

NWP activities in TURKEY



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ALADIN-TURKEY

Current operational suite:

Model version: cy35T1

ALARO-0 with 3MT

Model geometry:

- 4.5 km horizontal resolution
- 450 X 720 grid points
- 60 vertical model levels
- Quadratic spectral truncation
- Lambert projection



ALADIN Post-Processing Domain

Forecast settings

- Digital filter initialization
- 300 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)
- LBC coupling at every 3 hours
- Transfer ARPEGE LBC files from Meteo France (Toulouse) via Internet

Major Highlights

- 1st January 2010: cy35T1 ALARO-0 daily parallel run on SGI
- 10st February 2010: ALARO-0 under SMS
- 1st March 2010: cy35T1 ALARO-0 runs operationally
- 1st July 2010: Four runs per day
- 1st April 2011 cy36T1 Paralel Run

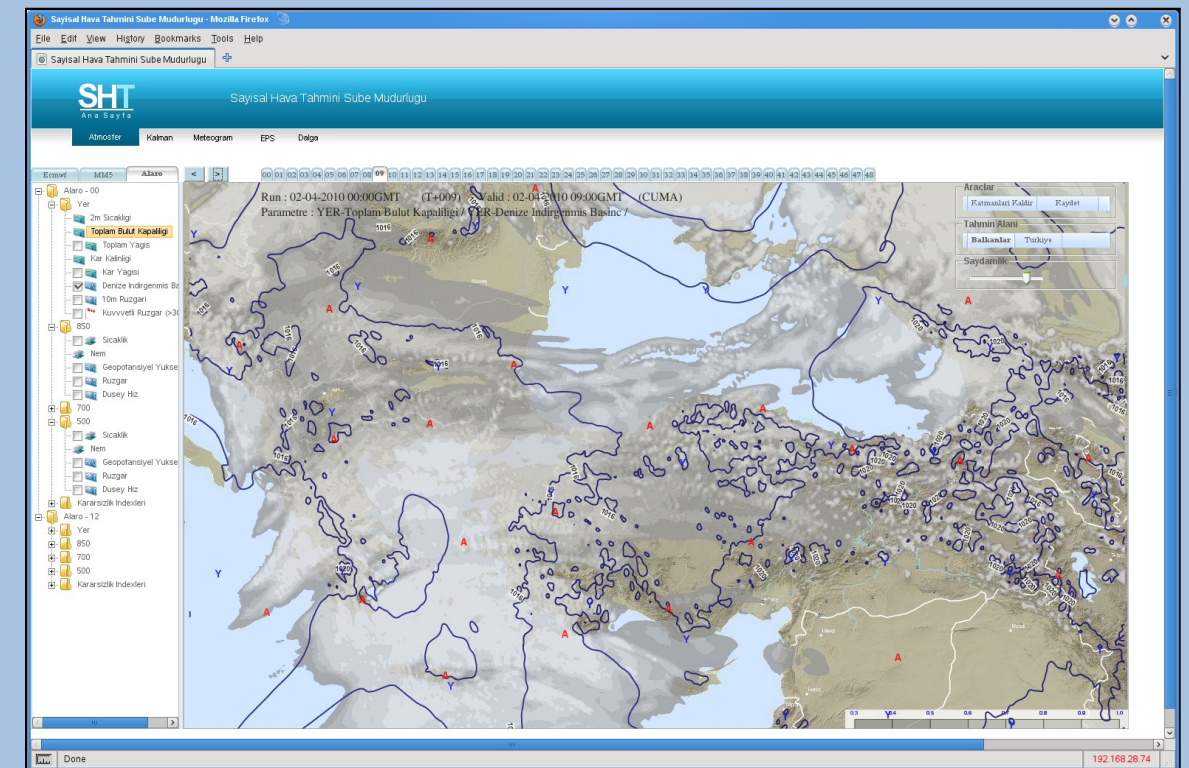
HPC System

- SGI Altix 4700
- 512 cores based Intel Itanium2 Montvale each at 1.67 GHz
- Total Peak performance 3.4 TFlops
- Total memory 1 TB
- Total Disk Space: 20 TB

