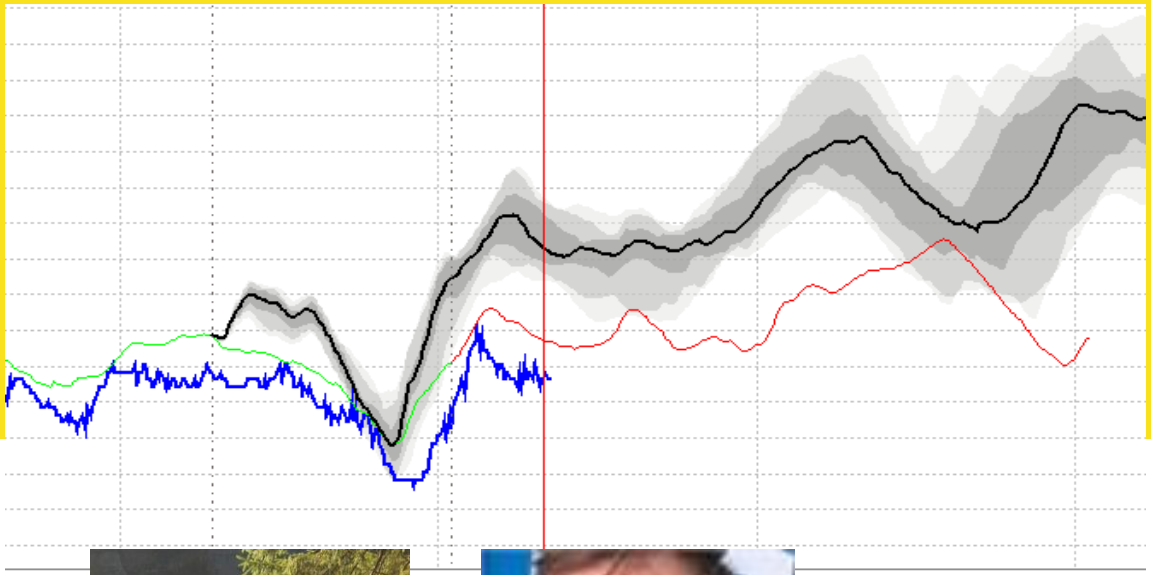
Rijkswaterstaat
Ministerie van Infrastructuur en Waterstaat



Web-based online Forecast Verification Tool

Delft-FEWS User Days
5th November 2020

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Water Management
Center of RWS

Peter Gijsbers
Deltares

Deltares enabling delta life

Outline

(1) **WHY** do we want this tool ?

(2) **WHAT** will the tool do?

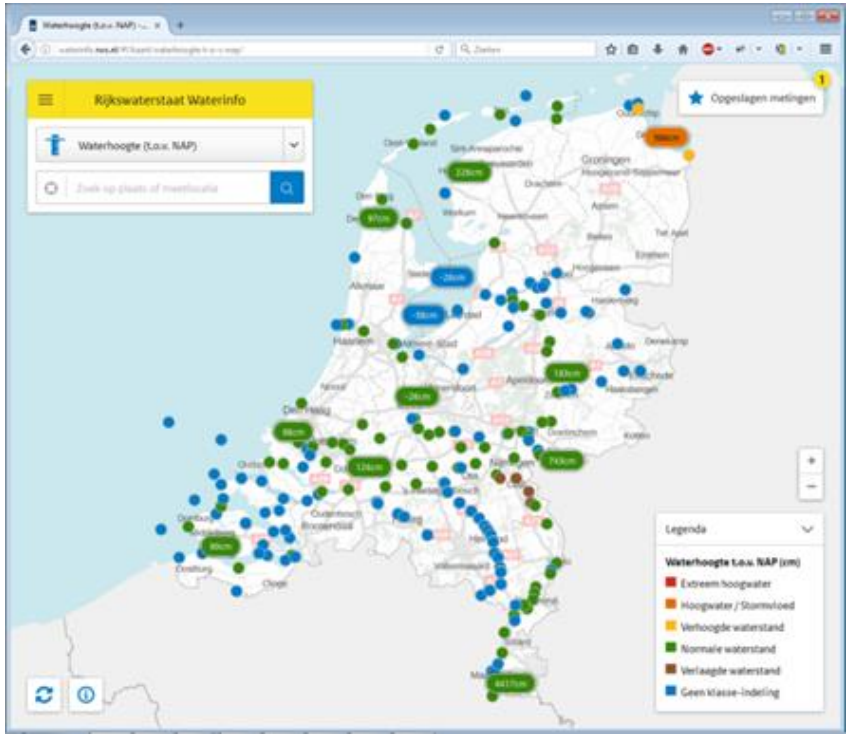
(3) **HOW** is it build?

(4) **HOW** will it look like?

(5) **Want** to join?

WHY

- Water management centre of the Netherlands responsible for daily forecasts of water levels, discharge, tides, waves and currents for all water systems
- Higher uncertainties in extreme events



