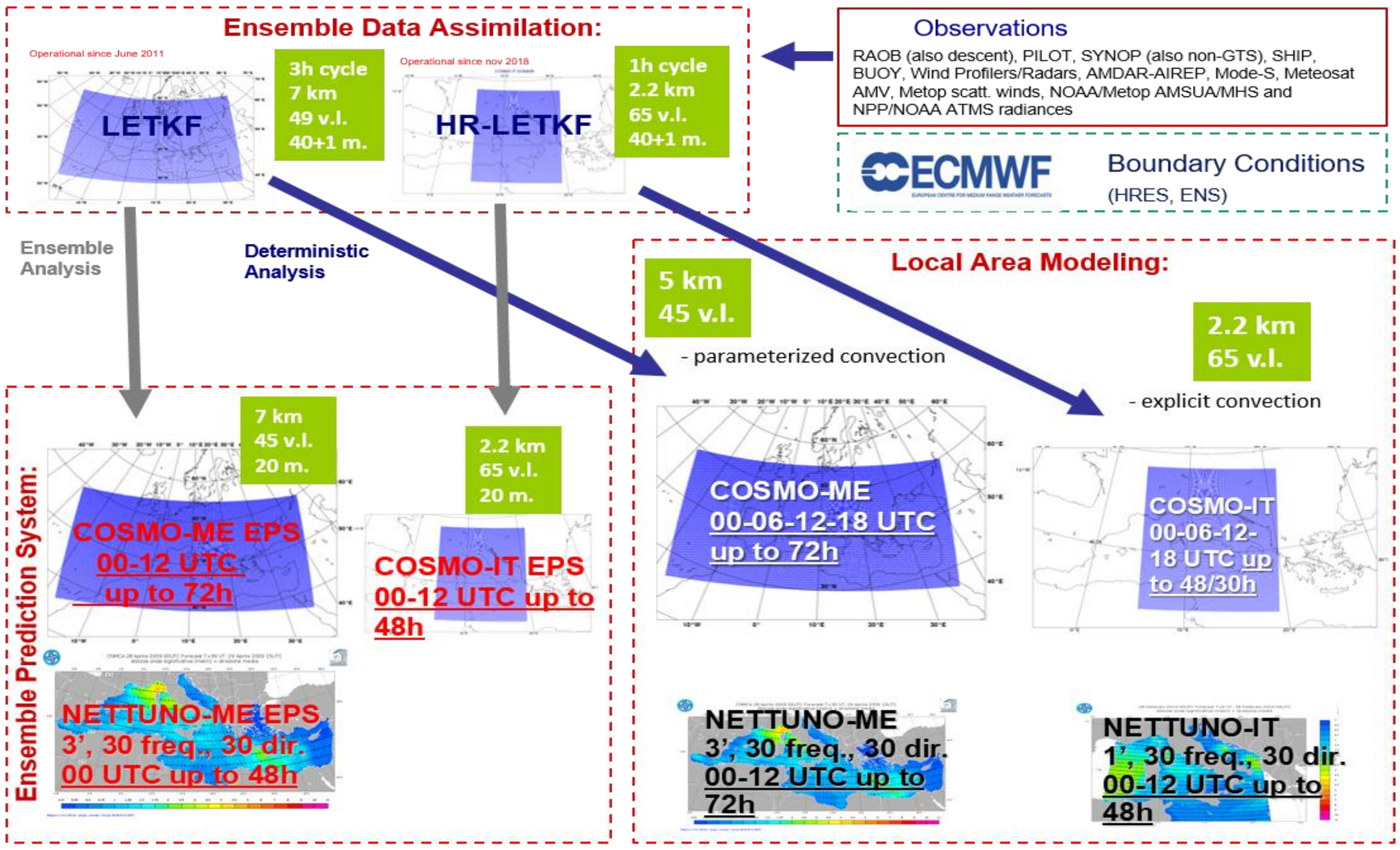
The Italian Air Force Met. Service NWP system

COMET - Italian Air Force Operational Center for Meteorology, Pratica di Mare, Rome - Italy

