System Working Week
Wrap-up Report

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TSMS, Ankara, Turkey

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Participants: U. Andrae, Y. Cengis, T. Dalkilic, M. Derkova (MD), M. Jidane, E. Kucukkaraca, R. Randriamampianina (RR), O. Spaniel, P. Termonia (PT), and the assitance of several members of the Turkish ALADIN team.

During this week, Ulf Andrae and Roger Randriamampiana from HIRLAM were assisting to an ALADIN working week, with the aim to install and test the HARMONIE system. This system comprises the following main components:
1. a scripting system (mini-sms) to set up experiments on a machine, to organize and to submit jobs and to monitor them;
2. a namelist generator which help the user to create generally accepted parameter lists for running the model, and
3. a verification package, to check the output.

The reason for this meeting has a threefold origin:
1. During the meeting in Ankara of last year where RR (at that time as ACNA) and PT (ALADIN PM) visited TSMS Turkey, it was decided that, since Turkey is a recent newcomer in the consortium, it may very much benefit from this system in order to install and run a data assimilation system. Indeed it is frequently claimed that such system is very beneficial for newcomers to get the model and the data assimilation up and running as fast as possible.
2. At the verification meetings in Brussels in 2012 and Portugal this year (18-20/9/2013), it was observed that the HARMONIE system, and specifically the verification part, could provide a platform for developing a future common HIRLAM-ALADIN strategy for validating export cycles of the code.
3. During the discussions at the common PAC/HAC meeting in Toulouse (6-7/5) this year, it was stated there there still exist substantial differences in work practices between the HIRLAM and the ALADIN consortia for the cycle validations. In particular, the evaluation of the meteorological performance of new System releases (aka "Quality Assurance", QA), is performed in ALADIN mostly through the activity for QA at Météo-France (Arome-France, Aladin Overseas) and the dispersed efforts in the other local ALADIN teams. In HIRLAM, QA is assessed via the coordinated efforts of the System core group, mostly on ECMWF's HPC, as a first step before local implementation. At PAC/HAC, it was proposed as a next step in the analysis of a further merge, to take the system WW in Ankara as an opportunity to analyse the HIRLAM work practice and its compatibility to the ALADIN work practice. This should form a basis to formulate a well-documented opinion on how to improve both practices and possibly integrate them into a potential future common governance structure.

We (MD and PT) arrived later during the week and had meetings and discussions on Wednesday, Thursday and Friday. As a first impression, both of us thought that the first reason seems to be confirmed. Given that Ersin Kücükkaraça executing the necessary preparatory steps before this week

(about 4 working days), it was quite impressive that the group succeeded in getting a 3DVar experiment running for a extended period on the local machine . The model that was compiled was, however, cy38h1 (thus the HIRLAM version) and not cy38t1. Finally some results were presented on a verification of the AROME model for the Turkish operational applications, with mostly very good results. The success of this fast implementation can be attributed to two ingredients:
- the HARMONIE scripting system but, also,
- even if we do not address this in detail here in this report; the easiness of use of a historical data set of observations by the <u>OPLACE system of LACE</u>, used during this week.

We then discussed the potential role of the HARMONIE system for future cycle validation (in PT's opinion the main potential value of a common HARMONIE system). This discussion went about the different in cycle-update frequency between the two consortium related to the different scopes of ambition and the link with the governance structures and the question of a potential further merge. It was then recalled that, during the LTM meeting, cy38t1_bf3 has been "declared" as an export version for the ALADIN countries, but that the validation in specific applications is still to be carried out. PT then proposed to approach this implementation of the HARMONIE system in TSMS from that perspective; i.e. to use the installed the HARMONIE system now to validate the ALARO-0 baseline configuration as if they were intended for the Turkish applications.

In practice this means that this exercise can be limited to downscaling, with DFI but a priori without assimilation and without the initialization of the additional initial fields necessary for completing non-hydrostatic initial conditions (as is done in Prague). In other words, perform the exercise of replacing the existing operational ALARO version with the new export version, including performance scores, as opposed to only the sanity checks that have been carried out at Météo-France in the course of the phasing process (included within mitraillette). This may provide a platform for future common validation of export cycles of ALADIN together with HIRLAM.

On Friday, a very nice presentation was given by Yelis Cengis weighing the pro's and con's of the HARMONIE system from the perspective of a user from the ALADIN consortium. From the subsequent discussion it was then concluded that a number of features should be added (work to be done by the ALADIN people):
- we should ensure that the export versions of ALADIN are properly included (i.e. The so-called "t" versions in the HARMONIE system),
- we should ensure to make it fully possible to run from ARPEGE coupling files,
- as a long-term issue one might consider the option of replacing gl by configuration 901,
- we should include blending,
- and it was felt that one particular default feature of the HARMONIE system, namely the on-the-fly removal of intermediate files including the namelists and output listings, should become an option that can be switched off (in other words, even if the experiment was carried out without any problem, we still want to know what sits inside the box, to facilitate the use of the system but also, on a more general level, to avoid a tendency to run the system as a black box).
- We need to improve the documentation.

The next steps:
- perform the performance validation of the ALARO configuration of the current source code export version for the Turkish domain,
- present the results if possible still to the General Assembly but, if time will be too pressing, present it to PAC/HAC, and then

- decide on a strategy (e.g. promote this for ALL ALADIN countries or not) and discuss ensuing man power issues if we go for that strategy.
- We may then aim at validating a future cycle fully together, between ALADIN and HIRLAM.

Additional remarks:
- Should we decide that the HARMONIE system will be promoted to ALL ALADIN countries, then with the current governance structure, there is no man power to coordinate this task. Given the LTM structure, it can only be hoped that the LTMs carry this out in their country without a person to coordinate this transversally (note that for LACE this is not an issue because LACE has a system Area Leader for this; O. Spaniel). As an intermediate solution, one could envisage a HARMONIE system working week next year in order to maximally "help" the concerned countries. Post-meeting note: there might be a HARMONIE training organised in autumn in Norrköping, as it usually happens every year.
- It was also felt that probably the main longer-term advance and power of such a common HARMONIE system should be situated in the area of data assimilation.
- The main forthcoming taskfor the "ALARO-validation" exercise in Turkey is the compilation of the export version and the installation of the namelist prepared by Radmila Brožkova. The latter namelist (included in the export package together with ALARO-0 baseline switches explanations) has already been transferred to the Turkish team - with some comments - on the Friday of this meeting.