0 25 174*****SMOS information flag***

Bit No.	Meaning	Status
1	Pixel is affected by RFI effects	Operational
2	Pixel is located in the hexagonal alias direction centred on Sun alias	Operational
3	Pixel is close to the border delimiting the extended alias free zone	Operational
4	Pixel is inside the extended alias free zone	Operational
5	Pixel is inside the exclusive of alias free zone	Operational
6	Pixel is located in a zone where a Moon alias was reconstructed	Operational
7	Pixel is located in a zone where Sun reflection has been detected	Operational
8	Pixel is located in a zone where Sun alias was reconstructed	Operational
9	Flat target transformation has been performed during image reconstruction of this pixel	Operational
10	Scene has been combined with an adjustment scene in opposite polarization during image reconstruction to account for cross-polarization leakage	Operational
11	Direct Moon correction has been performed during image reconstruction of this pixel	Operational
12	Reflected Sun correction has been performed during image reconstruction of this pixel	Operational
13	Direct Sun correction has been performed during image reconstruction of this image	Operational
All 14	Missing value	Operational



**0 26 010*****Hours included***

Bit No.		Status
1	0100 included	Operational
2	0200 included	Operational
3	0300 included	Operational
4	0400 included	Operational
5	0500 included	Operational
6	0600 included	Operational
7	0700 included	Operational
8	0800 included	Operational
9	0900 included	Operational
10	1000 included	Operational
11	1100 included	Operational
12	1200 included	Operational
13	1300 included	Operational
14	1400 included	Operational
15	1500 included	Operational
16	1600 included	Operational
17	1700 included	Operational
18	1800 included	Operational
19	1900 included	Operational
20	2000 included	Operational
21	2100 included	Operational
22	2200 included	Operational
23	2300 included	Operational
24	2400 included	Operational
25	Unknown mixture of hours	Operational
All 26	Missing value	Operational





**0 29 001*****Projection type***

Code figure		Status
0	Gnomonic projection	Operational
1	Polar stereographic projection	Operational
2	Lambert's conformal conic projection	Operational
3	Mercator's projection	Operational
4	Scanning Cone (radar)*	Operational
5	Reserved	Operational
6	No projection	Operational
7	Missing value	Operational

\* Projection type 4 indicates a Cartesian grid placed directly on the scanning cone defined by the azimuthal sweep of the radar.

**0 29 002*****Coordinate grid type***

Code figure		Status
0	Cartesian	Operational
1	Polar	Operational
2	Other	Operational
3-6	Reserved	Operational
7	Missing value	Operational



**0 30 031*****Picture type***

Code figure		Status
0	PPI	Operational
1	Composite	Operational
2	CAPPI	Operational
3	Vertical section	Operational
4	Alphanumeric data	Operational
5	Map of subject clutter	Operational
6	Map	Operational
7	Test picture	Operational
8	Comments	Operational
9	Map of ground occultation	Operational
10	Map of radar beam height	Operational
11-13	Reserved	Operational
14	Other	Operational
15	Missing value	Operational

**0 30 032*****Combination with other data***

Bit No.		Status
1	Map	Operational
2	Satellite IR	Operational
3	Satellite VIS	Operational
4	Satellite WV	Operational
5	Satellite multispectral	Operational
6	Synoptic observations	Operational
7	Forecast parameters	Operational
8	Lightning data	Operational
9-14	Reserved	Operational
15	Other data	Operational
All 16	Missing value	Operational



**0 31 021*****Associated field significance***

Code figure			Status
0	Reserved		Operational
1	1-bit indicator of quality	0 = good 1 = suspect or bad	Operational
2	2-bit indicator of quality	0 = good 1 = slightly suspect 2 = highly suspect 3 = bad	Operational
3-5	Reserved		Operational
6	4-bit indicator of quality control class according to GTSP	0 = Unqualified 1 = Correct value (all checks passed) 2 = Probably good but value inconsistent with statistics (differ from climatology) 3 = Probably bad (spike, gradient, ... if other tests passed) 4 = Bad value, impossible value (out of scale, vertical instability, constant profile) 5 = Value modified during quality control 6-7 = Not used (reserved) 8 = Interpolated value 9 = Missing value	Operational
7	Percentage confidence		Operational
8		0 = <i>Not suspected</i> 1 = <i>Suspected</i> 2 = <i>Reserved</i> 3 = <i>Information not required</i>	<i>Validation</i>
9-20	<i>Reserved</i>		<i>Validation</i>
21	1-bit indicator of correction (see Note 2)	0 = original value 1 = substituted/corrected value	Operational
22-62	Reserved for local use		Operational
63	Missing value		Operational

## Notes:

- (1) Associated field significance shall be used initially in conjunction with the quality of observed data.
- (2) The code figure 21 may be used within corrected messages with the substituted/corrected values identified.
- (3) Further applications may be developed.

