UERRA

Objectives and achievements

Year 1

Per Undén

Coordinator UERRA

SMHI

Objectives of UERRA

To produce long-term high-resolution climate quality datasets over Europe

- 3 and 4D reanalyses and ensemble assimilation over Europe 30-50+ years
- 2D downscaling renalyses
- extending gridded observation data sets
- estimations of their quality and uncertainty

To provide additional observations for these RAs, other projects and for the community at large

Objectives of UERRA

To quantify uncertainties and establish knowledge of the quality of the different RA in many different ways, between datasets and with respect to observation gridded sets and satellite-based datasets and river discharge data

To get a consistent knowledge for Europe with a common evaluation procedure for ECVs, climate indicators, extremes and scales of variability in space and time and distributions

To document how well extremes and special climate features are reproduced in the RA

Objectives of UERRA

To make the RA data available to a large number of users

To provide data services and visualisation portals for a large number of RA fields (in WP4)

To provide a unique and useful datasets for a wide range of downstream applications

Objectives of UERRA

To support Climate change services and climate adaptation

To support and aid policy development and monitoring of climate for European wide and European national applications

To establish good user contacts and get early feedback on the user products

To have a long lasting impact also after the end of the project

WP1
Historical observations
Summary of achievements

Data rescue

- Inventory of data to fill in gaps done
- Over 3M digitized, half after 1961, half before, most sub daily data
- 3.7 M was target!
- Sub-daily data, 3 times/day - hourly
  - Yes, for some countries – not possible from some others (data policies inter alias)

WP1

- Data development
  - Quality controls checked and developed
  - Improvements
- Transfer of data from EURO4M to ECMWF
  - Converted to ODB for archiving at ECMWF
- Gridded data sets improvements
  - Added many obs to E-OBS and CRU TEM
  - New Interpolation methods of precipitation data
  - Uncertainty estimations of precipitation gridding

UERRA Deterministic models

11 km European 3D-VAR re-analysis 50 years

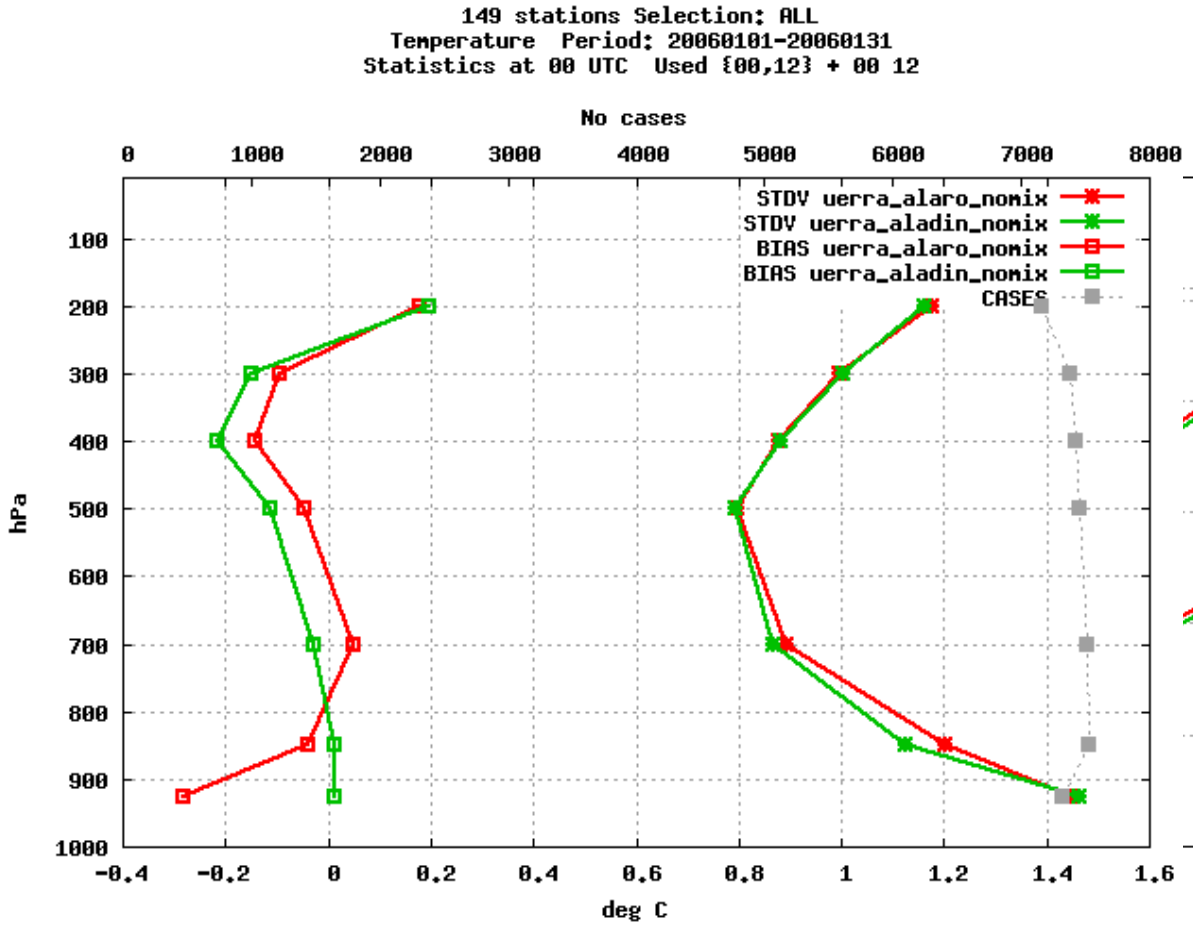
- Basic model configurations, settings and testing with MF
- Data assimilation statistics derived for the 2 models
- Validation of several monthly runs
- Vegetation cover Leaf Area Index
- Archiving issues discussed, not quite solved

