

Data Assimilation Experiences and Plans in Turkey

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- First DA works started on early 2016
- B-Matrix, NMC-method(90 days)
- HARMONIE scripting system used at ECMWF and local HPC
- Hungarian Met. Service-LACE based scripting system ported on local HPC
- ALARO-0 CY38
- Preliminary tests covering 1 monthly period (April 2016)
- OPLACE used for a given period
- Only conventional observations were used
- LBC files from ARPEGE
- Surface Blending

Operational Configuration

ALARO-1 TURKEY

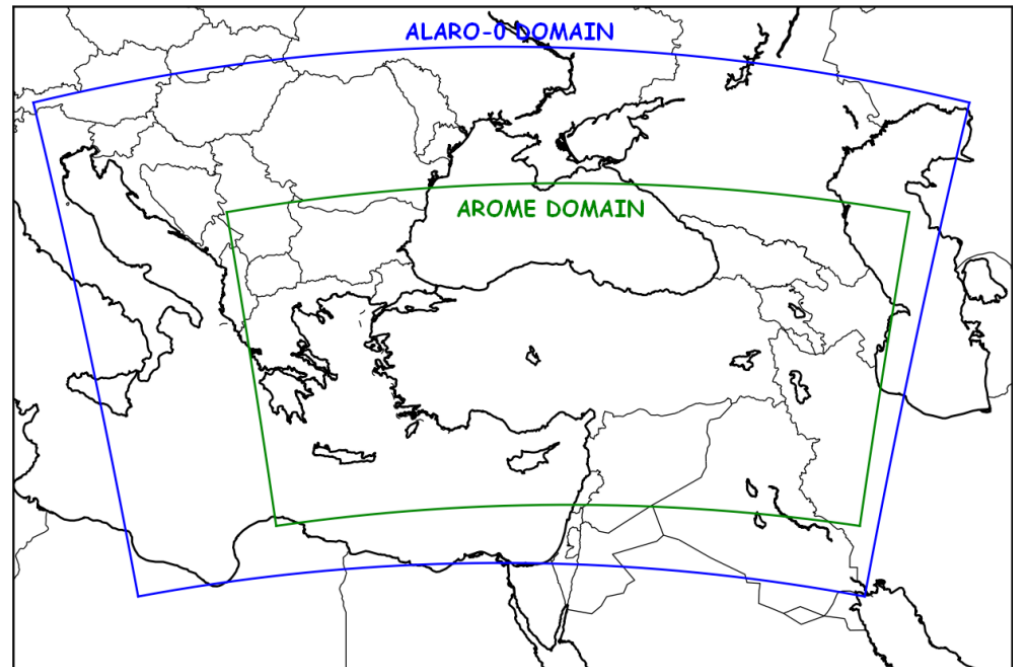
Current operational suite:
Model version: cy40T1bf05

Model geometry:

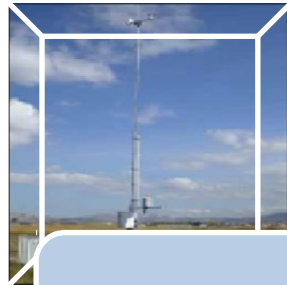
4.5 km horizontal resolution
450 X 720 grid points
60 vertical model levels
Quadratic spectral truncation
Lambert projection

Forecast settings

Digital filter initialization
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