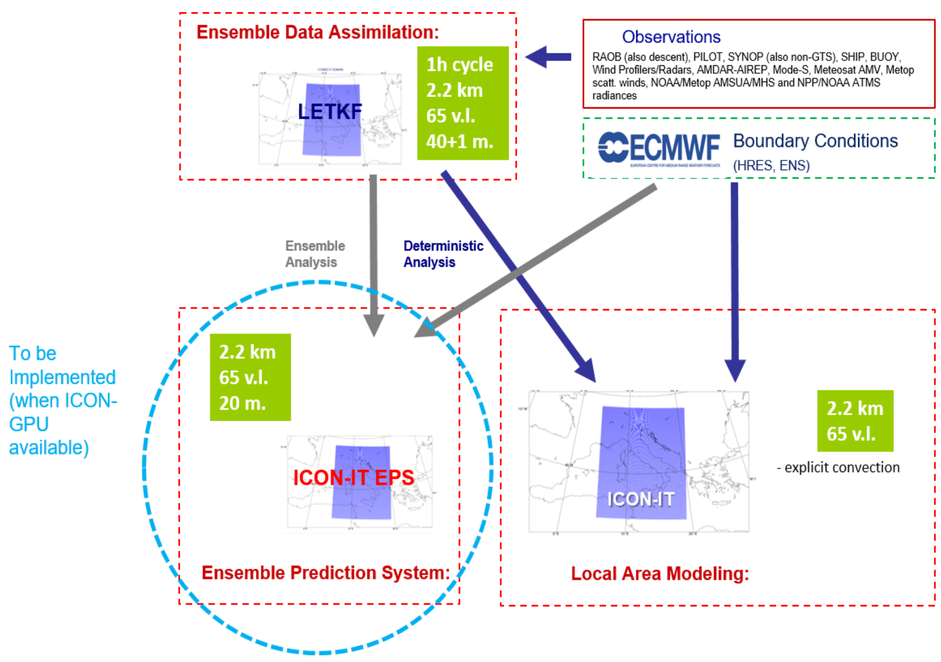
Francesca Marcucci, Marco Alemanno, Francesco Batignani, Riccardo Scatamacchia, Valerio Cardinali, Emanuele Regoli, Nicola Zaccariello and Antonio Vocino

