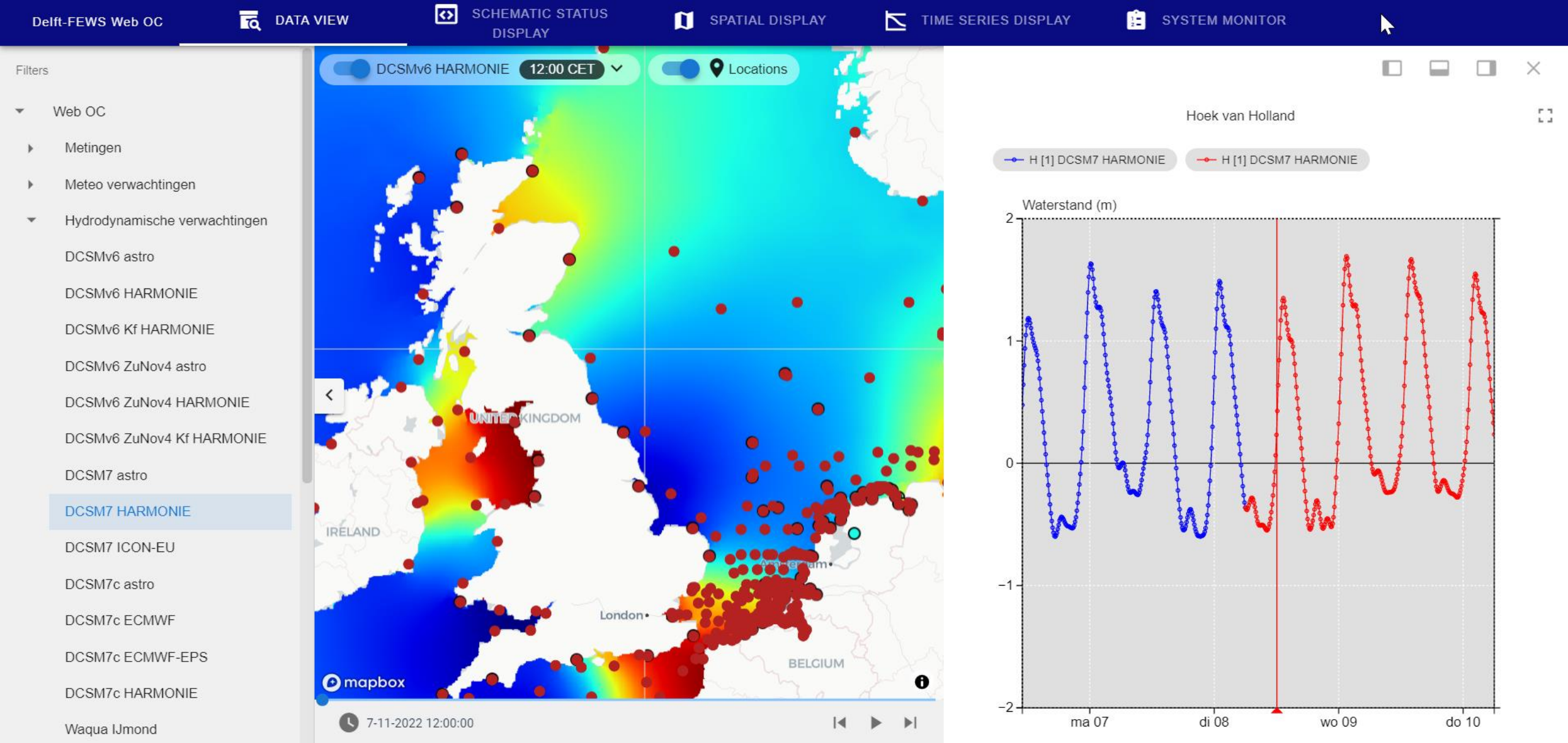


# Deltares





INT Delft-FEWS User Days 2022  
- Web OC Development Team -

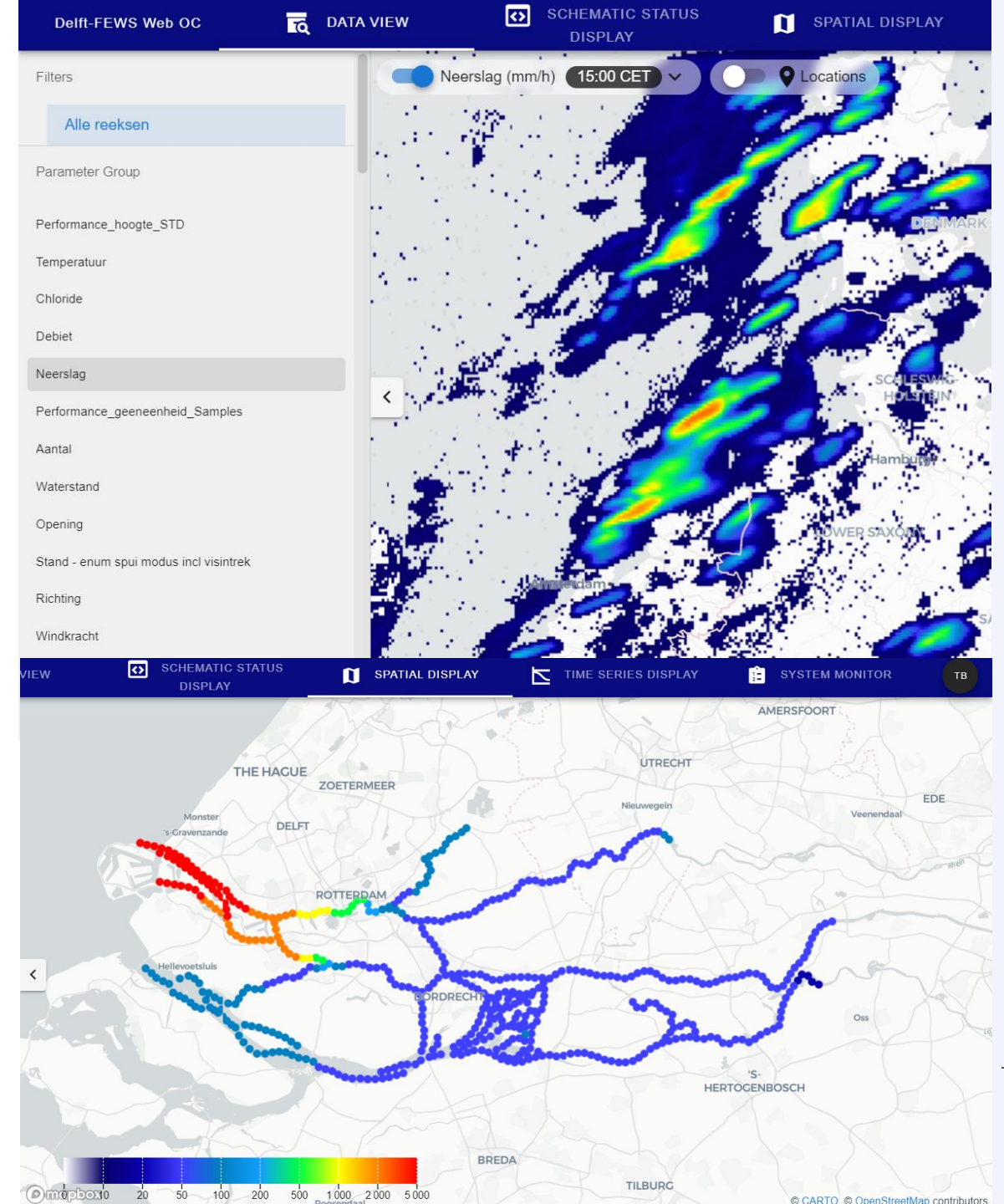


# Today's break-out session

## Presentation

- Status Web OC development
- Short recap architecture
- Demo
- Way forward

Run your own Web OC!





# Previous presentations on Delft-FEWS Web OC

- Reasons for developing the Web OC
- Key features (interactive sessions online User Days INT/NL)
- Technical Design: main building blocks
- Third-party collaboration
- Demo of Web OC components: SSD, Spatial, Topology/DisplayGroups
- Timeline: beta testing & UX/UI interviews Q3/Q4 2022



# Web OC News

- Development Team: Martijn Kwant will take over from Daniel Twigt. Focus on UX/UI Design.
- 2022 Q3/Q4: Continuation of Web OC (functional) Component developments:
  - Schematic Status Display
  - System Monitor
  - Spatial Display
  - Topology
  - Data Viewer
- FewsWebServices improvements
- Focus on code quality, test and deployment proces
- Security / Authentication / Authorization






# Parallel back-end & front-end development

## Back-end (FewsWebServices)

- Version management: Subversion
- Issue tracking in JIRA
- Development feature and unit tests
- Code Review
- Deploy new FewsWebServices on test server (both open and authorized version).

## Front-end (Libraries & Web OC components)

- Version management: Deltares Github
- Issue tracking in JIRA
- New branch in Git for each issue (manual)
- Review and push to main branch (manual)
-  Run tests for Typescript libraries (automated Teamcity)
-  Run test for Web OC components (automated Teamcity)
-  Test successful → deploy on Azure test environment (artifact on build server), <http://www.delftfewsweboc.deltares.nl>