**0 31 031*****Data present indicator***

Bit No.	Value		Status
1	0	Data present	Operational
	1	Data not present	



**0 33 002*****Quality information***

Code figure		Status
0	Data not suspect	Operational
1	Data suspect	Operational
2	Reserved	Operational
3	Quality information not given	Operational

**0 33 003*****Quality information***

Code figure		Status
0	Data not suspect	Operational
1	Data slightly suspect	Operational
2	Data highly suspect	Operational
3	Data considered unfit for use	Operational
4-6	Reserved	Operational
7	Quality information not given	Operational

**0 33 005*****Quality information (AWS data)***

Bit No.		Status
1	No automated meteorological data checks performed	Operational
2	Pressure data suspect	Operational
3	Wind data suspect	Operational
4	Dry-bulb temperature data suspect	Operational
5	Wet-bulb temperature data suspect	Operational
6	Humidity data suspect	Operational
7	Ground temperature data suspect	Operational
8	Soil temperature (depth 1) data suspect	Operational
9	Soil temperature (depth 2) data suspect	Operational
10	Soil temperature (depth 3) data suspect	Operational
11	Soil temperature (depth 4) data suspect	Operational
12	Soil temperature (depth 5) data suspect	Operational
13	Cloud data suspect	Operational
14	Visibility data suspect	Operational
15	Present weather data suspect	Operational
16	Lightning data suspect	Operational
17	Ice deposit data suspect	Operational
18	Precipitation data suspect	Operational
19	State of ground data suspect	Operational
20	Snow data suspect	Operational
21	Water content data suspect	Operational
22	Evaporation/evapotranspiration data suspect	Operational
23	Sunshine data suspect	Operational
24-29	Reserved	Operational
All 30	Missing value	Operational

**0 33 006*****Internal measurement status information (AWS)***

Code figure		Status
0	Self-check OK	Operational
1	At least one warning active, no alarms	Operational
2	At least one alarm active	Operational
3	Sensor failure	Operational
4-6	Reserved	Operational
7	Missing value	Operational

**0 33 015*****Data quality-check indicator***

Code figure		Status
0	Passed all checks	Operational
1	Missing data check	Operational
2	Descending/reascending balloon check	Operational
3	Data plausibility check (above limits)	Operational
4	Data plausibility check (below limits)	Operational
5	Superadiabatic lapse rate check	Operational
6	Limiting angles check	Operational
7	Ascension rate check	Operational
8	Excessive change from previous flight	Operational
9	Balloon overhead check	Operational
10	Wind speed check	Operational
11	Wind direction check	Operational
12	Dependency check	Operational
13	Data valid but modified	Operational
14	Data outlier check	Operational
15-62	Reserved	Operational
63	Missing value	Operational

**0 33 020*****Quality control indication of following value***

Code figure		Status
0	Good	Operational
1	Inconsistent	Operational
2	Doubtful	Operational
3	Wrong	Operational
4	Not checked	Operational
5	Has been changed	Operational
6	Estimated	Operational
7	Missing value	Operational



**0 33 021*****Quality of following value***

Code figure		Status
0	Within limits	Operational
1	Outside limits	Operational
2	Reserved	Operational
3	Missing value	Operational

**0 33 022*****Quality of buoy satellite transmission***

Code figure		Status
0	Good (several identical reports have been received)	Operational
1	Dubious (no identical reports have been received)	Operational
2	Reserved	Operational
3	Missing value	Operational

**0 33 023*****Quality of buoy location***

Code figure		Status
0	Reliable (location was made over two satellite passes)	Operational
1	Latest known (no location over the corresponding pass)	Operational
2	Dubious (location made over one pass only; a second solution is possible in 5 per cent of the cases)	Operational
3	Missing value	Operational

**0 33 024*****Station elevation quality mark (for mobile stations)***

Code figure		Status
0	Reserved	Operational
1	Excellent - within 3 meters	Operational
2	Good - within 10 meters	Operational
3	Fair - within 20 meters	Operational
4	Poor - more than 20 meters	Operational
5	Excellent - within 10 feet	Operational
6	Good - within 30 feet	Operational
7	Fair - within 60 feet	Operational
8	Poor - more than 60 feet	Operational
9-14	Reserved	Operational
15	Missing value	Operational

**0 33 025*****ACARS interpolated values indicator***

Code figure		Status
0	Time interpolated, latitude and longitude reported	Operational
1	Time reported, latitude and longitude interpolated	Operational
2	Time, latitude, and longitude interpolated	Operational
3	Time, latitude, and longitude reported	Operational
4-6	Reserved	Operational
7	Missing value	Operational

**0 33 026*****Moisture quality***

Code figure		Status
0	Normal operations - measurement mode	Operational
1	Normal operations - non-measurement mode	Operational
2	Small RH	Operational
3	Humidity element is wet	Operational
4	Humidity element contaminated	Operational
5	Heater fail	Operational
6	Heater fail and wet/contaminated humidity element	Operational
7	At least one of the input parameters used in the calculation of mixing ratio is invalid	Operational
8	Numeric error	Operational
9	Sensor not installed	Operational
10-62	Reserved	Operational
63	Missing value	Operational

**0 33 027*****Location quality class (range of radius of 66 % confidence)***

Code figure		Status
0	Radius $\geq$ 1500 m	Operational
1	500 m $\leq$ Radius $<$ 1500 m	Operational
2	250 m $\leq$ Radius $<$ 500 m	Operational
3	Radius $<$ 250 m	Operational
4-6	Reserved	Operational
7	Missing value	Operational

**0 33 028*****Snapshot overall quality***

Code figure		Status
1	Nominal	Operational
2	Degraded by SW error; any error reported by the algorithms	Operational
3	Degraded by instrument error	Operational
4	Degraded by corrupted /missing ADF	Operational
5-6	Reserved	Operational
7	Missing value	Operational

**0 33 030*****Scan line status flags for ATOVS***

Bit No.		Status
1	Do not use scan for product generation	Operational
2	Time sequence error detected with this scan	Operational
3	Data gap precedes this scan	Operational
4	No calibration	Operational
5	No Earth location	Operational
6	First good time following a clock update	Operational
7	Instrument status changed with this scan	Operational
8-23	Reserved	Operational
All 24	Missing value	Operational

Note: If bit is set to 1 then statement is true.