ALADIN Products

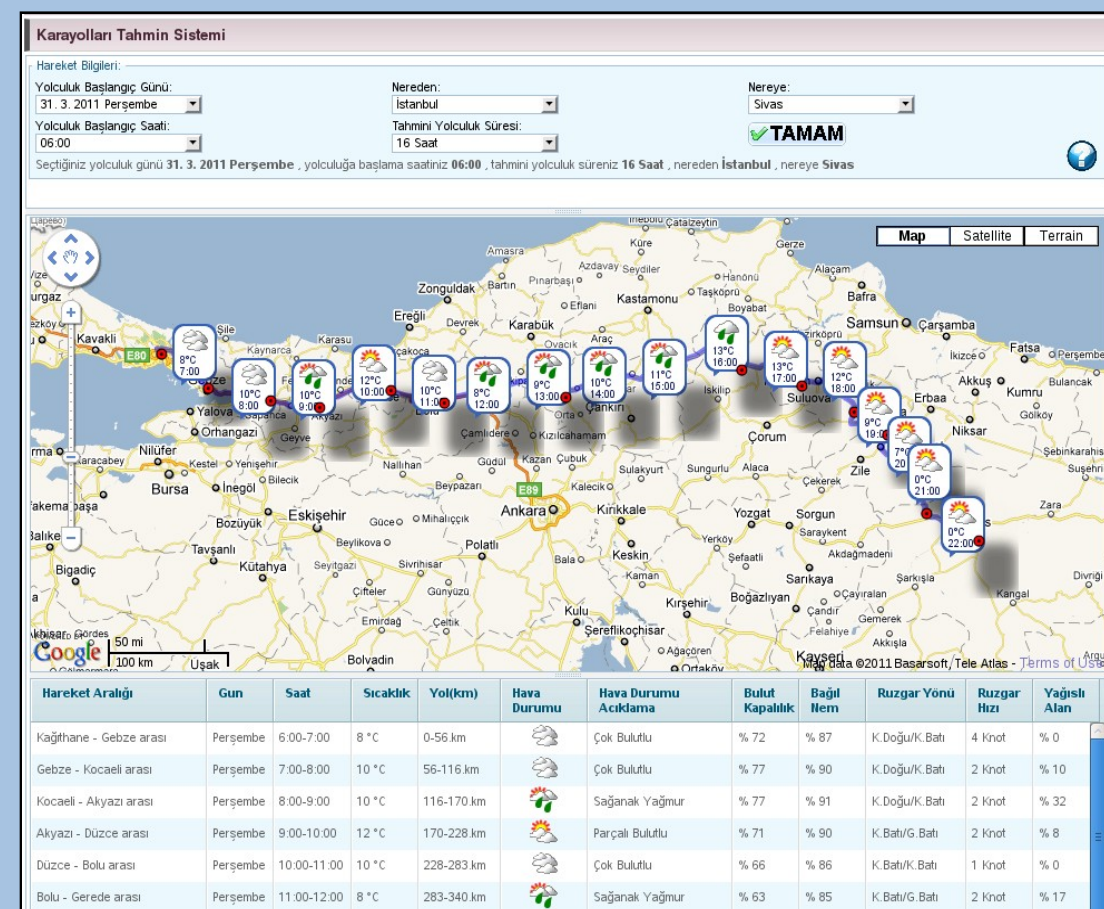
Interactive Web Page

TSMS is using a web-based visualization tool which aims to give interactive services that provide parameterized graphical products to authorized users. The framework is designed to use Magics++ with python (sometimes Fortran) for generating products.



Snapshot view of Total Cloud Cover and MSLP 02.04.2010 run, t+9 forecasts of ALARO-0 on Interactive Web Page.

Highways Weather Forecasting System v3



For more info, please visit: <http://www.dmi.gov.tr/tahmin/karayollari-tahmin-sistemi.aspx> (Note that currently we provide a Turkish version.)

The Highways Weather Forecasting System is an effective and friendly system for trip planning. It is also being used by General Directorate of Highways for highway maintenance.

The system has been developed on PHP, and it makes use of “Google Map APIs” for computing shortest distance algorithm. Then the HFS utilizes ALARO 00, 06, 12 and 18 UTC model outputs for the respective trip sections.

