UERRA WP3 overview

Outline:

1. Work performed in WP3 since the last GA
2. Work planned for next year
3. How to achieve the WP3 aims despite the delay in WP2 productions

WP3 deliverables by 2016

Deliverable	Title	Due date	Status 21th Nov 2016
D3.1	Definition workshop	M3	done
D3.2	Evaluation procedures	M6	done
D3.3	Programme package	M15 (2015)	done
D3.4	Evaluation experiences	M24 (2015)	done
D3.5	Preliminary assessment	M34 (2016)	done, based on preliminary data (outside the archive)

WP3 deliverables 2017

Deliverable	Title	Due date	Status 21th Nov 2016
D3.6	Scientific report on assessment of regional reanalysis against independent data sets	M45 (Sept 2017)	partly in work, requires careful planning
D3.7	Synthesis workshop	M45 (Sept 2017)	to be planned
D3.8	User friendly synthesis report	M48 (Dec 2017)	material to be collected

WP3 results 2016:

1. Evaluation routines have been applied for the COSMO-REA6, EURO4M reanalyses, ERA-Interim, ERA-20C, and other preliminary data
2. Results presented at the EMS session
3. WP3 issues of delayed production+archiving dealt with:

- panic attacks and delaying efforts
- using preliminary data
- limited time-span, non-archived UERRA data

Method	Data source	Parameter	Details	Scientific questions	User questions
A: feedback statistics	Radiosonde		store in ODB format	**How stable** are the roughly 100 km?	How well represented **ends and ologies** of wind relevant for wind ?
B: point measurements	B1: (independent) mast station data; B2: (dependent, i.e., assimilated) station data	B1: wind speed B2: Tmin, Tmax, and number of days of threshold exceedance	There are many more suitable observations available for B2 than for	At which **time scales** can we find which **correlations** between reanalysis fields and station observations?	On which time scales of variability and parameters can we use the **RRAs similar to** the use of a **station measurements**?
C: gridded measurements	Gridded data for the Nordic region and the UK; E-OBS, APGD	Precipitation; Tmin and Tmax	sider whether a underlying station observations was assimilated into the reanalysis.	What differences do we get with different products when determining the **useful spatial and temporal scales** of the RRAs?	**Which scales** of the RRAs (temporal, spatial) **can be interpreted**?
D: satellite data products	Satellite data products of CM-SAF and CCI	Global radiation; total cloud cover; snow water equivalent		How well do the **RRAs** compare to the **satellite observations** - or exceed their quality?	Does the **RRA** or the **satellite** provide the better data product **for the user applications**?
E: Ensemble based comparison	WP1 created e of gridded data derived uncert estimates; Products as in methods A through D	Parameters as in A through D	le based nty estimates erformed on (1) the newly (WP1) created data products. (2) the basis of methods A through D when available.	Does the **ensemble** provide a **spatially and temporally better resolved** estimate of uncertainty compared to a deterministic reanalysis?	Which **uncertainty characteristics** can be interpreted from the ensembles **for user** relevant parameters?
F: User related models		Tmean:	EX by Météo uses the yses as input		Is the result of a **user model forced by RRAs** significantly better than with the original forcing?

