PP CARMENs
Cosmo Application of Rfdbk/MEC on ENS

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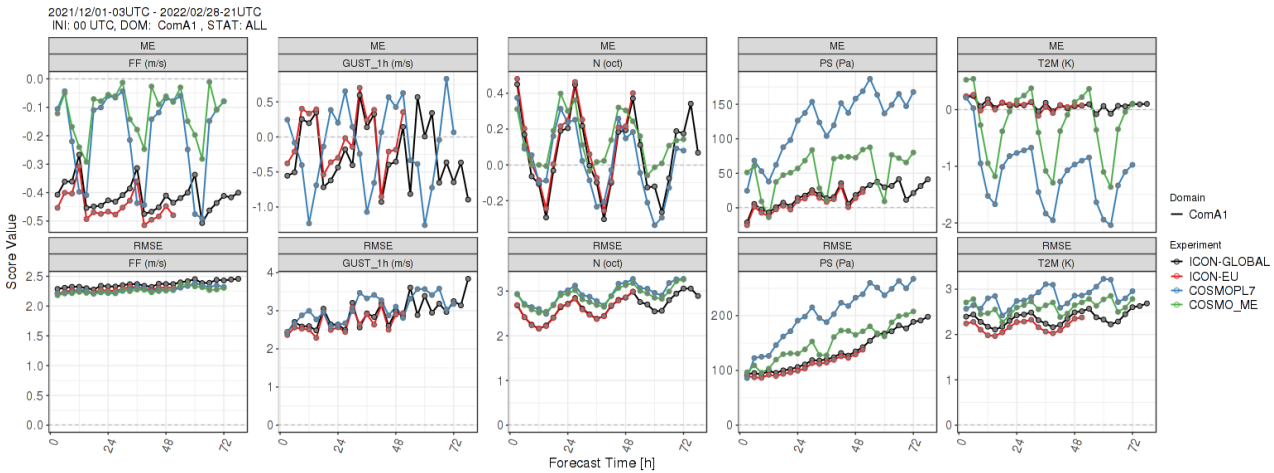
PP CARMA (2018-2021)

Goal

- replace VERSUS with MEC-Rfdbk (DWD) as Common Verification Software to perform part of the verification activities in the consortium
- main use - production of CP verification
- centralized transfer and visualization of results (COSMO web server)
- EPS, spatial and other verification with MEC-Rfdbk not the purpose of this project



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Current Status

- MEC-Rfdbk implemented and running operationally in most countries of the consortium
- Products for CP activities:
  - Categorical scores for Gust, RR_6h and N;
  - Scores for continuous parameters;
  - Scores for upper air parameters;
  - Comparison between two models showing the trend in various scores;
  - Domain average and station based verification;
  - Common Area and national domain stratification.
- Remaining open issues performed regularly through WG6 SPRT Common Plot activity
- Documentation and templates for the use of MEC-Rfdbk available (deterministic features).