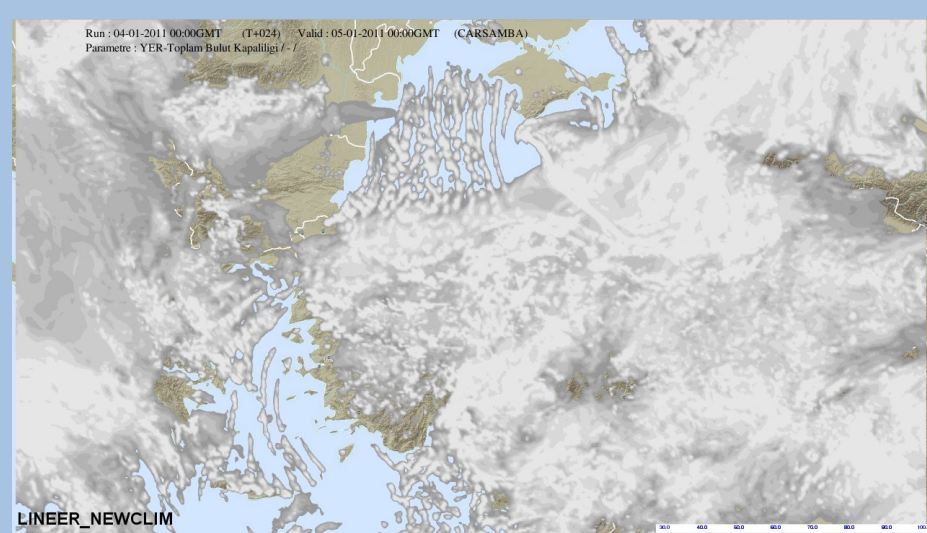
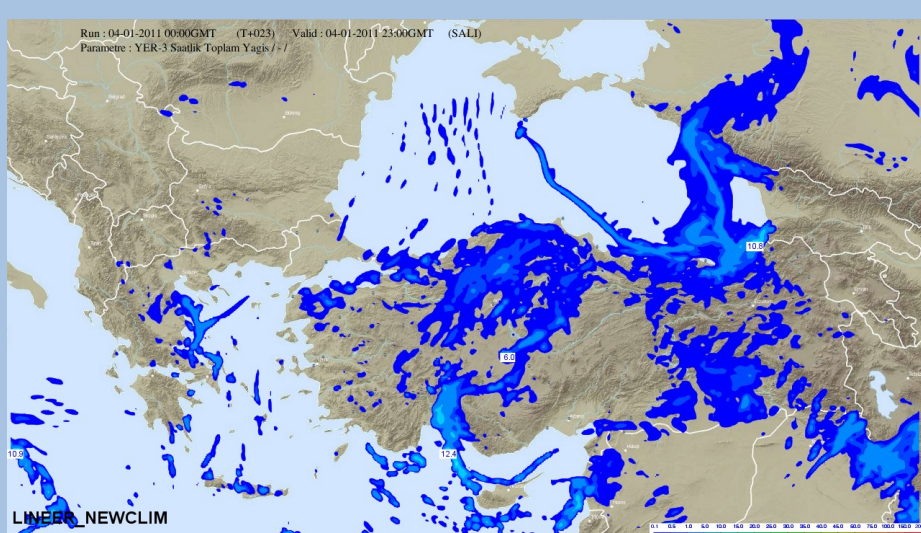
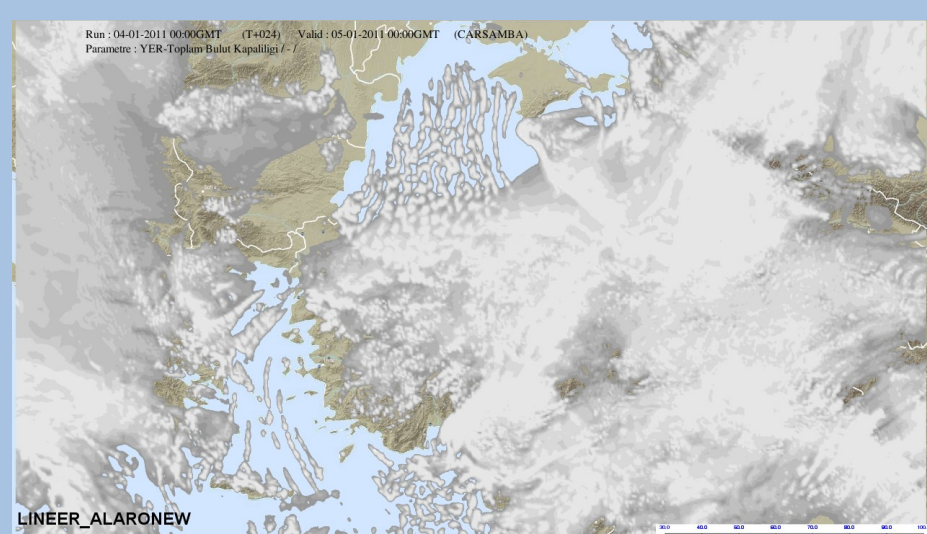