Drought

High Water

Environmental issues

Deltares

RWsOS

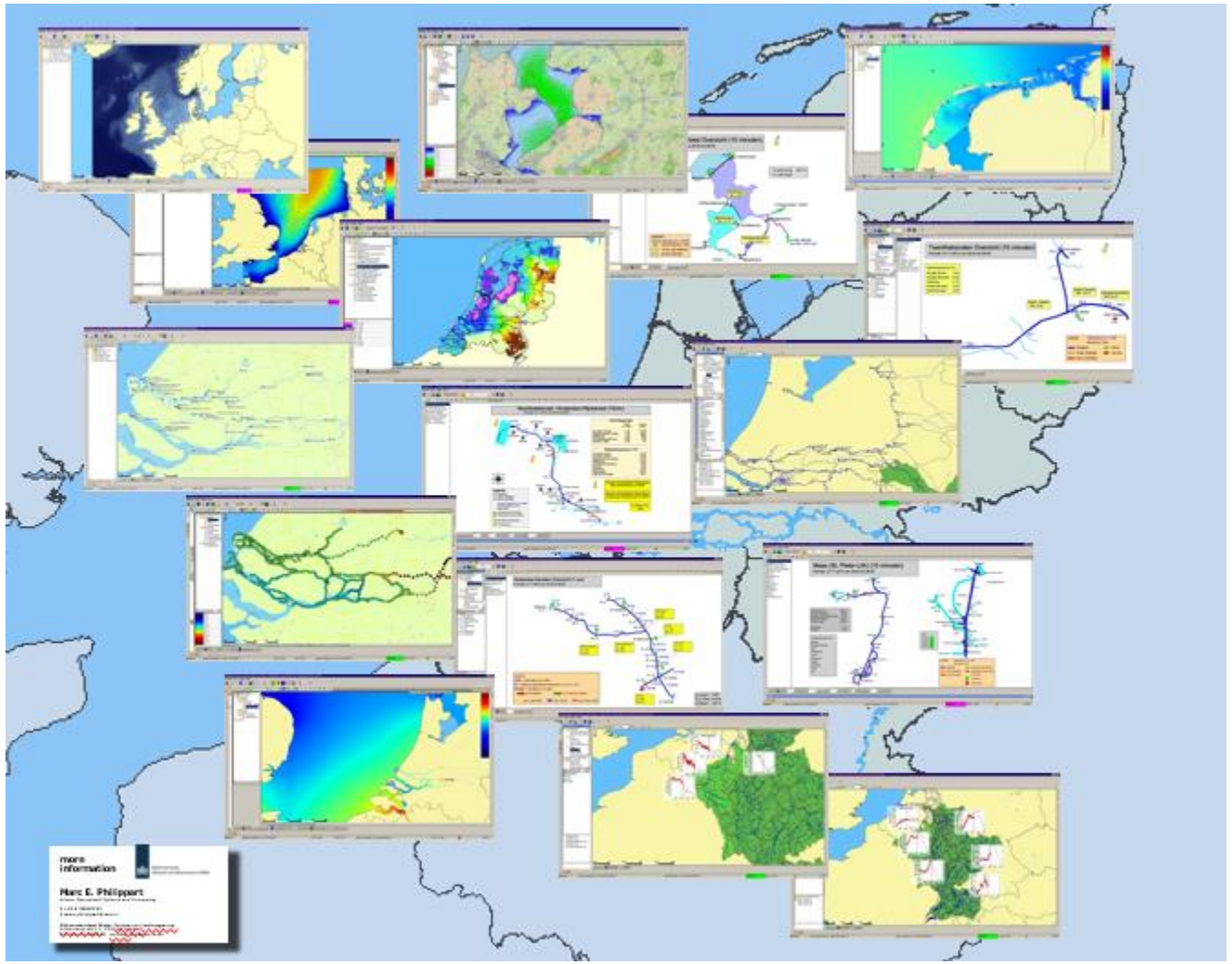
Rijkswaterstaat consistent Operational Systems

Modelling the waters from Switzerland tot Iceland for Safe and Sound watermanagement in the Netherlands

WHY

- 7 different Delft-FEWS based operational systems running, 30+ different models based on 10+ different Meteo products

- Different groups of forecasters engaged @RWS, some groups daily, some groups only during storm surge/ flooding situations



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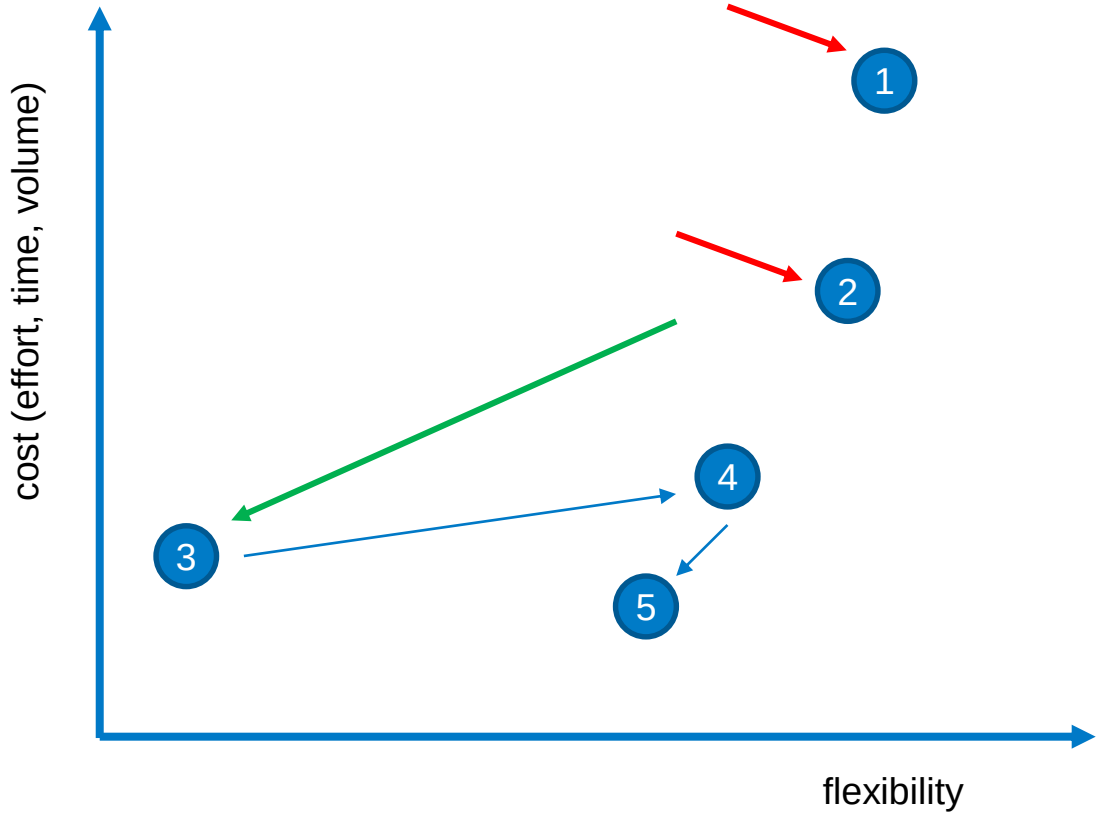
WHY

- Models are changing over the years, characteristics might change unnoticed, and extreme events can make models behave very differently
- Validation and verification reports necessary, but by definition often outdated
- Lot's of handwork required to keep track – we can do this better!
- In operation we want to have easy access not only to model accuracy information, but also reliability information of the whole operational system (process).

WHY

Verification procedures

(1) manually compute verification metrics from recreated hindcasts
(2) manually compute verification metrics from archived observations and forecasts
(3) continuous computation and archiving of predefined verification metrics
(4) continuous detection and archiving of observation-forecast pairings, compute verification metrics at moment needed
(5) continuous computation and archiving daily verification metric increments, aggregate verification statistics as needed



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WHAT will the tool do?

- ARCHIVE all information and make it available for web services!
- Show statistical parameters of deterministic model runs and forecasts (2020)
- Show availability and quality information of all observed parameters/ locations
- Show run time estimates of all scheduled model runs – flag if runs are being delayed
- Show statistical parameters on ensemble forecast quality

WHAT will be possible in future?

