MESAN 2D surface downscaling re-analysis

MESAN OI analyses with first guess from HIRLAM 3D-VAR every 3 hour. The HIRLM forecasts are downscaled from the HIRLAM 0.2° grid to the MESAN 0.05° grid and used as first guess in the MESAN OI analyses together with all available surface observations.

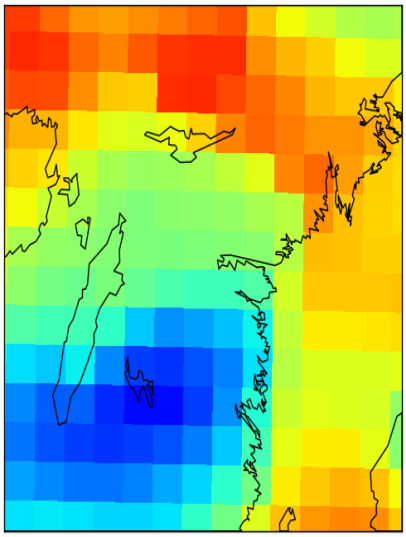

Figure1: Example showing HIRLAM 6 hour forecast of 2 m temperature with 0.2 degree resolution.

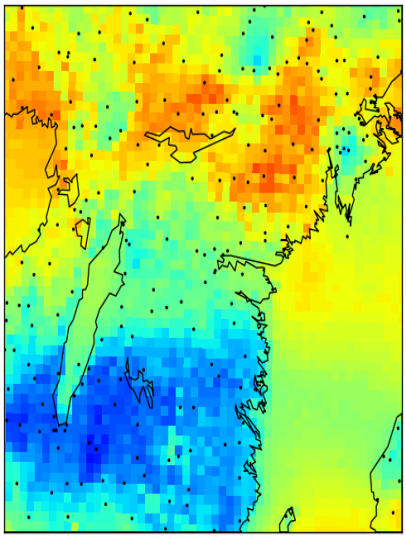

Figure 2: MESAN t2m analysis using surface observations and the HIRLAM 6 hour forecast in Figure 1 as first guess.

Infobox

SPECIFICATIONS

Output data sets
OI surface analysis (for a list of parameters see below).

Data
Spatial resolution: 0.05 by 0.05 ° on a rotated grid.
Temporal resolution: 3 hours.
Grid: Rotated spherical.
Format: GRIB ed 1.

Availability
Area: Europe (EEA).
Time period: 1989 -2010.
Timeliness: Daily precipitation available for 1989 – 1997 and 2010. Remaining years and other parameters are scheduled for 2014.
Freely available without restrictions.

Validation
Background and analysis statistics against observations used.
Statistics of analysis increments.
Differences from ERA Interim analyses.

Outlook
Further validation / evaluation by 2014.
Improvement.
Releases.

Currently the data sets are not yet available through the EURO4M website. **If you are interested in the datasets please contact Tomas Landelius at SMHI**: Tomas.Landelius@smhi.se

Description and Validation
SMHI (Swedish Meteorological and Hydrological Institute)

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Example of usage:

The high-resolution MESAN 2D reanalysis provides 3-hourly information on temperature, precipitation, and wind in Europe with a spatial resolution of 0.05 deg.

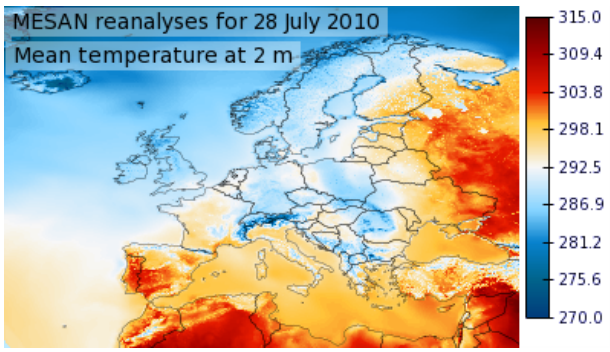

Figure 1: Mean 2mtemperature for 28 July 2010 based on the MESAN reanalysis

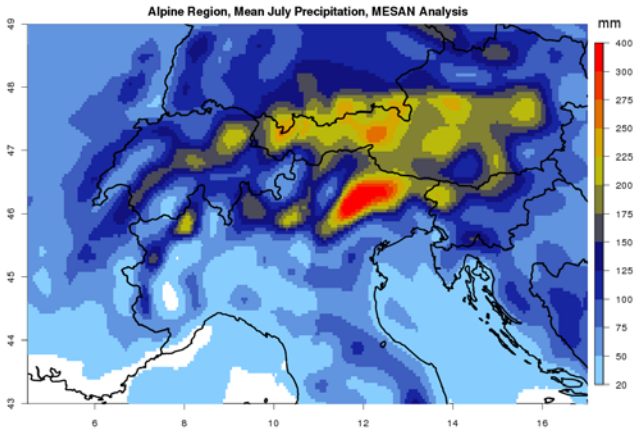

Figure 2: Multi-year mean precipitation for July in the Alpine region based on the MESAN reanalysis.

MESAN EURO4M fields and their GRIB codes / level types:

10 m parameters

U-component of Wind (33, 105, 10)
V-component of Wind (34, 105, 10)

2m parameters

Temperature, grid average (11, 105, 2)
Max Temperature (15,105,2)
Min Temperature (16,105,2)
Relative Humidity, grid average (52,105,2)
Temperature over land (140,105,2)
Specific Humidity over land (141,105,2)

Surface parameters

Accumulated 24 hour precipitation (61,105, 0)

References:

Häggmark, L., K-I Ivarsson, S. Gollvik and P-O. Olofsson, 2000: MESAN, an operational mesoscale analysis systeem, Tellus, 52A, 2-20.