NWP Activities at TSMS

1st ACCORD All Staff Workshop, 12-16 April 2021, Video-Conference

NWP Division (sht@mgm.gov.tr)

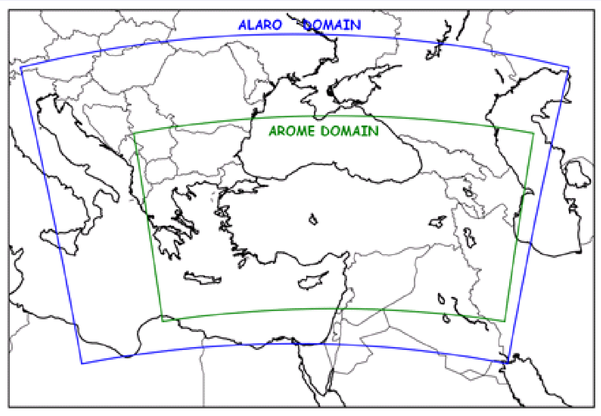
Operational Configurations

ALARO-TURKEY

Current operational suite:
Model version: cy40T1_bf7

Model geometry:
- 4.5 km horizontal resolution
- 450 X 720 grid points
- 60 vertical model levels
- Linear spectral truncation
- Lambert projection

Forecast settings
- Digital filter initialization
- 180 sec time-step
- Hourly post-processing
- 4 runs per day at 00, 06, 12 UTC (up to t+72) and 18 UTC (up to t+60).
- Coupling with ARPEGE LBC files at every 3 hours



AROME-TURKEY

Current operational suite:
Model version: cy43t2_bf10

Model Geometry:
- 1.7 km horizontal resolution
- 629 X 1589 grid points
- 72 vertical model levels
- Linear spectral truncation
- Lambert projection

Forecast settings
- 60 sec time-step
- Hourly post-processing
- 4 run per day at 00,06,12,18 UTC up to 48 hourly forecast

PARALLEL SUITE

AROME-RUC (CANARI_OIMAIN) Model version: cy43t2_bf10

Model Geometry : Same as operational
Forecast settings: Coupled to ECMWF-IFS, forecasts up to t+24
Assimilation settings:
- 3 hour assimilation cycle
- Surface Assimilation- Canari OI Main
- Coupling with ECMWF LBC files at every 3 hours

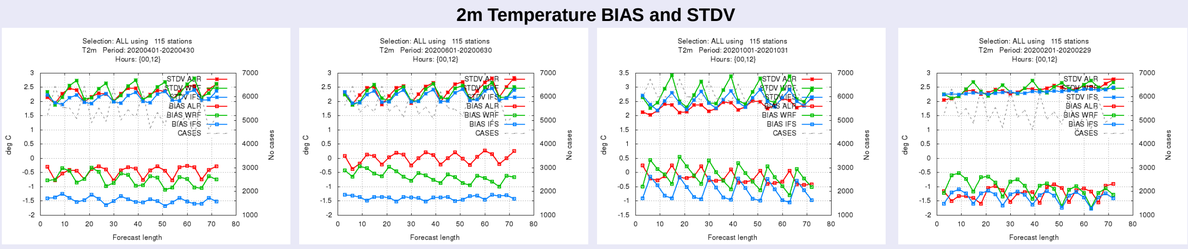
Observation usage:
- SAPP Observations GTS + Local

Comparisons & Verification (ALARO-1 ECMWF WRF)

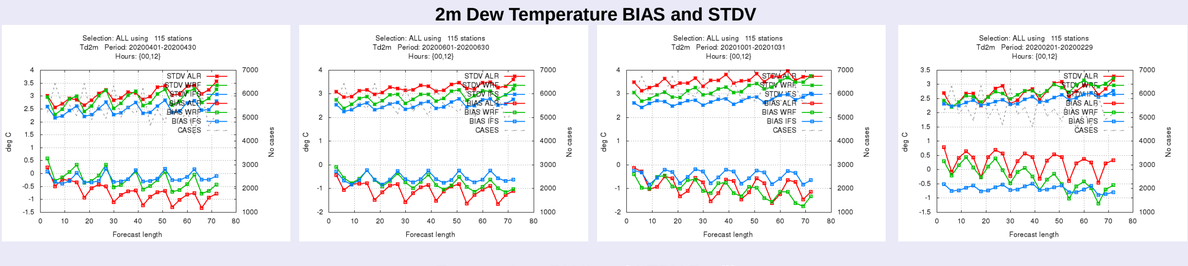
TSMS run both ALARO-1(cy40t1) and WRF model at local systems. WRF and IFS model outputs are also added to Harmonie Verification Tools at 00-12 GMT for monthly comparisons and verifications. 115 Turkish synoptic and 7 radio-sonde stations used for verifications.

