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| 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 (3)(13. 5. 2016)-------------------------ITEM 2.2ENGLISH ONLY |

GRIB

New GRIB table entries

*Submitted by Enrico Fucile (ECMWF), Sebastien Villaume (ECMWF), Elias Holm (ECMWF)*

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**Summary and Purpose of Document**

 This document contains new GRIB entries for code table 4.2 to describe new parameters needed for NWP processing.

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**ACTION PROPOSED**

 The IPET-DRMM is invited to validate the proposed entries to be included next fast track 2016-II.

**DISCUSSIONS**

ECMWF is requesting for the benefit of the NWP community a set of “unbalanced" residuals of several parameters already present in code table 4.2. The main application is in the analysis which is why only relevant analysis variables are suggested at this time, with the potential to add more analysis related variables at a later stage. The unbalanced residuals are obtained by subtracting the “balanced” part from the total physical quantities. As an example the ageostrophic wind (unbalanced) results from subtracting the geostrophic wind (balanced) from the full wind. The definition of the balanced component is complex and is a peculiarity of the NWP schema. Therefore it is not viable to provide a precise description for each of the balanced parameters. The only clear constraint is that they have the same dimensions as the parameters for which they constitute the balanced or unbalanced component.

The unbalanced parameters proposed are made from parameters already in use in code table 4.2.

**PROPOSAL**

The following new entries to **code table 4.2** are proposed:

**Product Discipline 0 – Meteorological products, Parameter category 0: temperature**

|  |  |  |
| --- | --- | --- |
| number | parameter | units |
| **28** | Unbalanced component of temperature | K |

Description:

* 28: Residual resulting from subtracting from temperature an approximate "balanced" value derived from relevant variable(s).

**Product Discipline 0 – Meteorological products, Parameter category 1: Moisture**

|  |  |  |
| --- | --- | --- |
| number | parameter | units |
| **109** | Unbalanced component of specific humidity | Kg kg\*\*-1 |
| **110** | Unbalanced component of specific cloud liquid water content | Kg kg\*\*-1 |
| **111** | Unbalanced component of specific cloud ice water content | Kg kg\*\*-1 |

Description:

* 109: Residual resulting from subtracting from specific humidity (mass of water vapour / mass of moist air) an approximate "balanced" value derived from relevant variable(s).
* 110: Residual resulting from subtracting from specific cloud liquid water content (mass of condensate / mass of moist air) an approximate "balanced" value derived from relevant variable(s).
* 111: Residual resulting from subtracting from specific cloud ice water content (mass of condensate / mass of moist air) an approximate "balanced" value derived from relevant variable(s).

**Product Discipline 0 – Meteorological products, Parameter category 2: momentum**

|  |  |  |
| --- | --- | --- |
| number | parameter | units |
| **45** | Unbalanced component of divergence | S\*\*-1 |

Description:

* 45: Residual resulting from subtracting from divergence an approximate "balanced" value derived from relevant variable(s).

**Product Discipline 0 – Meteorological products, Parameter category 3: mass**

|  |  |  |
| --- | --- | --- |
| number | parameter | units |
| **31** | Unbalanced component of logarithm of surface pressure | - |

Description:

* 31: Residual resulting from subtracting from logarithm of surface pressure an approximate "balanced" value derived from relevant variable(s). **Note that this parameter is dimensionless**.