**0 33 031*****Scan line quality flags for ATOVS***

Bit No.		Status
1	Time field is bad but can probably be inferred from the previous good time	Operational
2	Time field is bad and can't be inferred from the previous good time	Operational
3	This record starts a sequence that is inconsistent with previous times (i.e. there is a time discontinuity). This may or may not be associated with a spacecraft clock update (see scan line status flags for ATOVS)	Operational
4	Start of a sequence that apparently repeats scan times that have been previously accepted	Operational
5	Scan line was not calibrated because of bad time	Operational
6	Scan line was calibrated using fewer than the preferred number of scan lines because of proximity to start or end of data or to a data gap	Operational
7	Scan line was not calibrated because of bad or insufficient PRT data	Operational
8	Scan line was calibrated but with marginal PRT data	Operational
9	Some uncalibrated channels on this scan	Operational
10	Uncalibrated due to instrument mode	Operational

(continued)

(Code table 0 33 031 - continued)

Bit No.		Status
11	Questionable calibration because of antenna position error of space view	Operational
12	Questionable calibration because of antenna position error of black body	Operational
13	Not Earth located because of bad time	Operational
14	Earth location questionable because of questionable time code (see time problem code bits)	Operational
15	Earth location questionable - only marginal agreement with reasonableness check	Operational
16	Earth location questionable - fails reasonableness check	Operational
17	Earth location questionable because of antenna position check	Operational
18	Scan line calibration cold black body	Operational
19	Scan line calibration warm black body	Operational
20	Scan line calibration space view	Operational
21	Earth view	Operational
22-23	Reserved	Operational
All 24	Missing value	Operational

Notes:

- (1) If bit is set to 1 then statement is true.
- (2) Bits 1-4 represent time problem code. All bits off implies the scan time is as expected.
- (3) Bits 5-10 represent calibration problem code. All bits set to zero indicated normal calibration. Where any of bits 5, 7, 10 are set, secondary calibration coefficients have been used.
- (4) Bits 11-17 represent Earth location problem code. All bits set to zero implies the Earth location was normal.

**0 33 032*****Channel quality flags for ATOVS***

Bit No.		Status
1	No good blackbody counts for scan line	Operational
2	No good space view counts for this line	Operational
3	No good PRTs for this line	Operational
4	Some bad blackbody view counts for this line	Operational
5	Some bad space view counts for this line	Operational
6	Some bad PRT temps on this line	Operational
7-23	Reserved (bits set to zero)	Operational
All 24	Missing value	Operational

Note: All bits off implies a good calibration.

**0 33 033*****Field of view quality flags for ATOVS***

Bit No.		Status
1	Set if secondary calibration used	Operational
2-21	Bit n set to 1 if brightness temperature in channel n-1 is physically unreasonable or has not been calculated due to calibration problems	Operational
22	Set if all the channels are missing	Operational
23	Suspect	Operational
All 24	Missing value	Operational

## Notes:

- (1) All bits off implies a good calibration.  
 (2) Bits 2-21 used for HIRS, but only bits 2-16 used for AMSU-A and only bits 2-6 used for AMSU-B.

**0 33 035*****Manual/automatic quality control***

Code figure		Status
0	Automatic quality control passed and not manually checked	Operational
1	Automatic quality control passed and manually checked and passed	Operational
2	Automatic quality control passed and manually checked and deleted	Operational
3	Automatic quality control failed and manually not checked	Operational
4	Automatic quality control failed and manually checked and failed	Operational
5	Automatic quality control failed and manually checked and re-inserted	Operational
6	Automatic quality control flagged data as questionable and not manually checked	Operational
7	Automatic quality control flagged data as questionable and manually checked and failed	Operational
8	Manually checked and failed	Operational
9-14	Reserved	Operational
15	Missing value	Operational

**0 33 037*****Wind correlation error***

Bit No.		Status
1	u departure from guess	Operational
2	v departure from guess	Operational
3	u and v departure from guess	Operational
4	u acceleration	Operational
5	v acceleration	Operational
6	u and v acceleration	Operational
7	Possible land feature	Operational
8	u acceleration and possible land feature	Operational
9	v acceleration and possible land feature	Operational
10	u and v acceleration and possible land feature	Operational

(continued)

(Code table 0 33 037 - continued)

Bit No.		Status
11	Bad wind guess	Operational
12	Correlation failure	Operational
13	Search box off edge of area	Operational
14	Target box off edge of area	Operational
15	Pixel brightness out of bounds (noisy line)	Operational
16	Target outside of latitude/longitude box	Operational
17	Target outside of pressure minimum/maximum	Operational
18	Autoeditor flagged slow vector	Operational
19	Autoeditor flagged vectors	Operational
All 20	Missing value	Operational

