UERRA

Objectives and achievements

Year 2

Per Undén, Coordinator UERRA

Management Support Team

Partner scientists

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 make the RA available to a large number of users and downstream applications

- provide data services and visualisation
- Provide useful data sets

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 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
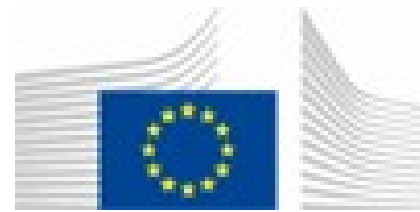
WP1
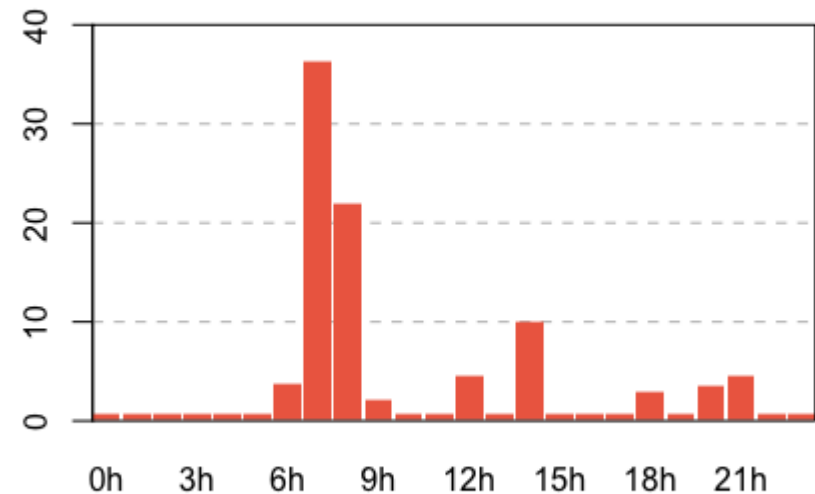# Historical observations
Summary of achievements

