NWP activities in TURKEY

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ALADIN-TURKEY

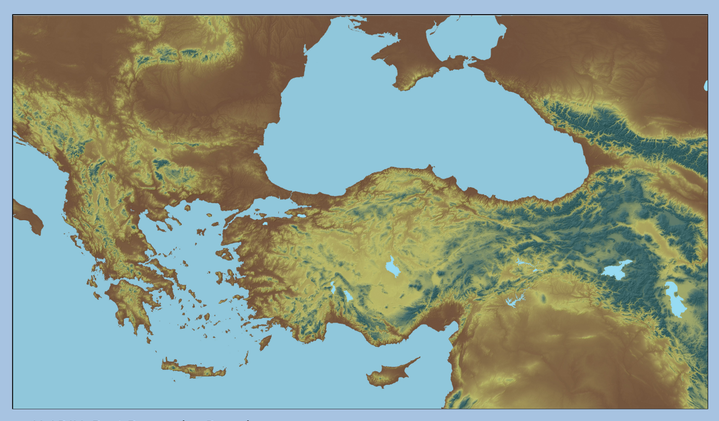
➢Current operational suite:

Model version: cy35T1

ALARO-0 with 3MT

Model geometry:

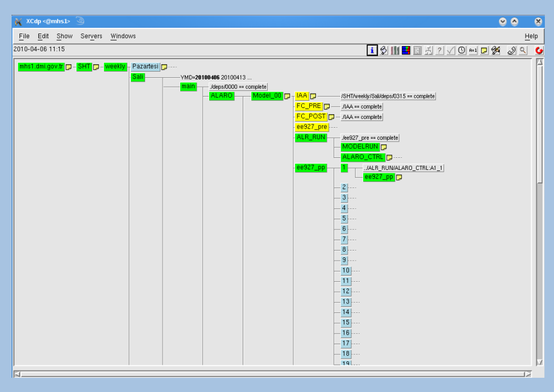
- 4.5 km horizontal resolution
- 450 X 720 grid points
- 60 vertical model levels
- Linear spectral truncation
- Lambert projection



ALADIN Post-Processing Domain

Forecast settings

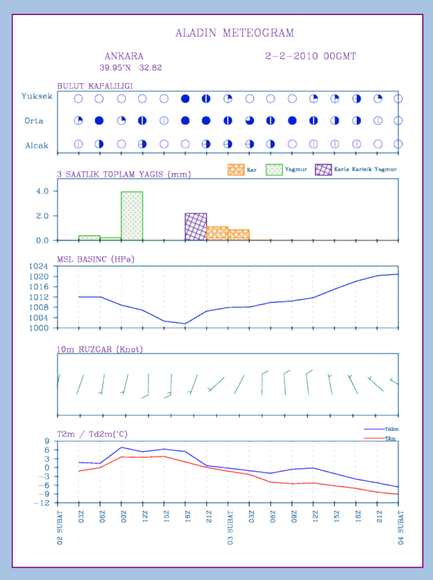
- Digital filter initialization
- 300 sec time-step
- Hourly post-processing
- 4 runs per day. 00,06,12 UTC runs with
  72 hours forecast lengths and
  18 UTC run with 60 hours forecast lengths
- LBC coupling at every 3 hours
- Transfer ARPEGE LBC files from
  Meteo France (Toulouse) via Internet



ALADIN Suite run under SMS

Major Highlights

- 15th December 2009: New HPC Acceptable test complete
- 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



Meteogram of ALADIN, prepared with NCL.