- Show statistical quality parameters of model performance by using conditional filtering
- 'Verification-as-a-service' by calculating on-the-fly statistical parameters on demand
- Make it very easy to keep track of our forecast quality – under all conditions and for all models and systems (without digging in excel each time …)

WHY

Verification procedures

(1) manually compute verification metrics from recreated hindcasts
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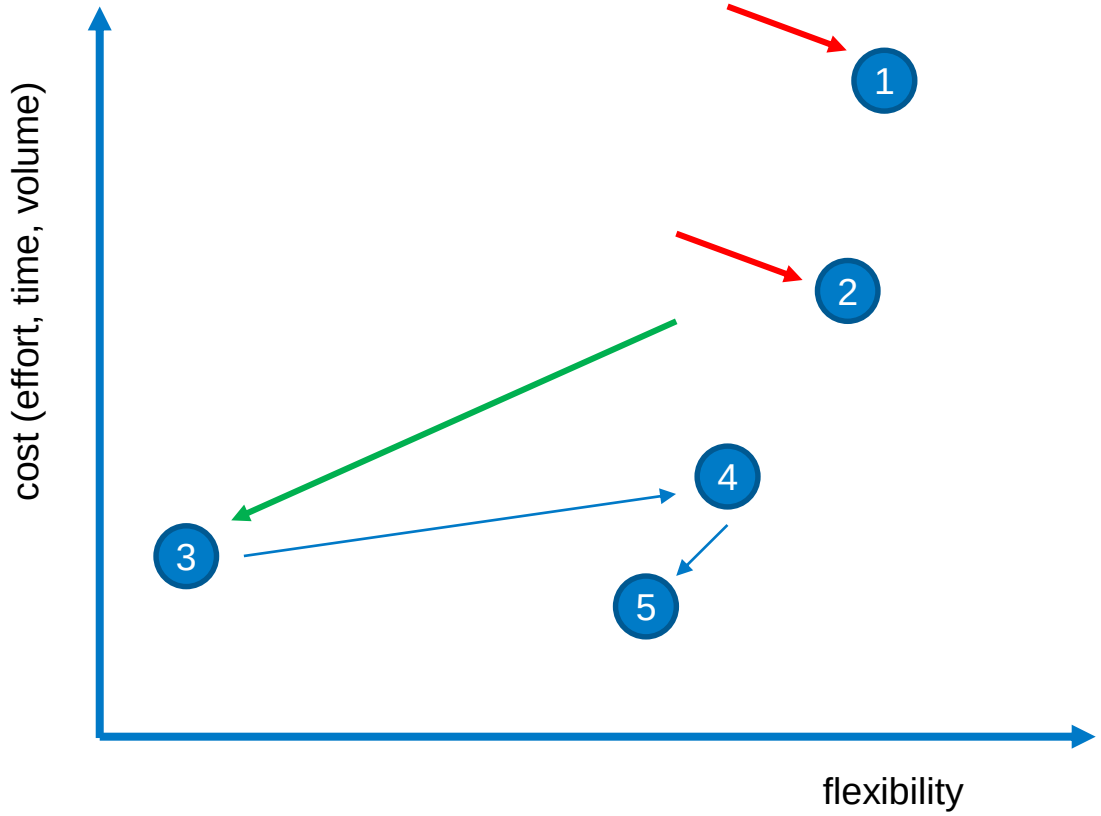