**0 33 038*****Quality flags for ground-based GNSS \* data***

Bit No.		Status
1	Total zenith delay quality is considered poor	Operational
2	GALILEO satellites used	Operational
3	GLONASS satellites used	Operational
4	GPS satellites used	Operational
5	Meteorological data applied	Operational
6	Atmospheric loading correction applied	Operational
7	Ocean tide loading applied	Operational
8	Climate quality data processing	Operational
9	Near-real time data processing	Operational
All 10	Missing value	Operational

\* GNSS = Global Navigation Satellite Systems

**0 33 039*****Quality flags for radio occultation data***

Bit No.		Status
1	Non-nominal quality	Operational
2	Offline product	Operational
3	Ascending occultation flag	Operational
4	Excess phase processing non-nominal	Operational
5	Bending angle processing non-nominal	Operational
6	Refractivity processing non-nominal	Operational
7	Meteorological processing non-nominal	Operational
8-13	Reserved	Operational
14	Background profile non-nominal	Operational
15	Background (i.e. not retrieved) profile present	Operational
All 16	Missing value	Operational

**0 33 041*****Attribute of following value***

Code figure		Status
0	The following value is the true value	Operational
1	The following value is higher than the true value (the measurement hit the lower limit of the instrument)	Operational
2	The following value is lower than the true value (the measurement hit the higher limit of the instrument)	Operational
3	Missing value	Operational

Note: This descriptor will be associated with visibility data or height of clouds data to specify if the value is bounded. If the reported data is the true value, the code figure is 0. However, the measurement can hit the limit of the instrument measurement capability. If the reported value is higher than the true value, the code figure is 1; if the reported value is lower than the true value, the code figure is 2.

**0 33 042*****Type of limit represented by following value***

Code figure		Status
0	Exclusive lower limit (>)	Operational
1	Inclusive lower limit (>=)	Operational
2	Exclusive upper limit (<)	Operational
3	Inclusive upper limit (<=)	Operational
4-6	Reserved	Operational
7	Missing value	Operational

**0 33 043*****AST confidence***

Bit No.		Status
1	Sea MDS. Nadir only SST retrieval used 3.7 micron channel Land MDS reserved	Operational
2	Sea MDS. Dual view SST retrieval used 3.7 micron channel Land MDS reserved	Operational
3	Nadir view contains day time data	Operational
4	Forward view contains day time data	Operational
5-7	Reserved	Operational
All 8	Missing value	Operational

**0 33 044*****ASAR quality information***

Bit No.		Status
1	Input data mean outside nominal range flag	Operational
2	Input data standard deviation outside nominal range flag	Operational
3	Number of input data gaps > threshold value	Operational

(continued)

(Code table 0 33 044 - continued)

Bit No.		Status
4	Percentage of missing lines > threshold value	Operational
5	Doppler centroid uncertain. Confidence measure < specific value	Operational
6	Doppler ambiguity estimate uncertain. Confidence measure < specific value	Operational
7	Output data mean outside nominal range flag	Operational
8	Output data standard deviation outside nominal range flag	Operational
9	Chirp reconstruction failed or is of low quality flag	Operational
10	Data set missing	Operational
11	Invalid downlink parameters	Operational
12	Azimuth cut-off iteration count. The azimuth cut-off fit did not converge within a minimum number of iterations	Operational
13	Azimuth cut-off fit did not converge within a minimum number of iterations	Operational
14	Phase information confidence measure. The imaginary spectral peak is less than a minimum threshold, or the zero lag shift is greater than a minimum threshold	Operational
All 15	Missing value	Operational

**0 33 047*****Measurement confidence data***

Bit No.		Status
1	Error detected and attempts to recover made	Operational
2	Anomaly in on-board data handling (OBDH) value detected	Operational
3	Anomaly in ultra stable oscillator processing (USOP) value detected	Operational
4	Errors detected by on-board computer	Operational
5	Automatic gain control (AGC) out of range	Operational
6	Reception (Rx) delay fault. Rx distance out of range	Operational
7	Wave form samples fault identifier. Error	Operational
8	S-band anomaly/error detected	Operational
9-11	Reserved	Operational
12	Brightness temperature (channel 1) out of range	Operational
13	Brightness temperature (channel 2) out of range	Operational
14	Reserved	Operational
15	Ku-band ocean retracking error	Operational
16	S-band ocean retracking error	Operational
17	Ku-band ice 1 retracking error	Operational
18	S-band ice 1 retracking error	Operational
19	Ku-band ice 2 retracking error	Operational
20	S-band ice 2 retracking error	Operational
21	Ku-band sea ice retracking error	Operational
22	Arithmetic fault error	Operational
23	Meteo data state. No map	Operational
24	Meteo data state. 1 map	Operational
25	Meteo data state. 2 maps degraded	Operational
26	Meteo data state. 2 maps nominal	Operational
27	Orbit propagator status for propagation mode, several errors	Operational
28	Orbit propagator status for propagation mode, warning detected	Operational
29	Orbit propagator status for initialization mode, several errors	Operational
30	Orbit propagator status for initialization mode, warning detected	Operational
All 31	Missing value	Operational



