UERRA WP3 overview

Deutscher Wetterdienst
Wetter und Klima aus einer Hand
DWD

Meteorologisk institutt

UEA
University of East Anglia

Met Office

Koninklijk Nederlands Meteorologisch Instituut
Ministerie van Infrastructuur en Milieu

METEO ROMANIA

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Outline

1. WP3 outcomes 2014
2. Links to WP1, WP2, WP4, WP8
3. WP3 issues
4. Planned activities 2015
5. Deliverable list
6. Summary

WP3 activities 2014:

- Workshop with user involvement
- Preliminary set of evaluation procedures
- Exploring options for R scripts / GIT

Reminder on Motivation

1. Significant user interest (renewable energy, hydrological applications, agriculture and forestry) in high resolution reanalysis.

2. User oriented uncertainty estimates required
and guidance on which spatio-temporal scales to use

Workshop on definition of common evaluation procedure Offenbach, 26-27 June 2014 (D3.1)

User motivation

Deutscher Wetterdienst
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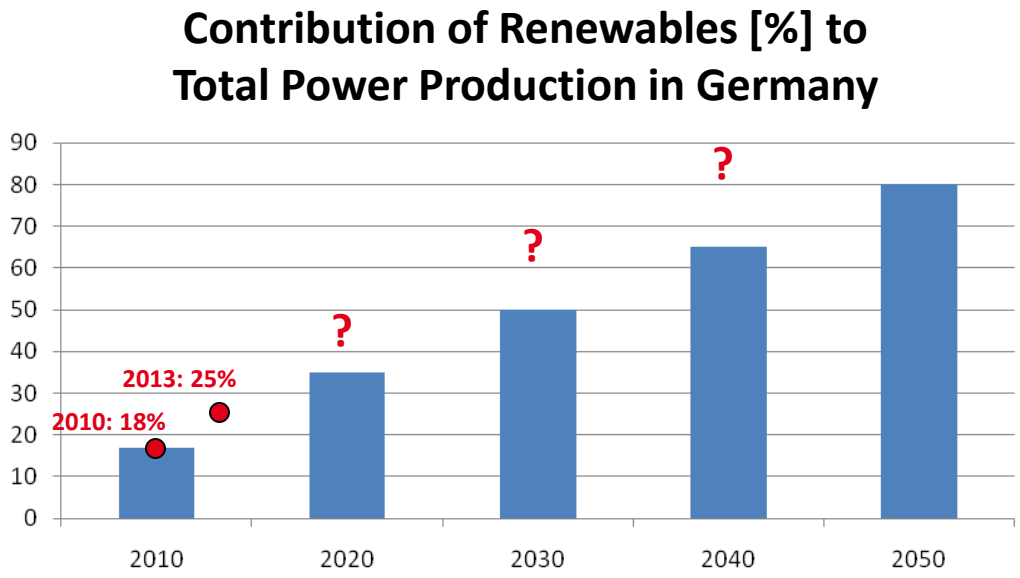
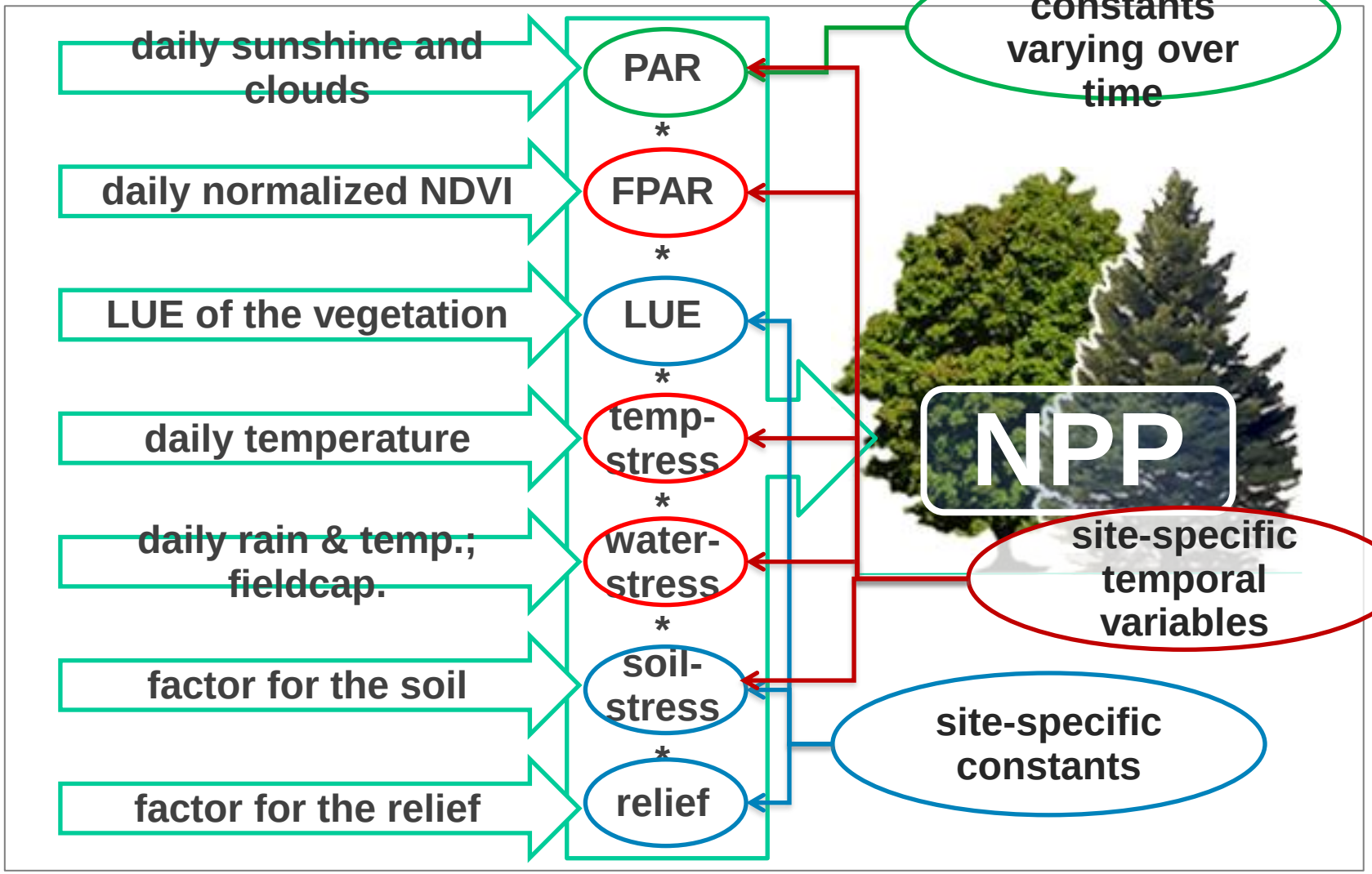
- Moving towards sustainable supply of energy based on renewables



