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| WORLD METEOROLOGICAL ORGANIZATION  COMMISSION FOR BASIC SYSTEMS  -----------------------------  THIRD MEETING OF  INTER-PROGRAMME EXPERT TEAM ON DATA REPRESENTATION MAINTENANCE AND MONITORING  BEIJING, CHINA, 20 - 24 JULY 2015 |  | IPET-DRMM-III / Doc.2.1 (2)  (15.07.2015)  -------------------------    ITEM 2.1    ENGLISH ONLY |

**New GRIB2 Regulations and notes to make it clear that forecast times may be negative**

*Submitted by Charles Sanders, Weiqing Qu (Australia)*

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**Summary and Purpose of Document**

This document proposes some new GRIB2 Regulations and additional notes.

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**ACTION PROPOSED**

The meeting is requested to review the proposed new regulations and notes and approve them for pre-operation.

# Negative time offsets in GRIB-2

There are a number of cases where it is desirable to allow the “forecast time” to be negative. These include, but are not limited to, accumulations which start before the reference time during a 4-D variational analysis. This was raised by DWD as agenda item 2.1.2 at the second meeting of the IPET-DRMM in 2014.

Nothing in the current GRIB-2 standard specifies that the forecast time must be positive, but some GRIB-2 software assumes that it must be positive. In particular wgrib2 and GRIB-API both assume that the forecast time is positive and behave incorrectly when a negative value is encoded or decoded.

It would be desirable for the situation to be rectified with the following actions:

1. Specify that the “Forecast time” can assume negative values by adding a regulation.
2. Request a co-ordinated release of wgrib2 and GRIB-API to implement the change.

### Details of proposed change

These proposed changes assume that the version of the GRIB templates (15.1.0) and GRIB regulations on the WMO web site is up to date. If it is not, then some additional templates may need changing.

Add a regulation 92.6.3

In templates that refer to a forecast time or offset form reference time, this may be negative to refer to times or intervals that begin before the reference time, if this is applicable.

In templates 4.0 through 4.7, 4.15, 4.32, 4.33, 4.40, 4.41, 4.44, 4.45, 4.48, 4.51, 4.54, 4.60, 4.1000, 4.1001, 4.1002, and 4.1100:

Change “Forecast time in units defined by octet …” to “Forecast time in units defined by octet … (see regulation 92.6.3)”

In templates 4.8, 4.9, 4.11 through 4.14, 4.34, 4.42, 4.43, 4.46, 4.47, 4.61, 4.91, and 4.1101

Change “Forecast time in units defined by octet … (see Note 2)” to “Forecast time in units defined by octet … (see Note 2 and regulation 92.6.3)”

In template 4.10

Change “Forecast time in units defined by previous octet (see Note 2)” to “Forecast time in units defined by previous octet (see Note 2 and regulation 92.6.3)”

In templates 4.53 and 4.57

Change “Forecast time in units defined by previous octet” to “Forecast time in units defined by previous octet (see regulation 92.6.3)”