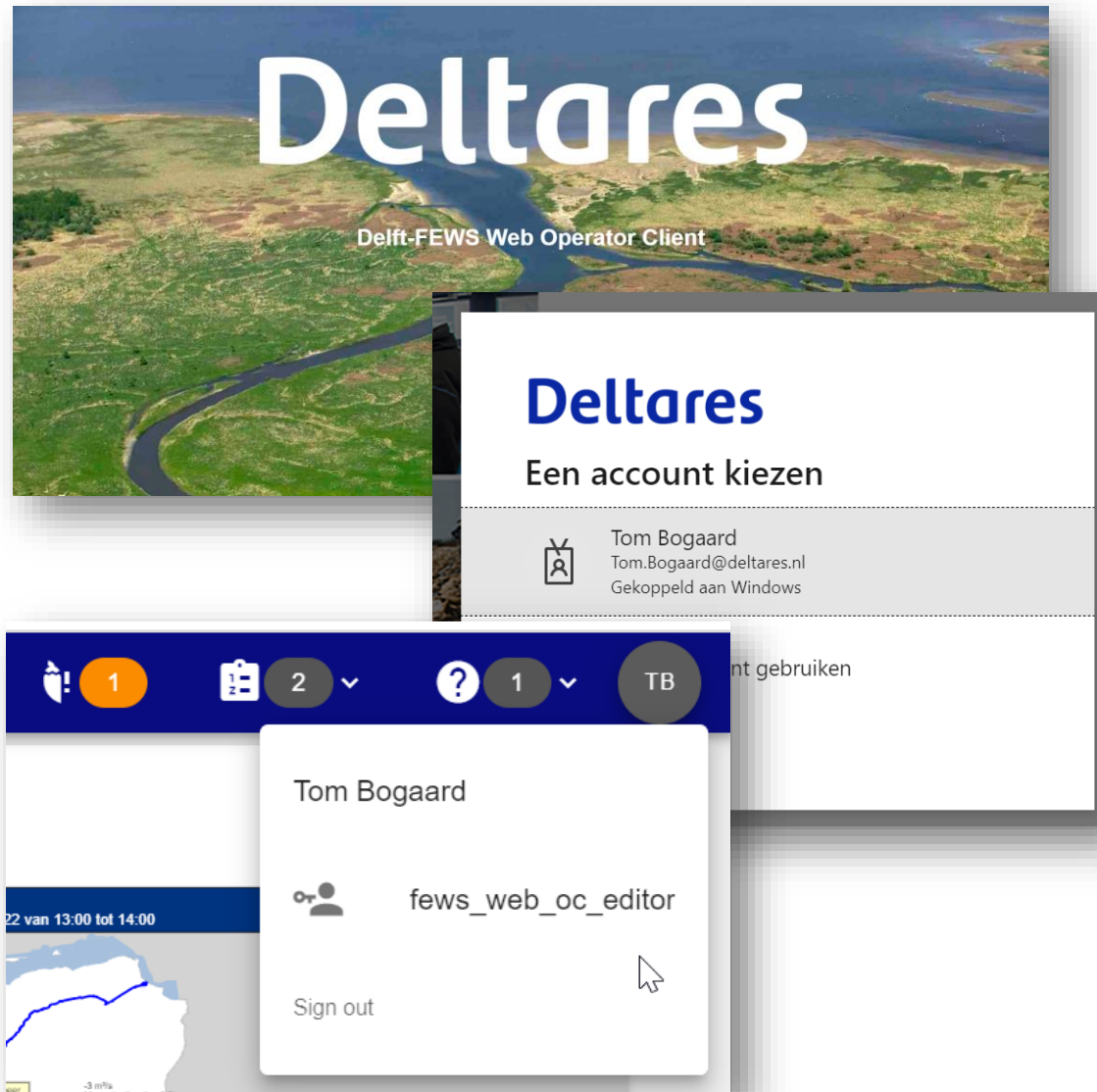


# Authentication / Authorization

fewsWebServices

Typescript libraries  
(eg: timeseries request,  
wms request)

