|  |  |  |
| --- | --- | --- |
| WORLD METEOROLOGICAL ORGANIZATIONCOMMISSION FOR BASIC SYSTEMS-----------------------------FOURTH MEETING OF INTER-PROGRAMME EXPERT TEAM ONDATA REPRESENTATION MAINTENANCE AND MONITORINGGENEVA, SWITZERLAND, 30 MAY – 3 JUNE 2016 |  | IPET-DRMM-IV/ Doc. 2.2 (5)(17. 5 2016)-------------------------ITEM 2.2ENGLISH ONLY |

GRIB

**New generating process and common codes to represent wildfire-driven pollution in air quality models**

*Submitted by Yves Pelletier (Canada), Paul-André Beaulieu (Canada)*

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

**Summary and Purpose of Document**

New air quality modeling systems incorporating wildfire emissions are becoming increasingly important in obtaining an accurate numerical representation of wildfire pollution transport. The cross-border nature of pollution transport makes collaboration and data exchange more important than ever. This document contains a proposal for a new type of generating process and new common codes for wildfire pollution modeling systems that are being implemented at the Canadian Meteorological Centre and are not currently available in GRIB2.

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

**ACTION PROPOSED**

The meeting is requested to approve the additions to Common Code Table C-14 as well as to Code Table 4.3 for validation.

**ANNEXES:**

 1. Proposed additions to Common Code Table C-14 and Code Table 4.3 in tabular form

**DISCUSSION**

Air quality modeling systems can greatly benefit from the ingestion of wildfire emissions, providing a more accurate representation of pollutants present in the atmosphere. In addition, the cross-border nature of air pollution increasingly requires timely and accurate data exchange between bordering authorities.

The proposed new generating process for Table 4.3, “difference between two forecasts”, describes the method used in the Canadian FireWork system: two instances of the same online Chemical Transport Model (CTM), one with forest fire source terms and one without, are subtracted to produce a field containing only the contribution of forest fires.

The proposed entries in Common Code Table C-14 are aerosol size categories of atmospheric particulate matter that are widely reported and forecasted in the field of Air Quality.

**PROPOSAL**

The tables annexed herewith contain proposed additions to Common Code Table C-14 and Table 4.3 of the GRIB2 section of the Manual on Codes. These are necessary to represent and share output from wildfire-driven air quality forecasting models. It is hoped that they are sufficiently general for eventual use by other Centres.

Validation status is requested for these additions.

**REFERENCE**

**The FireWork Air Quality Forecast System with Near-Real-Time Biomass Burning Emissions: Recent Developments and Evaluation of Performance for the 2015 North American Wildfire Season**

Radenko Pavlovic , Jack Chen , Kerry Anderson , Michael D. Moran , Paul-Andre Beaulieu , Didier Davignon , Sophie Cousineau

Journal of the Air & Waste Management Association

Annex

Proposed new entries for Common Code Table C-14 and Code Table 4.3

|  |  |  |
| --- | --- | --- |
|  | **Proposed new entries for Common Code Table C-14(Atmospheric chemical or physical constituent type)** |  |
| **Code Figure** | **Meaning** | **Chemical formula** |
|  |  |  |
| 62026 | Particulate matter < 2.5 microns | none  |
| 62027 | Particulate matter < 10 microns | none  |

|  |  |
| --- | --- |
|  | **Proposed new entries for Code Table 4.3(Type of generating process)** |
| **Code Figure** | **Meaning** |
|  |  |
| 18 | Difference between two forecasts |