**0 33 048*****Confidence measure of SAR\* inversion***

Code figure		Status
0	Inversion successful	Operational
1	Inversion not successful	Operational
2	Reserved	Operational
3	Missing value	Operational

\* SAR = Synthetic aperture radar

**0 33 049*****Confidence measure of wind retrieval***

Code figure		Status
0	External wind direction used during inversion	Operational
1	External wind direction not used during inversion	Operational
2	Reserved	Operational
3	Missing value	Operational

**0 33 050*****Global GTSP quality flag***

Code figure		Status
0	Unqualified	Operational
1	Correct value (all checks passed)	Operational
2	Probably good but value inconsistent with statistics (differ from climatology)	Operational
3	Probably bad (spike, gradient, etc., if other tests passed)	Operational
4	Bad value, impossible value (out of scale, vertical instability, constant profile)	Operational
5	Value modified during quality control	Operational
6-7	Reserved	Operational
8	Interpolated value	Operational
9	<i>Good for operational use; Caution; check literature for other uses</i>	<i>Validation</i>
10-14	<i>Reserved</i>	<i>Validation</i>
15	Missing value	Operational

**0 33 052*****S-band ocean retracking quality***

Bit No.		Status
1-20	First 20 least significant bits correspond to the 20 values (one per data block containing: 0 = valid measurement, 1 = invalid). Bit 1 applies to the 20th data block	Operational
All 21	Missing value	Operational

**0 33 053*****Ku-band ocean retracking quality***

Bit No.		Status
1-20	First 20 least significant bits correspond to the 20 values (one per data block containing: 0 = valid measurement, 1 = invalid). Bit 1 applies to the 20th data block	Operational
All 21	Missing value	Operational

**0 33 060*****GqisFlagQual - individual IASI-System quality flag***

Code figure		Status
0	Good	Operational
1	Bad	Operational
2	Reserved	Operational
3	Missing value	Operational

**0 33 070*****Total ozone quality***

Code figure		Status
0	Good retrieval	Operational
1	Bad aerosol information flag or NOAA-16 radiance anomaly	Operational
2	Solar zenith angle greater than 84 degrees	Operational
3	380 nm residue greater than limit	Operational
4	Ozone inconsistency	Operational
5	Difference between profile ozone and step 3 total ozone exceeds threshold (set to 25 DU)	Operational
6	Step 1 ozone iteration did not converge	Operational
7	Any channel residue greater than 16 or bad radiance	Operational
8-14	Reserved	Operational
15	Missing value	Operational

**0 33 071*****Profile ozone quality***

Code figure		Status
0	Good retrieval	Operational
1	Solar zenith angle greater than 84 degrees	Operational
2	Difference between step 3 and profile total ozone greater than limit (25 DU)	Operational
3	Average final residue for wavelengths used in retrieval greater than threshold	Operational
4	Final residue greater than 3 times a priori error	Operational
5	Difference between retrieved and a priori greater than 3 times a priori error	Operational
6	Non-convergent solution	Operational
7	Upper level profile anomaly or stray light anomaly	Operational
8	Initial residue greater than 18.0 N-value units	Operational
9-14	Reserved	Operational
15	Missing value	Operational

**0 33 072*****Ozone error***

Code figure		Status
0	Good retrieval	Operational
1	Reflectivity out of range	Operational
2	Larger pixels (Number of cross-track pixels less than 32) or backward scans error	Operational
3	Solar zenith angle greater than 88 degrees	Operational
4	Latitude/longitude out of range	Operational
5	Viewing zenith angle or solar zenith angle out of range	Operational
6	Step-one process failed in general	Operational
7	First guess ozone out of range	Operational
8	Too many iterations (exceed 8)	Operational
9	Step-one residue calculation failed	Operational
10	Step-two process failed in general	Operational
11	First guess ozone profile out of range	Operational
12	Step-two ozone value out of range	Operational
13	Step-two residue calculation failed	Operational
14	Step-three process failed in general	Operational
15	Polarization correction accuracy alert	Operational
16	Radiance or irradiance less or equal to zero	Operational
17-30	Reserved	Operational
31	Missing value	Operational

**0 33 075*****Scan-level quality flags***

Bit No.		Status
1	Gap in Raw Data Record (RDR) data detected (i.e., missing scan(s) preceding the current scan)	Operational
2	Recorded time is not in sequence (i.e., the scan start time is out of sequence)	Operational
3	Lambda monitored calculation cannot be updated (see Note 1)	Operational
4	The measured temperatures of any instrument components (e.g., beam-splitter, scan mirror, scan baffle, etc.) are outside the allowable ranges (see Note 2)	Operational
5	At least one of the monitored instrument temperatures has drifted more than a specified tolerance value	Operational
6-12	Reserved	Operational
All 13	Missing value	Operational

**Notes:**

- (1) Set to 1 if laser wavelength calculation is invalid due to laser diode bias current and/or laser diode temperature measurements being outside the predetermined allowable ranges. These ranges are tunable. In this case Lambda monitored calculation shall have 1 bit per scan.
- (2) These temperatures are used to compute the "environmental" contribution to the Internal Calibration Target (ICT) radiances. When this bit is set to 1, the invalid temperatures shall be replaced with the validated temperature values of the ICT.