francesca.marcucci@aeronautica.difesa.it, antonio.vocino@aeronautica.difesa.it

OPERATIONAL CONFIGURATION

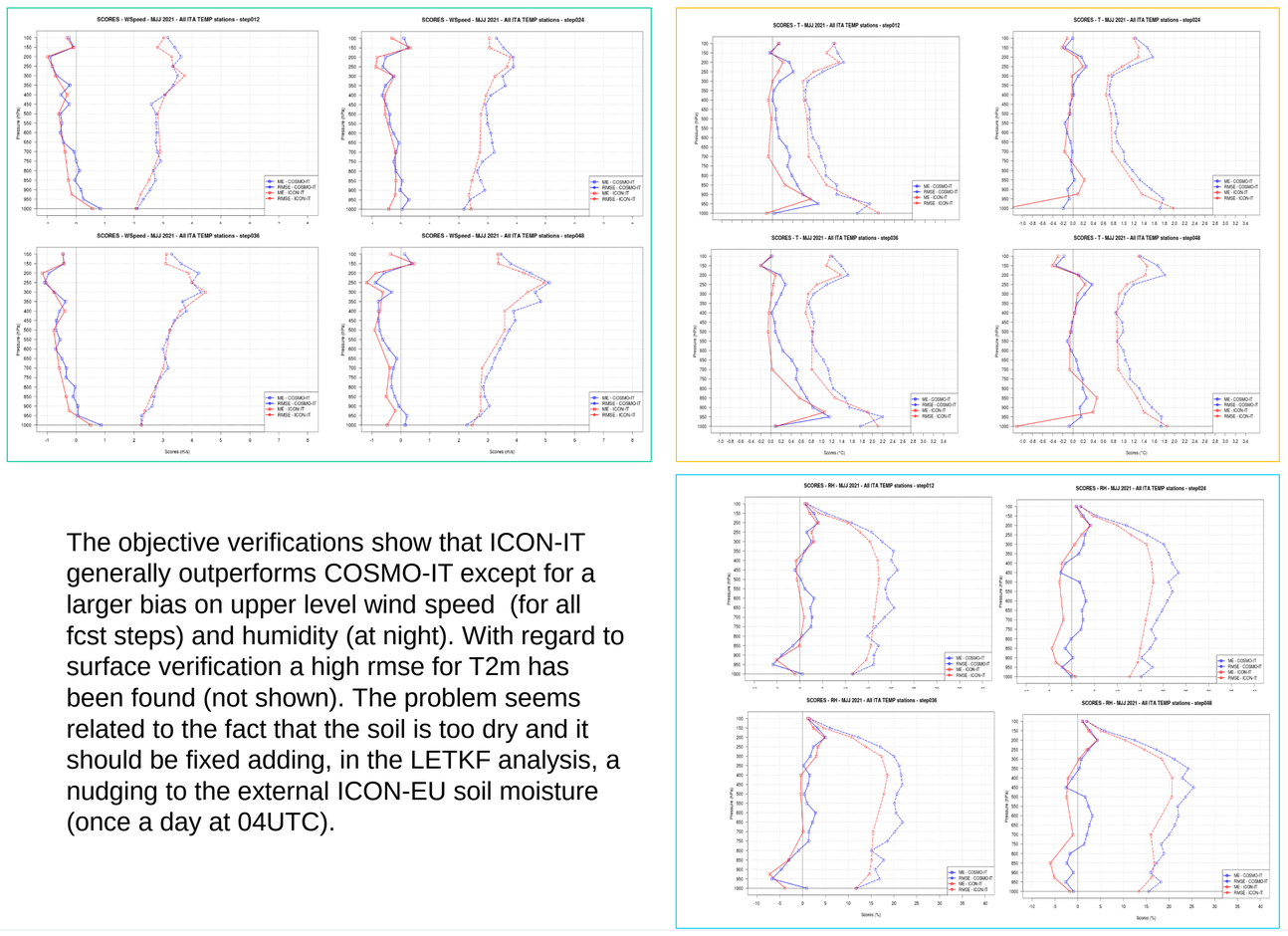


ICON-IT OPERATIONAL SUITE



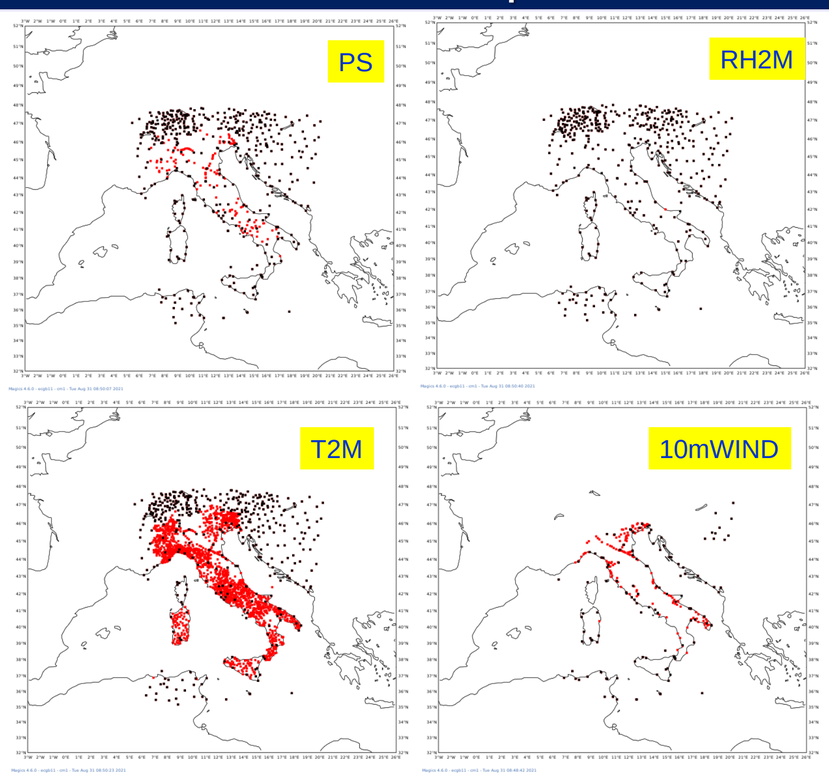
FORECAST VERIFICATION AGAINST RADIOSOUNDES

