DA activities at DHMZ

T1.5: Move to local observation monitoring at each center

LACE observation monitor (version 2) was installed. Some difficulties are present when dealing with WINDPROFILER observations. During computation of period statistics program crashes with *Segmentation error* . So far error was not fixed, so in order to get long period statistics computations concerning WINDPROFILER data were removed.

T2.1: Computation of background errors on local domains

Ensemble B matrix was computed (K. Horvath). Matrix is computed from 4 members of ARPEGE ensemble which are integrated with ALADIN to obtain 6hr forecast. This is done for 98 days starting from 19. February 2009. From this two pairs of differences between ensemble members are calculated (2x98 differences). From them ensemble B matrix was calculated with FESTAT program. Some single obs. experiments were done to compare it with B matrix computed with standard NMC method but this matrix was not tested in assimilation cycle. In our test assimilation cycle we still use B matrix computed with standard NMC method.

T2.3: Evaluation of the assimilation system and preparation of an operational setup

Technically assimilation system is tested and so far it seems to work well. System is steered with bash scripts. It runs in parallel mode, with timings similar to the ones used in operational setup. For verifications VERAL was installed. Observation departures are calculated using CANARI from cy35t1 and ASCII files for verification are created using modified MANDALY from same cycle.
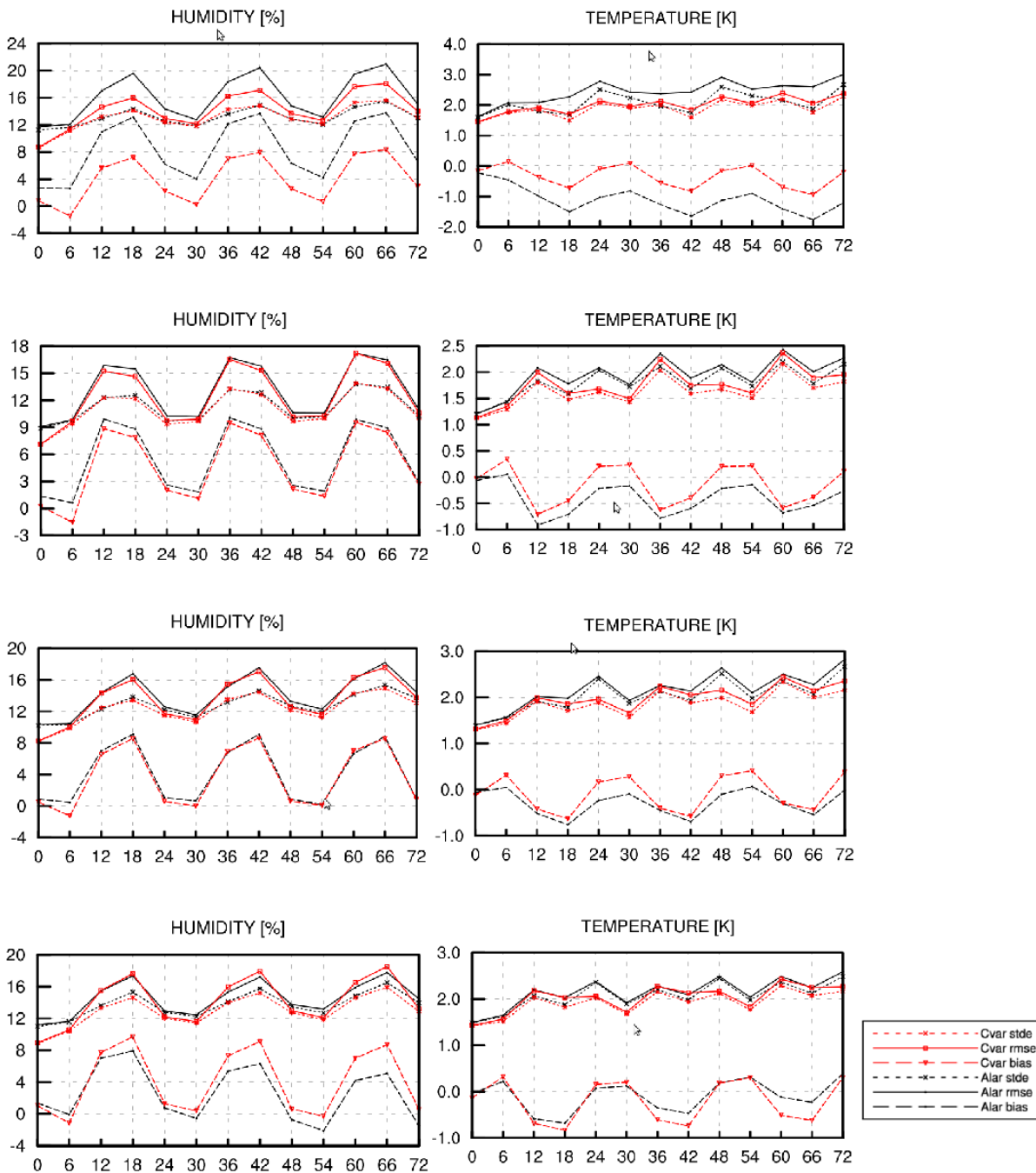
Figure 1: : RMS, STDE, BIAS for operational run (Alar) and production from assimilation cycle (Cvar). First row is April, second May, third June and forth July.

