

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

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
- 10th 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



ALADIN Post-Processing Domain

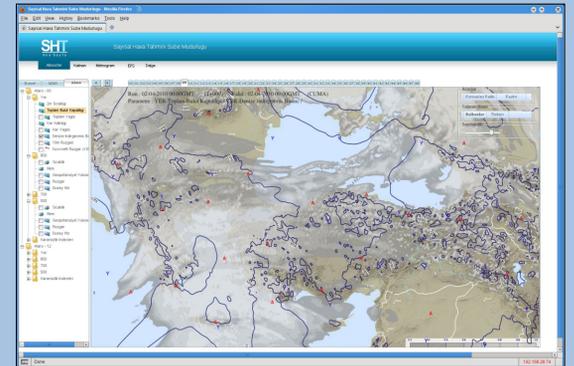
HPC System

- 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



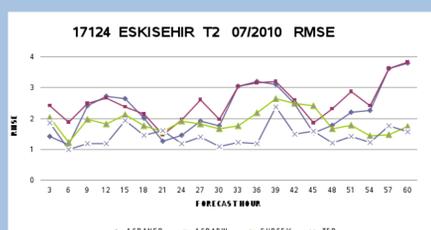
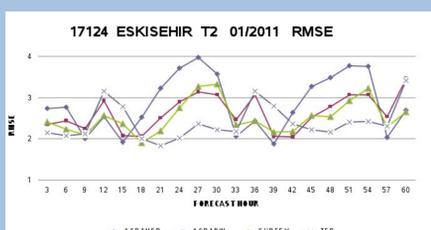
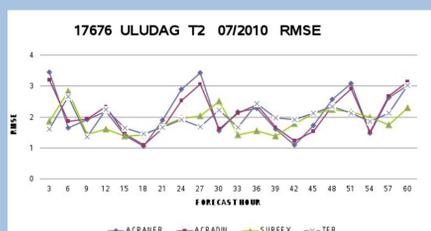
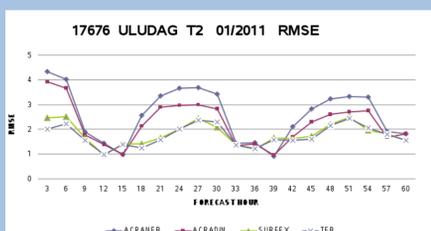
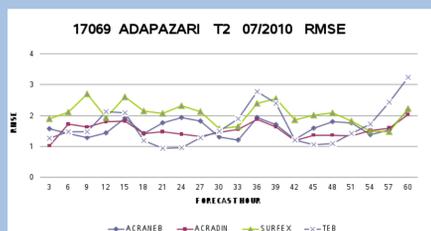
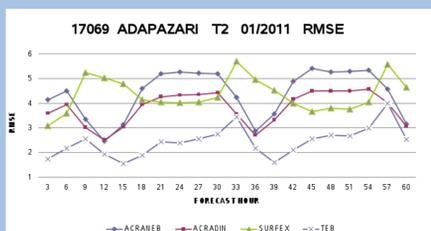
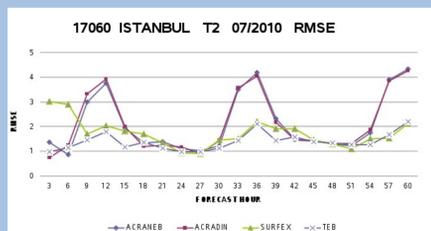
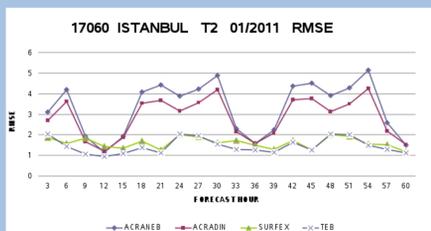
The Highways Weather Forecasting System is an effective and friendly system for trip planning. It is also being used by General Directorate of Highways for highway maintenance.

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.

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

SURFEX Preliminary Studies

We have initiated some Alaro-Surfex coupling tests. As part of our ALADIN-SURFEX working group studies, we have examined the performance of SURFEX for; 2m temperature, 10m wind speed, and 2m relative humidity. The runs have included sensitivity tests of four schemes in the following combinations; ACRANEb (Geleyn Radiation Scheme) –which is used operationally at TSMS-, ACRADIN (ECMWF Radiation Scheme), SURFEX (ECMWF Radiation Scheme and SURFEX), and TEB (ACRADIN+SURFEX+TEB). For preliminary testing, 4 stations –which are aimed to represent land use types (such as Istanbul to represent urban areas, Adapazari for coastal areas, Uludag for mountains area and Eskisehir for inland area)- are chosen to verify the run results. Verifications results give us some hope to carry on further studies.



FullPos Algorithms

FullPOS is a Post-Processing package embedded inside the Arpege/IFS/Aladin software. It is fully compatible with the model itself. Mainly, it is composed of two pieces, vertical interpolations and horizontal interpolations.

FullPOS needs the auxiliary library for the I/Os and for the spectral transforms it uses TFL and TAL externals. It can be run with respect to the proper namelist of Arpege/IFS/Aladin cycle using in the experiment. While some of the namelist variables are only private to the FullPOS, model variables in the namelist are also used.

When making historical files in FullPOS, it needs to invoke two parts which are required to start the control cascade from almost the beginning. By removing the code below the condition LFPART2 and making more straightforward mechanism instead is planned in this study. Scalability of FullPOS can be increased avoiding from these limitations.

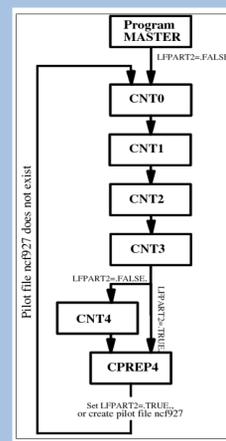


Figure 1. General mechanism of the PP inside the model. (From FullPos tech. Guide)

In order to avoid to start almost all the process from the beginning and to take the advantage of the modularity of the spectral transform, we handled two different type of geometry (Global to LAM or vice versa) at the same time which are required some modifications with respect to the spectral transform package. NFPSPREC is the integer number that activate the kind of new algorithm used in FullPOS, furthermore it controls the LFPSPREC.

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0AA0M0000
0000I0000
0000E0FF0
Z00000000
  
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Figure 2. New (e)(e)927 the STEPO sequence

Validation

(e)(e)927 cases tested both for surface and upper air fields. Spectral norms which are computed are slightly different from each other for the surface fields. This problem especially appeared for the surface fields, while the upper fields at the top are identical. Same results at the top of the atmosphere shows that new mechanism is working. Due to the vertical interpolations effected from orography seems the reason for the problem close to the surface. Testing on the problem of the vertical interpolations are still on progress.