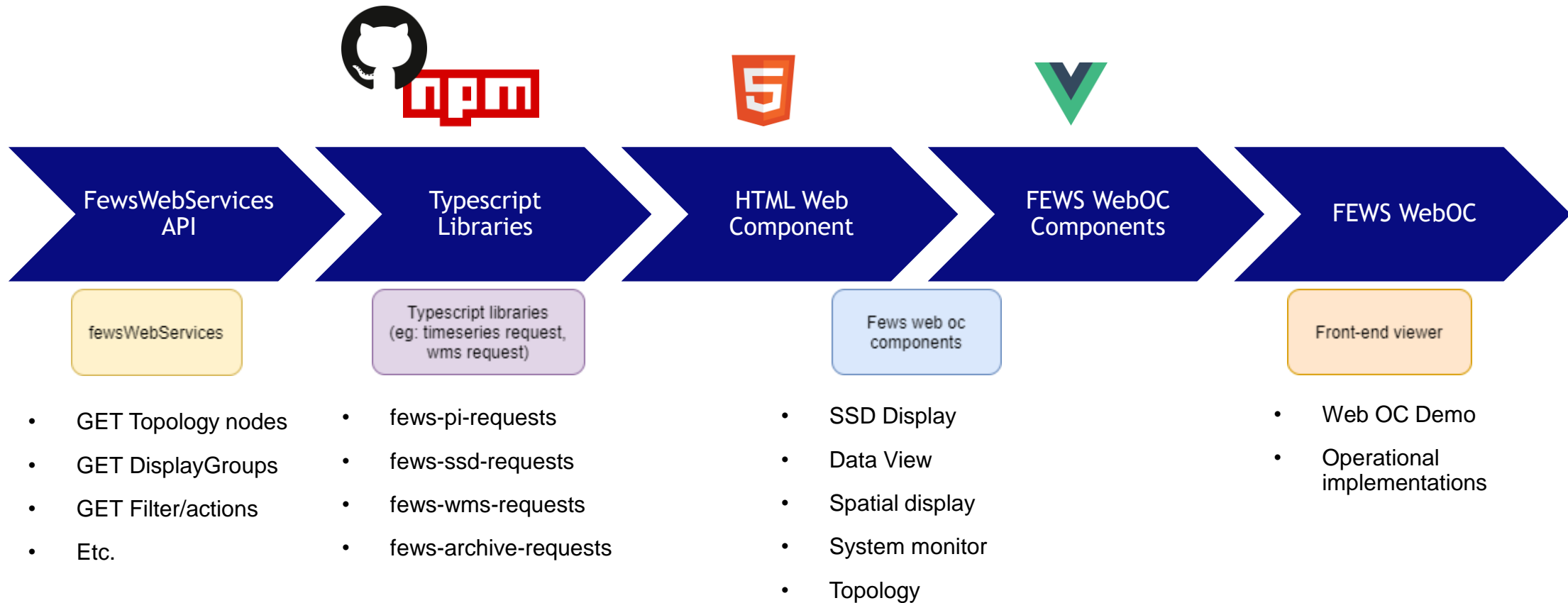
Fews web oc  
components



- Using OpenID Connect / OAuth2, for both Web OC front-end and FewsWebServices
- FEWS permissions respected by FewsWebServices
- Example using Deltares authentication service, but can be connected to authentication services of FEWS users

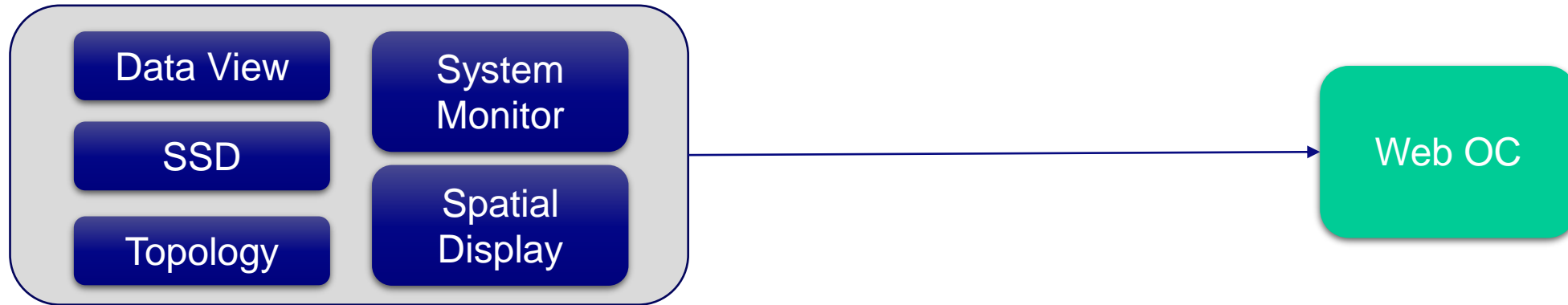


# Overview architecture





# Web OC demo application



## Lessons learned:

- back-end improvements, streamline development and test proces (technical & organizational), software architecture, 3rd party collaboration, authentication/authorization etc.

## Starting point for further discussion on:

- Future front-end/back-end developments, UI/UX, configurability, specific/generic components, full operational implementations, etc.



# Topology component

- Lists Desktop OC topology nodes
- If configured, shows displayGroups for selected nodeId.
  - Labels/titels/line colours/units etc. consistent with FEWS configuration.