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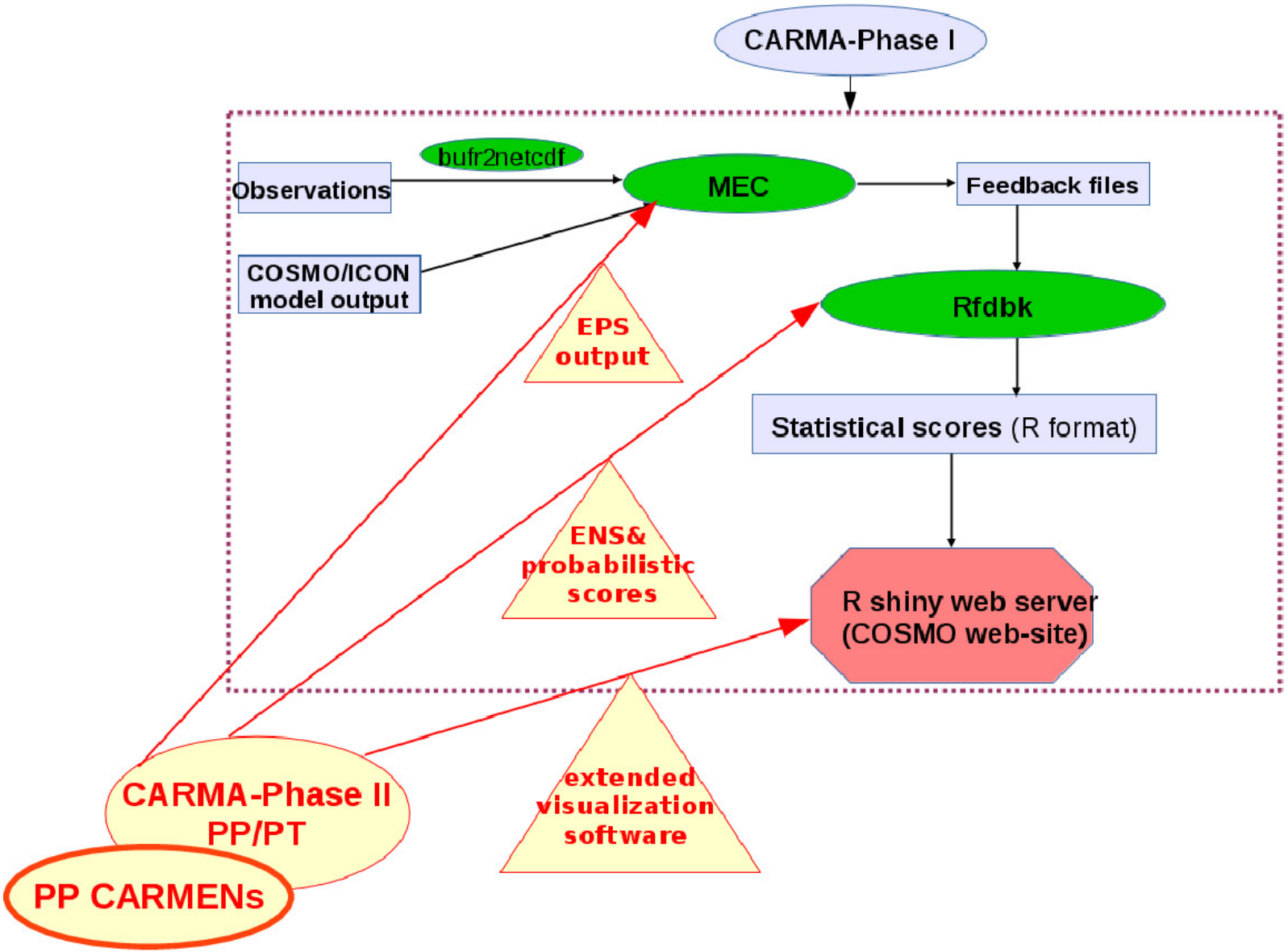
Goal

- **extend the implementation and usage of the MEC-Rfdbk system to the evaluation of EPS model outputs**
- available statistical results for selected time periods of ensemble COSMO and ICON-LAM based systems over national domains to be produced and published on the COSMO Verification web page
- the possibility of an extension of CP activities to EPS (selectively over common areas) will be assessed


CARMA-Phase I
bufr2netcdf
Observations
MEC
Feedback files
COSMO/ICON
model output
Rfdbk
EPS
output
Statistical scores (R format)
ENS&
probabilistic
scores
R shiny web server
(COSMO web-site)
CARMA-Phase II
PP/PT
extended
visualization
software
PP CARMENs

Task 1. Administrative Tasks and Technical Support

Start 09.2022 - End 09.2024

- continuous technical support by the PST (Project Support Team) for the update of the MEC-Rfdbk system for EPS output by all participants & any other technical difficulties
- administrative tasks

Deliverables:

- Support in the implementation of the system for all partners.
- Project coordination, meetings, preparation of plans/reports, workshops and regular web conference organization.