OBSERVATION NETWORK



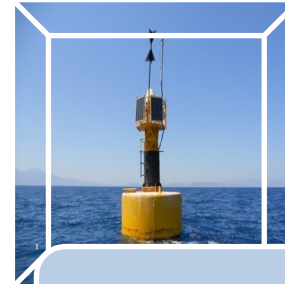
**1237
AWOS**

+



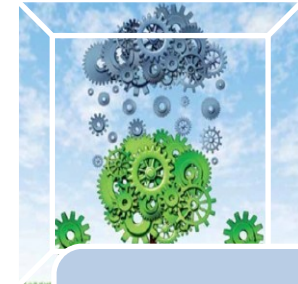
**72
Airport
AWOS**

+



**78
Marine
AWOS**

=



**1387
AWOS**



**17 C-Band
Radar
1 X-Band Radar
2 Marine Radar**

+



**10
Upper Air
Station**

+



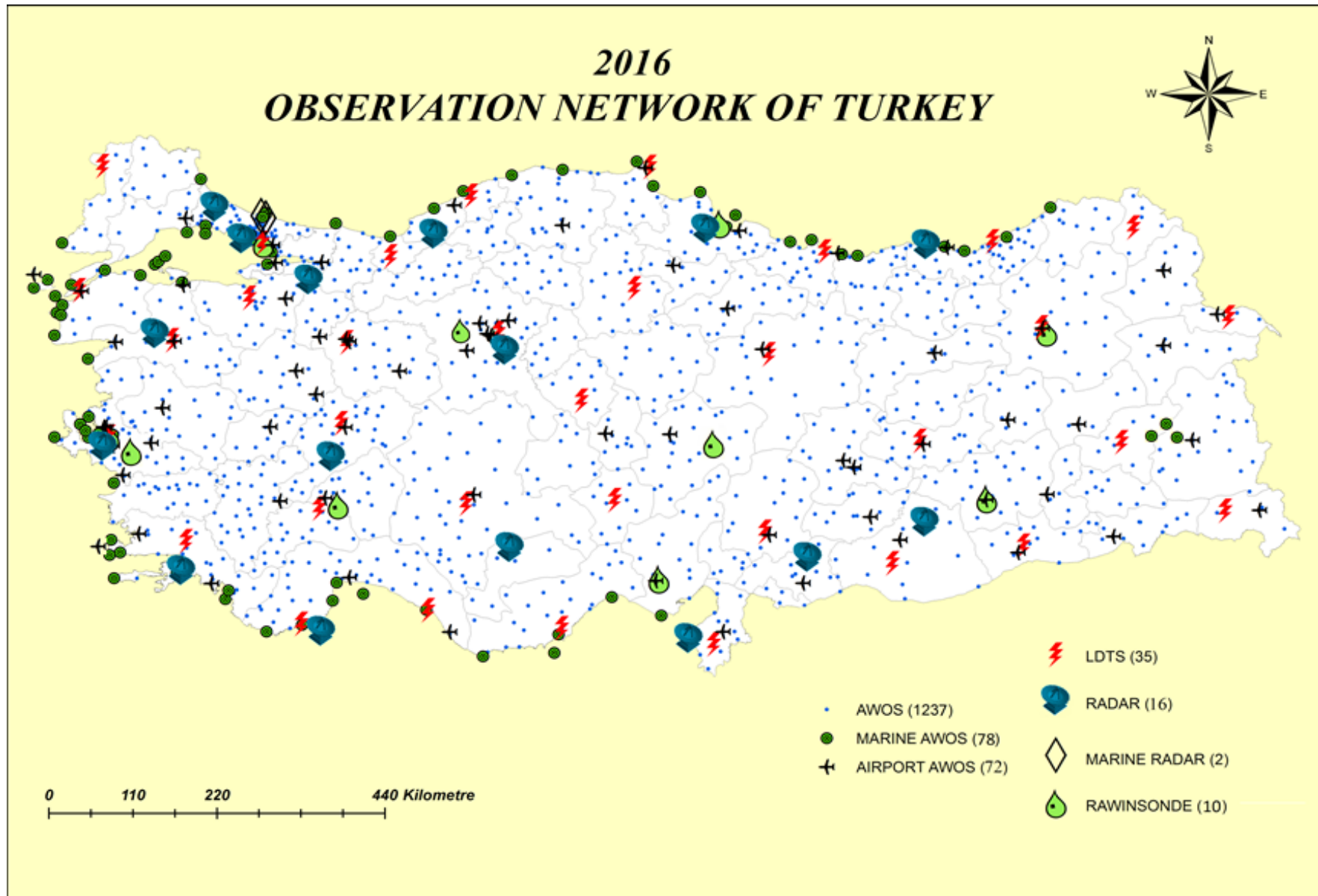
**35
LDS**

=



**1450
Observation
Systems**

OBSERVATION NETWORK



RADAR NETWORK

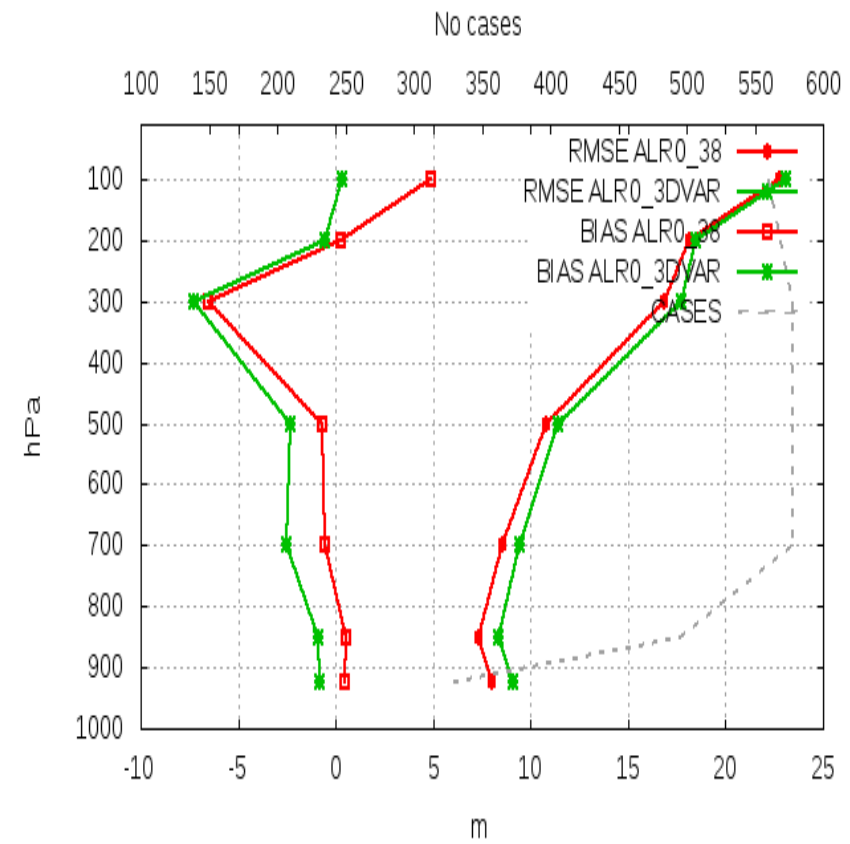
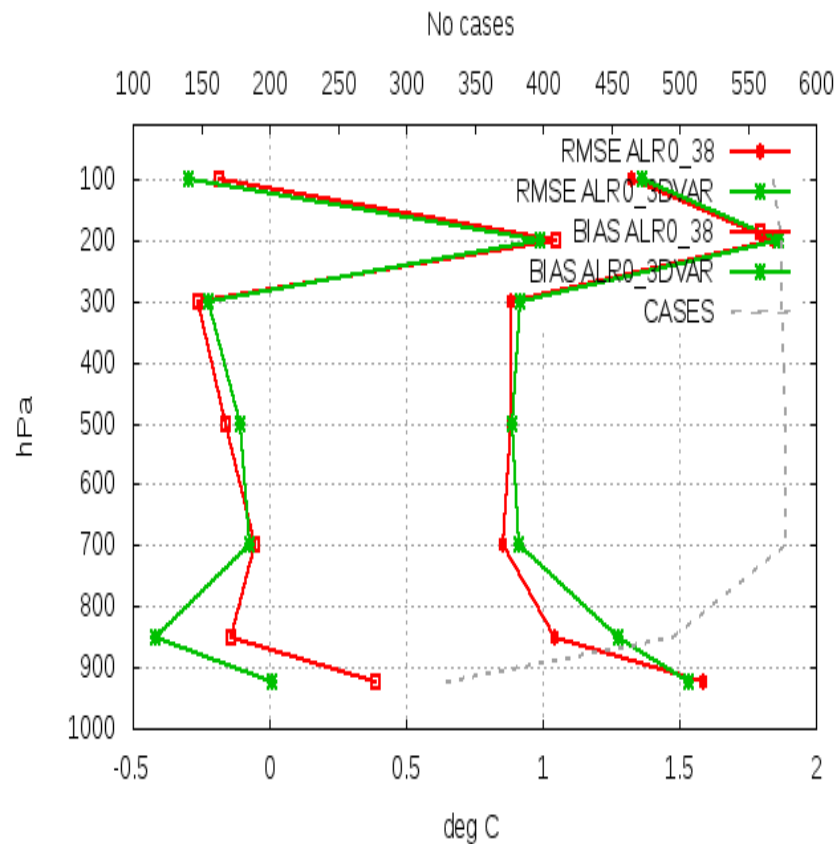


