The ARPEGE e-suite has been tested during summer and autumn 2010. The list of changes is:

- Assimlation of the SSMIS data , new algorithm to compute the winds of the ASCAT scatterometer, assimilation of GPS satellite from 25 to 36 km heights and AMSU A and B above sea ice
- New bias removal of radiosounding for temperature and humidity
- Use of the SST OSTIA, computed by the Met Office
- Assimilation of 2 meters humidity during day time
- b recovered from the AEARP for all assimilated variables
- modification of roughness lengths in the turbulence scheme and fall velocities in the microphysical scheme

GEOPOTENTIEL:PA.r 00/AC−PAD.r 00/AC
(1.0000 m) Chaîne 2010_01: Nouvelles Observations et Physique
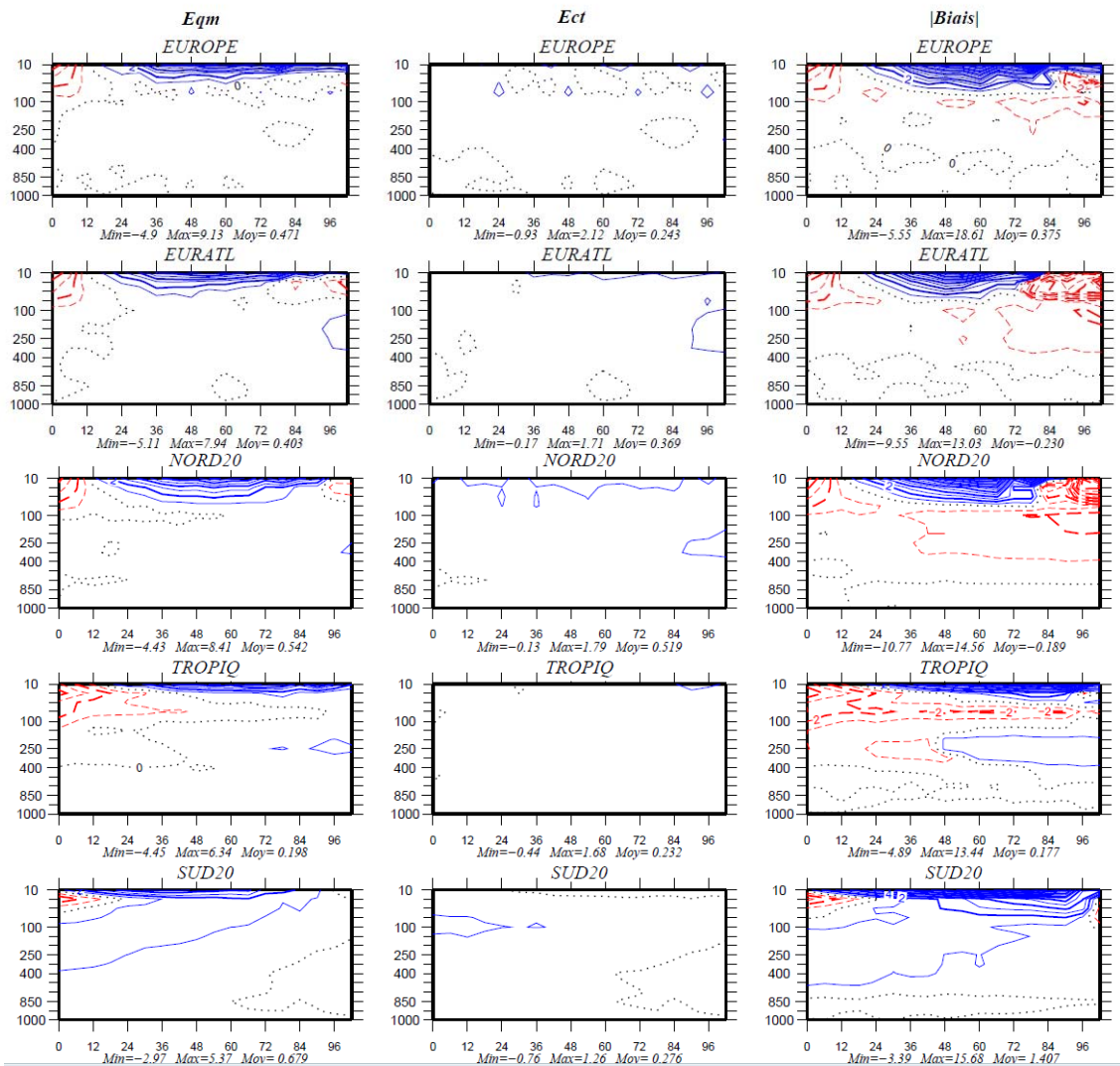108 simulations de 102h contrôlées du 20100804 au 20101123