- HARMONIE 2 model physics (ALADIN/ALARO) for the 5 years – recently started but delayed

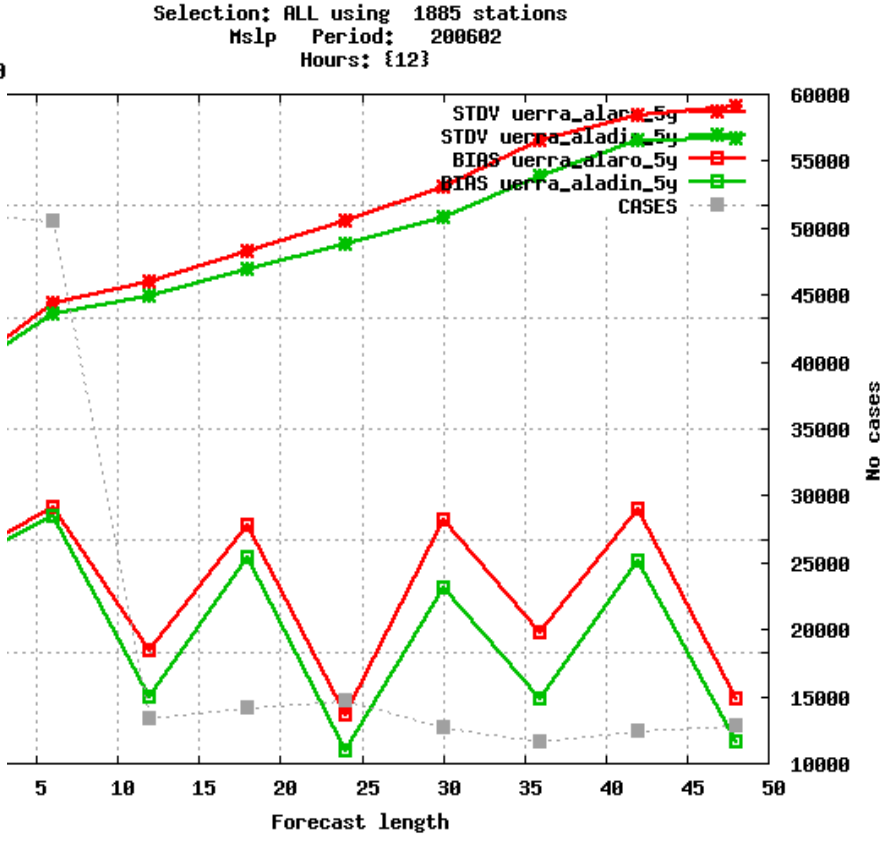
Uncertainties in Ensembles of Regional ReAnalyses

