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| WORLD METEOROLOGICAL ORGANIZATION  COMMISSION FOR BASIC SYSTEMS  -----------------------------  THIRD MEETING OF  INTER-PROGRAMME EXPERT TEAM ON DATA REPRESENTATION MAINTENANCE AND MONITORING  BEIJING, CHINA, 20 - 24 JULY 2015 |  | IPET-DRMM-III / Doc. 2.2 (2)  (22. 6. 2015)  -------------------------  ITEM 2.2  ENGLISH ONLY |

GRIB

**New GRIB2 parameters and product definition template for observational satellite data**

*Submitted by Jeff Ator (U.S.A)*

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**Summary and Purpose of Document**

This document proposes several new GRIB2 parameters in Code Table 4.2, as well as a new Product Definition Template 4.35.

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**ACTION PROPOSED**

The meeting is requested to review the proposal and approve the contents for validation.

**DISCUSSION**

NCEP’s Ocean Prediction Center (OPC) plans to begin producing GRIB2 fields of observational data from the AMSR-2 satellite. Since this is data from a satellite, parameters will be reported from within discipline 3 (“Space products”). Several intended products, including those for wind speed and rain rate, already have parameters defined within this discipline, but others do not and so we are making a request for some new such parameters as shown in the below proposal.

In addition, the OPC intends to report quality information for most of these parameters. As discussed initially at IPET-DRMM-1 (Tokyo, 2013), there is no general, extensible way to report quality information associated with a grid of data values in GRIB2, and though an approach was developed during the Tokyo meeting, it was never subsequently validated and so is still not part of the official GRIB2 regulations. We would like to resurrect that proposal as part of this validation and would respectfully ask for assistance in doing so from CMC, EUMETSAT and others who originally helped to develop it at the time. However, in order to do so, we also need to propose an adaptation of existing product definition template 4.31 (“Satellite data”) in order to allow the specification of a code figure from code table 4.10, per the quality approach developed in Tokyo.

**PROPOSAL**

***New parameters in Code Table 4.2:***

**Discipline 3 (Space products)**

**Category 1 (Quantitative products)**

18 Water temperature K

**Category 191 (Miscellaneous)**

0 Seconds prior to initial reference time (defined in Section 1) s

***Product definition template 4.35 – satellite product with statistical process applied***

Octet No. Contents

10 Parameter category (see Code table 4.1)

11 Parameter number (see Code table 4.2)

12 Type of generating process (see Code table 4.3)

13 Observation generating process identifier (defined by originating centres)

14 Type of statistical process applied to parameter (see Code Table 4.10)

15 Number of contributing spectral bands (NB)

*16– Repeat the following 11 octets for each contributing band (nb = 1, NB)*

(16+11(nb–1))–(17+11(nb–1)) Satellite series of band nb (code table defined by originating/generating centre)

(18+11(nb–1))–(19+11(nb–1)) Satellite numbers of band nb (code table defined by originating/generating centre)

(20+11(nb–1))–(21+11(nb–1)) Instrument types of band nb (code table defined by originating/generating centre)

(22+11(nb–1)) Scale factor of central wave number of band nb

(23+11(nb–1))–(26+11(nb–1)) Scaled value of central wave number of band nb (units: m–1)

Note: For “satellite series of band nb”, “satellite numbers of band nb” and “instrument types of band nb”, it is recommended to encode the values as per BUFR Code tables 0 02 020, 0 01 007 (Common Code table C–5) and 0 02 019 (Common Code table C–8), respectively.

For our purposes, we only plan to use proposed code figure 13 (quality indicator) from Code Table 4.10, which is still awaiting validation from the IPET-DRMM-1 meeting in Tokyo and whose validation we would like to help conclude as part of the validation of this proposal. The Tokyo proposal is copied here for easy reference:

**Code table 4.10 – Type of statistical processing**

Code figure Meaning

12 Confidence index (see Note 4)

13 Quality indicator (see Note 5 and Code table 4.244)

Notes:

(4) The original data value is a non-dimensional number from 0 to 1, when 0 indicates no confidence and 1   
indicates maximal confidence.

(5) The original data value is defined by Code table 4.244.

**Code table 4.244 – Quality indicator**

Code figure Meaning

0 No quality information available

1 Failed

2 Passed

However, if the full IPET-DRMM thinks it may be useful for future extensibility of this template to other values from Code Table 4.10 (e.g. reporting of observed averages, maxima, minima from satellites) we would be willing to add the following values to the proposed new template. Such values would be set to “missing” when code figure 13 is used from Code Table 4.10:

15–16 Year (of start of time interval to which statistical process applies)

17 Month (of start of time interval to which statistical process applies)

18 Day (of start of time interval to which statistical process applies)

19 Hour (of start of time interval to which statistical process applies)

20 Minute (of start of time interval to which statistical process applies)

21 Second (of start of time interval to which statistical process applies)

So in this case the new template for validation would then be:

***Product definition template 4.35 – satellite product with statistical process applied***

Octet No. Contents

10 Parameter category (see Code table 4.1)

11 Parameter number (see Code table 4.2)

12 Type of generating process (see Code table 4.3)

13 Observation generating process identifier (defined by originating centres)

14 Type of statistical process applied to parameter (see Code Table 4.10)

15–16 Year (of start of time interval to which statistical process applies)

17 Month (of start of time interval to which statistical process applies)

18 Day (of start of time interval to which statistical process applies)

19 Hour (of start of time interval to which statistical process applies)

20 Minute (of start of time interval to which statistical process applies)

21 Second (of start of time interval to which statistical process applies)

22 Number of contributing spectral bands (NB)

*23– Repeat the following 11 octets for each contributing band (nb = 1, NB)*

(23+11(nb–1))–(24+11(nb–1)) Satellite series of band nb (code table defined by originating/generating centre)

(25+11(nb–1))–(26+11(nb–1)) Satellite numbers of band nb (code table defined by originating/generating centre)

(27+11(nb–1))–(28+11(nb–1)) Instrument types of band nb (code table defined by originating/generating centre)

(29+11(nb–1)) Scale factor of central wave number of band nb

(30+11(nb–1))–(33+11(nb–1)) Scaled value of central wave number of band nb (units: m–1)

Note: For “satellite series of band nb”, “satellite numbers of band nb” and “instrument types of band nb”, it is recommended to encode the values as per BUFR Code tables 0 02 020, 0 01 007 (Common Code table C–5) and 0 02 019 (Common Code table C–8), respectively.