**0 33 076*****Calibration quality flags***

Bit No.		Status
1	Lunar intrusion on first deep space view (see Note)	Operational
2	Lunar intrusion on second deep space view (see Note)	Operational
3-8	Reserved	Operational
All 9	Missing value	Operational

Note: Set to 1 if at least one spectrum in the deep space moving average was invalidated due to a lunar intrusion.

**0 33 077*****Field-of-view quality flags***

Bit No.		Status
1	Degraded SDR quality	Operational
2	Invalid SDR* quality (see Note 1)	Operational
3	Invalid SDR* geolocation information	Operational
4	Degraded radiometric calibration	Operational
5	Invalid radiometric calibration (see Note 2)	Operational
6	Degraded spectral calibration	Operational
7	Invalid spectral calibration (see Note 3)	Operational
8	Fringe count error detected and corrected (see Note 4)	Operational
9	Day/night indicator (see Note 5)	Operational
10	Invalid RDR** data (see Note 6)	Operational
11	Significant fringe count error detected (see Note 7)	Operational
12	Bit trim failed	Operational
13-18	Reserved	Operational
All 19	Missing value	Operational

\* SDR = Science data record

\*\* RDR = Raw data record

## Notes:

- (1) SDR quality is invalid if bit trim failed (see bit 12), or fringe count error detected (see bit 11), or invalid raw data record (RDR) data (see bit 10), or invalid radiometric calibration (see bit 5), or invalid spectral calibration (see bit 7).
- (2) Radiometric calibration is invalid if radiometric calibration is not performed, or if it is performed with invalid calibration data (e.g., deep space window size = 0).
- (3) Spectral calibration is invalid if fringe count error detected and corrected (see bit 8), or if neon calibration is suspect and Lambda monitored calculation cannot be updated (see "Scan-level quality flags" (0 33 075) - bit 3).
- (4) Set to 0 if no fringe count error was detected (see bit 11), or a fringe count error was detected but it was not corrected.
- (5) Set to 0 if day (solar zenith angle < 90). Set to 1 if night (solar zenith angle > 90).
- (6) This flag indicates the instrument exhibited operational errors and the associated interferogram(s) is/are excluded from SDR processing.
- (7) This flag indicates a significant number of fringes have been missed, shifting the interferogram ZPD outside of a window monitored by the instrument, and the interferogram is excluded from SDR processing.

**0 33 078*****Geolocation quality***

Code figure		Status
0	Nominal - altitude and Ephemeris data available	Operational
1	Missing at most a small gap of altitude and Ephemeris data	Operational
2	Missing more than a small gap of altitude and Ephemeris data, but no more than a granule boundary	Operational
3	Missing more than a granule boundary of altitude and Ephemeris data	Operational
4-14	Reserved	Operational
15	Missing	Operational

**0 33 079*****Granule level quality flags***

Bit No.		Status
1-5	Reserved	Operational
6	The No. 1-No.7 health checks failed	Operational
7	The No. 8-No.15 health checks failed	Operational
8	The No. 16-No.23 health checks failed	Operational
9	The No. 24-No.31 health checks failed	Operational
10	The No. 32-No.39 health checks failed	Operational
11	The No. 40-No.47 health checks failed	Operational
12	The No. 48-No.55 health checks failed	Operational
13	The No. 56-No.63 health checks failed	Operational
14	The No. 64-No.70 health checks failed	Operational
15	Quadratic correction applied to the radiometric transfer function for non-linearity correction	Operational
All 16	Missing value	Operational

**0 33 080*****Scan level quality flags***

Bit No.		Status
1-6	Reserved	Operational
7	Divide-by-zero condition or computation loop failed to converge in the K/Ka and V (KAV) band PRT	Operational
8	Divide-by-zero condition or computation loop failed to converge in the WG band PRT	Operational
9	Divide-by-zero condition or computation loop failed to converge in the K/Ka, V, W, G band receiver shelf PRT K temperature computation	Operational
10	Out of range condition for the K/Ka and V band PRT	Operational
11	Out of range condition for the WG band PRT	Operational
12	KAV PRT temperature inconsistency	Operational
13	WG PRT temperature inconsistency	Operational
14	Time sequence error	Operational
15	Data gap - missing scan(s) preceding the current scan	Operational
16	KAV PRT sufficiency - insufficient KAV PRT data are available	Operational
17	WG PRT sufficiency - insufficient WG PRT data are available	Operational
18	Space view antenna position error	Operational
19	Blackbody antenna position error	Operational
All 20	Missing value	Operational

**0 33 081*****Channel data quality flags***

Bit No.		Status
1-2	Reserved	Operational
3	Moon in space view	Operational
4	Gain error - the lowest blackbody count is smaller than or equal to the highest space view count in a scan	Operational
5	Calibration with fewer than preferred samples	Operational
6	Space view data sufficiency check - insufficient space view samples are available	Operational
7	Blackbody view data sufficiency check - insufficient blackbody view samples are available	Operational
8	Out of range condition for the space view	Operational
9	Out of range condition for the blackbody view	Operational
10	Space view inconsistency	Operational
11	Blackbody view inconsistency	Operational
All 12	Missing value	Operational