April 2020 | July 2020 | October 2020 | February 2020

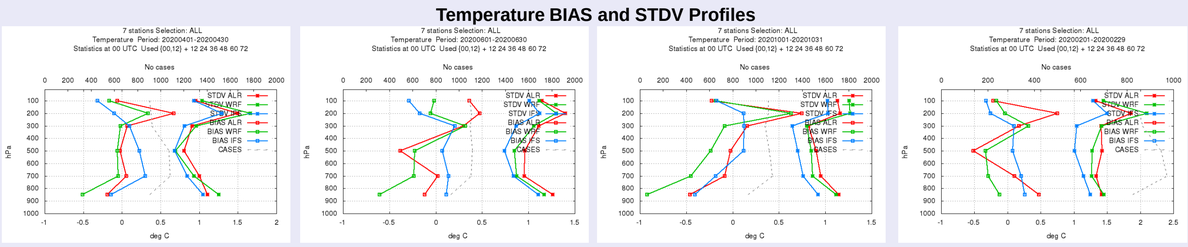
2m Temperature BIAS and STDV



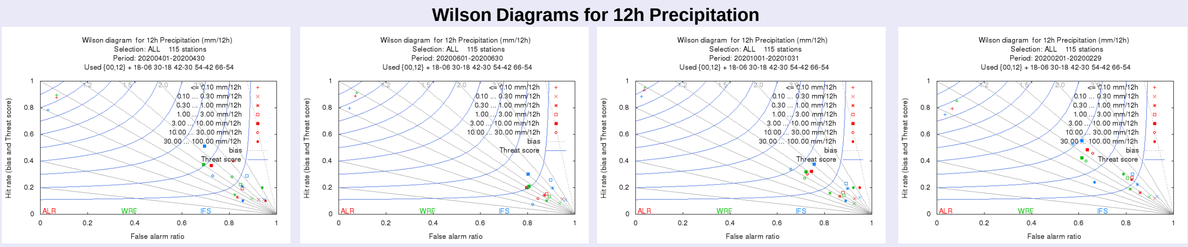
2m Dew Temperature BIAS and STDV



Temperature BIAS and STDV Profiles



Wilson Diagrams for 12h Precipitation



HPC Systems at TSMS

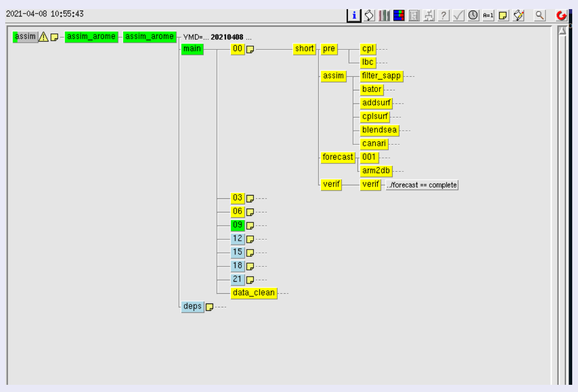
SGI ICE XA (Water cooled) System
- 288 nodes, E5-2690v4 Broadwell, 2.6GHz, 14 Cores (Total 4032 Core), 192GB DDR4 RAM per node
- ~168 Tflops peak performance
- OmniPath (100 Gbps),
- Enhanced Hypercube Interconnect Topology
- Altair PBS Pro
- SLES 12
- Intel Parallel Studio XE Cluster Edition
- SGI Lustre System ; 350TB disk storage

(Installed at Turksat Headquarter)