- Focus on wind- and solar power production
- Weather dependent, fluctuating power production

Increase of biomass – model approach for the forestry



WP3 outcomes 2014

Method	Data source	Parameter	Details	Scientific questions	User questions
A: feedback statistics	Radiosonde soundings	Temperature, wind speed, and relative humidity	Focus on lower troposphere; bias and RMSE of time series; store in ODB format	**How stable** are the regional reanalyses (RRAs) with respect to multi-annual trends on a spatial scale of roughly 100 km?	How well represented are **trends and climatologies** of wind speed relevant for wind energy?
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 of temperature and precipitation	There are many more suitable observations available for B2 than for B1.	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 products for the Nordic region and the UK; E-OBS, APGD	Precipitation; Tmin and Tmax	To consider whether a part of 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 ensemble of gridded data with derived uncertainty estimates;	Pprecipitation; Tmin, Tmax, Tmean;	Ensemble based uncertainty estimates will be performed on (1) the newly (WP1) created data products.	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?
	Products as in methods A through D	Parameters as in A through D	(2) the basis of methods A through D when available.		
F: User related models		Tmean; Tmax and Tmin pseudo analysis; wind speed; precipitation;	SURFEX by Météo France uses the reanalyses as input		Is the result of a **user model forced by RRAs** significantly better than with the original forcing?