Verification scores showed degradation of some screen level scores toward summer months. Some results are shown at Figure 1. It can be seen that bias for temperature is clearly better for April but as we move to July operational run gets better while scores for 3dvar are similar. Also there is problem with minimum temperature for 3dvar. RMSE for 3dvar is better but differences are getting smaller towards July. Results for humidity show similar behaviour and for July scores are even worse.

We have also implemented verification (visual) for precipitation, where we compare precipitation from model (operational, production from assimilation cycle) with observations (rain gauges). Example is shown below. Production from assimilation cycle gave better results.
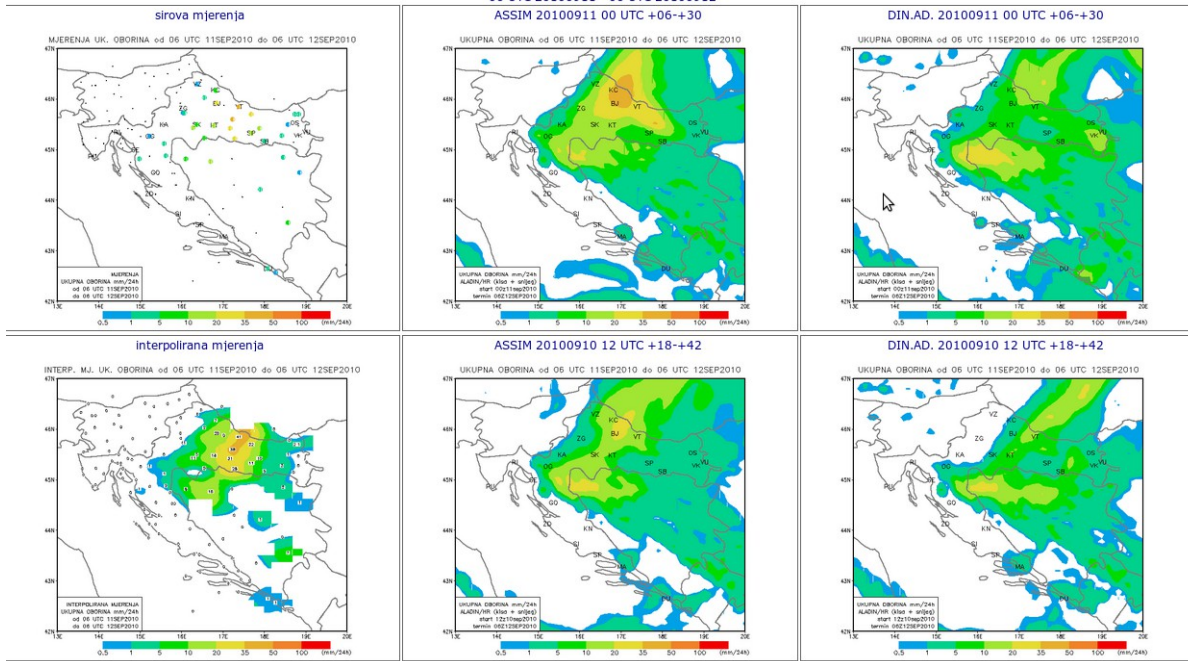
Figure 2: Comparison of model results with rain gauge measurements (points and interpolated values).

T2.4: Maintenance of the data assimilation system: update with new observation types and follow research and developments

No new cycle was installed so we still use cy35t1 for out data assimilation system (except integration which is done with cycle 32t2). Some changes were done concerning moving data to new archive machine. From March assimilation cycle and production from it are stored in new archive machine, same as data coming from OPLACE. Some bugs were fixed in software preparing OBSOUL files with Croatian automatic stations data and also few new automatic stations were added.