Producers -> link to WP2

WP3 2015 +

WP3 2016 +

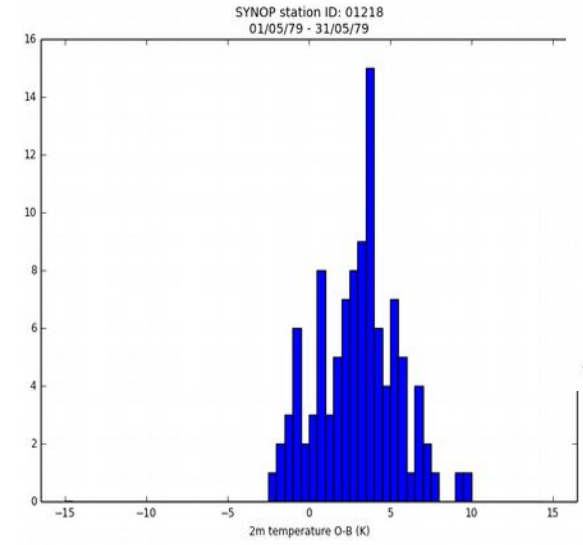
users

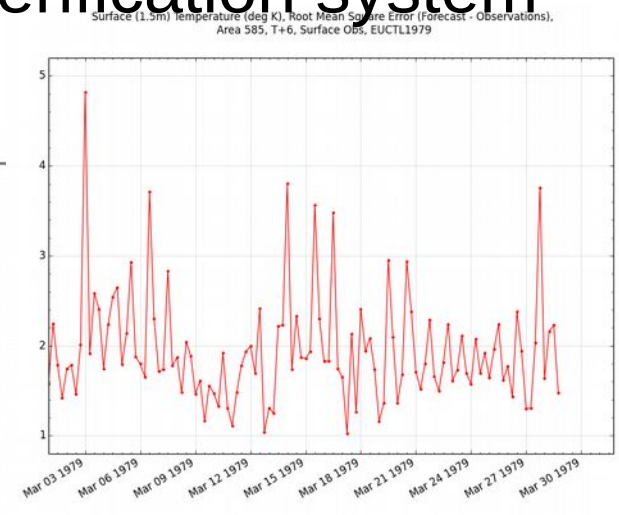
WP3 results from the individual partners

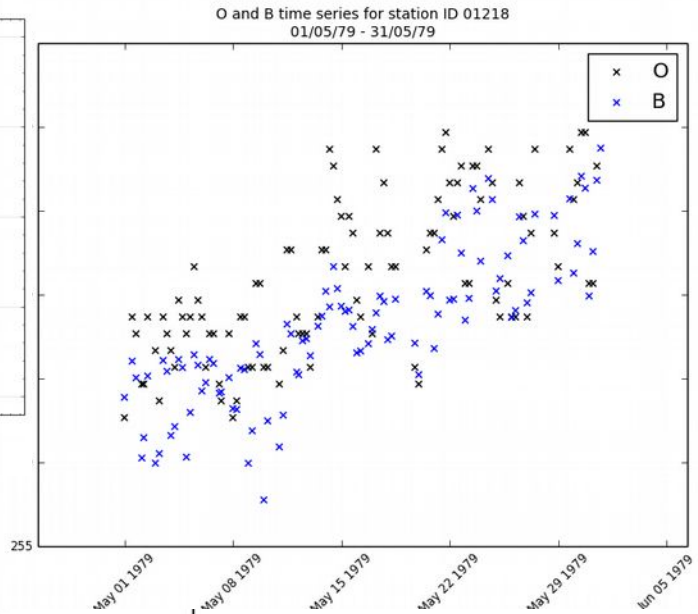
WP3 contribution from the Met Office

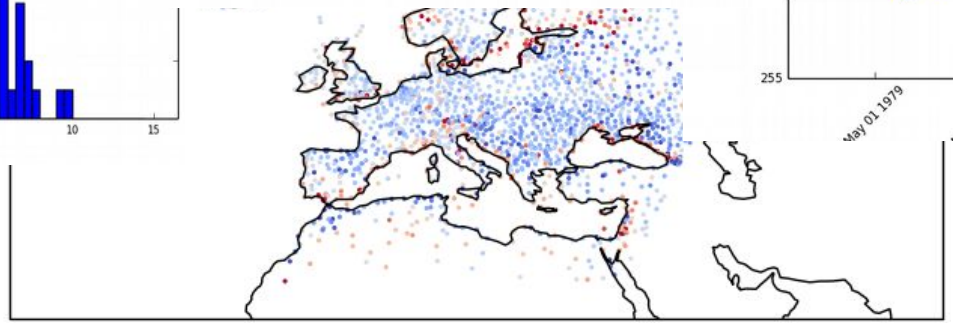
Capability for Reanalysis vs Obs statistics based on

- Observation feedback files (ODB)
- Var analysis statistics
- Area-based verification system



