# Minutes of COSMO TAG Meeting, 28 November 2013 (14:00 – 15:45 CET), videoconference

**Participants:** **COSMO Software Administrators** (Uli Schättler (**US**), Jean-Marie Bettems (**JMB**), Adriano Raspanti (**AR**), Daniel Lüthi (**DL**)), **TAG Coordinator** (Massimo Milelli (**MM**))

**Excused:** Uli Blahak (visit to Oman)

**Chair:** Massimo Milelli (**MM**)

**Minutes:** Uli Schättler (**US**)

1) **Different mechanisms for definition of readiness of the output file (proposition of Oliver Fuhrer):**

There was a proposition by Oliver Fuhrer (MCH) to discuss the different mechanisms for signalling that an output file is ready for further processing. In the COSMO-Model and in INT2LM so-called "ready-files" are used, which are ASCII files written after the closing of the binary data files. MCH has used a different mechanism in its production suite since more than 10 years, the lock files, which they have implemented in their local versions of the code. TAG should discuss a common usage.

The question by MM, why MCH introduced the lock-files, was answered by JMB that this is a widespread method doing this on Linux, which has the benefit to minimize the number of additional objects to be considered in the production suite. Also, some years ago there have been problems at MCH using the ready-files, related to the synchronization of the file-system. US mentioned that the reason for these problems was never investigated.

US informed, that the ready-files are the common usage at DWD also for the other models and post-processing, and that they cannot be eliminated from the COSMO-Model and the INT2LM without a major rewrite of the controlling jobs for the operational production and the experimenting system NUMEX. The ready-files are also used at other centres for controlling the operational jobs. The only compromise is to implement the lock files as an additional method. But then some time should be invested to have an adequate implementation. Moreover, US mentioned that the whole I/O part of the COSMO-Model and the INT2LM now is very much like "spaghetti code" and should be restructured anyhow. But maybe there are not enough resources to do so at the moment.

JMB contacted Oliver Fuhrer during the meeting, to get the actual status of MCH's implementation. There are some problems to use the lock files with grib_api (because of missing functionality of the DWD Grib library function cinquire; missing relationship between the grib-handle and the filename). **Decision:** MCH will come up with a proposal, how the lock files could be implemented into the COSMO-Model and the INT2LM, by the end of the year. This issue can further be discussed in February.

2) **Standard GRIB Coding for gridded presentation (GRIB1 and GRIB2); weather parameters and upper air parameters on pressure levels; translation from GRIB2 to GRIB1 for VERSUS DB.**

*Gridded Precipitation:*
AR reported about the problems of VERSUS, recognizing the accumulated precipitation and the proper time periods for the accumulation from COSMO Nudging runs. JMB explained that this is a problem of the COSMO coding, that all products have timeRangeIndicator = 13 for Nudging runs. He remarked that fieldextra can repair this and produce a proper GRIB message, because the other meta data are set correctly and no information is lost. AR mentioned that similar problems appear with other products, not coming from the COSMO-Model. JMB replied that a repair is not possible, if too much information is lost or missing in the original GRIB message. US expressed his hope that all meta data will be set properly in the COSMO-Model when going to GRIB2.

*GRIB2 to GRIB1 conversion:*
In principle VERSUS can read GRIB2 data, but still has to be adapted to decode everything correct, more work is needed. AR therefore asks, whether it is possible (at least for some time) to convert GRIB2 data back to GRIB1. JMB said that fieldextra already now can convert most data back to GRIB1, but that some extensions for GRIB1 are necessary, for example for EPS products or for the new general vertical coordinates.

US asked, how long it will take until the centres will switch to GRIB2. At DWD the official date still is January 2014, but there are already (believable) rumours around, that it will only be after the migration to the new computing system, which will be early summer. JMB reported about the plans at MCH, to switch to GRIB2 with the new system COSMO-1, COSMO-E, but he thinks that DWD should switch first. For AR these plans are very comfortable, because there is more time for doing all the adaptations in VERSUS.

3) **GRIB2 updates and related issues (status, documentation, vertical coordinate and reference atmosphere parameters)**

US reported that there has been no update of the GRIB2 web documentation, but that much time was spent to implement, test and discuss GRIB2 issues at DWD. The problem of the vertical coordinate and reference atmosphere parameters, which are no more present in the GRIB2 meta data, has been discussed within WG6. The suggested solutions are:
- for the vertical coordinate parameters: their usage can be avoided and the model has to be adapted accordingly
- for the HHL file: to be included it into the laf-files for COSMO
- for the reference atmosphere: exchange full pressure P with a higher packing rate (24 bit instead of 16) and not the pressure deviation any more. Then the construction of the reference atmosphere in post processing programs is not necessary any more (or can be done independently from other programs).

DWD right now implements and tests the corresponding changes to INT2LM and the COSMO-Model.
**Decision:** a working version with these implementations will be available by the end of the year.

4) **Elaboration of 'common library issue':**

The organization of a meeting to discuss these issues has been delayed because of the work on Version 5.0 and GRIB2. US lately set up a doodle to find a date for such a meeting before Christmas.
**Decision:** the outcomes of this meeting will be discussed in February.

5) **EXTPAR documentation on the web:**

DL informed about the status of EXTPAR. He is working on Version 2.0. The largest part has been done, he is just implementing the latest developments from the CLM community. This should be

ready by the end of the year. The documentation will be available shortly afterwards.

An issue is, how EXTPAR can be made available for the COSMO Community. A possible solution could be to give COSMO people access to the CLM web port for EXTPAR. This possibility will be further investigated.

MM reminded that the documentation, once it is ready, should be sent to the COSMO Web Page administrator.
**Decision:** the documentation will be available before the SMC meeting in February.


6) **Use of fieldextra for up-scaling methods and on possible strategies for post-processing.**

This discussion has been postponed to the next SMC meeting in February in Bologna. For most TAG members a meeting on the morning of the 5th is ok, but US only arrives during this morning. It was decided to have the meeting on the morning, as US is not involved in these issues. Possible questions and issues could be discussed with him later.
**Decision:** JMB, AR and MM will participate in this meeting the morning before the SMC. US will be informed as soon as he arrives. MM will ask Chiara Marsigli a room for the meeting.


7) **AOB**

- Provision of an online trajectory module by ETH Zürich: the TAG welcomed the contribution by the colleagues from ETH and supported the implementation into the COSMO-Model.
  **Decision:** MM will set up an entry in the COSMO-development page and will submit the issue to the SMC.
- JMB asked a general question about GRIB2 (and especially about the key "numberOfVerticalCoordinateValues"). For the new general vertical coordinate, grib_api does not deliver the value "6", but the number of vertical levels of the model. But this is not the value which should be coded in octets 6-7 of the product definition section ("number of coordinate values after template"). US informed that this decision has been taken by the validating centres ECMWF and MPI (Max-Planck Institute in Hamburg). The alias key "NV" gives the correct number from octets 6-7 and the key "numberOfVerticalCoordinateValues" gives the number of vertical levels (which is somehow logical, because the name just reflects this). So the pragmatic solution is to use only the alias key "NV".
- JMB stressed the need for improved coordination of GRIB aspects. One should find a mechanism to be able to give some feedback on design and interpretation issues before a final decision is taken.

  A discussion started on the level of pragmatism required or how much one could stick to the standards. Of course it would be better if everybody could just use standards, but sometimes pragmatic solutions are also necessary. This is especially the case, because COSMO does not have enough resources for the huge amount of coordination work necessary.