ALARO and ALADIN

Profile of Temperature STD and bias

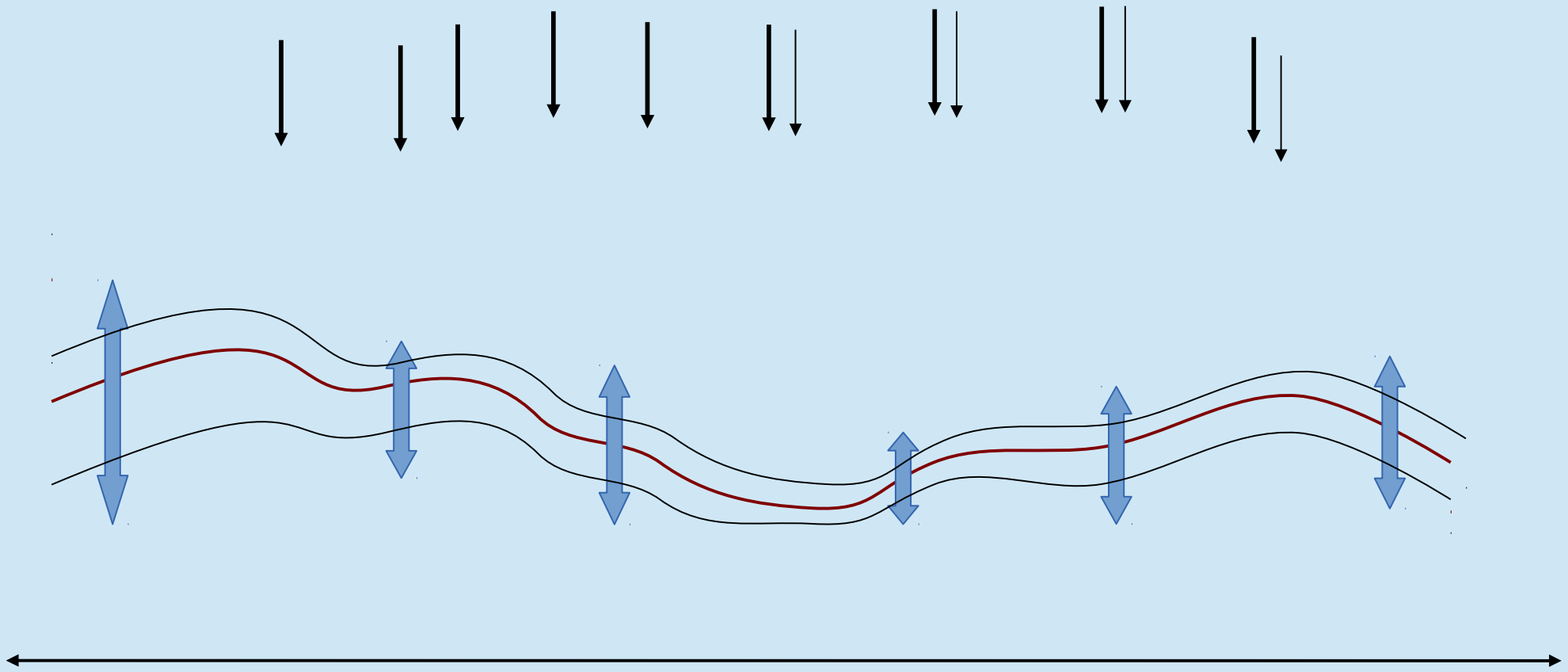


Mean sea level pressure STD and bias



UERRA Deterministic models

- 5 km European 2D MESCAN (MF) and cooperation with SMHI
  - ALADIN and ALARO tests for different periods to test and have correct configurations
  - Many experiments over a 3 month period and validations
  - MESCAN coupled to ALADIN and downscaling aspects
  - Ensembles
- 5 km European cloud MESAN analysis (SMHI)
  - Preparations (data)



Time : 1961 , ~1978 → 2014

Uncertainty estimation and evaluation

Ensemble Data Assimilation

Met Office EDA

- Developed the regional EDA capacity
- observation monitoring
- Basic Ensemble DA methods investigated for the regional case – report written (on uerra.eu)
- TOVS bias corrections and capability to run from 70's

DWD / Uni Bonn Ensemble Kalman Filter EDA

- Ensemble nudging successfully tested
  - LETKF to be introduced
- Perturbed observations started – some delay

WP3 definintion of methods:

Workshop at DWD 26-27 June 2014

- Users and WP1, 2, 3 and 4 participants
- Discussions arriving at report and tables for validation and parameters to archive and use
- Dependency on WP4 and EURO4M test data 2008-2009

Validation procedures in D3.2 (and paper)

- Validations against observations and independent data sets

WP4

- MARS and Web map service – ECMWF, KNMI
  - EURO4M 2008-09 archiving being done
  - UERRA archiving in common format: preparing
- MARS and ESGF, working with CLIPC
  - Discussions taking place, cooperation with CLIPC
- KNMI visualisation from EURO4M, an example
- Hydrological downstream modelling
  - Validation of re-analyses done for EURO4M 20 years – Deliverable 4.6

