

Prepared by EUMETSAT  
Agenda Item: II.5  
Discussed in WG II

## **Creation of a BUFR Master Table for Satellite Data**

The de facto standard format for the international exchange of satellite data on the GTS is BUFR. The management of the changes to the BUFR tables required in order to support the representation of these data and their evolution could be simplified by the creation of a specific BUFR master table for satellite data.

This paper describes the possible introduction of a dedicated BUFR master table for satellite data. It is proposed that the management of this master table be put under the responsibility of the Co-ordination Group for Meteorological Satellites (CGMS), and that the communication between this group and the ET/DR&C be dealt with by a suitable rapporteur.

CGMS Members are invited to consider the proposal for the introduction of a dedicated master table for satellite data and its subsequent management. The meeting is further invited to agree an implementation plan for the new master table, as appropriate.

This WP responds to Action 31.30.

## Creation of a BUFR Master Table for Satellite Data

### 1 INTRODUCTION

Consideration of the work of the WMO Expert Team on Data Representation and Codes (ET/DR&C) and its predecessors shows that a large fraction of the proposals and requests for additions and/or changes to BUFR tables originate in the satellite meteorology community. The ET/DR&C plays a vital role in reviewing and co-ordinating these changes, along with any many others.

This paper describes the possible introduction of a dedicated BUFR master table for satellite data. It is proposed that the management of this master table be put under the responsibility of the Co-ordination Group for Meteorological Satellites (CGMS), and that the communication between this group and the ET/DR&C be dealt with by a suitable rapporteur.

### 2 CREATION OF A NEW MASTER TABLE

The concept of alternative master tables is foreseen in BUFR. A master table number is indicated in octet 4 of Section 1. Note 2 to the specification of the contents of Section 1 in the Manual on Codes states that BUFR master tables may be defined for scientific disciplines other than meteorology.

At the 1998 meeting of the WMO/CBS Working Group on Data Management / Sub-Group on Data Representation and Codes in Montreal, a paper (Document 7) was submitted by the IOC/IODE presenting a BUFR master table for oceanography. The paper was, broadly speaking, favourably received by the sub-group, although some concerns were identified concerning the maintenance of the primary copy of the tables. The uptake of BUFR master table 10 has been somewhat slow within the oceanographic community for a number of reasons. It is hoped that the drive to get Argos data into BUFR will bring the issue forward.

### 3 MANAGEMENT OF A NEW MASTER TABLE

#### 3.1 Expert Team on Data Representation and Codes (ET/DR&C)

The ET/DR&C provides a focal point for changes to the Manual on Codes. The functions carried out by the Team with respect to BUFR are, *inter alia*:

- ◆ consideration of proposals for new code table entries, element descriptors, and sequence descriptors
- ◆ review of validation efforts relating to new entries
- ◆ discussion of proposals for new operator descriptors
- ◆ planning of content and scheduling of future BUFR editions.

Some of these activities are performed on a continual basis, using e-mail exchanges where appropriate. The Team meets yearly in order to address these and other data representation issues in a focussed forum.

### **3.2 Co-ordination Group for Meteorological Satellites (CGMS)**

CGMS provides a forum for the exchange of technical information on geo-stationary and polar orbiting meteorological satellite systems, such as:

- ◆ reporting on current meteorological satellite status and future plans,
- ◆ telecommunications matters,
- ◆ operations,
- ◆ inter-calibration of sensors,
- ◆ processing algorithms, products and their validation,
- ◆ data transmission formats, and
- ◆ future data transmission standards.

It is an international group whose active members include EUMETSAT, India, Japan, the People's Republic of China, the Russian Federation, the United States of America and WMO. The group's regular meetings have facilitated the co-ordination of the activities of the various satellite operators.

### **3.3 Master table for satellite data**

It is proposed that a BUFR master table for satellite data should be created, and this should be managed by CGMS, or a duly created working group thereof. This would reduce the workload of the ET/DR&C, and would make available many descriptors to support continually evolving satellite data representation requirements.