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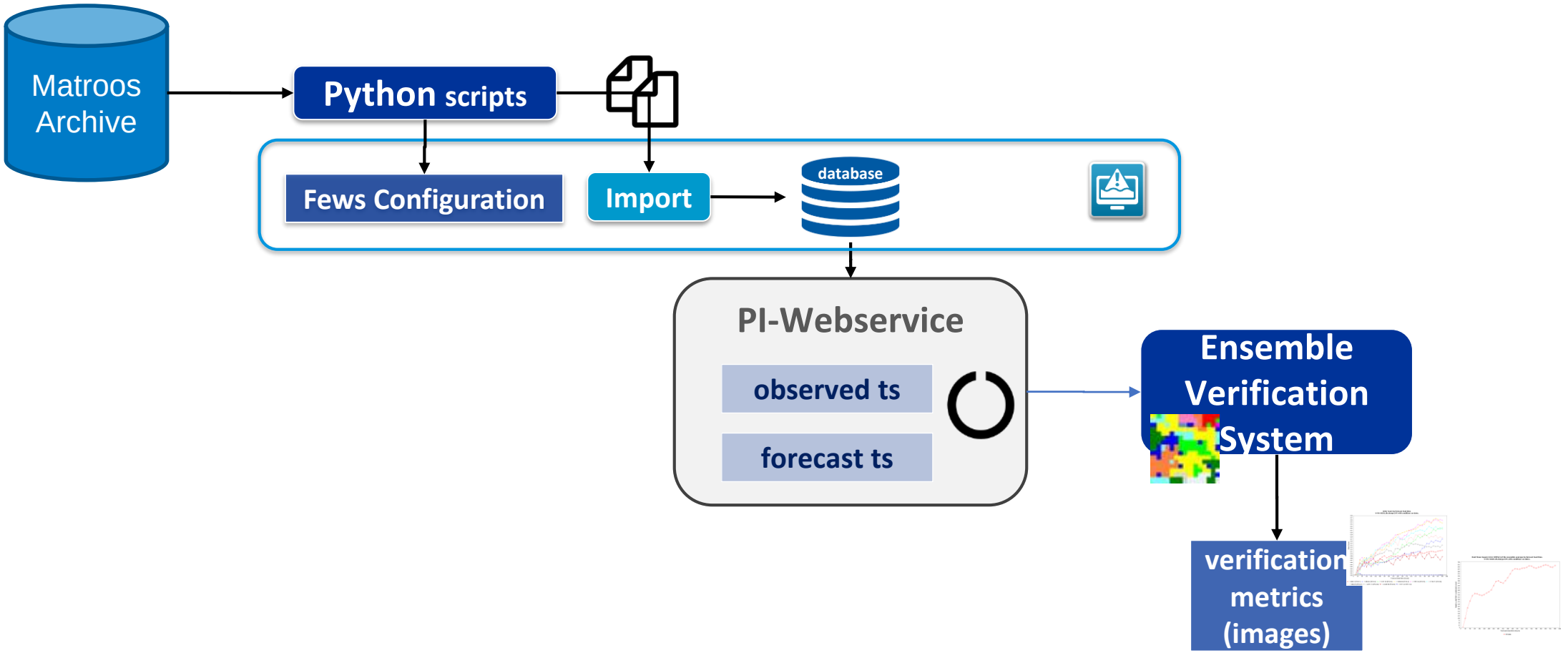
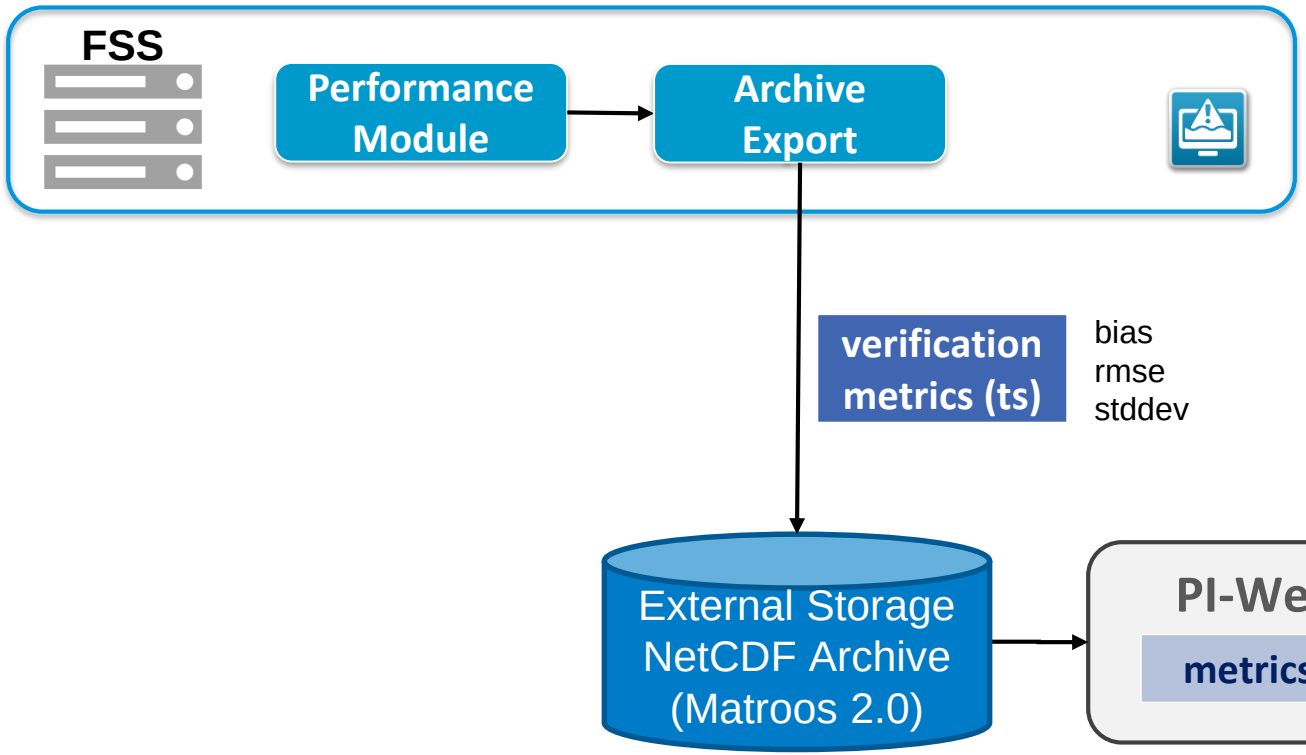
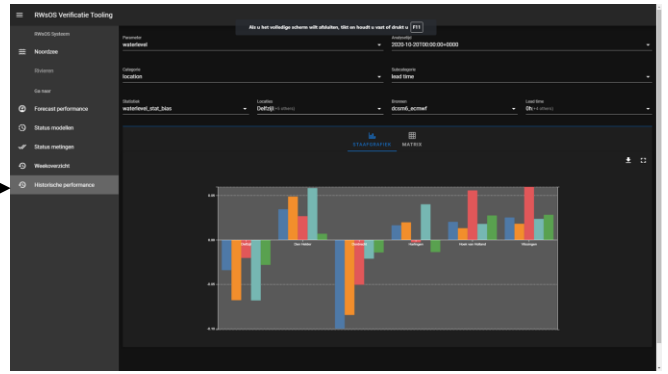
HOW current manual process (2)



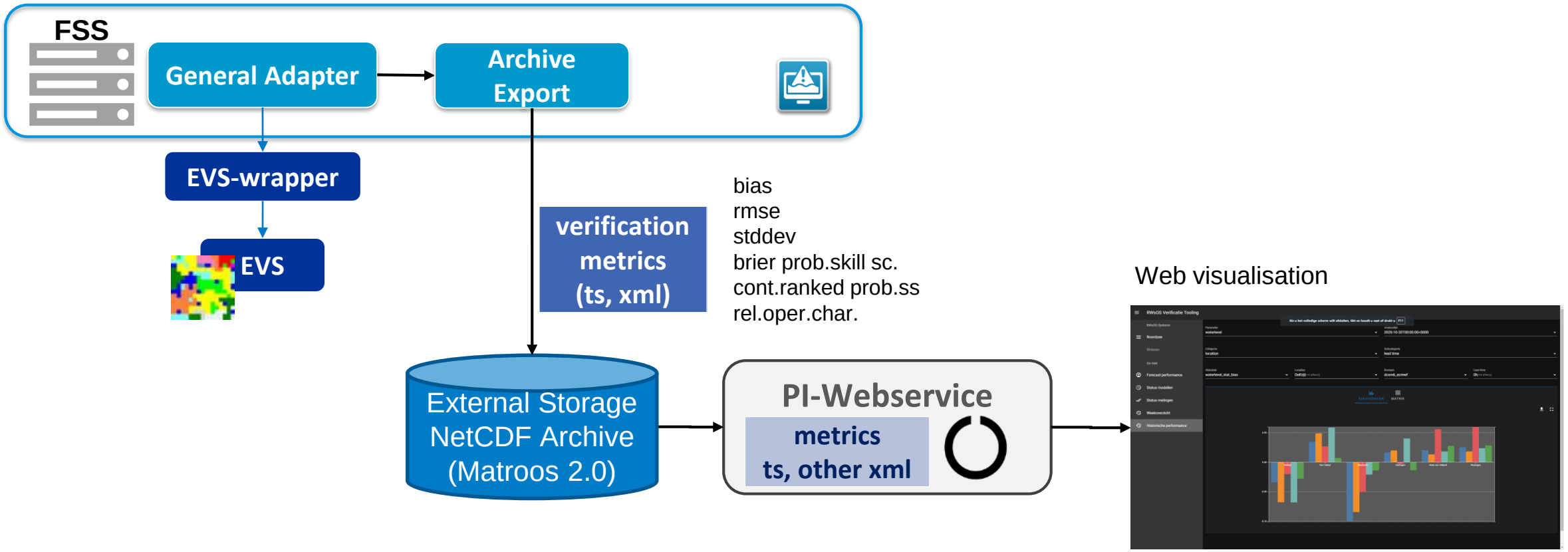
HOW automation being implemented (3)



