**Follow up on IPET-DRMM II Document 2.2(1)**

**New parameters and fixed surface types to represent ground surface conditions in analyses or models**

Yves Pelletier, MSC

Original document reference: <http://www.wmo.int/pages/prog/www/ISS/Meetings/IPET-DRMM_CollegePark2014/Documents/IPET-DRMM-II_Doc2-2-1_parameters_types.docx>

**DISCUSSION**

Meteorological modeling systems use increasingly sophisticated representations of the ground surface to increase detail and accuracy in NWP analysis and forecast products. In this document we propose new parameters and fixed surface types to accommodate the increase in detail of modeling systems that are being implemented at the Canadian Centre for Meteorological and Environmental Prediction (CCMEP). An accurate representation of the state of the surface is useful not only for providing correct boundary conditions for NWP, but may also have uses as a standalone product.

We propose several new parameters to represent surface conditions, as well as several new fixed surface types. We also propose one new Parameter Category for glaciers and inland ice.

It should be noted that one of the proposed parameters, Brightness Temperature, would appear in Product Discipline 0, Parameter Category 5 (Long Wave Radiation). A similar parameter exists in Parameter Category 4 (Short Wave Radiation) but this seems incompatible with the wavelengths associated with Earth surface brightness temperatures.

**PROPOSAL**

The tables annexed herewith contain proposed additions to Tables 4.2 and 4.5 of the GRIB2 section of the Manual on Codes. These are necessary to reflect new surface fields being implemented at the CCMEP, and it is hoped that they are sufficiently general for eventual use by other Centres.

Validation status is requested for these additions.

**IPET-DRMM II OUTCOME (from personal meeting notes)**

The proposed code table entries were accepted for validation.

It was pointed out that certain code table numbers had already been taken by other parameters under validation. This is fixed in the proposed code tables in annex of this document and we request that these entries be reserved for validation.

It was pointed out that the root layer can be defined as a layer between the surface and the already existing “bottom of the root layer” parameter. The proposed root layer parameter has been withdrawn from the proposed code tables in annex.

Validation is contingent on MSC and ECMWF experts confirming or updating the terminology used in the proposed parameter and code table names. **ACTION ONGOING**.

Annex

Proposed new entries for Code Tables 4.2 and 4.5

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Parameter** | **Product Discipline** | **Parameter Category** | **Parameter number** | **Units** |
| Brightness temperature(See note 1) | 0 | 5 (long-wave radiation) | 7 | K |
| Soil volumetric ice content | 2 | 0 | 28 | m^3/m^3 |
| Liquid water in snow pack | 2 | 3 | 18 | kg/m^2 |
| Glacier temperature | 2 | 2 (**New parameter category**. Proposed name : glaciers and inland ice) | 1 | K |

|  |  |  |
| --- | --- | --- |
|  | **Proposed new entries for Code Table 4.5(Fixed surface types and units)** |  |
| **Code Figure** | **Meaning** | **Unit** |
|  |  |  |
| 174 | Deep inland or glacier ice (of indefinite depth) | none  |
| 175 | Grid tile land fraction as a model surface | none  |
| 176 | Grid tile water fraction as a model surface  | none  |
| 177 | Grid tile sea, lake or river ice fraction as a model surface | none  |
| 178 | Grid tile inland or glacier ice fraction as a model surface | none  |
| 179 | Top surface of sea, lake or river ice | none |
| 180 | Top surface of sea, lake or river ice, under snow cover | none |
| 181 | Bottom surface (underside) of sea, lake or river ice | none |
| 182 | Deep soil (of indefinite depth) | none |
| 183 | Inland or glacier ice (top surface) | none |