## ▼ Topology

- ▶ Overdracht
- ▶ Duiding
- ▶ Berichtgeving
- ▶ Validatie Kalman filter



There are no plots configured for this node





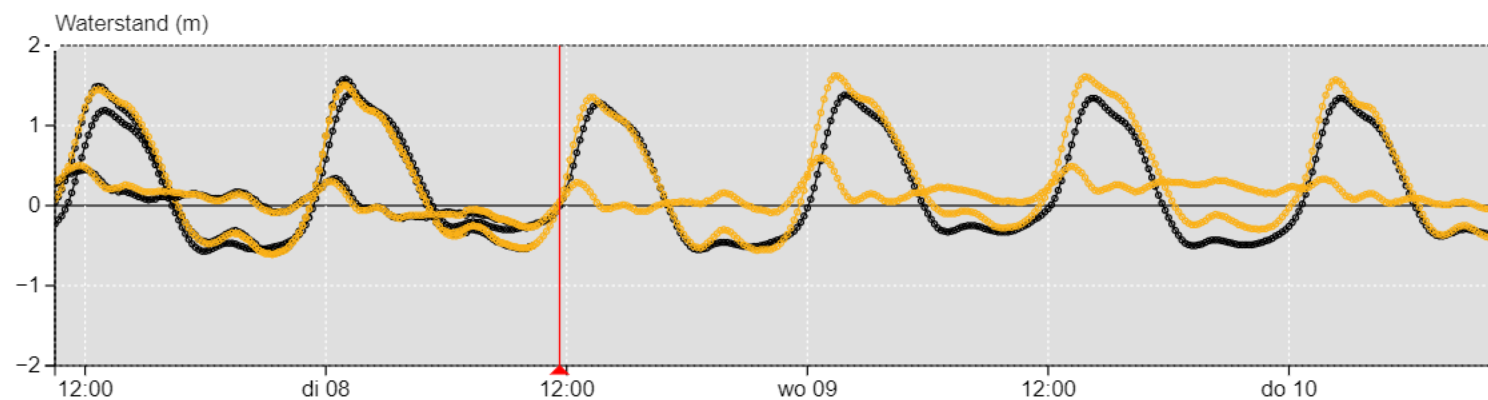


- ▼ Duiding
- ▶ Meteo
- ▼ Waterstanden
- ▶ Waterstanden Engelse locaties
- ▼ Waterstanden kustsectoren
- Oostende
- Westhinder
- Zeebrugge
- Cadzand meetpaal
- Westkapelle
- ←
- Flissingen
- Roompot buiten
- Brouwershavensegat 8
- Haringvliet 10
- Lichteiland Goeree 1
- Europlatform
- Hoek van Holland
- Scheveningen
- IJmuiden

Eindverwachting - Hoek van Holland

— H Meting — Astro (HATYAN) [2] Meting — H Eindverwachting RWS — H [1] Eindverwachting RWS — Opzet Meting

— Opzet Eindverwachting RWS — Opzet [1] Eindverwachting RWS



Eindverwachting - Hoek van Holland

— Res Eindverwachting RWS

Residue (m)

Overview

Overzicht - Hoek van Ho...

Eindverwachting - Hoek ...

Ensembles - Hoek van ...

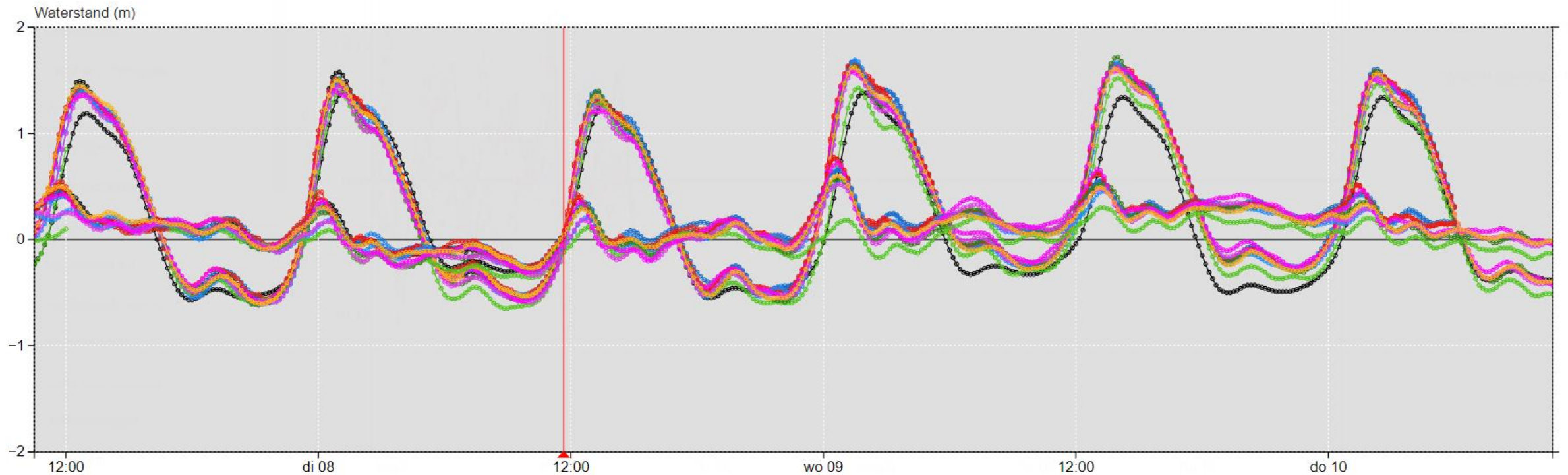
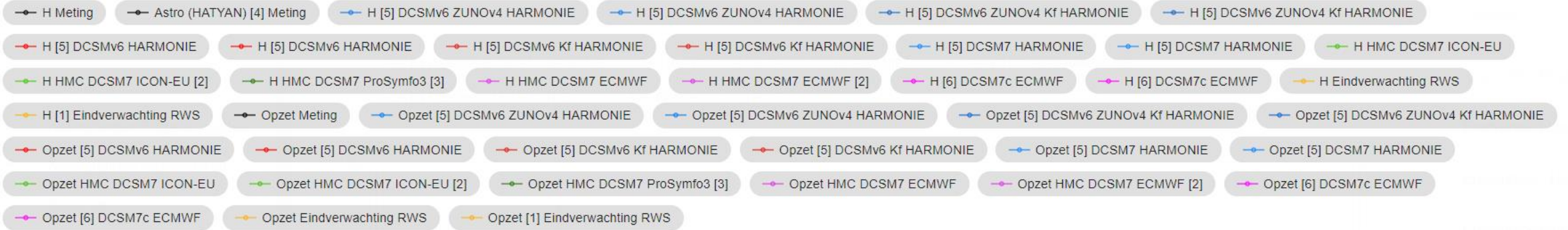
Ensembles (statistiek) - ...

