Meteorological Quality Assurance in **ACCORD**

*Looking for CONSONANCE*

Carl Fortelius, 2021-04-16, 1st ACCORD ASW
The two legs of meteorological quality assurance

How well are we predicting (verification)
• how much can I trust the forecasts?
• are we getting better?
• am I getting a return on my investments

How good is our forecasting system (diagnosis)
• is my system working properly?
• is my system replicating the climate system?
• are my innovations any good?
Verification of forecasts

Components:

● Quality measures
● Data
● Verification engine
● Systematic application, regular reporting
Strategic goal 2021-2025:
Further develop common methods/metrics, with a focus on methods for high density/resolution spatial-temporal verification and high impact weather.

- e.g. the neighbourhood-aware CRPS (Joël Stein, MQA-session)
Verification of forecasts: Data

Strategic goal 2021-2025:
Consider greater synergies with the DA team on observation uses and quality control

- In situ: met. stations, crowd source data (e.g towns),
- Remote sensing: radar, satellite imagery, lightning data
- Commercial operators (e.g solar power, wind power, hydro power, shipping lines, railway operators,...)
- Research data: flux networks, towers, profilers
Verification of forecasts: verification engine

Strategic goal 2021-2025:
- Make the jointly developed HARP verification system attractive as a common verification tool
  - Hirlam-Aladin R Package for verification: HARP
  - https://github.com/harphub/harp
  - deterministic scores, probabilistic scores, spatial methods, EPS-calibration, visualization
  - flexible regarding input
Verification of forecasts: Application

Strategic goal 2021-2025:

- Enhance the user-developer interaction
  - continuously produced and monitored
  - *operational suites*, e-suites, experiments
  - *Code Engineering, Phasing and Quality assurance “CEpQA”*
  - *reporting*: newsletters, bulletins, presentations
The two legs of meteorological quality assurance

How well are we predicting the weather (verification)
- how much can I trust the forecasts?
- are we getting better?
- am I getting a return on my investments

How good is our forecasting system (diagnosis)
- is my system working properly?
- is my system replicating the climate system?
- are my innovations any good?
Diagnosing the forecasting system

Strategic goal 2021-2025:

- Enhance the verification of 3/4D physical processes to aid model development, including the necessary observations
  - Monitoring data flows, scrutiny of input and output
  - Diagnostics model and d/a
    - obs vs. background statistics, dfs, analysis increments,
    - budgets, fluxes, tendencies (DDH)
    - model drift (spin up),
  - Application to operational suites, e-suites, and experiments
Summary

Promising areas of cooperation

- Usage of HARP
- Development of HARP
- Enhancing data pool used for verification
- Sharing diagnostic methods and practices, e.g. ML

Next steps:

- Get together: teams and team leaders, CSCs
- Topical meetings involving other areas
- Explore MQA in the CSCs
Shall we dance?

LOUIS SPARRE, "DANS PÅ BRYGGAN"