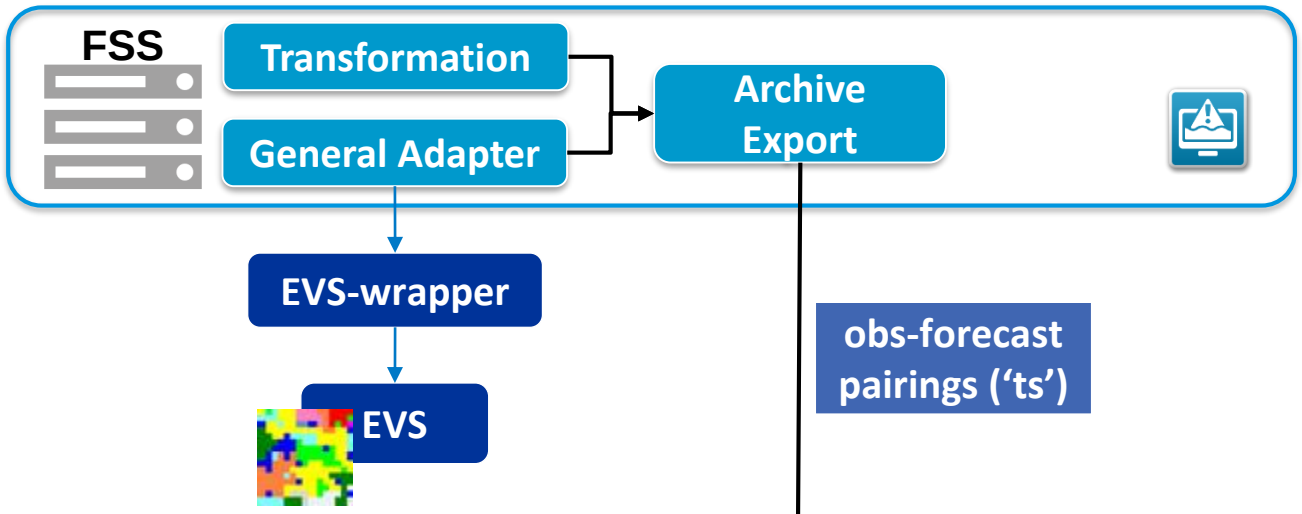
Web visualisation



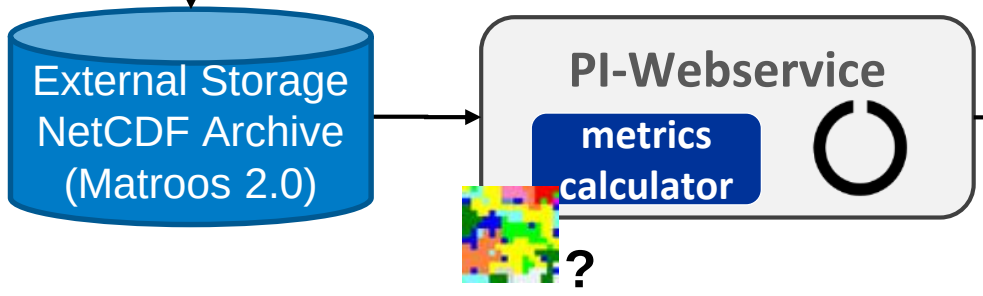
HOW automation development being considered (3)



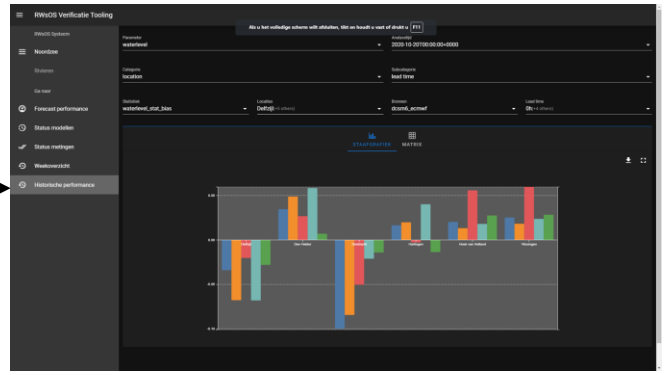
HOW future automation to be investigated (4)



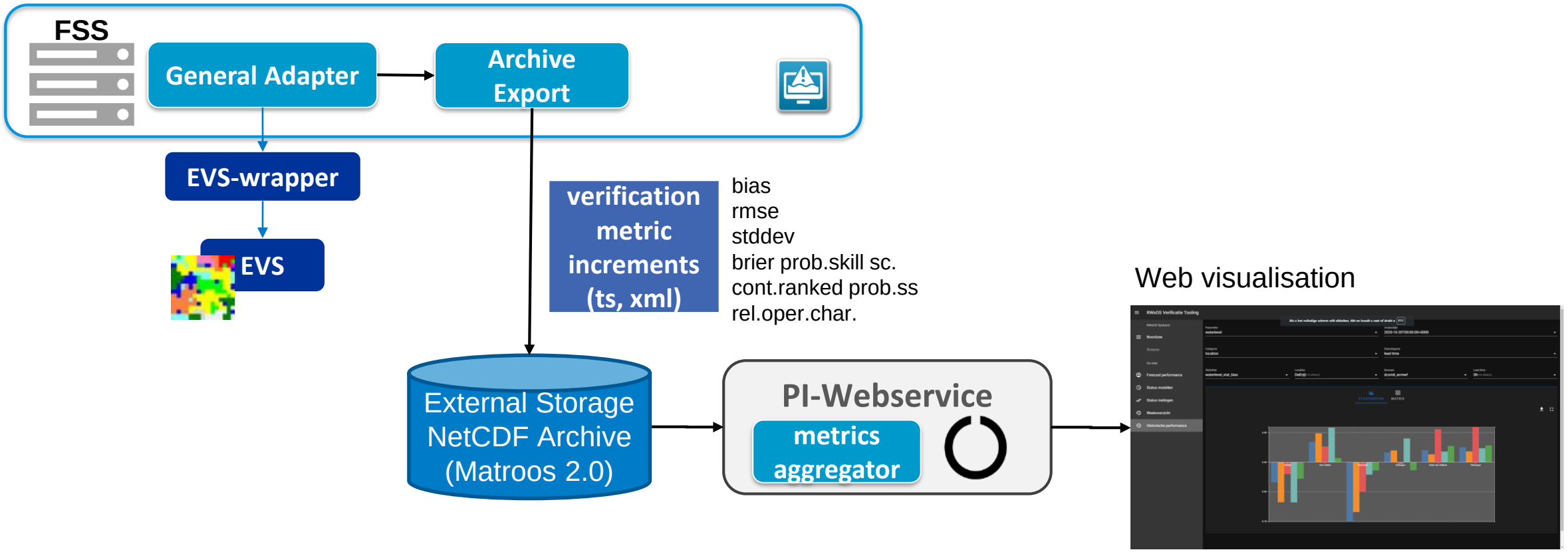
obs-forecast pairings ('ts')