### 0 33 082

#### *Geolocation quality flags*

Bit No.		Status
1-6	Reserved	Operational
7	Invalid input data (indicates that any of the spacecraft ephemeris or attitude data is invalid)	Operational
8	Bad pointing (indicates that the sensor LOS does not intersect the geoid, is near the limb, has invalid sensor angles or other similar condition)	Operational
9	Bad terrain (indicates that the algorithm could not obtain a valid terrain value)	Operational
10	Invalid solar angles	Operational
11	Missing at most a small gap of altitude and ephemeris data	Operational
12	Missing more than a small gap of altitude and ephemeris data, but no more than a granule boundary	Operational
13	Missing more than a granule boundary of altitude and ephemeris data	Operational
14	The number of encoder pulse values per delta time is not as expected	Operational
15	Solar eclipse during earth view scan	Operational
All 16	Missing value	Operational

### 0 33 083

#### *Radiance data quality flags*

Bit No.		Status
1-6	Reserved	Operational
7	Poor calibration quality due to bad space view offsets, OBC view offsets, etc or use of a previous calibration view	Operational
8	Saturated pixel	Operational
9	Missing data -data required for calibration processing is not available for processing	Operational
10	Calibrated pixel radiance out of range	Operational
11	Calibrated pixel reflectance or EBBT out of range	Operational
12	The moon has corrupted the space view	Operational
13	Scan data is not present (no valid data)	Operational
14	Quality for this scan-line is reduced. The value is determined by the combined number of steps required to find a replacement for thermistor or calibration source data	Operational
15	Bad detector	Operational
All 16	Missing value	Operational





**0 35 000*****FM and Regional Code number***

Code figure		Status
000-099	International FM Codes	Operational
100-199	RA I Codes	Operational
200-299	RA II Codes	Operational
300-399	RA III Codes	Operational
400-499	RA IV Codes	Operational
500-599	RA V Codes	Operational
600-699	RA VI Codes	Operational
700-799	Antarctic Codes	Operational
800-999	Reserved	Operational
1000-1022	Not used	Operational
1023	Missing value	Operational

**0 35 001*****Time-frame for monitoring***

Code figure		Status
0	Real time	Operational
1	Near-real time	Operational
2	Non-real time	Operational
3-6	Reserved	Operational
7	Missing value	Operational

**0 35 030*****Discrepancies in the availability of expected data***

Code figure		Status
0	No discrepancies	Operational
1	Non-compliance with standard and recommended practices and procedures including those of monitoring	Operational
2	Catalogues of meteorological bulletins not updated in a timely manner	Operational
3	Incorrect routing directories	Operational
4	Lack of flexibility in the routing arrangements	Operational
5	Deficiencies in the operation of GTS centres and circuits	Operational
6	Loss of data or delays in relaying data on the GTS	Operational
7	Routing of data different from the routing provided in the plan	Operational
8	Various malpractices	Operational
9-14	Reserved	Operational
15	Missing value	Operational

**0 35 031*****Qualifier on monitoring results***

Code figure		Status
1	Sufficient and all of acceptable quality	Operational
2	Sufficient but partly of acceptable quality	Operational
3	Insufficient but all of acceptable quality	Operational
4	Insufficient and of unacceptable quality	Operational
5	Some messages not complete	Operational
6	Suspect or wrongly coded groups could not be interpreted confidently	Operational
7	Gross coding errors	Operational
8	Transmission sequential order not observed	Operational
9	Report completely garbled and thus discarded	Operational
10	Deficiencies identified and rectified	Operational
11	Deficiencies identified but not rectified	Operational
12	Deficiencies not identified	Operational
13	Measuring errors	Operational
14	Mutual inconsistency	Operational
15	Temporal inconsistency	Operational
16	Forecast error	Operational
17	Bias	Operational
18	Improve system of quality control	Operational
19	Expand training programmes	Operational
20-98	Reserved	Operational
99-122	Not used	Operational
123	Missing value	Operational

**0 35 032*****Cause of missing data***

Code figure		Status
1	Data groups missing due to radio fading	Operational
2	Data groups missing due to outage of centre	Operational
3	Data groups missing due to outage of circuit	Operational
4	Non-implementation or maintenance of required RBSN density	Operational
5	Shortage of qualified staff to man stations	Operational
6	Lack of consumables	Operational
7	Instrument failure	Operational
8	Non-adherence to telecommunication procedures	Operational
9	Some observing programmes ceased	Operational
10-14	Not used	Operational
15	Missing value	Operational

**0 35 033*****Observation and collection deficiencies***

Code figure		Status
1	No deficiency	Operational
2	Observations not made regularly	Operational
3	Observations not made at right time	Operational
4	Observations made but not disseminated	Operational
5	Observations made and sent to incorrect users	Operational
6	Collection not received	Operational
7	Collection transmitted late	Operational
8	Collection not transmitted	Operational
9	Difficulties in HF propagation and selection of suitable frequency	Operational
10	Difficulties in maintenance of communication equipment at remote stations	Operational
11	No alternative arrangement for routing meteorological observation	Operational
12-99	Reserved	Operational
100-122	Not used	Operational
123	Missing value	Operational

