Accounting of the ACCORD/MG visit to the Tunisian NMS (INM)

On 4-5 May 2023, the Management Group visited the Tunisian NMS in the context of an ACCORD/MG visit to a Member Institute. The visit was prepared by the PM, the CSS and the Tunisian LTM Haythem Belghrissi. The program of the discussions is outlined hereafter, along with a few headline information from these discussions:

Thursday May 04, 2023

- Opening speeches by Mr Ahmed Hmem, CEO of INM, Mr Hatem Baccour, DRDM Head of Research & Development, and Claude Fischer, PM ACCORD. Mr Hmem stressed the high importance of NWP activities for the goals and missions of INM.
- Round table presentation of the participants. The INM NWP team was represented by the LTM, the three members of the core team (Wafa Khalfaoui, Rahma Ben Romdhane, Hajer Dhouioui) and a representative of the General Forecast Dept (Bacem Nahali, Head of General forecast Dept).
- Numerical weather prediction at INM: Organizational plan, internal and external relations and current projects (NETTUNIT Italy-Tunisia, PIRC International Development funded program). The perspective for Tunisia, via the initiatives at INM, to become a cooperating state at ECMWF was explained. INM plans to install a new network of five C-band radars covering the whole Tunisian territory, to extend its HPC, and to renew its surface observation network...
- Technical information. NWP suites at INM, code and HPC. INM is operating several LAM instances, with a large focus on AROME. A new HPC was installed (DELL) which will offer the possibility to implement in operations an AROME-1.3km configuration with a fairly large domain. There is a strong wish to implement 3DVAR data assimilation soon after which is considered as the main priority of the NWP team. The ACCORD/MG presented several of the current initiatives to foster collaborative work in ACCORD, and modernize the working practices: the forum of Local Team System Representatives (LTSR), the use of the SPFRACCO Special Project at ECMWF, the intention of using github and the training webinars.
- Research and development activities: the NWP team at INM has strong interests in working on microphysics and data assimilation. Mrs Khalfaoui, Dhouioui and Ben Romdhane gave presentations about their DA, microphysics and project-related activities. Some feedback has been given from MG members regarding the results shown of some 3DVAR tests and the results of using ICE4 and LIMA schemes for microphysics.
- Feedback from users at INM. Mr Nahali presented use cases of strong convective precipitation in Mediterranean weather situations, either formed by local triggering or forced by the large-scale situation. Extreme precipitation is one of the main concerns and challenges in forecasting at INM. The use cases provided the ground for an active exchange between the MG and the INM team on sensitivity tests and model

settings for further exploring these situations from the modeling side. The suggested organization of user feedback in ACCORD (in link with the white paper on R2O/O2R) was presented, and it was concluded that the use cases explained by INM were a good example of what could be done in ACCORD.

- Many research fields have been proposed to investigate the sources of spatial shifts and temporal lags found in some Arme outputs. it may arise due to various factors, such as errors in the initial and boundary conditions (ARPEGE), limitations in the model physics, representation of the land surface processes. To address these issues, several research directions have been proposed, such as running the model with reanalysis instead of LBC to make sure that the problem is not related to Arome or the use of data assimilation techniques or Ensemble.
- Overall, investigating the sources of spatial and temporal shifts may be an additional task which require further collaboration and support from ACCORD mcommunity.
- Discussions: contribution of INM to the RWP, proposal of PhD-related subjects to members of the NWP team, financing of stays. Scientific stays should preferably focus on microphysics and DA topics, with a goal to develop a research work offering a possibility to prepare a scientific publication. The concrete organization of the scientific visits and the participation to WWs in ACCORD was addressed, including how both INM and ACCORD could look for solutions on how to enhance the in-person participation of staff within the contours of each organization's rules.
- AOB: upcoming events in 2023, workshop calendar and meetings.

Friday May 05, 2023

The ACCORD/MG and the INM NWP team met again in order to debrief the discussions of the day before and make a final wrap-up. There was a shared feeling that this visit had been beneficial for both sides, for INM staff to have the opportunity to present their plans, their overall activity and meet in person a large fraction of the ACCORD/MG, and for the MG to meet the NWP team and learn about INM.
The ACCORD/MG then met in the premises of INM the rest of the day, in order to hold an MG meeting devoted to the preparation of parts of the Rolling Work Plan 2024.

Throughout the two days, the ACCORD/MG appreciated the high quality of the presentations and the discussions with the team in Tunis, as well as the excellent hosting by INM.