Data assimilation status in Romania
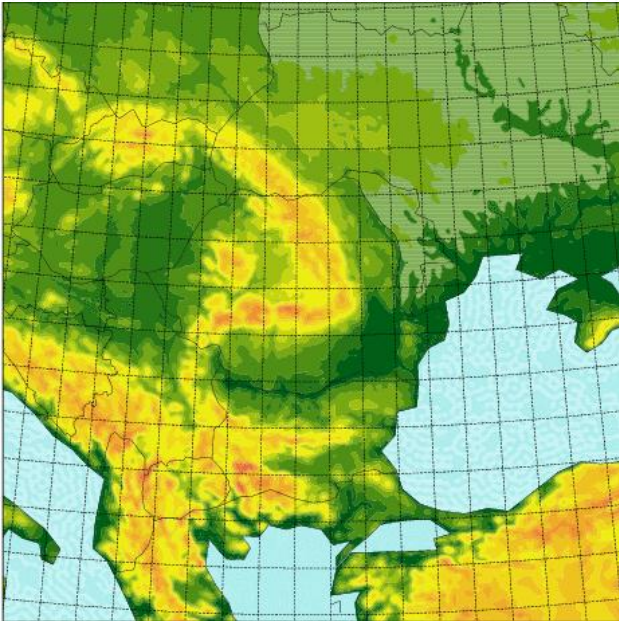
Mirela Pietrisi

ALARO – oper domain and its characteristics
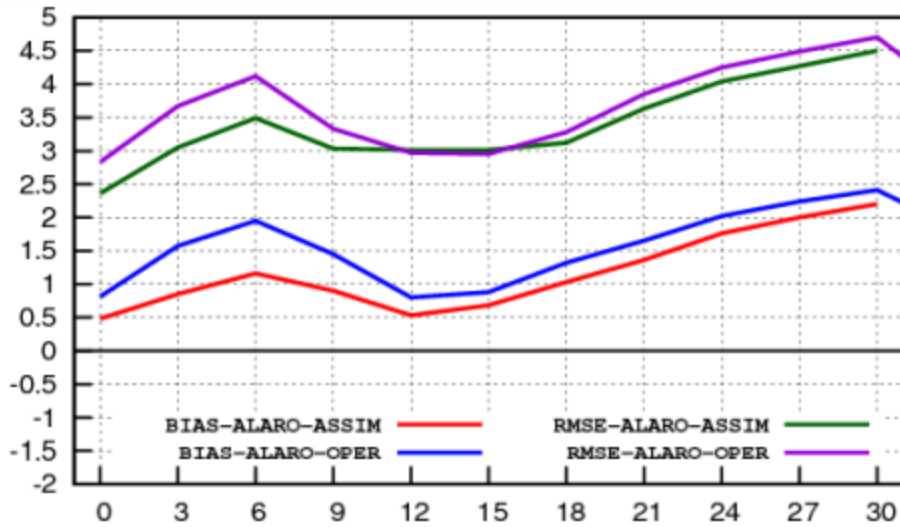

- 240 x 240 grid points;

- Δx= 6.5 km; L49;
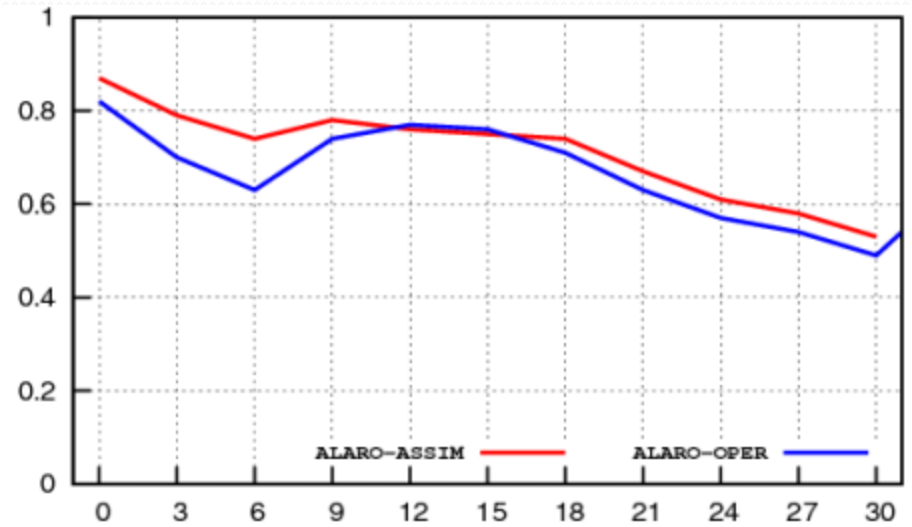
- CI + LBC ← ARPEGE model at every 3 hours;