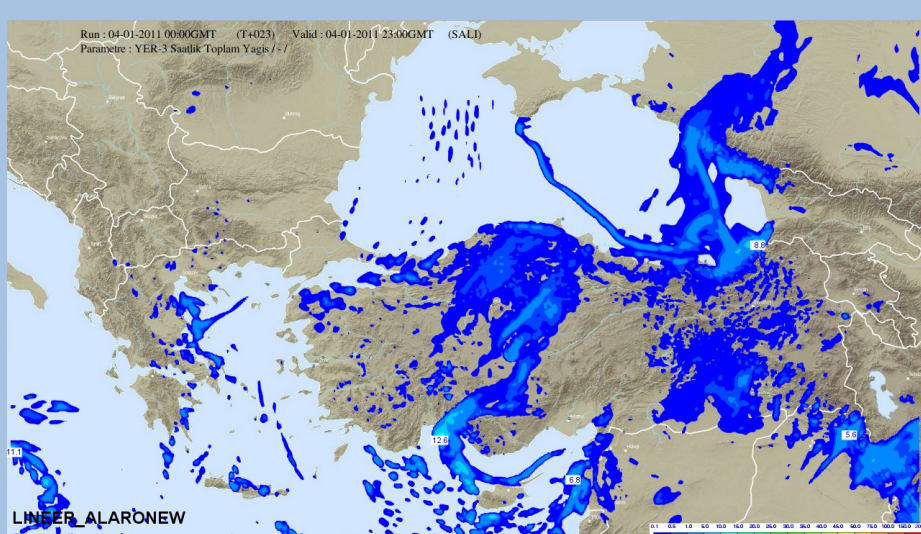
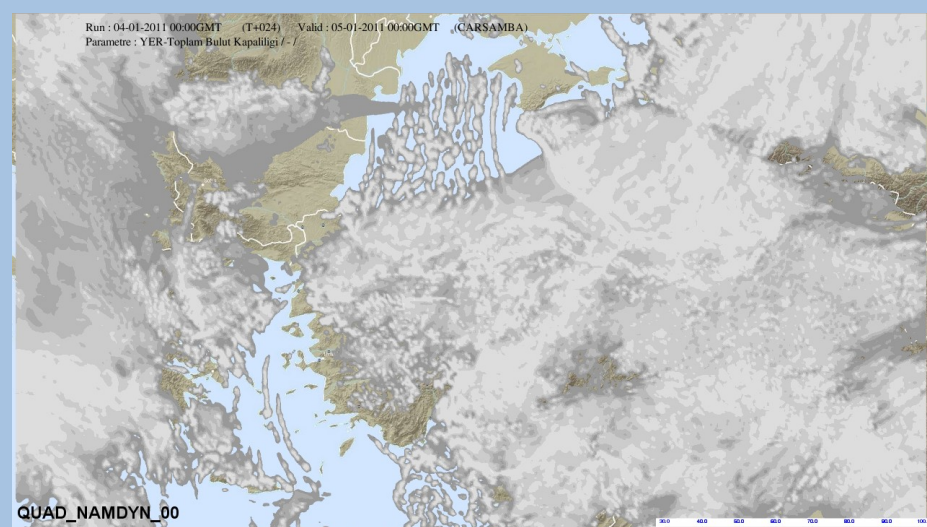
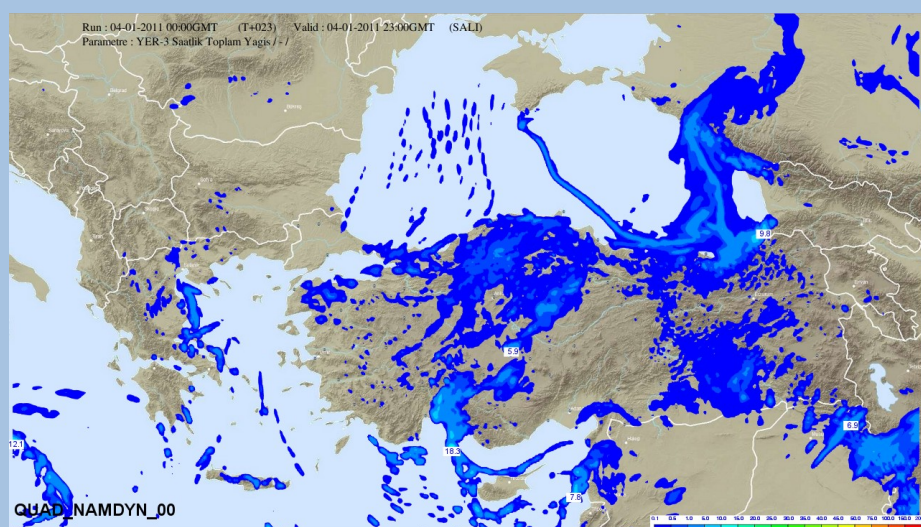
Model Sensitivity Studies