period 1° MAY – 31° JULY 2021

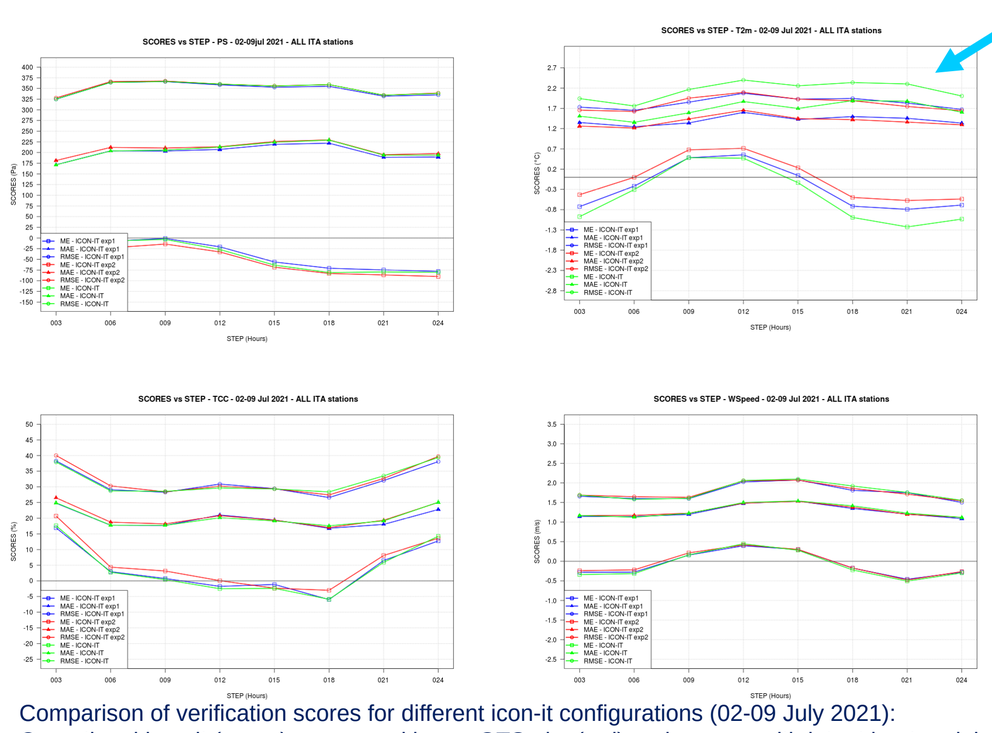


The objective verifications show that ICON-IT generally outperforms COSMO-IT except for a larger bias on upper level wind speed (for all fcst steps) and humidity (at night). With regard to surface verification a high rmse for T2m has been found (not shown). The problem seems related to the fact that the soil is too dry and it should be fixed adding, in the LETKF analysis, a nudging to the external ICON-EU soil moisture (once a day at 04UTC).

Experimental run: Assimilation of high-res non-GTS surface obs



Distribution of non-gts observations (red) vs synop observations (black) at 12UTC



Comparison of verification scores for different icon-it configurations (02-09 July 2021):
Operational icon-it (green), exp run with non-GTS obs (red) and exp run with latent heat nudging (blue).
As latent heat nudging is not yet well tuned, results are not discussed here

Observations (Ps,rh2m,t2m, 10mwind) from non-GTS stations (provided in near real time by Italian partners as Civil Protection Department, motorways company, regional met. agencies etc) have been assimilated in the 1h DA cycle for a comparison experiment lasting from 2 to 9 July 2021

00UTC Forecasts (up to 24 hours) have been verified against synop observations

A clear improvement on t2m rmse has been found