

Minutes of COSMO TAG Meeting, 5 February 2014 (10:00-12:00 CET)

Participants: COSMO Software Administrators (Jean-Marie Bettems (**JMB**), Adriano Raspanti (**AR**)), TAG Coordinator (Massimo Milelli (**MM**))

Excused: Daniel Lüthi (**DL**), Uli Blahak (**UB**), Uli Schättler (**US**) (arrived later)

Chair: Massimo Milelli (**MM**)

Minutes: Massimo Milelli

1) Use of fieldextra for up-scaling methods and possible strategies for post-processing

There is a need (expressed by **JMB** and **AR**) to reach an agreement on the respective roles of fieldextra and VERSUS. In this perspective, fieldextra is used as a pre-processor when manipulation of gridded field is required for location oriented data. XML will be also used as interface between fieldextra and VERSUS. Decoding and processing of BUFR messages is not part of fieldextra but libsim can be used for BUFR manipulation and will be part of the VERSUS software. Because of resources constraints, the upscaling of gridded precipitation has been implemented with libsim; this is an accepted exception to the COSMO software architecture rules that could be fixed in the future through the use of fieldextra.

The previous discussion highlighted the need of a **clear policy on COSMO software architecture**. The TAG proposes to the SMC the following policy:

1. the COSMO software architecture is documented on the COSMO web (basic principle, role of each software component, interfaces, data flow)
2. the TAG has to be informed before any new development (new software component, new pre- or post-processing task) and gives a recommendation for the implementation.

Decision: TAG will prepare a COSMO software architecture documentation for the web.

2) Grib2 COSMO policy (proposition of JMB)

JMB presents his proposal (already sent via email and shown below). Part of it (points 1, 3, 4) has been already discussed and agreed with **US**. The TAG recommends to accept the draft document prepared by MetoSwiss and DWD supports this action, but has currently no resources to invest in point 5 of the proposal (Suzanne Schütz in charge of GRIB 2 usage at DWD has left; her position will be filled, but it will take time).

Decision: the draft is accepted, it will be published on the web and sent via email to cosmo-all. **JMB** will review and consolidate GRIB 2 web pages prepared by **US** and ready before the next GM.

3) Output of the 'Common library' meeting

A workshop has been organized in Offenbach regarding the use of ICON physics parametrizations in COSMO. **JMB** briefly presents the minutes but the discussion is postponed to the following day because of time shortage and because point 6.2 of SMC agenda is dedicated to this topic.

4) AOB

- The ready and lock files mechanisms in use at DWD and at MeteoSwiss are under investigation. Oliver Fuhrer is searching for a solution in order to support both options.
- The EXTPAR documentation on COSMO web will soon be available. DL prepared it and will published it in the next weeks.

***** GRIB 2 common COSMO policy (DRAFT) *****

1. Field short name

COSMO software use alphanumeric names to refer to specific fields.

Support for short names:

In GRIB API: definition files in grib2/localConcepts/<centre>, where <centre> is the shortcut for the originating centre (e.g. edzw for DWD) In fieldextra: dictionaries (external ASCII files)

Proposed COSMO policy:

- 1.1 define a set of common definitions used by all COSMO members
- 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 centre specific table values:

In GRIB API: grib2/tables/local/<centre>/<version>, where <centre> is the shortcut for the originating centre (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)

Proposed 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

Proposed COSMO policy:

- 3.1 the name of each model in operation in the COSMO centres is uniquely defined by the n-tuple (centre, subcentre, 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.<centre>.<localSection>.def, where <centre> is the originating centre identifier (e.g. 78 for DWD) and <localSection> is the local use identifier In fieldextra: hardcoded internal tables

Proposed COSMO policy:

- 4.1 COSMO standard keys are: 'localNumberOfExperiment' (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 centre

5. GRIB API definition files

The GRIB API definition files are used by multiple COSMO software (e.g. INT2LM, COSMO, fieldextra).

A unified set of definition files should be provided to facilitate their maintenance.

Furthermore, local modifications to these files should be organized in such a way that the definition files can be easily upgraded when a new release of the GRIB API is provided by ECMWF.

Proposed COSMO policy:

- 5.1 A COSMO set of definition files is maintained, which is compatible with all COSMO software
- 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

6. Information flow

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

Proposed 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 centre:
 - 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