Verification Results (April 2016)

Upper Air Temperature

7 stations Selection: ALL_ALL
 Temperature Period: 20160402-20160430
 Statistics at 00 UTC Used {00,12} + 12 24 36

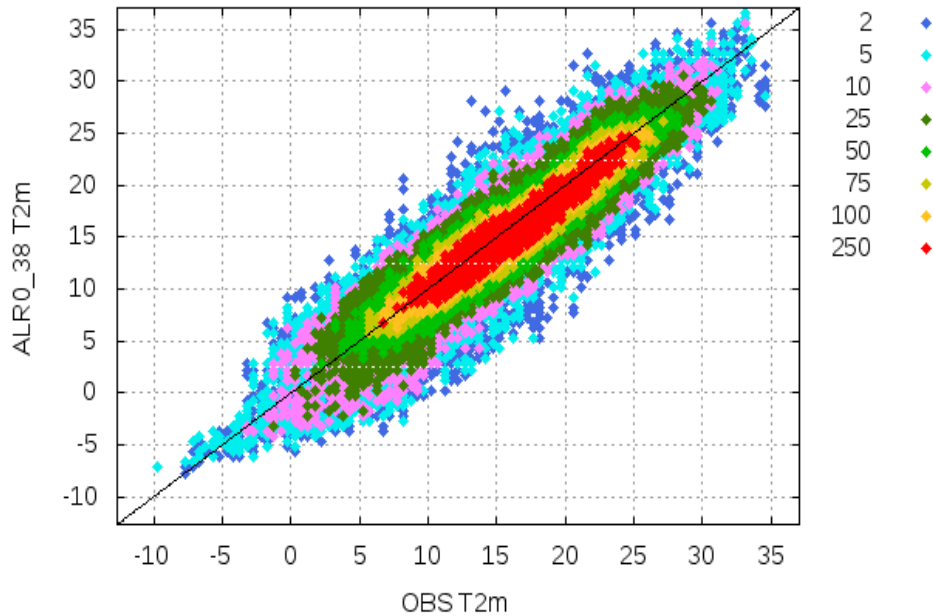
7 stations Selection: ALL_ALL
 Height Period: 20160402-20160430
 Statistics at 00 UTC Used {00,12} + 12 24 36



Verification Results (April 2016)