Data rescue

- Digitisation has gone further and faster –

  - more experienced staff

Post−1950 data
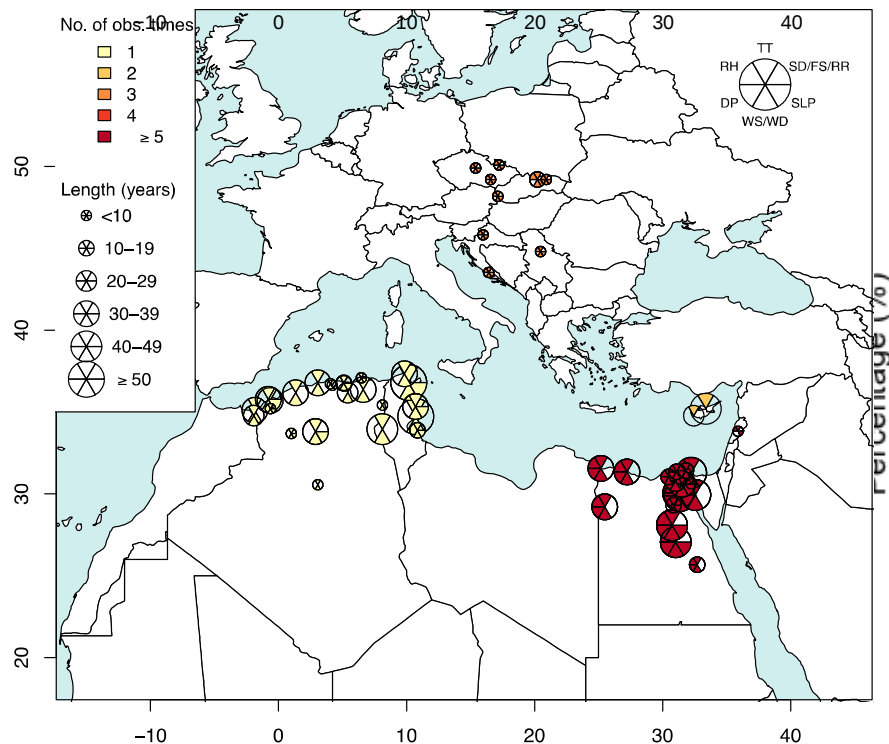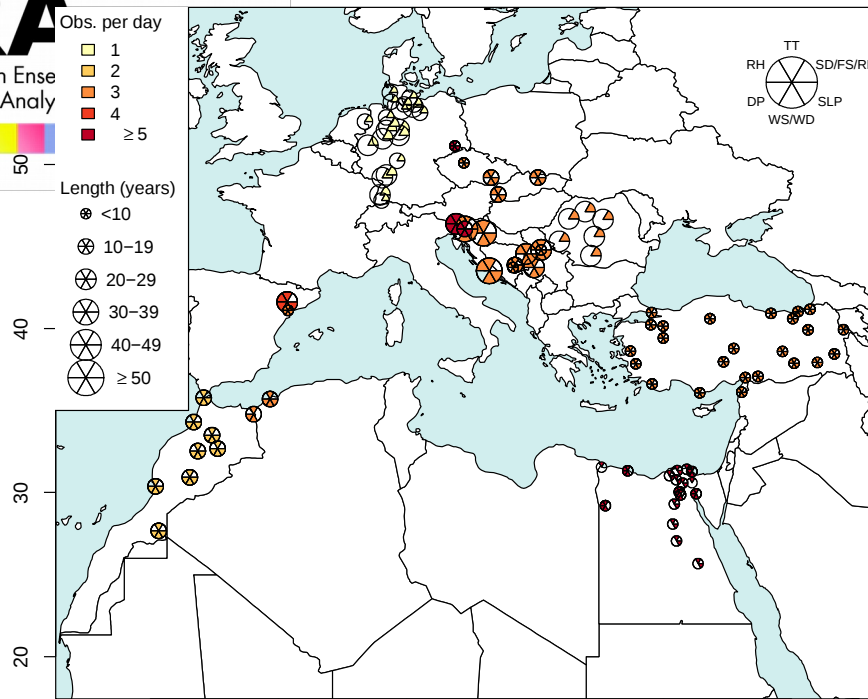
Infilling >1950 and <1950

complemented by French and Swedish 60's data

WP1

Gridded data sets improvements

- Added many obs to E-OBS and CRU TEM
- Impact of station density / coverage (D1.9)
- New Interpolation methods of precipitation data
- Uncertainty estimations of precipitation gridding

