|  |  |  |
| --- | --- | --- |
| WORLD METEOROLOGICAL ORGANIZATION  COMMISSION FOR BASIC SYSTEMS  -----------------------------  FIRST MEETING OF  INTER-PROGRAMME EXPERT TEAM ON CODES MAINTENANCE  GENEVA, SWITZERLAND, 24 - 28 JULY 2017 |  | IPET-CM-I / Doc. 2.6 (5)  (10. 7. 2017)  -------------------------  ITEM 2.6  ENGLISH ONLY |

GRIB edition 3

**Template for unstructured mesh**

*Submitted by Enrico Fucile*

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Summary and Purpose of Document**

Template components and template for unstructured mesh are proposed.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**ACTION PROPOSED**

The Team is asked to review the proposal and accept it for validation.

**DISCUSSIONS**

Unstructured grid is proposed as a list of latitudes and longitudes encoded using the simple packing algorithm. The mesh proposed is completely unstructured and some work is needed to provide extra components to define connectivity of the grid and to define partially structured grid.

**PROPOSAL**

***Horizontal Domain Template Component 4.13 – Latitude/longitude unstructured mesh simple packing***

|  |  |
| --- | --- |
| Byte No. | Contents |
| 1-4 | Number of grid points |
| 5-12 | Longitude Reference Value. (IEEE 64-bit floating-point) |
| 13-14 | Longitude Binary scale factor |
| 15-16 | Longitude Decimal scale factor |
| 17 | Number of bits used for each longitude value |
| 18-25 | Latitude Reference Value. (IEEE 64-bit floating-point) |
| 26-27 | Latitude Binary scale factor |
| 28-29 | Latitude Decimal scale factor |
| 30 | Number of bits used for each latitude value |
| 31-34 | Nblon - Number of bytes of longitude encoded data |
| 35 – 35+Nblon | Longitude simple packing encoded data |
| 36+Nblon - 37+Nblon | Nblat - Number of bytes of latitude encoded data |
| 38+Nblon – 38+Nblon+Nblat | Latitude simple packing encoded data |

***Horizontal Domain Template 4.z1 – Latitude/longitude unstructured mesh on ellipsoidal planet simple packing***

|  |  |
| --- | --- |
| Component Code | Component Name |
| 4.0 | Ellipsoid of revolution defined with axis lengths |
| 4.13 | Latitude/longitude unstructured grid simple packing |

***Horizontal Domain Template 4.z2 – Rotated Latitude/longitude unstructured mesh on ellipsoidal planet simple packing***

|  |  |
| --- | --- |
| Component Code | Component Name |
| 4.0 | Ellipsoid of revolution defined with axis lengths |
| 4.13 | Latitude/longitude unstructured grid simple packing |
| 4.2 | Rotation of latitude/longitude coordinate system |