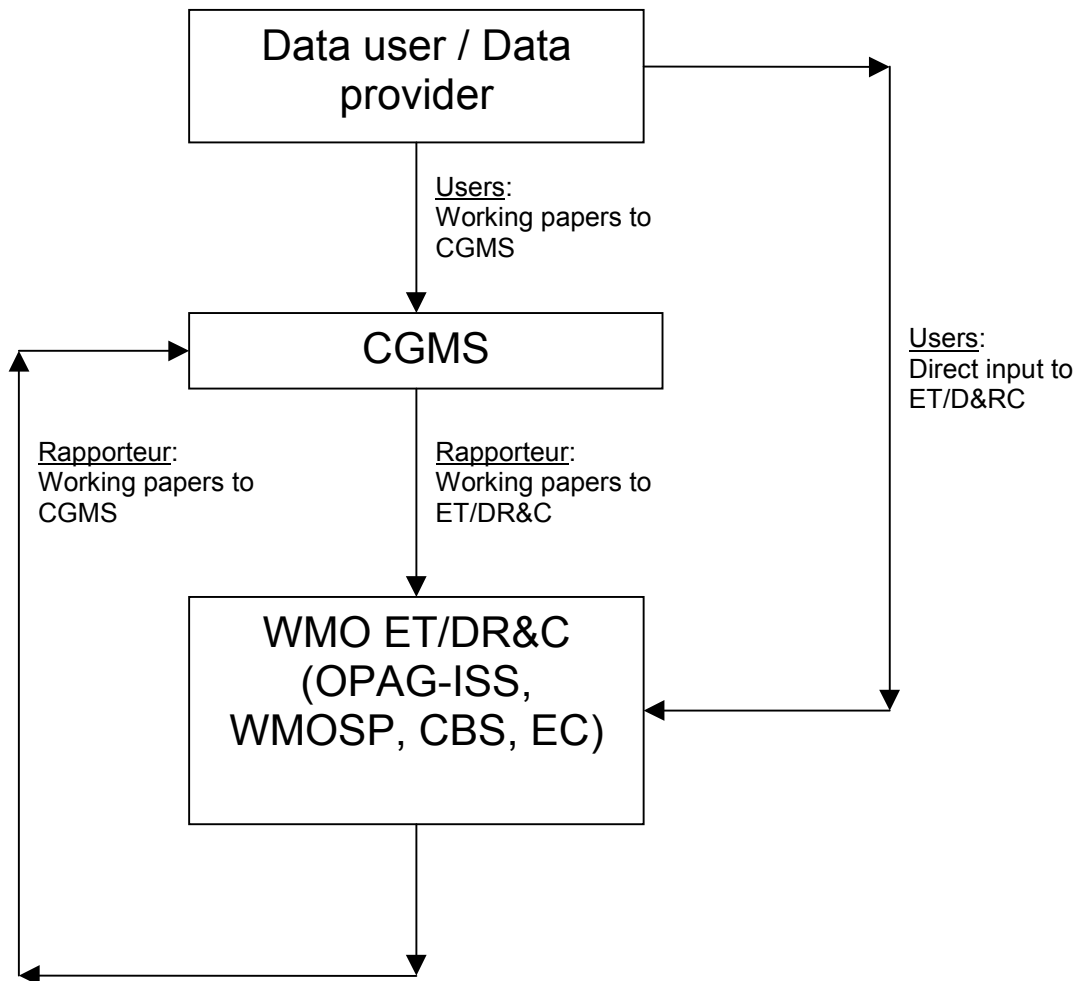
By giving CGMS control of the proposed master table, the necessary expertise for assessing detailed satellite specific issues would be readily accessible. As stated in Section 3.2, CGMS provides a forum for exchange of technical information on, among others data transmission formats. The management of a BUFR master table for satellite data would clearly fall within the scope of CGMS's activities.

### **3.4 The WMO Space Programme**

As set out in a recent WMO Congress Resolution (following from Draft Resolution 3.1.6/1 (Cg-XIV) – WMO Space Programme) a new major cross-cutting WMO Space Programme has been established. The role of the WMOSP is explained further in WMO's Sixth Long Term Plan. The WMOSP will, among many other things, encourage closer co-ordination between operational and R&D space agencies in the standardisation of data formats (see 6.10.19 in the Sixth Long-term Plan), and continue to be a member of CGMS (see 6.10.20 in the Sixth Long-term Plan).

The Sixth Long-term Plan and its description of the WMOSP's activities would support a potential role for the WMOSP in the management of a BUFR master table for satellite data.

The flow of information relating to the management of the proposed BUFR master table for satellite data is illustrated in the following figure.



### 3.5 Responsibilities

WMO and the ET/DR&C would remain responsible for the regulations defining the data representation form BUFR itself. The ET/DR&C would also remain responsible for the management of:

- ◆ BUFR Table A (Data Category),
- ◆ BUFR Table C (Data Description Operators),
- ◆ Common Code Tables to Binary and Alphanumeric Codes, and
- ◆ Class 0 of Table B (BUFR and CREX table entries).

For the proposed BUFR master table for satellite data, CGMS would be responsible for the co-ordination of:

- ◆ BUFR Table B (The classification and definition of data elements), excluding class 0,
- ◆ BUFR Table D (The list of common sequences), and
- ◆ Code and flag table entries.

Where the requirements for element or sequence descriptors are the same for the proposed satellite data master table and the existing master table for meteorology, the same element

definition should be used for both. This applies to the element name, number and specification, where appropriate.

It is proposed that a rapporteur be appointed to liaise between the ET/DR&C and CGMS. The rapporteur will be responsible for ensuring that the necessary information flow is in place between the two entities.

When a satellite data provider or user identifies a need for modifications or additions to the existing BUFR code tables, their input would be addressed either directly to CGMS or brought to the attention of CGMS via WMO and the aforementioned rapporteur.

#### **4 CONCLUSION**

This WMO document describes a proposal for a BUFR master table for satellite data and proposes a scheme for the management of the master table by CGMS.

When WMO and CGMS agree the proposal in principle, an implementation plan and schedule will need to be drawn up. Among the issues remaining to be considered are (j) the ability of existing BUFR software to handle multiple master tables, (ij) agreement upon an initial set of descriptors for the new master table, and (iij) a distribution mechanism for the master table, both via internet and hard copy.