Web visualisation

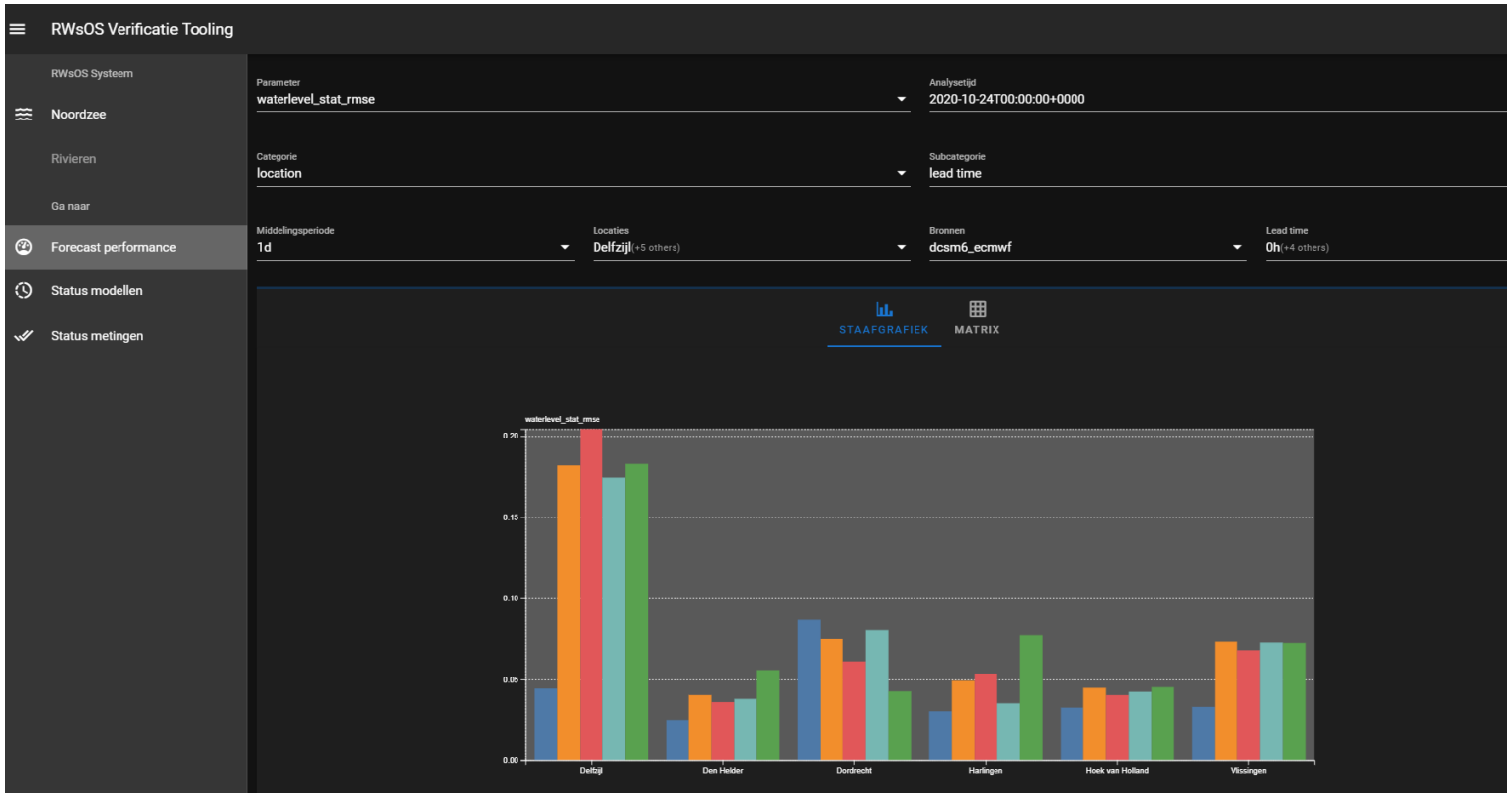


HOW future automation to be investigated (5)



HOW will it look like?