Previous status

- Cycle 35t1;

- Only the conventional data (from OPLACE plus local synop data);

- Problems with satellite data;

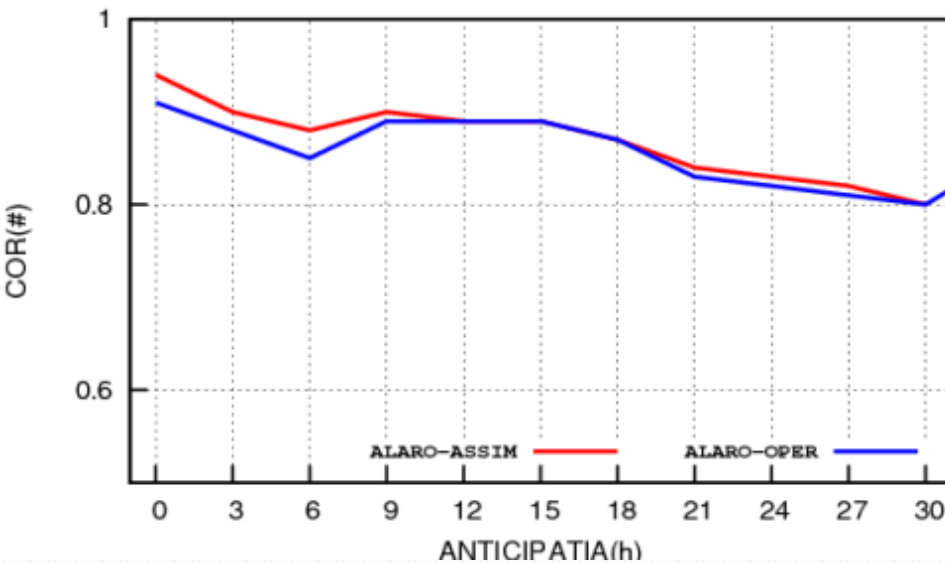# The impact of data assimilation on T2m for February 2012
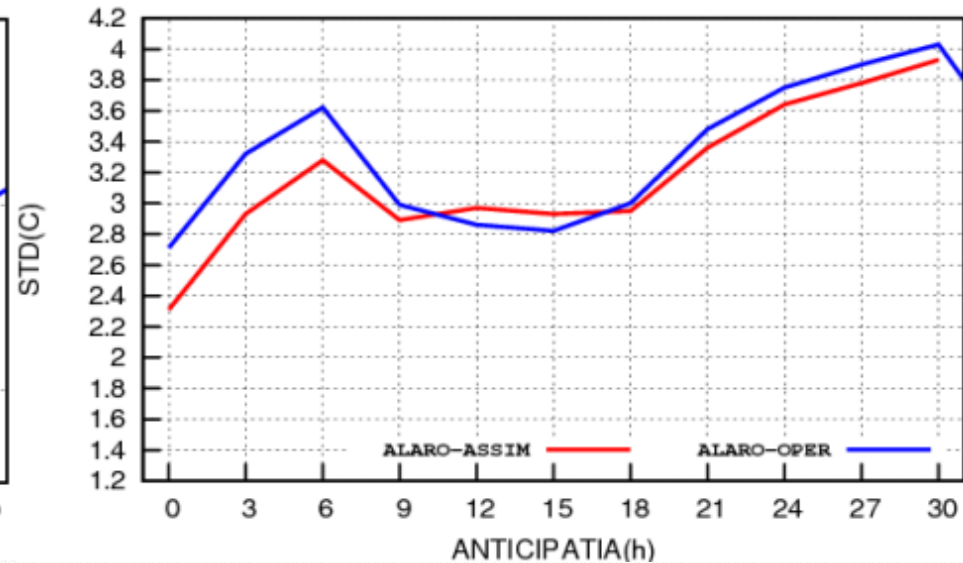

