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?

ACCORD

Verification of forecasts

Components:

- Quality measures
- Data
- Verification engine
- Systematic application, regular reporting

Verification of forecasts: quality measures

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

- **H**irlam-**A**ladin **R** **P**ackage 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

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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

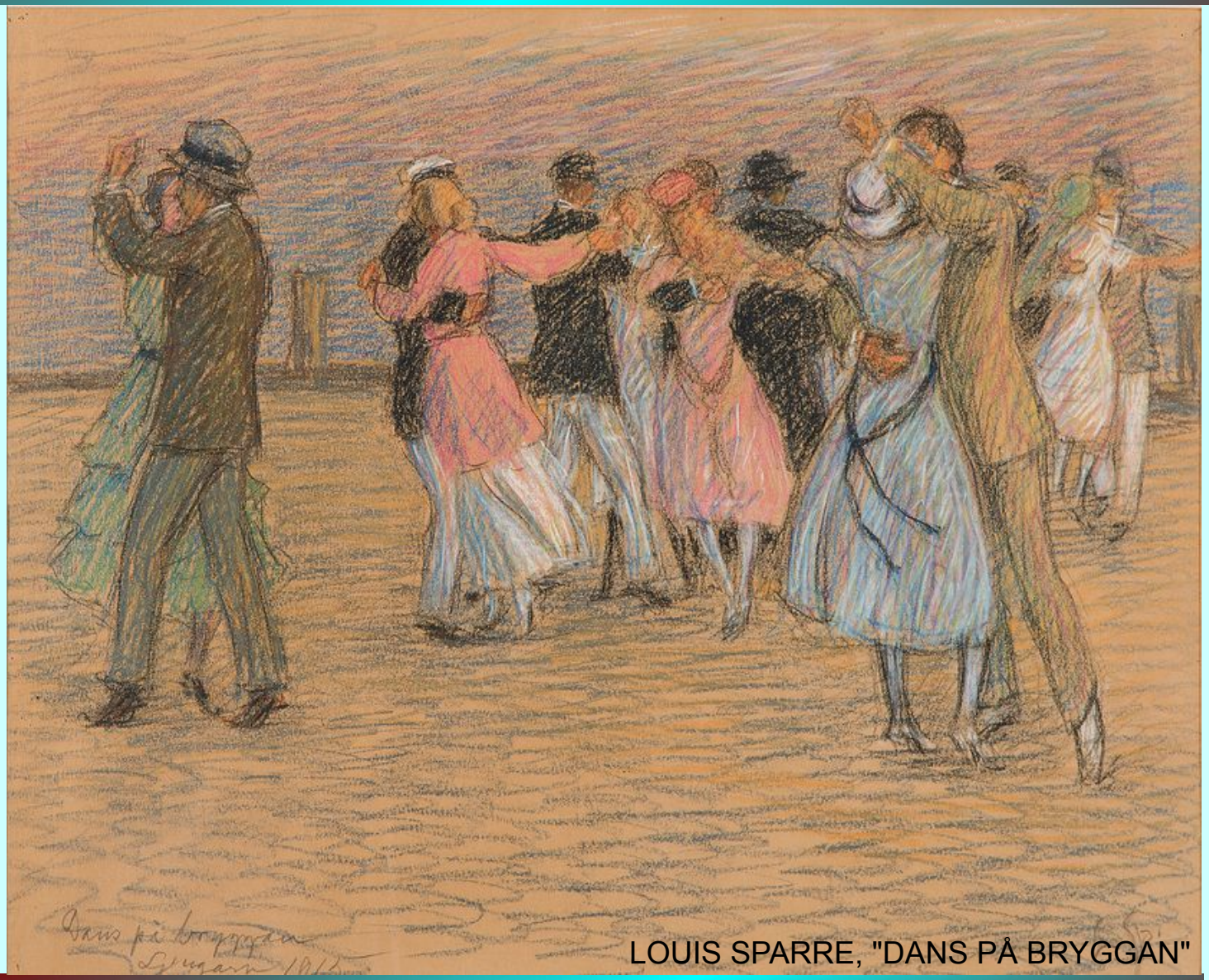
Promising areas of cooperation

- 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"