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Guide on aggregation and data re-gridding by Phil Jones and Christoph Frei

- Aggregation is done differently throughout Europe
- Note aggregation time for comparison with RRAs

WP3 link to WP1, WP2, WP4, WP8

- WP1, WP2, output required (data access, feedback statistics)
- WP4 infrastructure required
- Output of WP3 critical for WP8 workshop D 8.2
- Special WP3 focus: developments close to the users requirements

Links to WP1 – Example:

Christoph Frei

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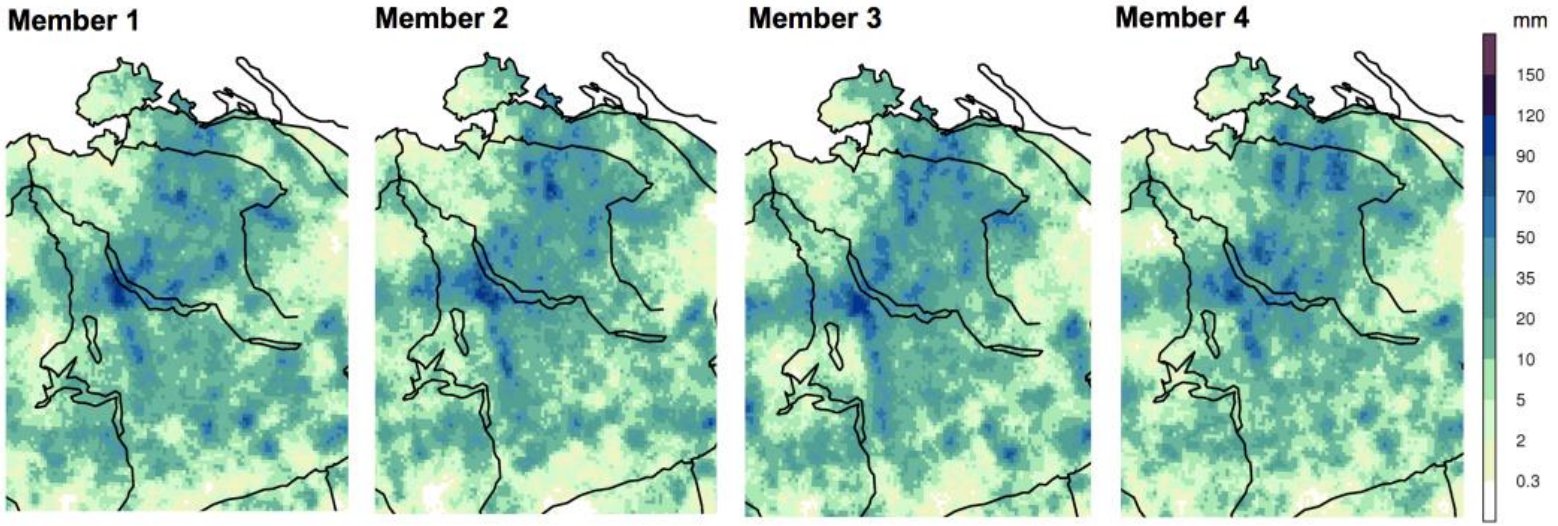
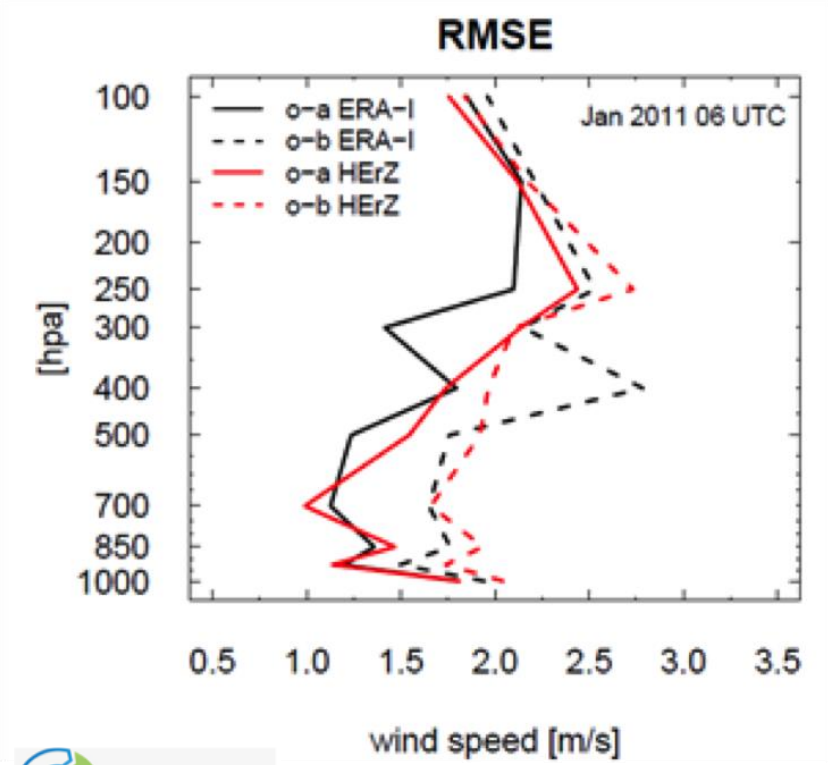