Poor man's ensemble (B...

What-If scenario - Hoek ...



Overzicht - Hoek van Holland





# Spatial Display component

- Equivalent of Desktop OC Spatial Display





## Layers

- ▶ Deining
- ▶ Wind
- ▶ Temperatuur
- ▶ Waterstand
- ▶ Opzet
- ▶ Stroomsnelheid
- ▶ SWAN
- ▶ ECWAM
- ▶ WMCN-Kust bijstelling
- ▶ Radar
- ▶ Meteo bronnen
- ▶ Archief
- ▶ Meteo
- ▶ Meteo Harmonie - pseudowind
- ▶ Biascorrectie veld
- ▶ SWAN DCSM-FM forcing

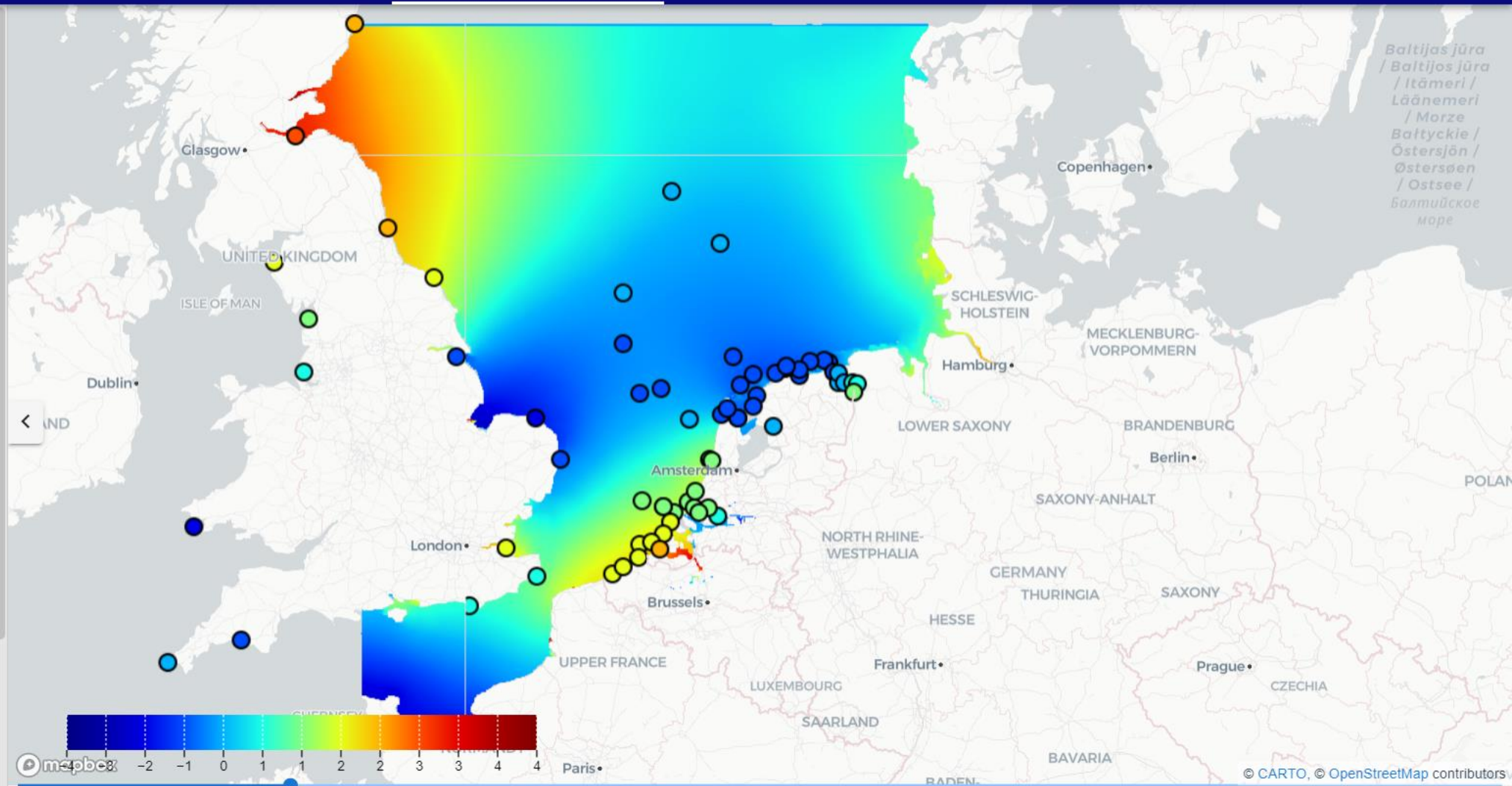






## Layers

- Deining
- Wind
- Temperatuur
- Waterstand
  - DCSMv6 HARMONIE
  - DCSMv6 ZUNOV4 Kf HARMONIE
  - DCSM7 HARMONIE
  - DCSM7c ECMWF
  - DCSM7 HARMONIE debug
  - DCSMv5 biasKF, Pressure correcti
  - DCSMv5 biasKF, bias correction fi
- Opzet
- Stroomsnelheid
- SWAN
- ECWAM
- WMCN-Kust bijstelling