Figure 1 : Difference of the scores realized by the operational version of ARPEGE and its e-suite. The reference is provided by the analysis of ECMWF. The scores are computed for the geopotentail heights : Bias (right), standart deviation (center) and root mean squarred error (left) for different domains : from top to bottom Europe, Euratl, North 20, Tropical area, South 20. The isolines are plotted every meter and the bleu ones correspond to an improvment and the red ones to a worsening.

The scores are in general rather neutral or sligtly positive 5figure 1 for geopotential height) depending on parameter, domain and lead time. This corresponds to the less important amount of changes performed in the operational model after the main change implemented in April 2010.
The subjective evaluation recovers quite the same result with a quasi-equal number of cases improved or damaged.

The ALADIN–FRANCE model uses the same modifications as ARPEGE. The same neutral results as for ARPEGE are recovered for the ALADIN-FRANCE model.

The AROME model has specific modifications listed below:
- increase of the simulation domain (Figure 2)
- assimilation of 7 supplementary french radars (Doppler winds and relflectivities)
- screening of satellite data at a finer resolution
- increase of the orographic roughness length
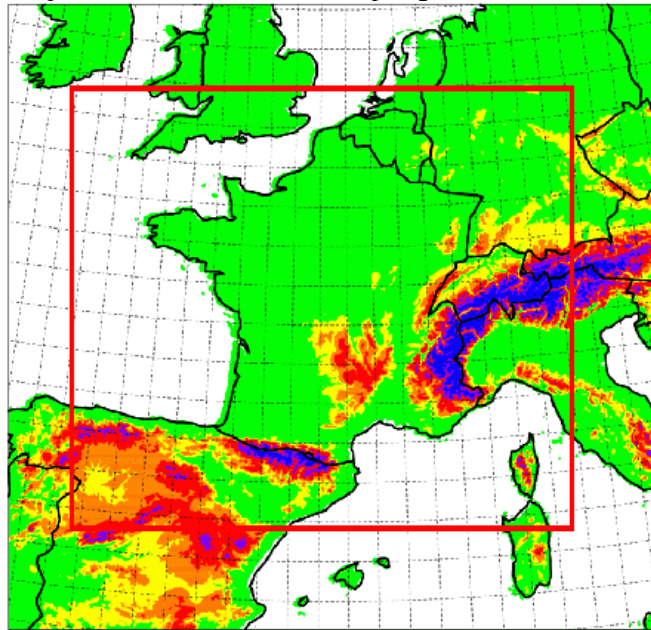- AROME analysis replaces the first ARPGE coupling file

Figure 2 : orography of the new AROME domain. The previous smaller domain is represented by the red square.

These changes improves the scores of the AROME model for surface parameters: mean sea level pressure, 2m temperature, 2m humidity and 10 m wind except the 6hours accumulated rains. For instance, the RMS for 10 m wind is reduced by 10 % as shown on Figure 3.
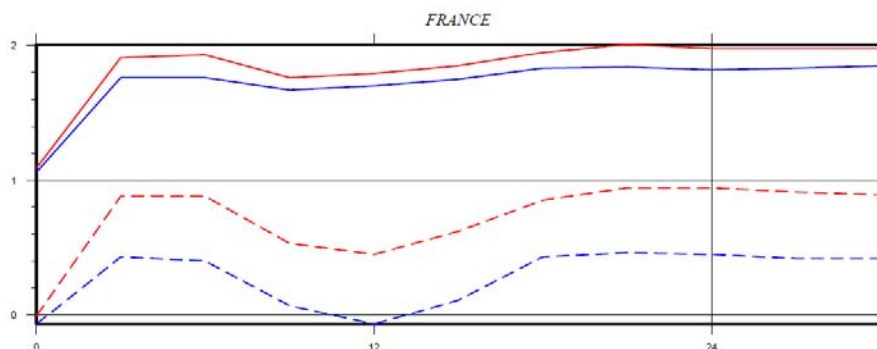

Figure 3 : RMS (full lines) and Bias (dotted dines) of AROME 10m wind for the operational version (red) and its e-suite (bleu) . The reference data are provided by the RADOME network, which covers France. The scores are plotted against the lead time and are averaged over the temporal period : 15 September to 23 November 2010.