**0 35 034*****Statistical trends for availability of data (during the survey period(s))***

Code figure		Status
1	Slight improvement	Operational
2	Significant improvement	Operational
3	Most significant improvement	Operational
4	Steady	Operational
5	Decreasing	Operational
6	Efforts required to improve night-time observations	Operational
7	Missing value	Operational

**0 35 035*****Reason for termination***

Code figure		Status
0	Reserved	Operational
1	Balloon burst	Operational
2	Balloon forced down by icing	Operational
3	Leaking or floating balloon	Operational

*(continued)*

*(Code table 0 35 035 - continued)*

Code figure		Status
4	Weak or fading signal	Operational
5	Battery failure	Operational
6	Ground equipment failure	Operational
7	Signal interference	Operational
8	Radiosonde failure	Operational
9	Excessive missing data frames	Operational
10	Reserved	Operational
11	Excessive missing temperature	Operational
12	Excessive missing pressure	Operational
13	User terminated	Operational
14-29	Reserved	Operational
30	Other	Operational
31	Missing value	Operational

**0 40 005*****Soil moisture correction flag***

Bit No.		Status
1	Soil moisture between -20% and 0%	Operational
2	Soil moisture between 100% and 120%	Operational
3	Correction of wet backscatter reference	Operational
4	Correction of dry backscatter reference	Operational
5	Correction of volume scattering in sand	Operational
6-7	Reserved	Operational
All 8	Missing value	Operational

Note: The nominal range for the surface soil moisture is 0% - 100%. In extreme cases, the extrapolated backscatter at 40 degrees incidence angle may exceed the dry or the wet backscatter reference. In these cases, the value provided by the measurement process of surface soil moisture is, respectively, less than 0% or more than 100%.

**0 40 006*****Soil moisture processing flag***

Bit No.		Status
1	Not soil	Operational
2	Sensitivity to soil moisture below limit	Operational
3	Azimuthal noise above limit	Operational
4	Backscatter Fore-Aft beam out of range	Operational
5	Slope Mid-Fore beam out of range	Operational
6	Slope Mid-Aft beam out of range	Operational
7	Soil moisture below -20%	Operational
8	Soil moisture above 120%	Operational
9-15	Reserved	Operational
All 16	Missing value	Operational

Note: See Note under Flag table 0 40 005.

**0 40 011*****Interpolation flag***

Bit No.		Status
1	Mean sea surface (MSS) interpolation flag	Operational
2	Ocean tide solution 1 interpolation flag (0 = 4 points over ocean, 1 = less than 4 points)	Operational
3	Ocean tide solution 2 interpolation flag (0 = 4 points over ocean, 1 = less than 4 points)	Operational
4	Meteorological data interpolation flag (0 = 4 points over ocean, 1 = less than 4 points)	Operational
5-7	Reserved	Operational
All 8	Missing value	Operational

**0 40 012*****Radiometer data quality flag***

Bit No.	(0 is good, 1 is bad)	Status
1	18.7 GHz brightness temperature	Operational
2	23.8 GHz brightness temperature	Operational
3	34 GHz brightness temperature	Operational
4-7	Reserved	Operational
All 8	Missing value	Operational

**0 40 013*****Radiometer brightness temperature interpretation flag***

Code figure		Status
0	Interpolation with no gap between JMR* data	Operational
1	Interpolation with gaps between JMR* data	Operational
2	Extrapolation of JMR* data	Operational
3	Failure of extrapolation and interpolation	Operational
4-6	Reserved	Operational
7	Missing value	Operational

\* JMR = JASON-1 Microwave Radiometer

**0 40 020*****GqisFlagQualDetailed - quality flag for the system***

Bit No.		Status
1	NZPD and complex calibration error	Operational
2	Band 3 affected by spike	Operational
3	Band 3 affected by saturation	Operational
4	Band 2 affected by spike	Operational
5	Band 1 affected by spike	Operational
6	Overflow/under flow	Operational
7	On-board processing error	Operational
8	Spectral calibration error	Operational
9	Radiometric calibration error	Operational
10	Missing AVHRR data	Operational
11	Missing IIS data	Operational
12	Missing sounder data	Operational
13	GqisFlagQual summary flag for all bands	Operational
14	On-ground processing error	Operational
15	Inter-calibration error IASI/AVHRR	Operational
16	Spare	Operational
All 17	Missing value	Operational

**0 40 023*****Auxiliary altimeter state flags***

Bit No.		Status
1	Band sequence (0 = 3Ku_1C_3Ku, 1 = 2Ku_1C_2Ku)	Operational
2	C band frequency (0 = 320 MHz, 1 = 100 MHz)	Operational
3	C band status (0 = On, 1 = Off)	Operational
4	Ku band status (0 = On, 1 = Off)	Operational
All 5	Missing value	Operational

**0 40 024*****Meteorological map availability***

Code figure		Status
0	2 maps available (6 hours apart)	Operational
1	2 maps available (> 6 hours apart)	Operational
2	1 map available; data extrapolated	Operational
3	No maps used	Operational
4-6	Reserved	Operational
7	Missing value	Operational

**0 40 025*****Interpolation flag for mean diurnal tide***

Code figure		Status
0	Good	Operational
1	Bad	Operational
2	Reserved	Operational
3	Missing value	Operational