- Time step tests: 180 sec time-step
- Code fixes are adapted in cy35T1 (will also be tested for cy36T1).

Examining noise related issues:

- New tuning in NAMDYN : Some parameters are added/tuned with respect to spectral part of SLHD. $RRDXTAU=123.$, $RDAMPT=1.$, $RDAMPDIV=1.$, $RDAMPDIVS=10.$, $RDAMPVOR=1.$, $RDAMPVORS=10.$, $RDAMPQ=0.$, $SLEVDH=0.1$, $REXPDH=2.$, $SLEVDHS=1.$, $REXPDHS=6.$
- Switching from quadratic truncation to linear truncation with new tuning in NAMDYN.
- Work in progress: Activating the vertical finite element scheme (VFE).

Acknowledgements: Filip Vana and CHMI colleagues provided insight and useful tips.



The left panel shows ALARO t+23 1 hour total precipitation forecasts, and the right panel shows ALARO t+24 total cloud cover forecasts. The figures at the top are from the operational run, middle figures are from the code fixed model run, and the figures at the bottom are from the model run of linear truncation with new tuning in NAMDYN.

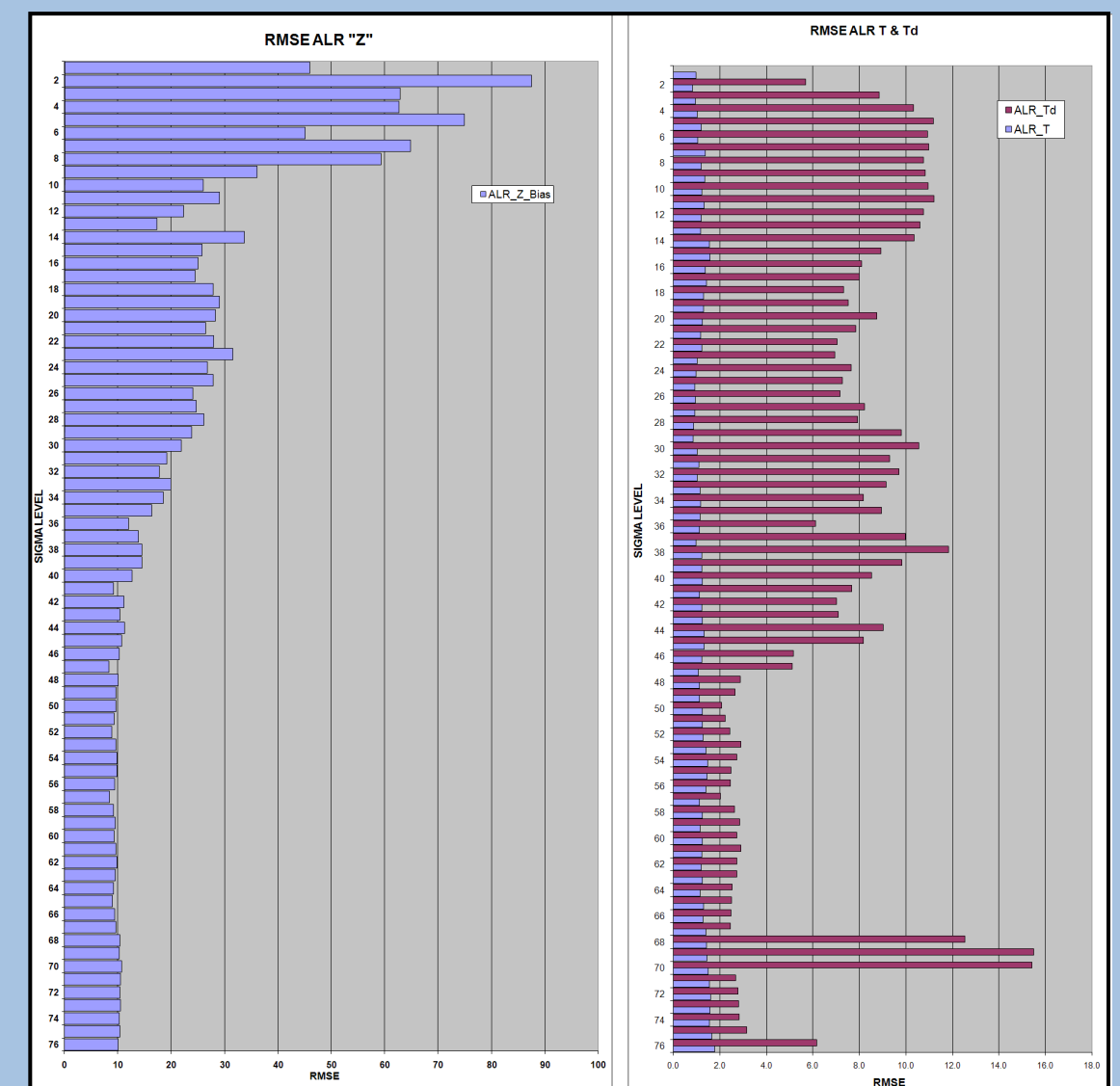
Verification Studies

Turkish radiosonde observed data that coincides well with the model sigma level are verified with the corresponding model forecasts.