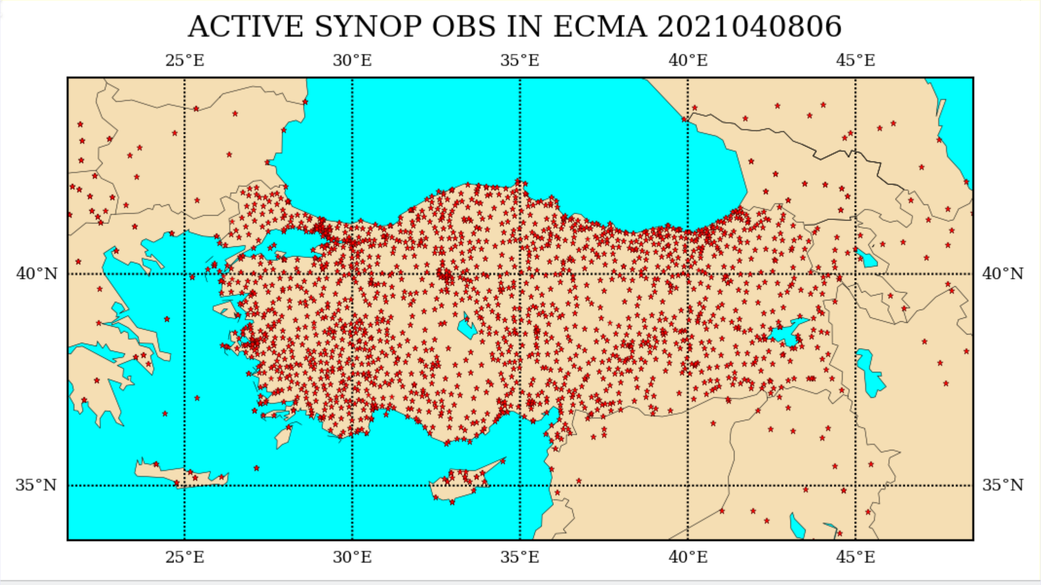
DAsKIT Activities

AROME-RUC surface assimilation system is running pre-operationally. The surface assimilation system is running on ecflow suite. SAPP program is used for observation pre-processing. SAPP synop data (rh2m, t2m) are assimilated in surface assimilation system. To decode SAPP synop data by BATOR cy43t2_bf10 we use a modset kindly sent by Eoin Whelan. For monitoring, a home-made tool based on MANDALAY is used. CANARI namelist setting is as follows:

- LMESCAN=.TRUE., REF_A_H2=100000.,REF_A_T2=100000.,
- REF_S_H2=0.1, REF_S_T2=1.6,REF_S_SST=0.8,
- REF_A_SST=200000., REF_A_SN=50000.,
- REF_S_SN=5., LAECHK=.FALSE.,



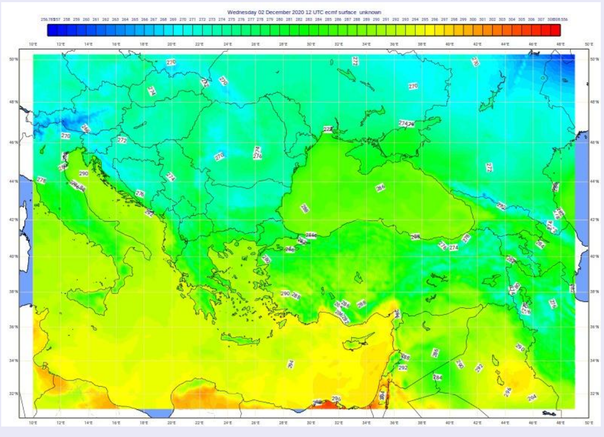
ecflow suite of AROME-TR surface assimilation



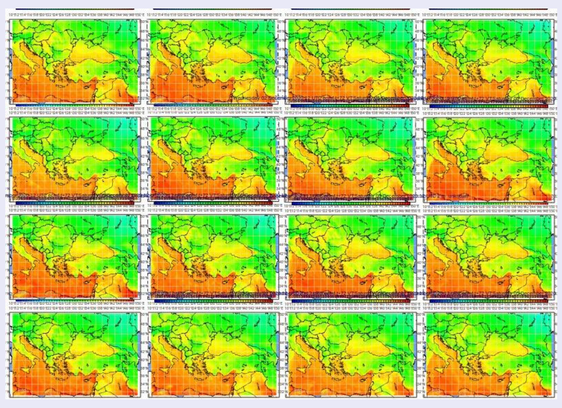
Location of synop observations used by surface asimilation system

A-LAEF Activities

Since 1 December 2020, A-LAEF post- processing data has been using operationally at TSMS by kind help of Martin Bellus.
- Domain 4.5km , 869*429, 16 members
- 60 vertical levels



A-LAEF Turkey Domain



2 meter temperature stamp map of A-LAEF members

Ankara, April 2021