WP 2
UERRA Deterministic models

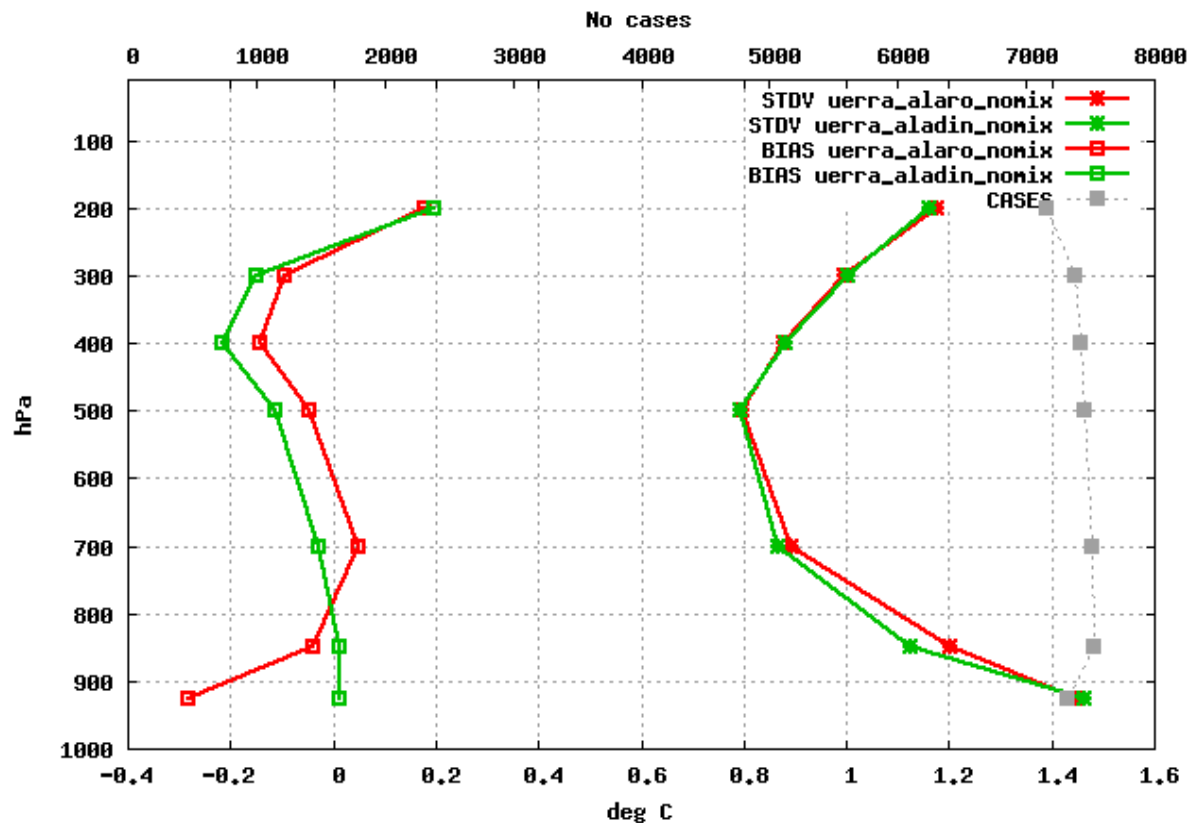## 11 km European 3D-VAR re-analysis 50 years

- HARMONIE 2 model physics (ALADIN/ALARO) run for 5 years
  - Much delayed – report D2.5 to be submitted
- 50+ years started in parallel streams for ALADIN
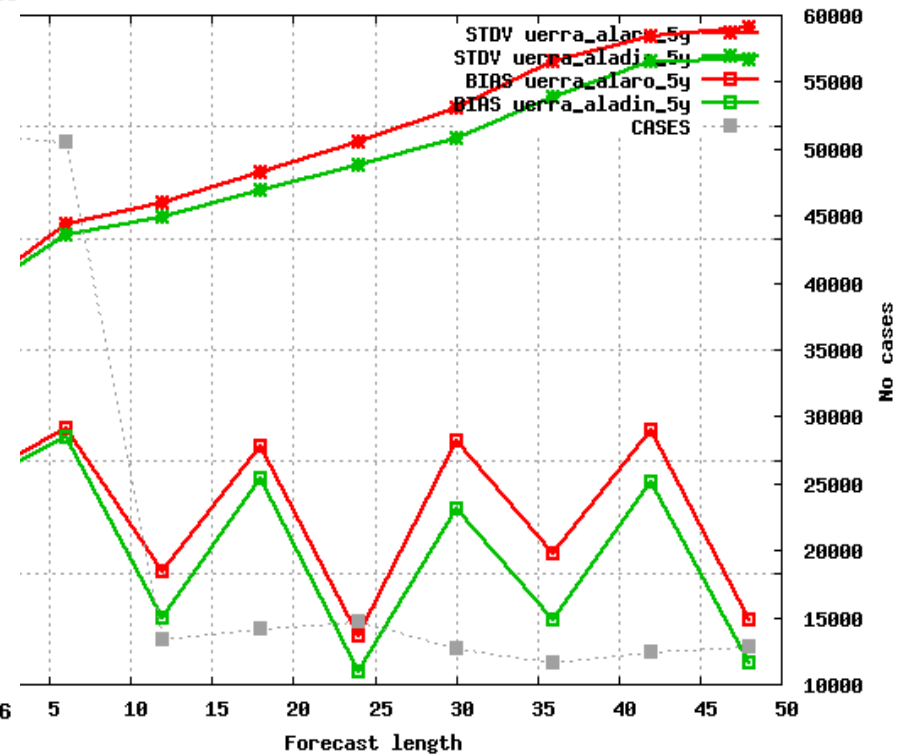- Additional observations from MF/SMHI