BIAS and RMSE

VARIATION REDUCTION

- the impact of DA is higher in the first 12 hours of integration

# The impact of data assimilation on T2m for February 2012

| CORRELATION COEFFICIENT | STANDARD DEVIATION |

The correlation coefficient has values above 85% (the model captured well the variability of predicted values compared to those observed);
A slightly degradation of ALARO-DA forecast is noticed between 12 -15 UTC, when the standard deviation shows a larger spread;

Minimum temperature on February 10th, 2012
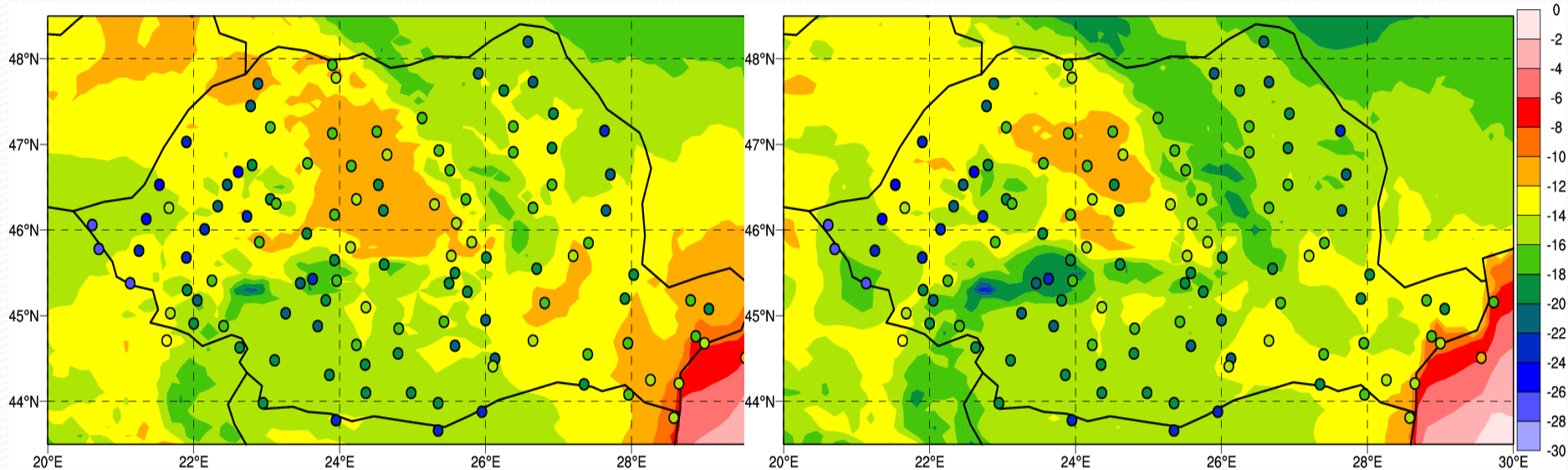
ALARO - OPER

ALARO – ASSIM

T2min and T2max fields for ALARO- OPER are overestimated comparing with the observations (circles colored in the same colors as the ALARO model forecast); Using DA, this overestimation is reduced (the benefit of the local data assimilation can be observed especially in Dobrogea and intra-Carpathians regions