Post-Processing

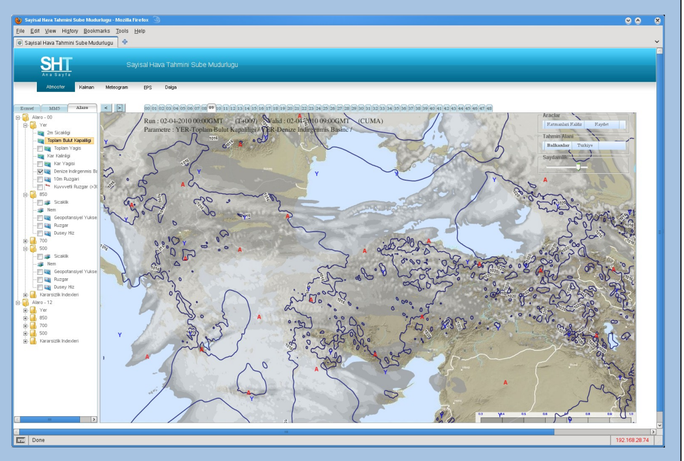
- NetCDF is used as default data format
- NCL for generating time-series and meteogram

Interactive Web Page Project

TSMS has started a web-based project 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.

Product aspects

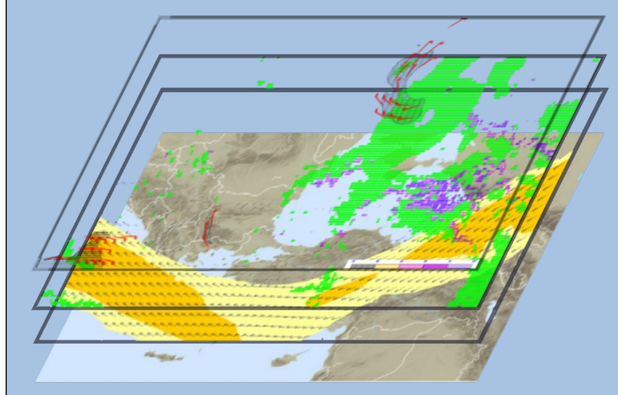
- Converting all model outputs in Mercator projections.
- Commonly used charts such as MSLP, total precipitation are generated immediately after model runs.
- Other meteorological charts are based on real-time production. Target is to deliver per plot under 3 seconds.



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

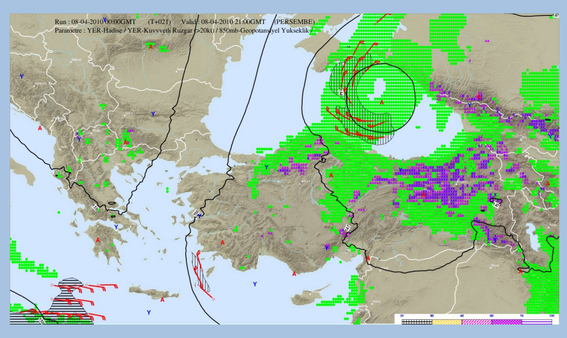
User interface: Mostly Javascript, PHP and AJAX.

Browser support: Firefox 3.x, IE 7+, Google Chrome



Layers:

- Layer is the basic meteorological visual element that could be displayed on the web interface.
- Currently, the layer has a default style. (Future plan is to add several optional styles that could be applied to the data).
- Special layers which do not have meteorological data can be represented as well such as; rivers, foreground coastlines, land-sea mask, orography and etc.



Products:

- A product is a combination of several layers.
- Users can customize products by combining layers to create their own products.

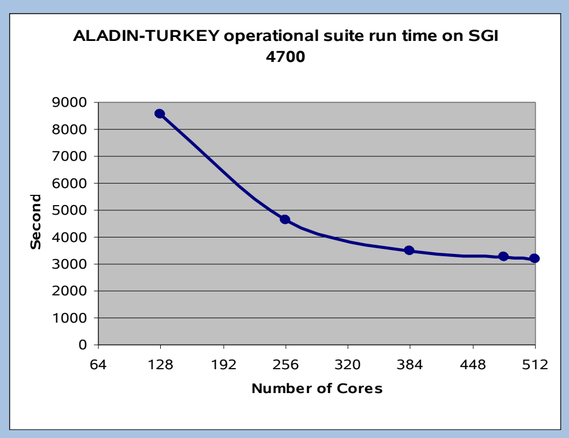
Remaining issues:

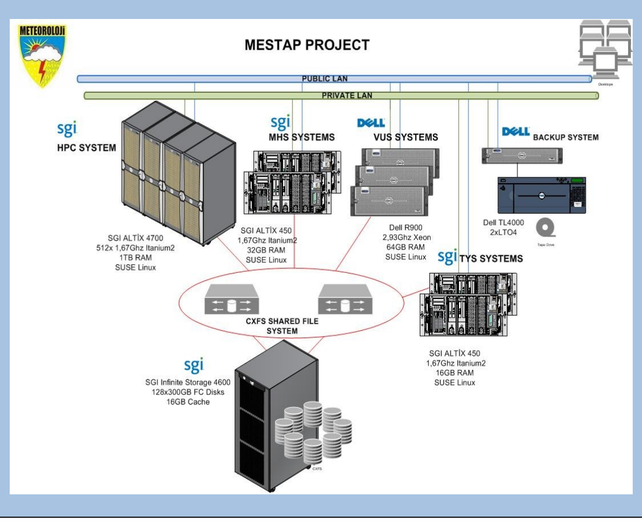
- Caching (memorization, actually…)
- Scalability
- Performance

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**
- **2 login nodes**
- **2 service nodes**
- **3 Xeon based post-processing nodes**





Archive System:

- 20 TB Disk Storage
- 165 TB Tape Storage
- Based on ECMWF Mars Software

METU3 Wave Model

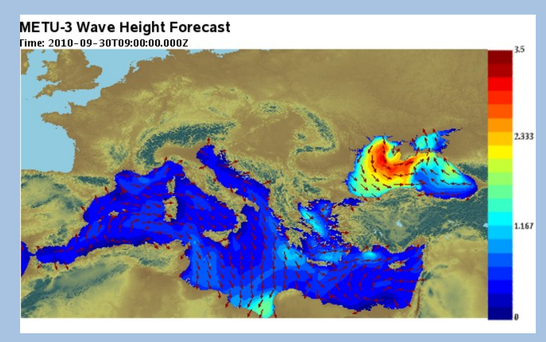
METU3 wave model that was developed in cooperation with METU (Middle East Technical University) for Turkish coasts under the NATO TU-Waves project, has been used since December 1999 for marine forecast at TSMS.

Forecast settings

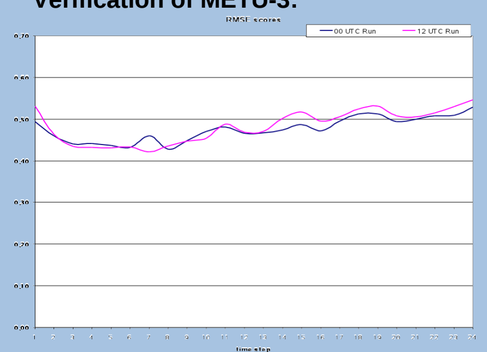
Initial conditions: ECMWF-IFS model
Horizontal resolution: 3km
Forecast integration: 72hrs
Run times: 00 and 12 UTC
Domains: Mediterranean ,Black Sea and Caspian Sea

METU-3 model products:

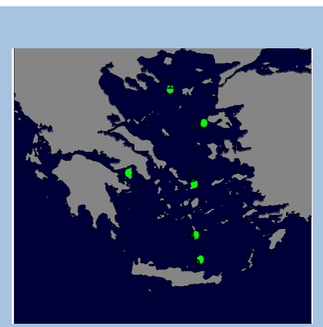
- 10 m wind speed and direction
- Wave height and direction
- Mean wave period



Verification of METU-3:



Metu-3 Wave Height RMSE scores against the buoys on Aegean Sea during last year. 00 UTC RMSE shown as blue line and 12 UTC shown as pink line .



The buoys on Aegean Sea which used for METU-3 verification