ALARO and ALADIN

Profile of Temperature STD and bias

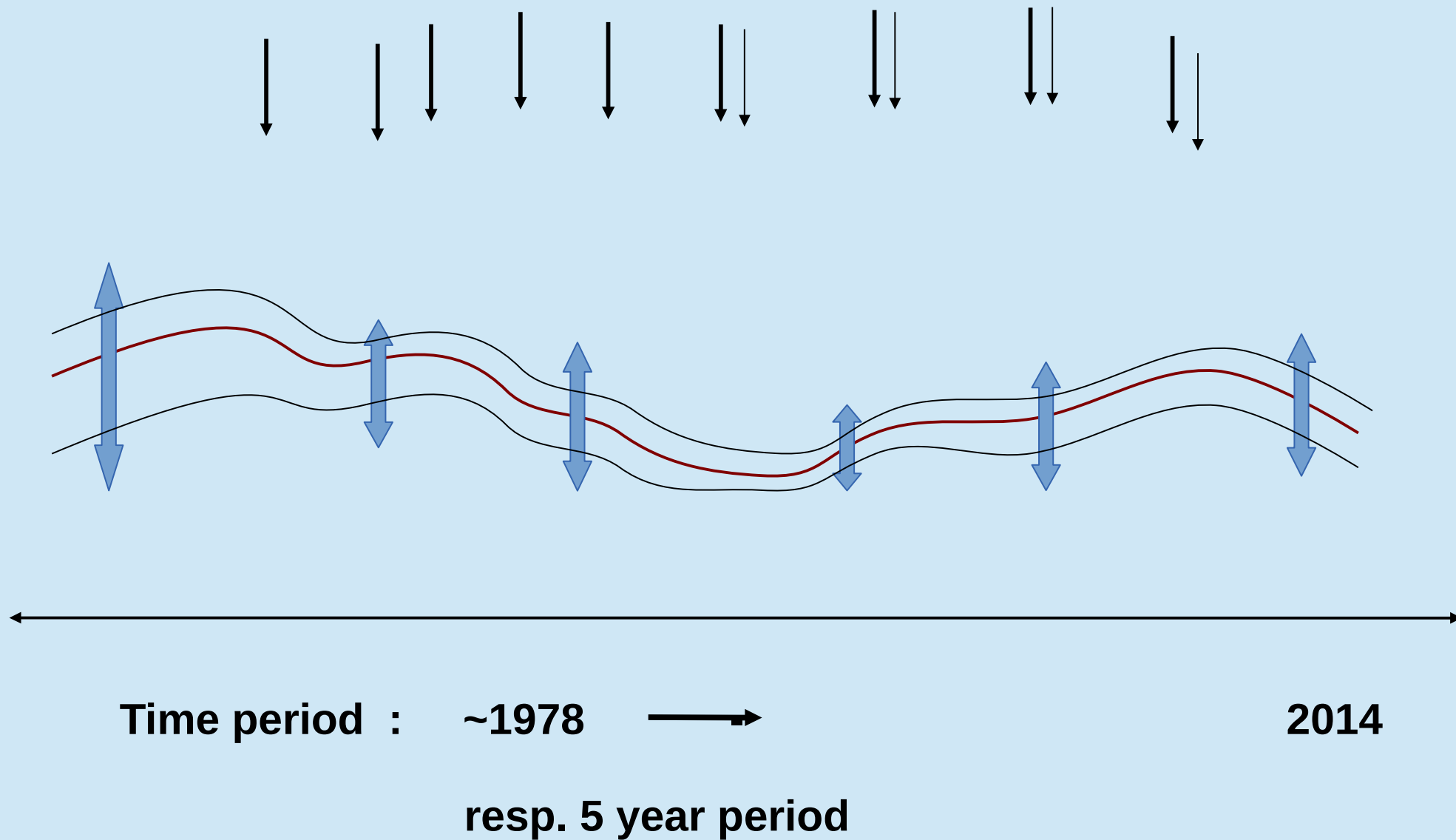Mean sea level pressure STD and bias

UERRA Deterministic models

5 km European 2D MESCAN (MF) and cooperation with SMHI

- ALADIN and ALARO inputs and different downscaling and perturbations added

5 km European cloud MESAN analysis (SMHI)

- Structure functions and data available
- Half the period first – slight delay

Time period : ~1978 ⟶ 2014

resp. 5 year period

Ensemble assimilation and uncertainty estimation

Ensemble Data Assimilation

Met Office EDA

- – Full framework set up on the ECMWF system
- – observation processing and TOVS bias corr
- – Ensemble DA tested for a month and report (D2.1)

DWD / Uni Bonn Ensemble Kalman Filter EDA

- – Ensemble nudging successfully tested and reported (D2.12)
  - • LETKF tested but technical and scientifical problems
- – Perturbed observations done (D2.11)

WP3 definition of methods:

Archiving parameters iterated and decided on

- With WP2, WP4

- Much harder than anticipated

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Discussions arriving at report and tables for validation and parameters to archive and use

Dependency on WP4 and EURO4M test data 2008-2009 and DWD

Validation procedures in D3.2 (and paper)

Software package developed according to the validation procedures (D3.3)