Maximum temperature on February 10th, 2012
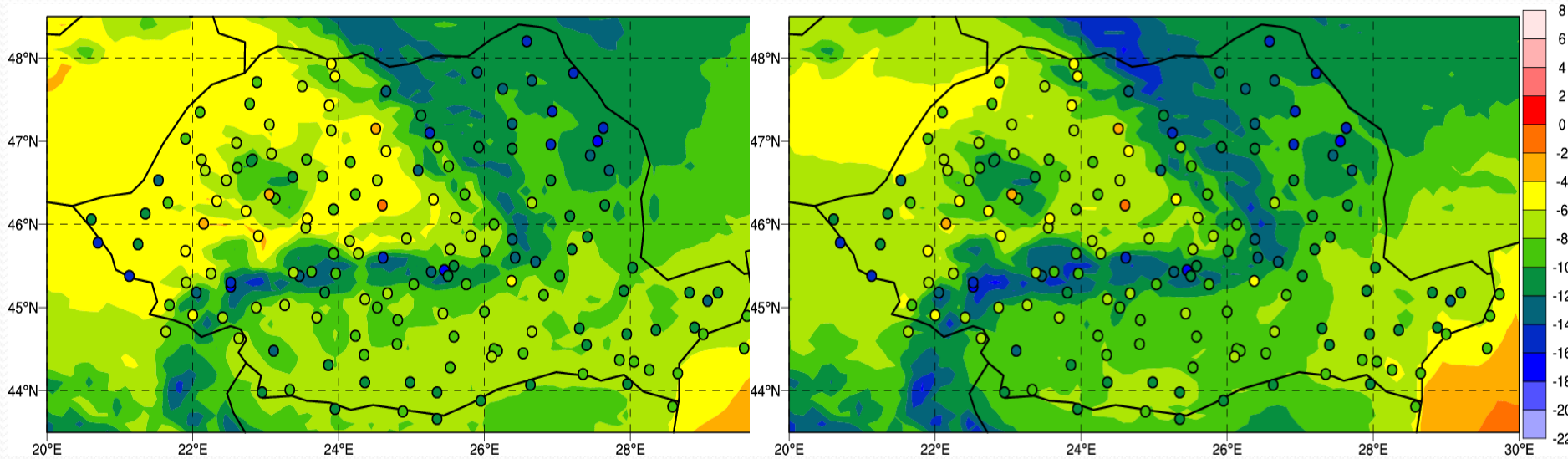
ALARO – OPER

ALARO – ASSIM

Still, the values for the predicted extreme temperatures are not reduced enough in the western part of Romania

The errors distribution in comparison with the observations for T2m at 06UTC: ALARO-OPER (left) and ALARO-DA (right)
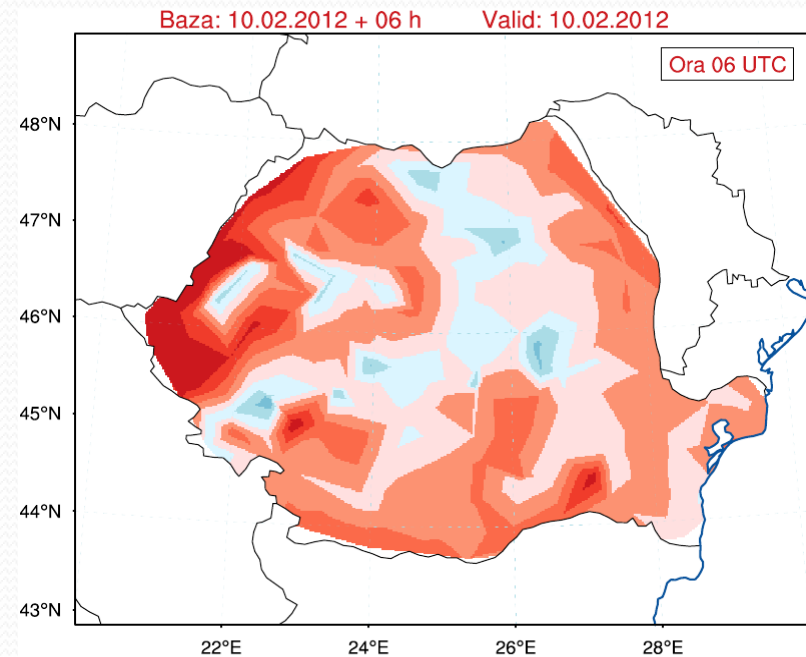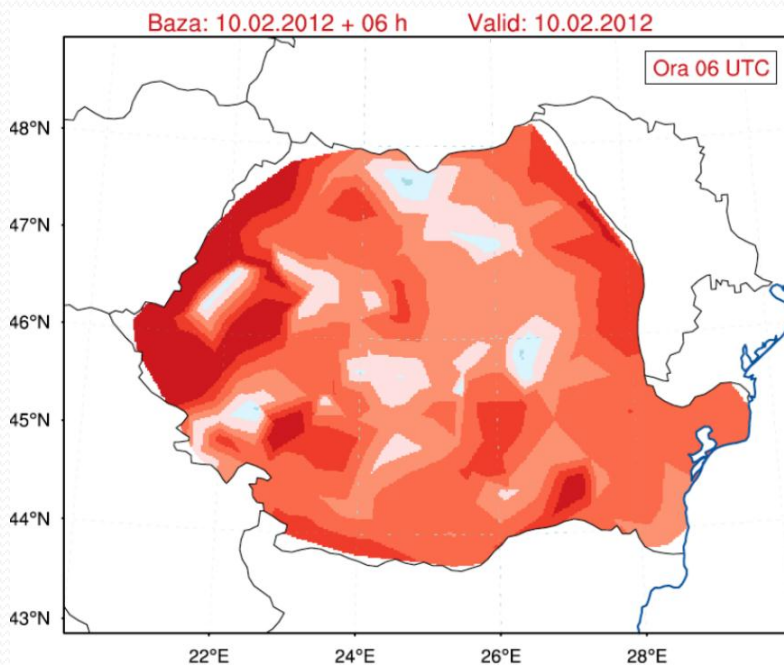
In extra-Carpathians area, the reduction of positive systematic error is insufficient – may be related to deficiencies of the model in the simulating strong thermal inversions

