Minutes of COSMO TAG Meeting, Thursday, July 9th 2015 (14:30-16:30 CEST)

Participants: **COSMO Software Administrators** (Uli Schättler (**US**), Jean-Marie Bettems (**JMB**), Antonio Vocino (**AV**), Daniel Lüthi (**DL**)), **TAG Coordinator** (Massimo Milelli (**MM**))**.**

Chair: Massimo Milelli (**MM**)

Invited: Theodore Andreadis (**TA**)**,** Xavier Lapillonne (**XL**)

Minutes: Massimo Milelli (**MM**)

Already excused: Uli Blahak (**UB**)

Agenda item 1: outcomes of the workshop on GRIB2 consolidation on May 21 (minutes sent by US on June 10 to TAG mailing list) and discussion about the proposed update of COSMO policy (see email of Uli S. on July 3 to TAG)

JMB and **US** (with IT team of DWD) had a meeting on May and the minutes have been sent to the TAG. A consolidated GRIB API environment (GRIB API 1.13.1, definition files, sample) supporting all originating centres will soon be made available, compatible with COSMO 5.3, INT2LM 2.2, and fieldextra 12.1.0. Only when the tests will be finished the community will be informed about the common actions to take (mainly about short names and definition files). Meanwhile, the proposed modification of the COSMO policy has been approved (in Appendix); in particular, it has been decided to validate any modification to the GRIB API environment with the technical test suite. During the GM there will be a meeting to discuss the progresses and the following actions.

Agenda item 2: Technical Test Suite status after the meeting in March at CUS

XL summarised the work done up to now. The idea is to release the TTS together with the COSMO package (starting from version 5.3). The suite is not working with INT2LM yet but the work is ongoing between MeteoSwiss and DWD. The goal is to have a TTS including all official COSMO software.

Agenda item 3: web pages modification/update

- After the SMC meeting in January, some modification was requested. The following pages have been updated:
  http://www.cosmo-model.org/content/model/mm_default.htm
  http://www.cosmo-model.org/content/support/software/mm_downloads.htm
  Although some minor changes are still needed (some pages have to be editable, the repository need a password), the general structure is approved. Only the latest official release of a software will be available in the repository (no history).
- There is a problem with the update of the web contents. Some pages are really old or not filled at all (operational pages, PP pages). Cosmin Barbu offered to load the contents on behalf of the PP leaders. No other solution has been found.

Agenda item 4: HNMS proposal for a new web server (document sent by MM on June 3 to TAG mailing list)

TA has sent on June a proposal for buying a new server. The HNMS proposal has been approved. It has to be pointed out that the prices are variables in time (depending on the market changes). The intermediate solution is probably the best compromise between the price and the needs of the Consortium.

Agenda item 5: Bugzilla status

Cosmin Barbu is studying the software (http://www.cosmo-model.org/tracker) and he will prepare a simple tutorial for users. This will be presented and then advertised during the GM.

Agenda item 6: Revision Control System: in view of a new server which may permit to install more features, do our community really need this facility in the (near) future ?

XL informed that MeteoSwiss is considering to move from SVN to GIT because it is better integrated with code review tools and it is not centralized (natural way to have local developments). The first software to be migrated will be Fieldextra; a central code repository will be accessible by any COSMO member to support shared development. In general both DWD and MeteoSwiss support the use of a common revision control system for COSMO software development.

Agenda item 7: namelist tool

MM informed that this useful tool has been updated by Andreas Will and Tom Seemann (CLM Community). DWD and MeteoSwiss namelists are already there, while the Italian, Greek, Romanian, Russian versions (plus COSMO LEPS) have been sent by **MM**. The page is hosted by the CLM web server but it is linked in the COSMO web:
http://www.cosmo-model.org/content/tasks/operational

Agenda item 8: "Scientific" version of COSMO, updates of coding standards with STELLA rules in C++ as decided during the latest SMC meeting, ICON participation in TAG, OpenACC tutorial

- The discussion about the opportunity of having a "scientific" version of COSMO is postponed to the next meeting.
- The update of the coding standards with STELLA rules will be released later, when the official version of POMPA code will be available.
- If the topics of a TAG meeting are relevant for the interaction COSMO/ICON, a representative of ICON will be invited (there is no SCA for ICON at the moment).
- An OpenACC tutorial will be organized in 2016 (where and when, to be decided).

Agenda item 9: next TAG meeting

There is a chance to have a TAG meeting during the GM (Monday/Tuesday) since at least four members will be there (**MM**, **US**, **UB**, **JMB**). The decision will be taken later, according to the definition of the agendas of the parallel sessions.

Agenda item 10: aob

Nothing to be discussed.

Appendix

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*  GRIB 2 common COSMO policy        *
*  Version 2 (30.06.15)              *
*  Accepted by SMC on ???            *
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0. Scope

The GRIB 2 COSMO Policy aims at coordinating the processing of GRIB 2 files within the COSMO consortium, in particular the use of the ECMWF GRIB API and the corresponding sample and definition files. Local coding, which are interesting only for one center, as well as processing of GRIB 1 records are not covered by this policy.

1. Field short name

COSMO software use alphanumeric names, the so-called short names, to refer to specific fields. The short name associated with a GRIB 2 record is derived from a n-tuple of GRIB 2 keys, with discipline, category, and parameter being obligatory part of the n-tuple.