Evaluation procedures and work following meeting at EMS

- Experiences – table in D3.4

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Evaluation

Method	Data source	Parameters	Evaluation procedure
B1: independent station measurements	Tower measurements	Wind speed	Corr, bias, RMSE, anomalies, hit false alarm rate, Extreme events, HKS, odd ….
B2: dependent station measurements	DWD stations (SYNOP)	Wind speed	75 indices
C: gridded measurements	E-OBS ROCADA Nordic gridded climate data set	Tx, Tn, Precip	ETCCDI incideces Drought indicies

WP4 – Facilitating downstream services
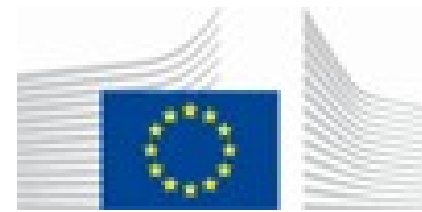
EURO4M 2008-09 test archive in MARS (partly)

UERRA archiving in common format:
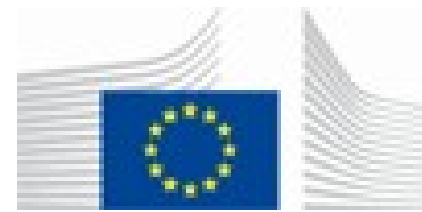
- Definition tables and GRIB2

MARS and ESGF, working with CLIPC

- ESGF security problems since the summer

Data plan (under revision , delayed D4.2)

Hydrological downstream modelling- next year

Project Management and Scientific coordination WP5 & WP6

Communications within Project

Much with archiving and Deliverables

6 MST meetings

Web site maintained, updated and expanded

Communications with our PO at REA and ESAB

Reporting

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 exists for 1979-2014

EURO4M reanalysis data requests to SMHI

UERRA is discussed in connection with C3S