Present status: ?

- Cy36t1 – op.2;

- Problems in conf.701 – CANARI
- Compiler: gcc 4.4.6
- Domain: 240 x 240 grid points;
- IBM, Linux Cluster: S.O: Scientific Linux 6.2 x64;

Info IBM

- - 14 x HS21 XM (Type 7995)
- 2 x Intel(R) Xeon(R) CPU E5450 @ 3.00GHz - 8 cores total
  8GB RAM DDR2
  72GB HDD SAS local storage
  2 x 1Gbps Ethernet used for storage network - only one operational
  2 x 10Gbps Ethernet used for MPI traffic - only one operational
  1 x Qlogic FC dual-port
- - 4 x HS22 (Type 7870)
- 2 x Intel(R) Xeon(R) CPU X5560 @ 2.80GHz - 8 cores + 8 HT - 16 threads total
  12GB RAM DDR3
  2 x 147GB SAS local storage
  2 x 1Gbps Ethernet used for storage network - only one operational
  2 x 10Gbps Ethernet used for MPI traffic - only one operational
  1 x Qlogic FC dual-port
- - 2 x Bladecenter H
  1 x Switch 10G per sasiu (exista conexiune 10G intre sasie)
  1 x Brocade FC switch per sasiu

  - DS3400 FC storage 4Gbps
  - 1 x RAID 5 array + 2 hotspare disks
  - 2 volumes (storage(2T) + home (500G))

Present status ?

- The error:

<Unknown> : ALDODB(__mpl_recv_mod_MOD_mpl_recv_real82+0x30a) [0x276527a]
    <Unknown> : ALDODB(__diwrgrid_mod_MOD_diwrgrid_recv+0x411) [0xb419e1]
    <Unknown> : ALDODB(casmswi_+0x2cbc) [0x88dd4c]
   <Unknown> : ALDODB(canari_+0x1f67) [0x7ec247]
    <Unknown> : ALDODB(can1_+0x1f7) [0x591947]
    <Unknown> : ALDODB(cnt0_+0xcf4) [0x5913e4]
    <Unknown> : ALDODB(MAIN__+0x63) [0x590503]

- *ILEN=NGPTOT*KNUM*
  IF (ILEN > 0 .AND. NPRCIDS(KIOPROC) /= MYPROC) THEN
   ITAG=MTAGDISTGP+KCH
   print*,"inainte de mpl_recv"
   CALL MPL_RECV(PREAL,KSOURCE=NPRCIDS(KIOPROC),KTAG=ITAG,KOUNT=ILENB, &
   & KFROM=iSENDER,KRECVTAG=ITAGR,CDSTRING='DISGRID_RECV:')
   print*,"dupa mpl_recv"
  IF (NPRINTLEV == 2) THEN
    WRITE(NULOUT,*) 'DISGRID_RECV : recv gridpoint field from ',ISENDER,&
    & ' with tag ',ITAGR
   ENDIF

Present status ?

- For a small domain: 69 x 69 grid points – CANARI worked!
- Now: new compiler: gcc-4.8.1;