Figure 1: Members of a conditional stochastic simulation of rainfall fields for precipitation in northern Switzerland (10. 6. 2008, Vogel 2013). Such simulations shall be used to account for uncertainties in reference datasets during the evaluation of ensemble regional reanalyses in UERRA.

Links to WP2 –note:



For Method A: We depend on internal metrics, namely feedback statistics on radiosondes – which WP2 partners are willing to store and to share (in which resolution)

Core Climax

A. K. Kaiser-Weiss, F. Kaspar, V. Heene, M. Borsche, D. G. H. Tan, P. Poli, A. Obregon, H. Gregow: Comparison of regional and global reanalysis near-surface winds with station observations over Germany, submitted to ASR, 2015.

Statistics with distributed data

ECMWF - MARS

Meteo France

Met Office

HErZ

SMHI

Reanalysis data

???

Nordic Grid

GALPS

ECA&D

EOBS

.....

Reference data

Tasks:

- Retrieve/Read data
  - Are all the data in MARS?
  - Common data format?
- Statistics of reanalysis
- Statistics of reference data
- Aggregation in time/Re-gridding
  - See UERRA Deliverable D3.2
- Verification
- Visualization

Slide from: Cristian Lusanna, met.no

WP3 issues (methodologies)

1. User interest in: high spatial resolution, high temporal stability -> *solution: give what is possible*

2. Uncertainty = Scale and application specific -> *solution: specific for parameter, scale, (application) – give many*

3. High quality data - > usually assimilated -> *solution: not restrict too severly to "independent" – do all*

WP3 issues (technical)

4. WP2 output required -> *solution: start with EURO4M data*
5. Infrastructure from WP4 required -> *in work (essential)*
6. Open source software aspired
7. Which software could/should be incorporated from MesoVICT: Mesoscale Verification Intercomparison over Complex Terrain - community project lead by RAL?
8. Which software from HARP (Hirlam Aladin R-package for EPS verification) ? … *which is not just an R-package …* git@hirlam.org:Harp
9. Is R fast enough ? -> *we could embedd Python*

WP3 activities 2015

WP3 Tasks and Deliverables

Task 3.1: Coordinated uncertainty evaluation (ongoing)
Task 3.2: Assessing uncertainties over the European domain (not started yet)

Deliverable	Title	Due date	Status 27th Jan 2015
D 3.1	Definition workshop	M3	submitted
D 3.2	Evaluation procedures	M6	submitted
D 3.3	Programme Package	M15	in work
D 3.4	Evaluation experiences	M24	started

WP3 Summary

- Deliverable status as planned
- Online discussion documents
- Developments close to the users requirements
- Next focus: software development