# Schematic Status Display

- Schematic display groups and panels will be displayed. User permissions will be respected by Web OC.
- Click actions not yet supported (almost there).





## Overzichtschermen

- NL
- Limburg
- Brabantse kanalen
- IJsselmeergebied
- Noordzeekanaal en Amsterdam-Rij
- Kanaal Gent-Terneuzen
- Meppelerdiep
- Twentekanal
- IJsselmeergebied ABT Tool
- Nederrijn-Lek
- Noordelijk Deltabekken
- Limburg
- Hoofdvaarweg Lemmer Delfzijl
- Grevelingenmeer
- Veerse Meer

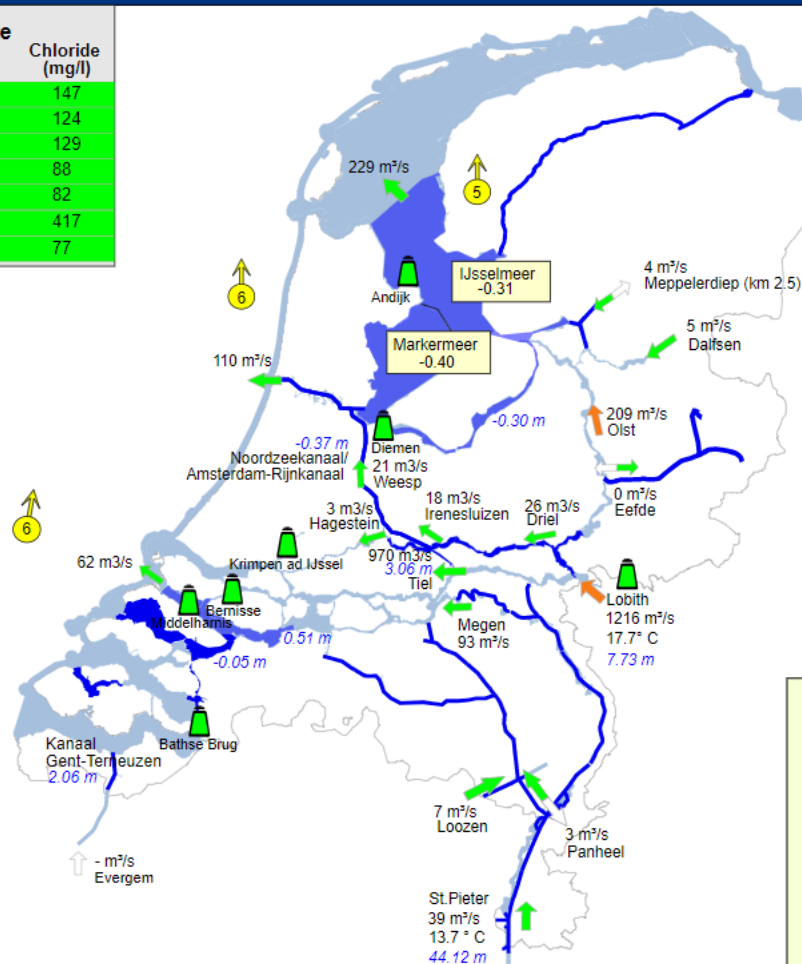
## Overzicht Hoofdwatersysteem Nederland

Uurgemiddelde (afvoer: lopend 24uur), periode 08-11-2022 van 11:00 tot 12:00



## Chloridegehalte

	Chloride (mg/l)
Andijk	147
Diemen	124
Krimpen a/d IJssel	129
Bernisse	88
Middelhamis	82
Bathse Brug	417
Lobith	77



## Legenda

Aan- en afvoer	Waterstand in m NAP
Aan- of afvoer	Streefpeil
Lage aan- of afvoer	Onder streefpeil
Hoge aan- of afvoer	Boven streefpeil
Geen afvoer / data	Geen data
Chloride	Wind
Chloride	Windkracht (Beaufort)
Chloride boven grenswaarde	Windrichting
Geen data	