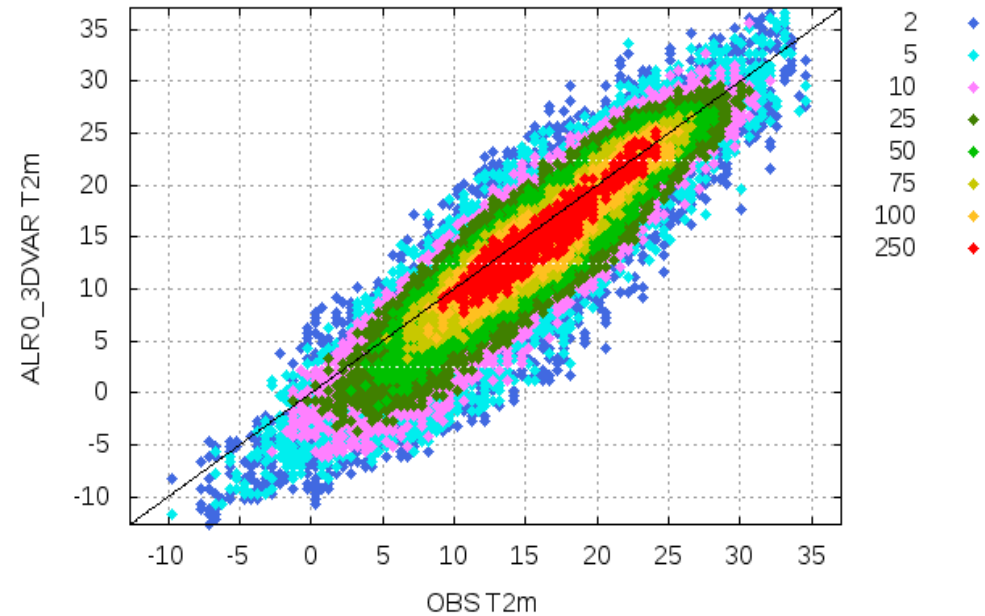
2m Temperature

Scatterplot for 109 stations Selection: ALL_ALL
T2m [deg C]
Period: 20160402-20160430
Used {00,12} + 000 003 ... 036



OPER

Scatterplot for 109 stations Selection: ALL_ALL
T2m [deg C]
Period: 20160402-20160430
Used {00,12} + 000 003 ... 036

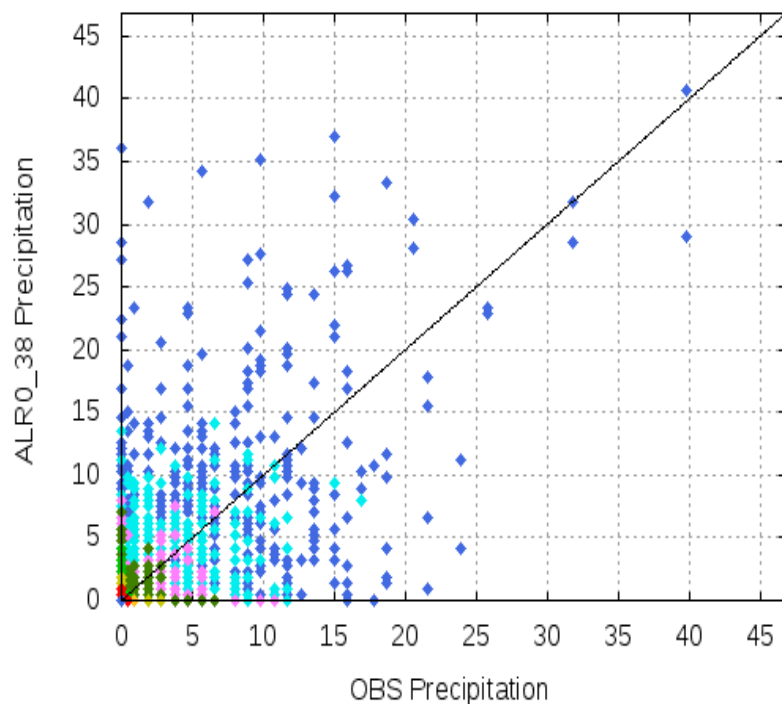


3D-VAR

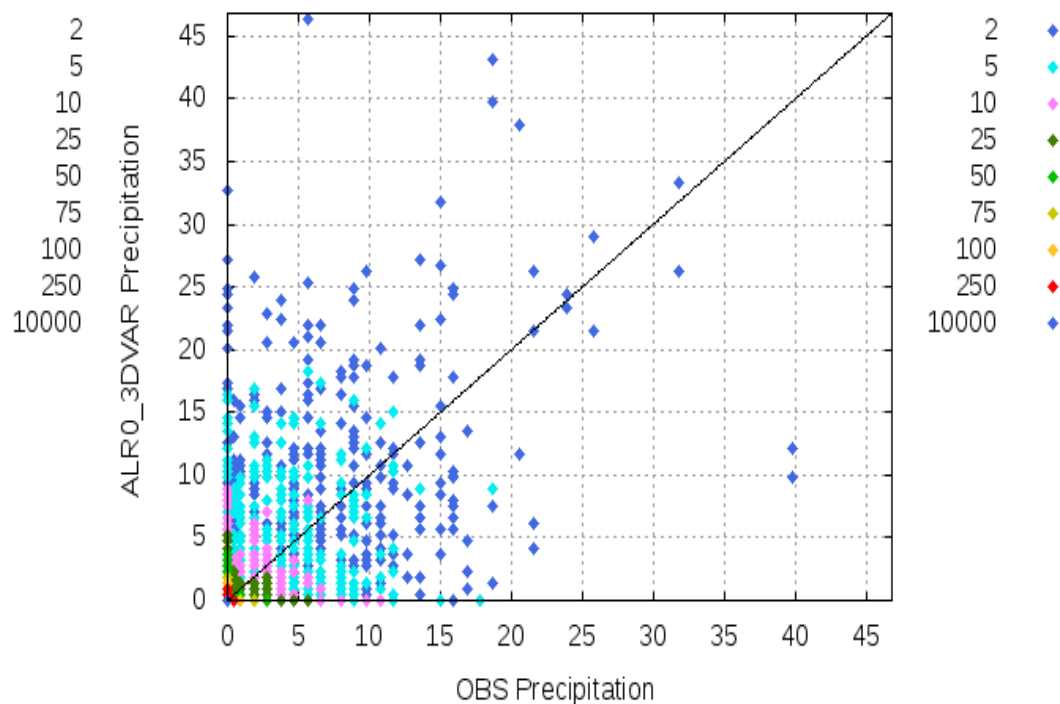
Verification Results (April 2016)