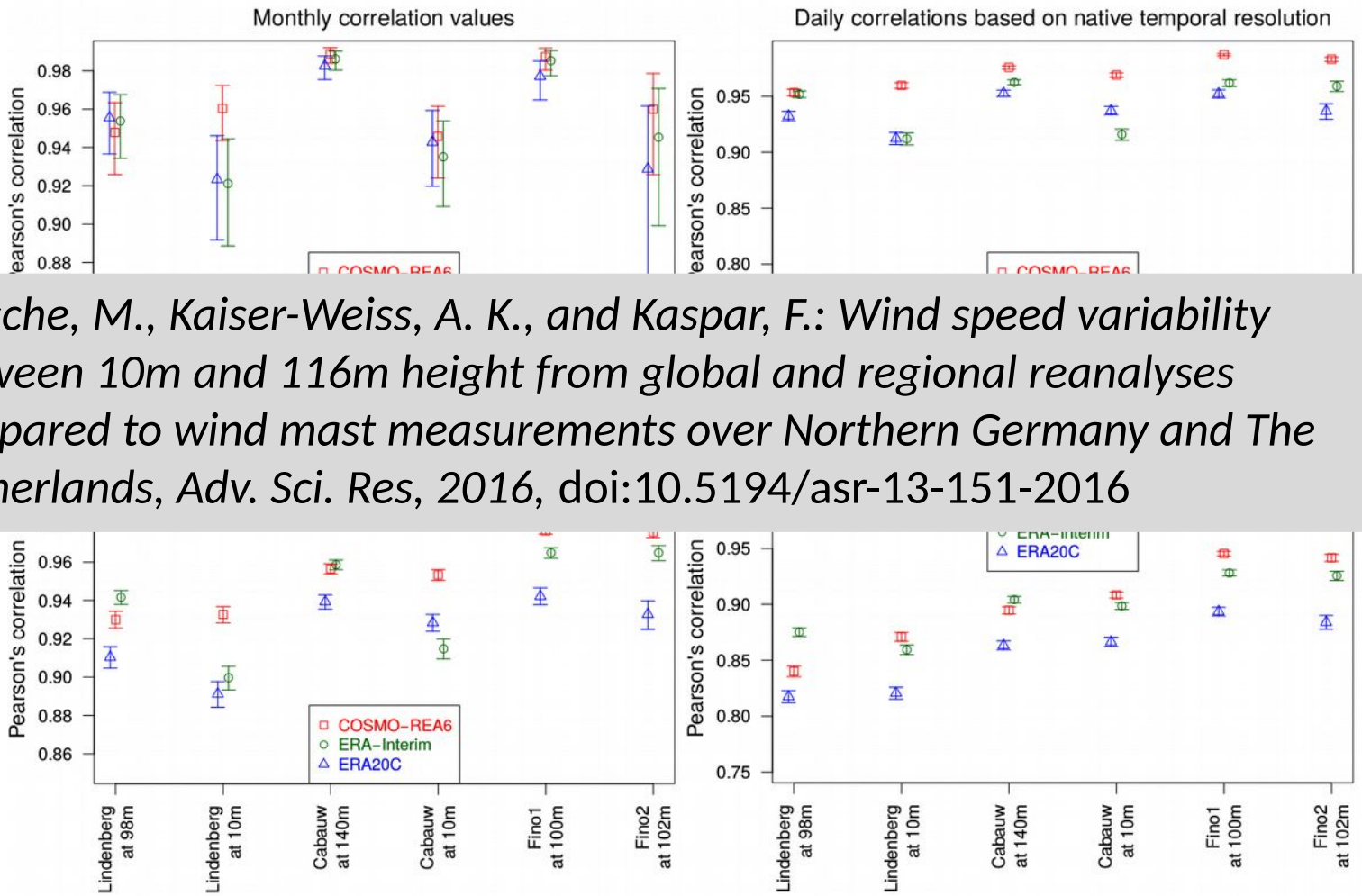






WP3 contribution from DWD

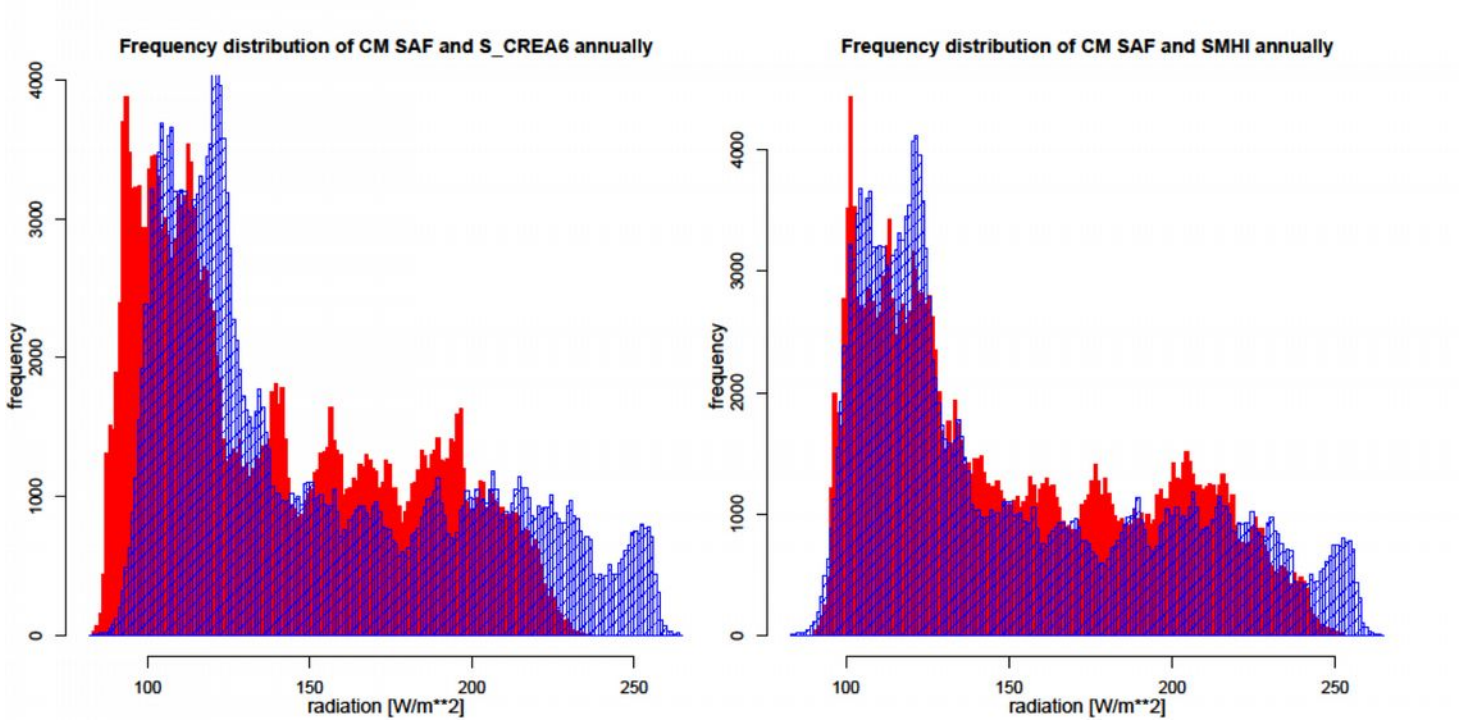
(1) Comparison of wind speed against tower measurements



Borsche, M., Kaiser-Weiss, A. K., and Kaspar, F.: Wind speed variability between 10m and 116m height from global and regional reanalyses compared to wind mast measurements over Northern Germany and The Netherlands, Adv. Sci. Res, 2016, doi:10.5194/asr-13-151-2016

WP3 contribution from DWD cont.