Contributors:

A. Iriza-Burcă (NMA) - 0.45 FTE, F. Fundel (DWD) - 0.2 FTE

Total Resources Task 1: 0.65 FTEs

Task 2. MEC and Rfdbk system adaptations for EPS systems

Start 09.2022 - End 05.2023

- Preparation of Instructions on adaptation of MEC & Rfdbk based on EPS model output.
- Test of guidelines/software (PST) on a dataset (1 month, TBD) - Problem solving
- Define content of CP EPS evaluation guidelines.
- Analyze the possibility of Common Area verification in addition to national domains.
- Adaptation of scripts for MEC/Rfdbk according to guidelines CP ENS requirements over national domains (& Common Area if applicable).
- If more variables requested by users, instructions will be provided.

Task 2. MEC and Rfdbk system adaptations for EPS systems (cont'd)

Deliverables:

- Guidelines for the use/adaptation of MEC & Rfdbk for EPS model output & probabilistic scores
- Templates (MEC & Rfdbk) for ENS and probabilistic products (WG5 repository) over national domains.
- WG5 CP Guidelines for COSMO EPS verification
- Rfdbk scripts for ENS and probabilistic products over Common Area (if applicable).
- Seasonal Sample dataset for users with no EPS products.

Contributors:

A. Iriza-Burcă (NMA) - 0.45 FTE, F. Fundel (DWD) - 0.3 FTE, F. Gofa (HNMS) - 0.25 FTE

Total Resources Task 2: 1.0 FTEs

Task 3. Semi-automatic use of the Rfdbk for ENS production and probabilistic scores

Start 05.2023 - End 09.2024

- Implementation & test of system features for production of ENS and probabilistic scores on national domains through practical use (all participants).
- Preparation of Seasonal FF (MEC) and test with Rfdbk.
- Templates, scripts & guidelines from Task 2.
- Installation & update of visualization software on national servers & COSMO web.
- Test of system features on Seasonal EPS forecasts over CommA (if applicable).

Task 3. Semi-automatic use of the Rfdbk for ENS production and probabilistic scores (cont'd)

Deliverables:

- MEC-Rfdbk system installed and updated in all services (for use with ENS products).
- Updated visualisation software on national servers and COSMO web.
- Web interface to host ENS results on COSMO web pages.
- Production of FF & Rdata statistical files for seasonal test periods by each service (where applicable).
- Visualization through COSMO Shiny web server or national web servers.
- Production of FF (per country) and Rdata statistical files (centrally) for seasonal test periods for CP (if applicable, dep. Task 2.3).

Task 3. Semi-automatic use of the Rfdbk for ENS production and probabilistic scores (cont'd)

Contributors:
A. Iriza-Burcă (NMA) - 0.34 FTE, F. Fundel (DWD) - 0.24 FTE, T. Andreadis (HNMS) - 0.02 FTE,
F.Gofa, D. Boucouvala (HNMS), J. Linkowska, A. Mazur (IMGW-PIB), T. Gastaldo (Arpae-SIMC), A. Pauling (MCH), A. Shtivelman, P. Khain (IMS), F. Sudati (CNMCA) - 0.2 FTE (each center)

Total Resources Task 3: 1.8 FTEs

Total Resources PP: $\approx$ 3.27 FTEs

Links to other projects or activities

- Support Activities - WG5 Common Plots.
- Support Activities - NWP Test Suite: MEC-Rfdbk system used at ECMWF for the evaluation of new model versions (COSMo & ICON) before official release.
- WG7 activities linked to development and evaluation of ENS systems.
- WG5 activities for verification and case studies.

Future actions

Observation representativeness for different model scales.

- Quantifying the representativeness could help in model development by offering the possibility to give corrected scores.
- Score correction for observation representativeness for the model scales.

Extend WG6 SPRT Common Plot activity to the collection on a seasonal basis of ENS based FF forecasts, if possible.

Thanks @ Flora Gora & Felix Fundel!

Thank you!

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