There is a need to discriminate between fields which have the same physical meaning but are produced by different algorithms (e.g. variations of different gust parameterizations).

** Support for short names **
In GRIB API: definition files in grib2/localConcepts/ , where is the shortcut for the originating center (e.g. edzw for DWD)
In fieldextra: dictionaries (external ASCII files)

** COSMO policy **
1.1 Define a set of common short name definitions used by all COSMO members.
  1.1.1 Minimize the number of short names which are not registered in the WMO tables.
    1.1.2 Short names for which a standard WMO definition exists must be included without any modifications.
    1.1.3 The COSMO local key 'localInformationNumber' can be used to discriminate between fields with the same physical meaning but produced by different algorithms; these fields share the same triple (discipline, category, parameter).

1.2 The master tables are managed by DWD (grib2/localConcepts/edzw).
1.3 MeteoSwiss provides a script to synchronize fieldextra dictionaries and localConcepts definition files (in both directions).

2. Center specific table values

The GRIB 2 standard reserves in all tables a range of values for local use (e.g. bytes 192-254 for one byte values).

** Support for center specific table values **
In GRIB API: grib2/tables/local/ /<version>, where is the shortcut for the originating center (e.g. edzw for DWD) and <version> is the version of the local table
In fieldextra: hardcoded internal tables (in order to be independent from input and output format, fieldextra translates all meta-information in some internal codes)

** COSMO policy **
2.1 Define a set of common values used by all COSMO members, avoid as much as possible local values not part of this set.
2.2 The master tables are managed by DWD (grib2/tables/local/edzw/<version>).

3. Model name

No provision exists in the GRIB 2 standard to code the model name.

** Support for model name **

In GRIB API: not available
In fieldextra: hardcoded internal tables

** COSMO policy **
3.1 The name of each model in operation in the COSMO centers is uniquely defined by the n-tuple (center, subcenter, product category, generating process identifier)
3.2 The associated information is always coded in each GRIB record

4. COSMO standard keys and local use section

Besides the model name considered in point 3, there is a need to define additional meta-information shared in the COSMO consortia, but not part of the GRIB 2 standard. The local use section is the mechanism provided by the GRIB 2 standard to code such additional meta information.

** Support for local use section **
In GRIB API: each local use section is defined by the file grib2/local. .<localSection>.def, where is the originating center identifier (e.g. 78 for DWD) and <localSection> is the local use identifier
In fieldextra: hardcoded internal tables

** COSMO policy **
4.1 COSMO standard keys are
'localNumberOfExperiment' (unsigned integer coded on 2 bytes),
'localInformationNumber' (unsigned integer coded on 2 bytes).
4.2 COSMO standard keys are coded in the local use section
4.3 A default local use section, with localSectionNumber = 250, and containing all COSMO standard keys, is defined for each center

5. GRIB API system

The GRIB API system (library, definition files, sample files) is used by many COSMO software to process GRIB files. The GRIB API system is developed at ECMWF; some definition files and some sample files are adapted by DWD to care for special needs.

A unified GRIB API system compatible with all COSMO software and working for all COSMO members should be provided. Furthermore, local modifications to the definition files should be organized in such a way that they can easily be upgraded when a new release of the GRIB API is provided by ECMWF.

** COSMO policy **
5.1 A relase of the GRIB API system is maintained by DWD, including definition and sample files, which is compatible with all COSMO software for all COSMO members.
5.2 Local modifications to the official ECMWF definition files should be put in the local part of the GRIB API definitions (e.g. localConcepts, tables/local), with the following exceptions
5.2.1 Bug fixes (should be communicated to ECMWF).
5.2.2 Typing errors and units corrections (should be communicated to ECMWF).
5.2.3 New features not yet in the official definitions, but planned for the next GRIB API release.
5.2.4 Modifications which are absolutely needed (e.g. new alias) - document and clearly mark these modifications in the definition files, try to convince ECMWF to put these in the next release.
5.3 Compliance with 5.1 of any new release of the GRIB API system (incl. modifications to the definitions or the sample files) must be tested with the COSMO technical test suite. This requires the following extension to the test suite
5.3.1 All COSMO software using GRIB API for the processing of GRIB 2 must be integrated in the test suite (e.g. INT2LM, COSMO, fieldextra)
5.3.2 A test case for each originating center (incl. 250) should be part of the test suite

6. Information flow

It is important to avoid incompatible developments coming from different sources.

** COSMO policy **
6.1 The COSMO TAG is responsible to coordinate the use of GRIB 2 within the consortium
6.1.1 It is informed about any planned modification of GRIB 2 coding at DWD

(e.g. new short name, new local value), and has the opportunity to give a recommendation to the DWD

6.1.2 It is informed about any local requirement by a COSMO member, and will propose a solution

6.1.3 The cosmo-tag mailing list is used for communication

6.2 The following information is maintained on the COSMO web

6.2.1 COSMO model names and associated n-tuples

6.2.2 COSMO standard keys and their definitions

6.2.3 Local table values common to all COSMO members (or the full GRIB 2 tables, with the COSMO local values inserted as in http://www.nco.ncep.noaa.gov/pmb/docs/grib2)

6.2.4 Master table for COSMO short names

6.2.5 For each center:

6.2.5.1 list and content of each local sections

6.2.5.2 definition of additional short names not integrated in common COSMO table