(2) Comparison against radiation from CM SAF satellite data

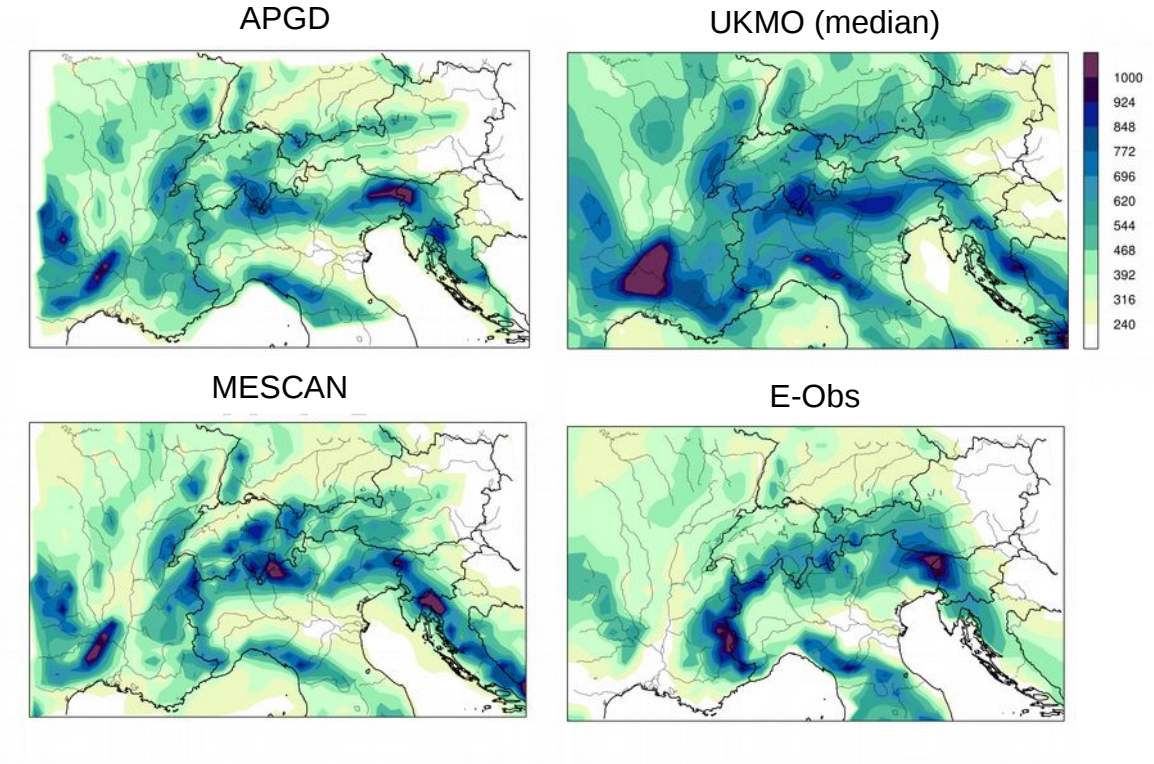


Frequency distribution of annual mean radiation values between COSMO-REA6 (red) and CM SAF SIS (blue) on the left side and between UERRA HARMONIE (red) and CM SAF SIS (blue) on the right side.
Source: UERRA D3.5, 2016.

credits: Michael Borsche, DWD

WP3 contribution from MeteoSwiss (EDI)

Christoph Frei, Francesco Isotta



Psum

1.2008-5.2008

UKMO 24km grid

- Evaluation tools ready, collaboration with MetNo
- First evaluation (five months) of UK MetOffice reanalyis and MESCAN
- Huge effort to prepare the data (download, conversion grib2 to NetCDF + precipitation 06-06h, upscaling/coordinate system conversion,…)

 Ready to analyse more datasets (HARMONIE, COSMO)

 Longer period needed for meaningful evaluation

WP3 contribution from Meteo-Romania

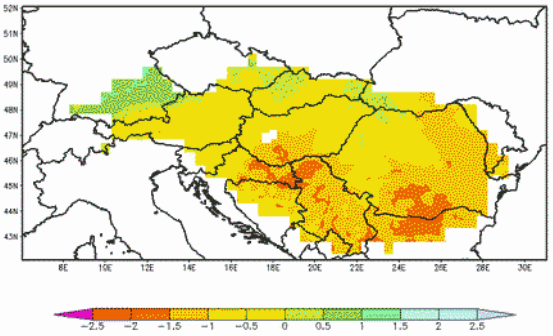
credits: Roxana Bojaru, Marius Birsan

preparing to use reanalyses for the assessment of drought variability and change

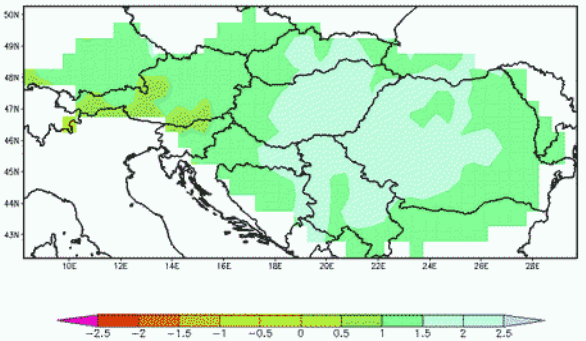
Data used:

