

## **COSMO Priority Task: TERRA Nova**

Version 2.2, 08/08/2018

**Task Leader: Yiftach Ziv (IMS)**

### **Project Extension: COSMO year 2018-2019**

A **prolongation of the PT TERRA Nova for 6 more months** until end of 2<sup>nd</sup> quarter of COSMO year 2018-2019 is proposed in order to complete the tasks planned in the original PT and to provide robust deliverables. The extension is requested due to the long delay in the release of v5.05 of COSMO (the version to be tested in this PT), and the difficulties of applying verification tools. The completion of the task is absolutely dependent on a stable COSMO 5.05 version, which was available only since June and had to be adapted to ECMWF-HFPC environment.

In addition, verification tools to be used for the PT depend on the domain – VERSUS for NW Europe, Movero for Central Europe, IMS local tool for Med. domain. These tools are operational in each NHMS (RHM, MCH, IMS accordingly) but the adaptation of these tools and modifications exceeded the expected resources. Due to these obstacles, only preliminary comparisons between different simulations were conducted, while the full extent of the verification will require an extension in time as requested and additional FTEs. The latter mainly in order to set-up the various verification tools.

Some delay in completing the deliverables can also be attributed to low availability of PT leader, due to the unexpected involvement in running TSA for CALMO-MAX PP.

### **Description of Individual Tasks**

#### **Task1: Compare various TERRA versions over various domains**

##### Subtask 1.1: Defining and executing the simulations.

In progress, but still mildly delayed due to delay in delivery of v5.05

##### Subtask 1.2: Verification of the simulations and documentation of the main differences.

Because of difficulties setting up VERSUS on ECMWF machines, alternative solutions for basic verification will be implemented:

- Northern Russia domain will be verified with RHM VERSUS
- Central Europe domain will be verified with MCH Movero tool
- Mediterranean domain will be verified with IMS local tool

The proposed verification of fluxes is currently out of the scope of the PT since it is estimated to require too many FTEs.

## Estimated Resources:

Extension of PT TERRA Nova until end February 2019 is proposed due to the delay in the completion of some Tasks. Estimated resources (in terms of FTEs): total of 0.35 FTEs is required, of which 0.15 FTEs already secured for the PT, and additional 0.20 FTEs are requested for the extension – mainly for the set-up of the various verification tools.

Task	Contributing Scientist(s)	FTE-Years	Start	Deliverables	Date of Delivery
1	Y. Ziv (IMS) I. Rozinikina (RHM) M.Nikitin (RHM) J.M Bettems (MCH)	0.20 0.03 0.07 0.05	9.2018	(1) A set of simulations based on the reference COSMO/TERRA v5.00, and the associated observation listed in the previous table, available for further studies. (2) A set of simulations based on COSMO v5.05 with new and old TERRA module and turbulence scheme to assess the contribution of each factor to change in simulations results. (3) Documenting the differences between the various versions of TERRA and standard near surface measurements in terms of RMSE, MBE and other scores used, for instance, by MCH "Movero" (standard verification). (4) Documenting the differences in land surface temperature between the three versions of TERRA and CM-SAF data base, according to CM-SAF validation methods (Anke et al. 2016).	2.2019

**Total of 0.35 FTE**