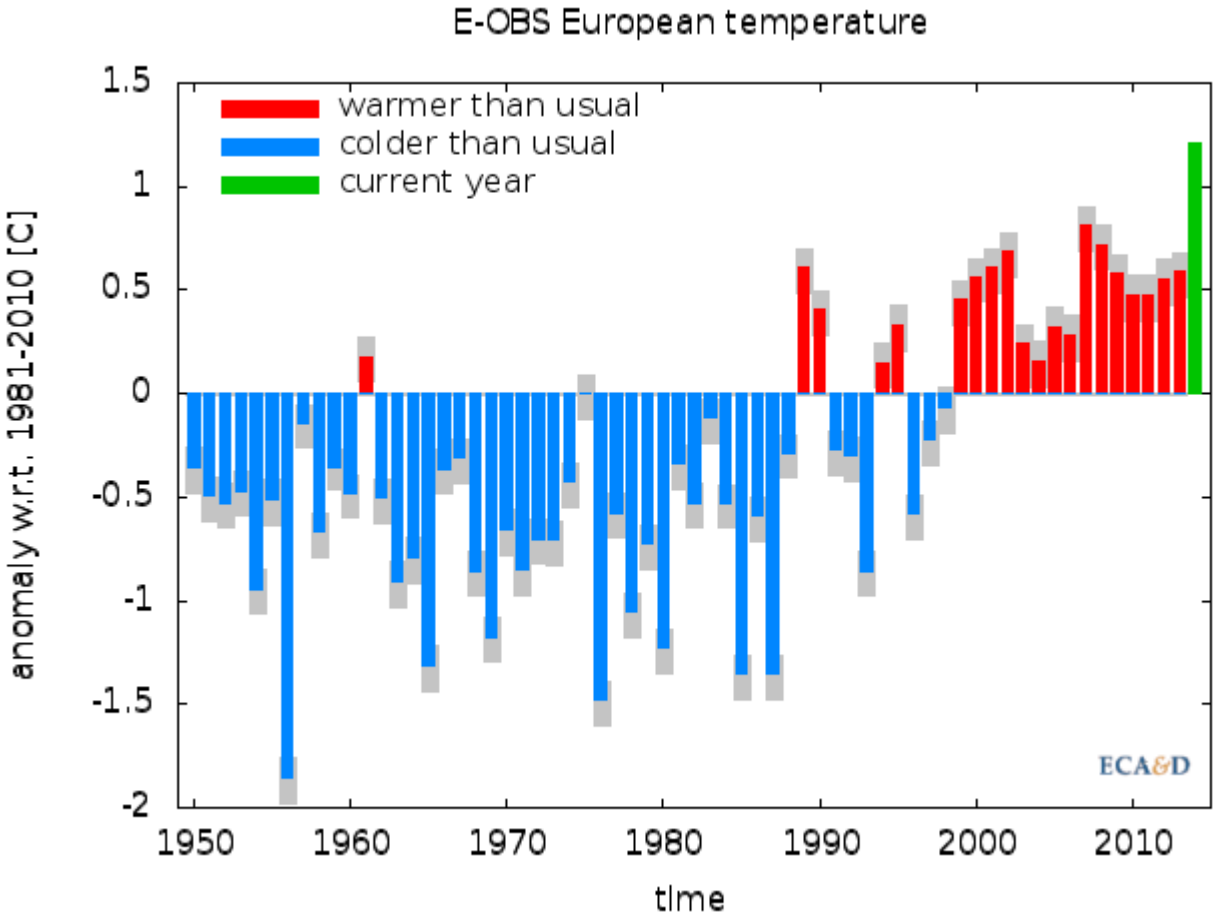
WP4 (cont.)

- Report and presentation

User oriented Climate indicators from E-OBS

Climate Indicator Bulletin (CIB) - warmest year

E-OBS mean annual mean against normal



Project Management and Scientific coordination WP5 & WP6

Communications within Project

4 MST meetings

Web site established early in the project

Communications with our PO at REA and ESAB

Reporting (Scientific Periodic Report right now)

Coordination Plan (D6.1) written

UERRA WP 7 Outreach and dissemination

Meetings where UERRA scientists participated:

- WMO Comm. For Climatology, Heidelberg
- World Weather Open Science Conf, Montreal
- EMS/ECAC
- AGU
- RA in connection with MO activities, e.g. Korea

Dissemination Plan (D7.3) written

Outreach and impact C3S

UERRA becomes more and more known and user interest – in our NMSs first

Regional reanalyses being used more

- SMHI EURO4M RA extended 1979-2014 due to strong internal interest

UERRA is discussed in connection with C3S

User interaction WP8
Overarching coordination
WP9

User interaction at DWD workshop

User 3rd party WS and plan in preparation

Two WP9 telephone conferences

Web page under the CLIPC portal

- To be further discussed