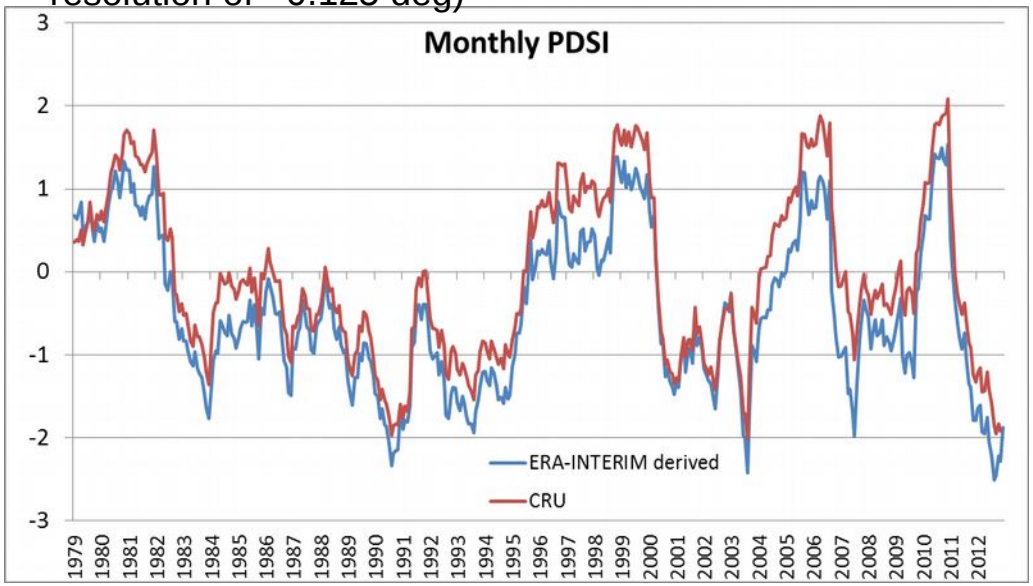
1. CRU gridded global data (0.5 deg. resolution)
2. WFDEI meteorological forcing data set based on ERA INTERIM (0.5 deg. resolution)
3. SMHI regional simulations (from the EURO-CORDEX, resolution of ~0.125 deg)

EOF 2 1971-2005 HIST SMHI

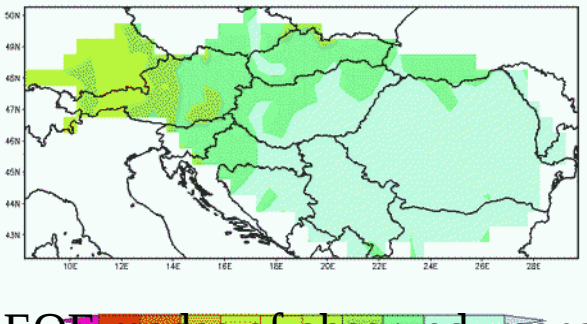


EOF 1 CRU 1901-2015





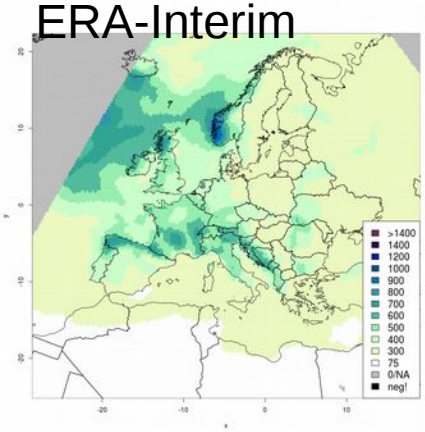
EOF 1 ERA-INTERIM derived 1979-2012



EOF modes of observed, reanalysis-derived and simulated the Palmer Drought Severity Index (PDSI) for the Danube basin