- Live demo
- Prototype

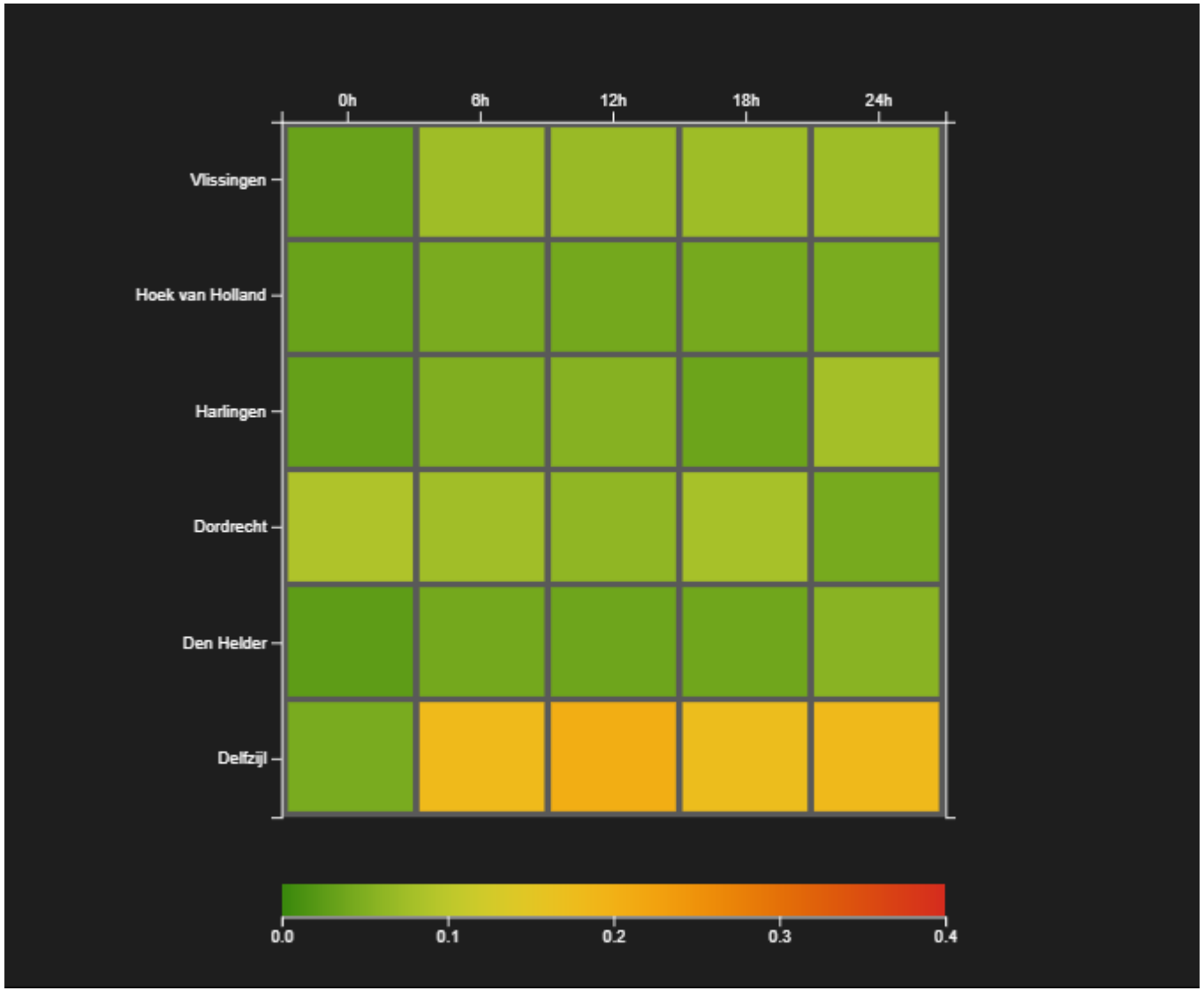


Performance matrix

Parameter RMSE shown in matrix for different locations/ leadtimes and 1 source

Axis and parameters flexible to choose by user

→ Lead time



→ Locations

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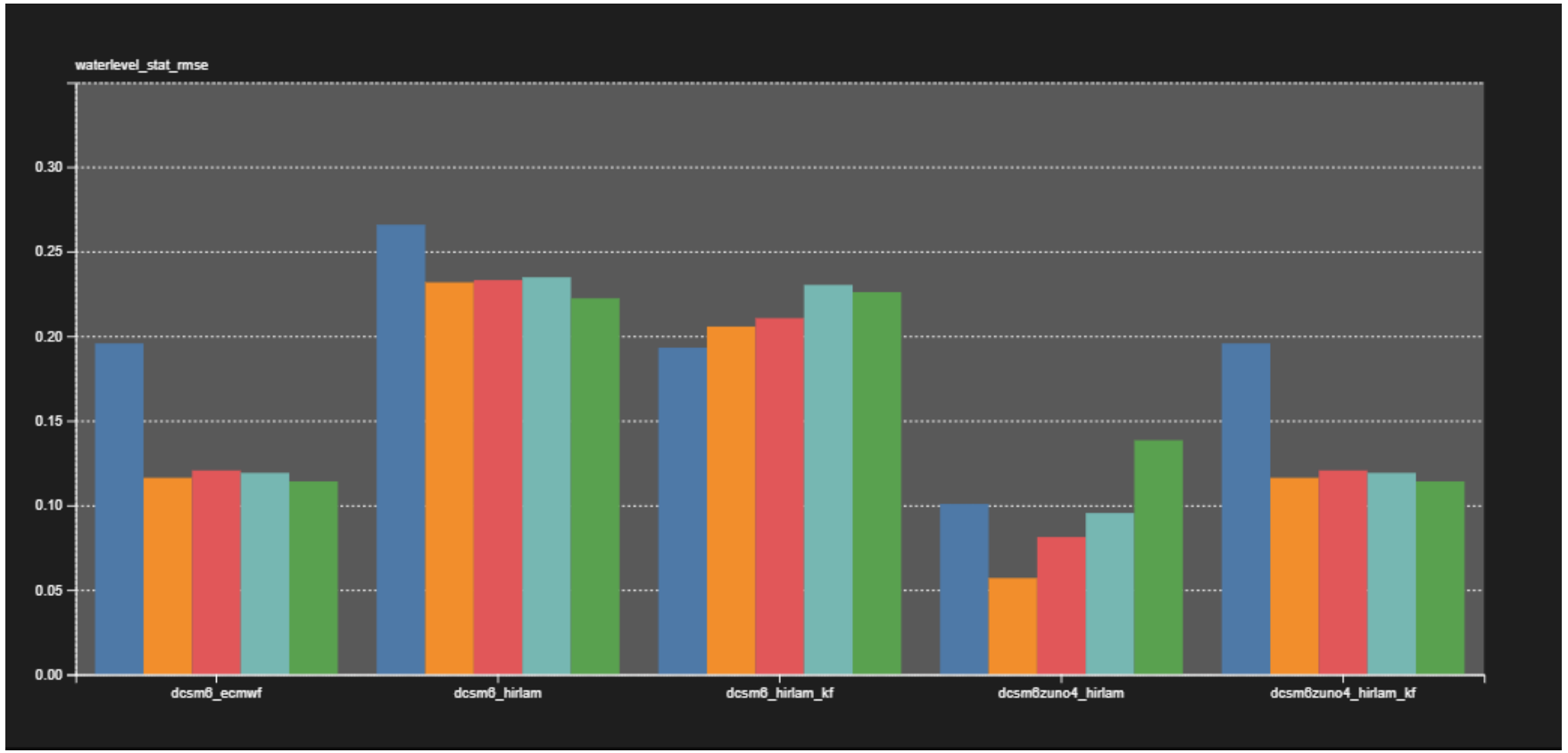
Statistics

Parameter RMSE shown in graphic for different models/ lead-time for 1 location

Axis and parameters flexible to choose by user



→RMSE on water level

→ Models / leadtime

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Availability model runs

Model runs delayed?