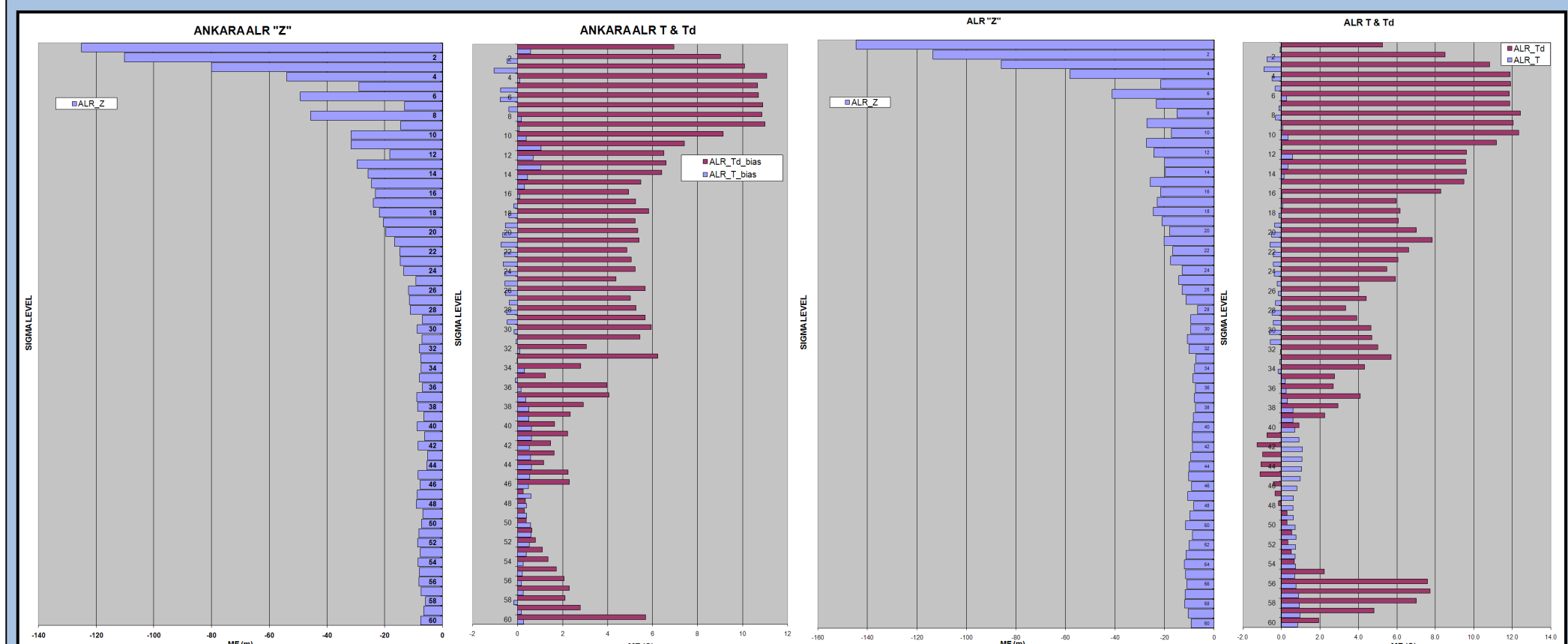
Scores computed: RMSE and BIAS

Parameters used: Geopotential height, temperature, dew point temperature, wind speed and direction.

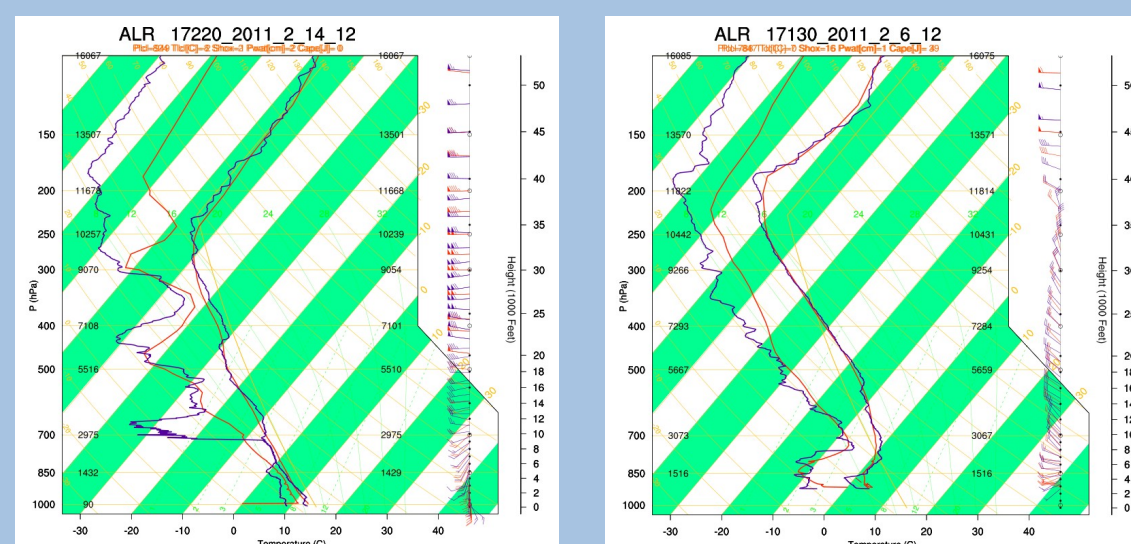
Preliminary results indicate that the model performs very well for geopotential height and temperature.



ALARO t+12 forecasts geopotential height, temperature and dew point temperature RMSE scores for all Turkish stations.



ALARO t+12 forecasts geopotential height, temperature and dew point temperature bias scores for the last winter period; Panel (a) shows Z scores for Ankara station which is an inland station, (b) is same (a) but T and Td scores, Panel (c) and Panel (d) show bias scores for Izmir which is a coastal station.



Skew-T diagrams are produced routinely to enable bench-forecasters to assess model performance against observations.

It is quite a recent work, it is too early to draw any conclusion on the model performance.