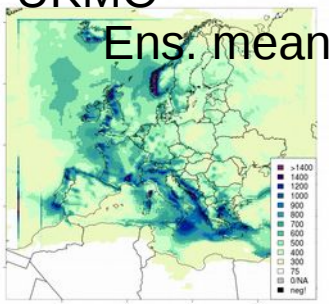
Reanalyses

ERA-Interim

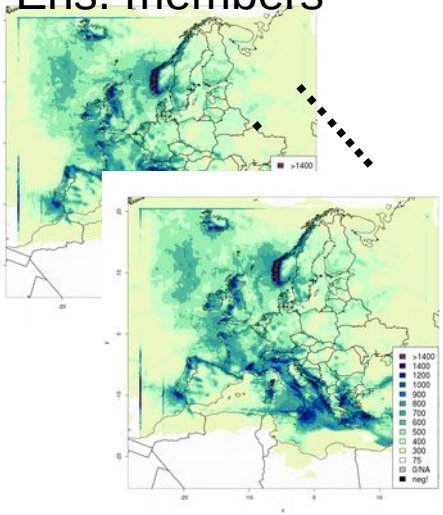


UKMO

Ens. mean

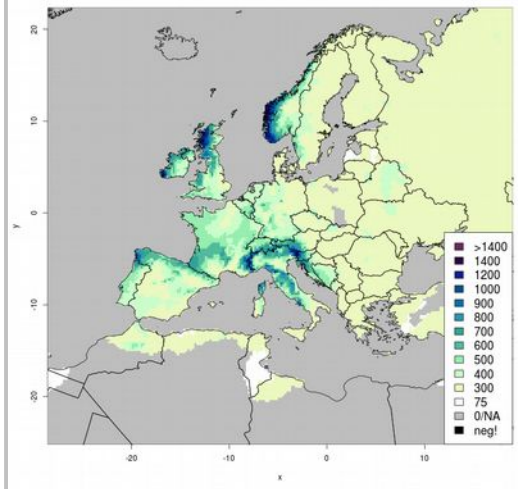


Ens. members

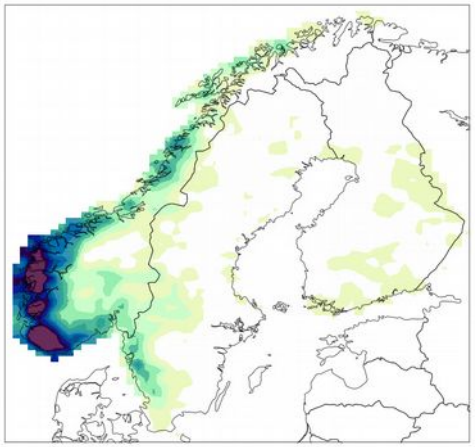


Gridded datasets

E-Obs



NGCD



MET Norway 4 UERRA:

(1) Preparation of RRA dataset for the inter-comparison:
Format conversion / regridding /...

(2) Assessment of RRA precipitation, focus on the Fennoscandia:
– Comparison against gridded station observations
– traditional scores for deterministic reanalyses;
– ensemble based methods;
– scale-separation spatial verification method;
see EMS2016 presentations

(3) NGCD further developments, considerations on the impact of different external predictors on the high-resolution gridded dataset.

Meteorologisk institutt
150 år

WP3 contribution from KNMI

Comparison of re-analysis data

- with independent satellite products e.g cloud cover and solar radiation
- with temperatures and precipitation from E-OBS.

We still have to specify exactly what to compare/assess: period, variable (e.g. focus on extremes such as r95p, or agregated quantities like European land temperature), and statistical quantity (eg bias, rms, pdf's).

It also depends on what reanalyses data is available.

WP3 issue - not only 2016:

- We rely on WP2 output

... Reminder from GA3: at least a short, common WP2 period

... what about 2006-2010?

pro: EURO-4M output, SMHI 5yr ensemble, MF downscaling, Alpine precip. ensemble ends 2008, NGCD ends 2010, cloud cover reanalysis ends 2013

... or 2009-2014?

pro: ERA-5 starting period (ensemble, quality),

... 2005 would be interesting (-2009)

pro: heat wave, „Monster precipitation “ in the Alpine area,

Either period: wind masts, stations, E-OBS, ECA&D, ROCADA, NGCD

UERRA WP3 overview

Summary (1/2):

1. WP3 in good shape, deliverables as planned. Demonstrations for all planned methods done.
2. Needs repeating / extending next year with (longer) UERRA data series.
3. Need to achieve the WP3 aims despite the delay in WP2 productions.

WP3 Summary (2/2)

5. To keep WP3 in good shape:

- WP3 needs data access, preferably via UERRA archive
- In January 2017 we expect 2008 data. Decisions on "individual" WP3 data cut-offs (e.g.: whatever produced by 1 May 2017). Producers please keep a reliable production plan updated, it is a pre-requisite for WP3 planning.

6. Focus on developments close to user requirements.