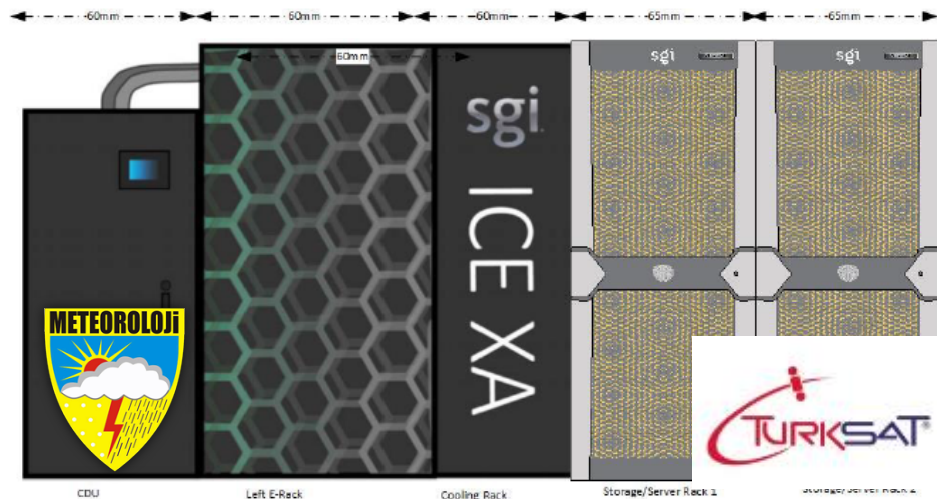
Precipitation

Scatterplot for 109 stations Selection: ALL_ALL
Precipitation [mm/12h]
Period: 20160402-20160430
Used {00,12} + 18- 06 30- 18



Scatterplot for 109 stations Selection: ALL_ALL
Precipitation [mm/12h]
Period: 20160402-20160430
Used {00,12} + 18- 06 30- 18





- New HPC installation will start on March 2017
- Operational switch is planing on October
- 167 teraflop peak performance

SGI ICE XA...

- Water Cooled System
- 288xCPU E5-2690v4, 2.6GHz, 14 Cores 4032Core
- 192GB per Node; 864x32GB DDR4 RDIMM, Reg-2400
- SLES 12
- 2xLogin Node, 2xRack Leader (HA), 2xAdmin Node (HA)
- OmniPath, Enhanced Hypercube Interconnect Topology
- Altair PBS
- Intel Parallel Studio XE Cluster Edition

DA PLANS

- Determining the problems by examining the initial test results
- Coupling ALARO with ECMWF boundary conditions
- MODEL version and physics update (CY38> CY40)
- Modification of the B-Matrix calculation method (EDA)
- Using CANARI for Surface Analysis
- Updating of lake temperatures with observations
- AROME RUC

DA PLANS

New observations to be included in the process:

- **Conventional**
 - SYNOP / SHIP / BUOY
 - TEMP
 - AMDAR (THY?)
- **Satellite**
- **GPS**
- **RADAR**



Thank you...