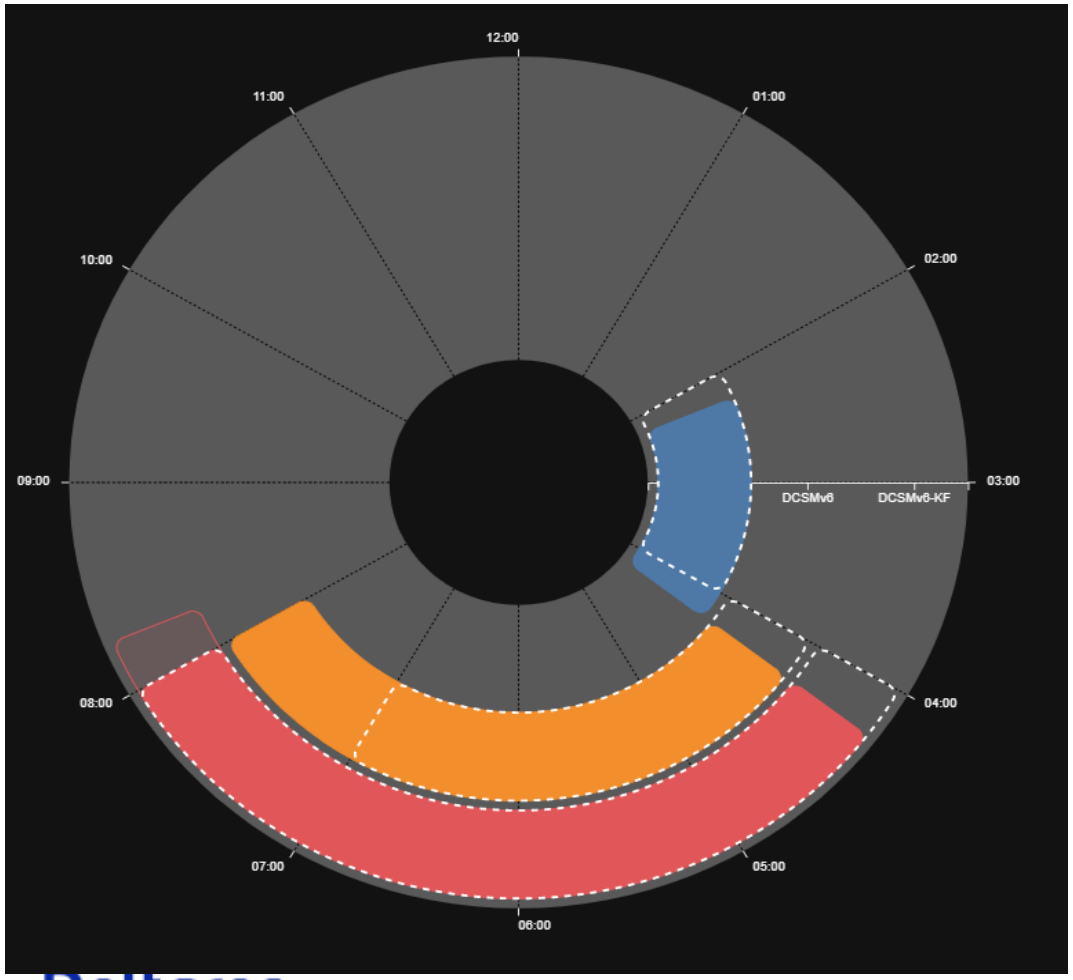
Can I wait for the next run before I will issue the warning?

→Date

→Time

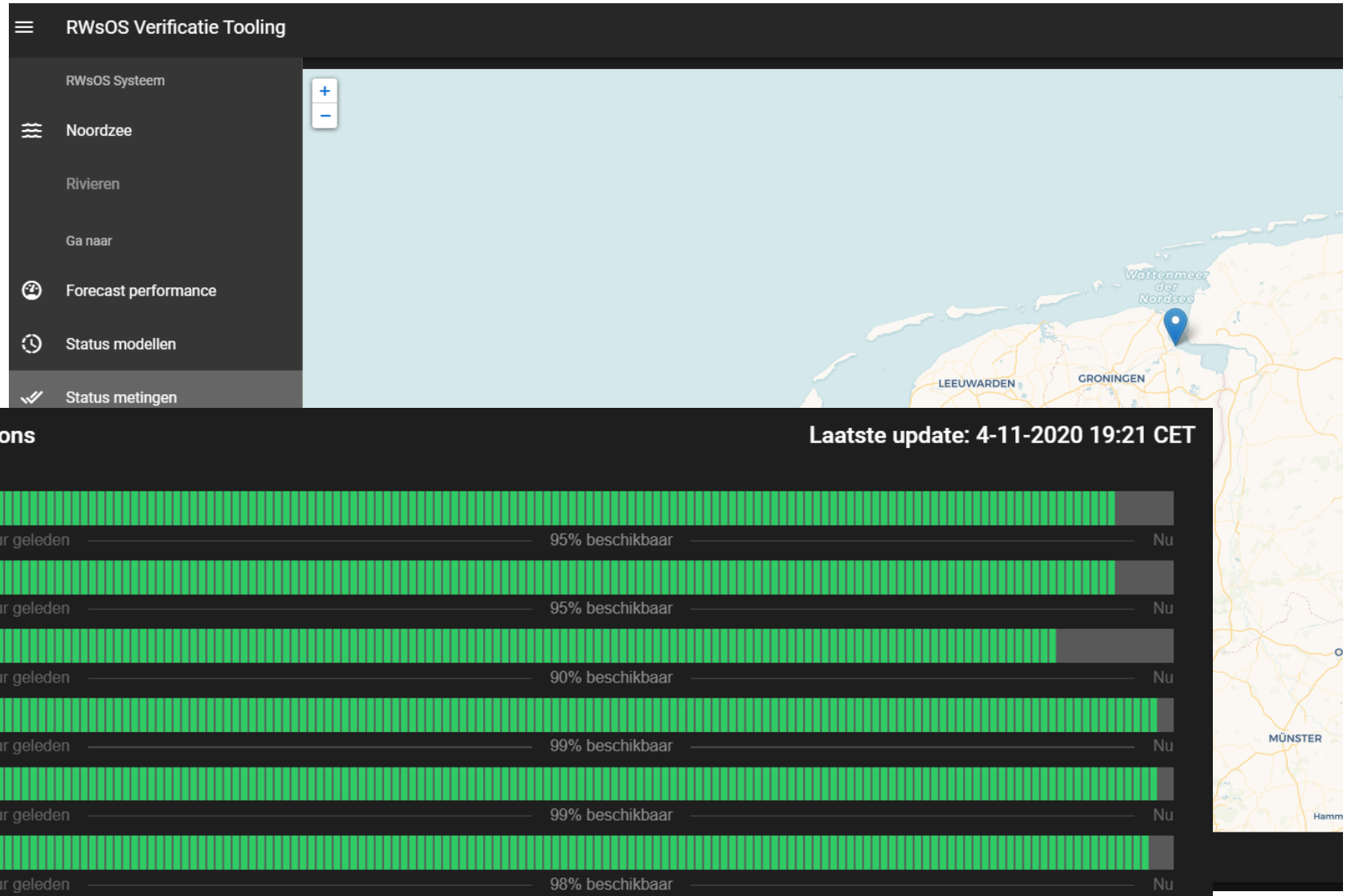
Information on model run

→Model runs incl. meteo forcing



Availability of observations for data assimilation

Observation are checked that are essential for data assimilation in the North Sea model



Want to join?

- What are you doing with verifications and why?
- How could we help each other with this development?
- Any ideas about what we are missing?

We love to hear from you!

contact

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Please contact us if you want to have a live demo!

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