9-10-2022 12:00:00





## Overzichtschermen

- NL
- Limburg
- Brabantse kanalen
- IJsselmeergebied

## IJsselmeergebied (10 min)

## IJsselmeergebied Chloride (10 min)

## IJsselmeer (10 min)

## Markermeer (10 min)

## Veluwerandmeren (10 min)

## Reevediep (10 min)

## Stevinsluizen (10 min)

## Lorentzsluizen (10 min)

## Houtribsluizen (10 min)

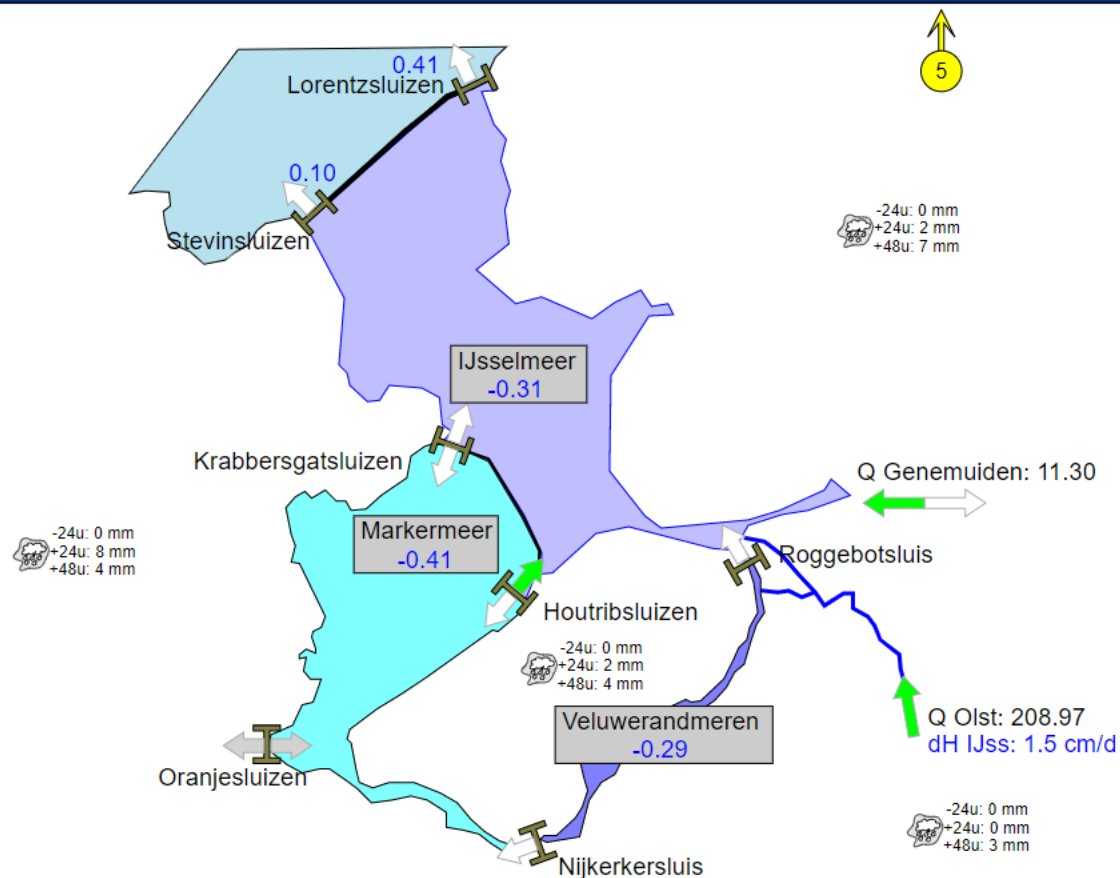
## Krabbersgatsluizen (10 min)

## IJsselmeergebied (10 min)

Periode 08-11-2022 van 11:40 tot 12:00

IWP  
IWA

Q Lobith	1206.58 m <sup>3</sup> /s
CI Lobith	78 mg/l



## Legenda

- Aan- en afvoer
- normale aan- of afvoer
  - geen aan- of afvoer
  - externe aan- of afvoer
  - onbekend

Actuele waarden

Debiet in m<sup>3</sup>/s

- Geen data

Waterstand in m NAP

Meerpeil

Actuele waarden

Wind

Windkracht  
(Beaufort)

Windrichting



# Data View component

Combination of Desktop OC Filters and spatial data layers.

- Lists all Filters available to the PI Service (PI Service configuration or defaultFilterId)
- Lists all ParameterGroups for selected Filter
- Shows all locations for Filter/ParameterGroup combination on the map (no location list)
- Shows time series graph for selected Filter/ParameterGroup/Location combination
  - Labels/titels/line colours/units etc. consistent with FEWS configuration.
- Spatial layers (filtered on selected parameterGroup) available in drop down menu

Many points for discussion: other options to browse locations, how to group parameters, show threshold crossings, link spatial data layers and filters, etc. etc.





Filters

Web OC

Metingen

Meteo verwachtingen

Hydrodynamische verwachtingen

Golf verwachtingen

SWAN input

SWAN HARMONIE

HMC verwachtingen

KNMI verwachtingen

Buitenlandse verwachtingen

Parameter Group

2D Golf variantiedichtheid

Golfhoogte

Golfperiode

Golfrichting

Deining

Golfrichtingsspreiding

Golfenergie

☐ Significante golfhoogte **11:00 CET** ☒ Locations

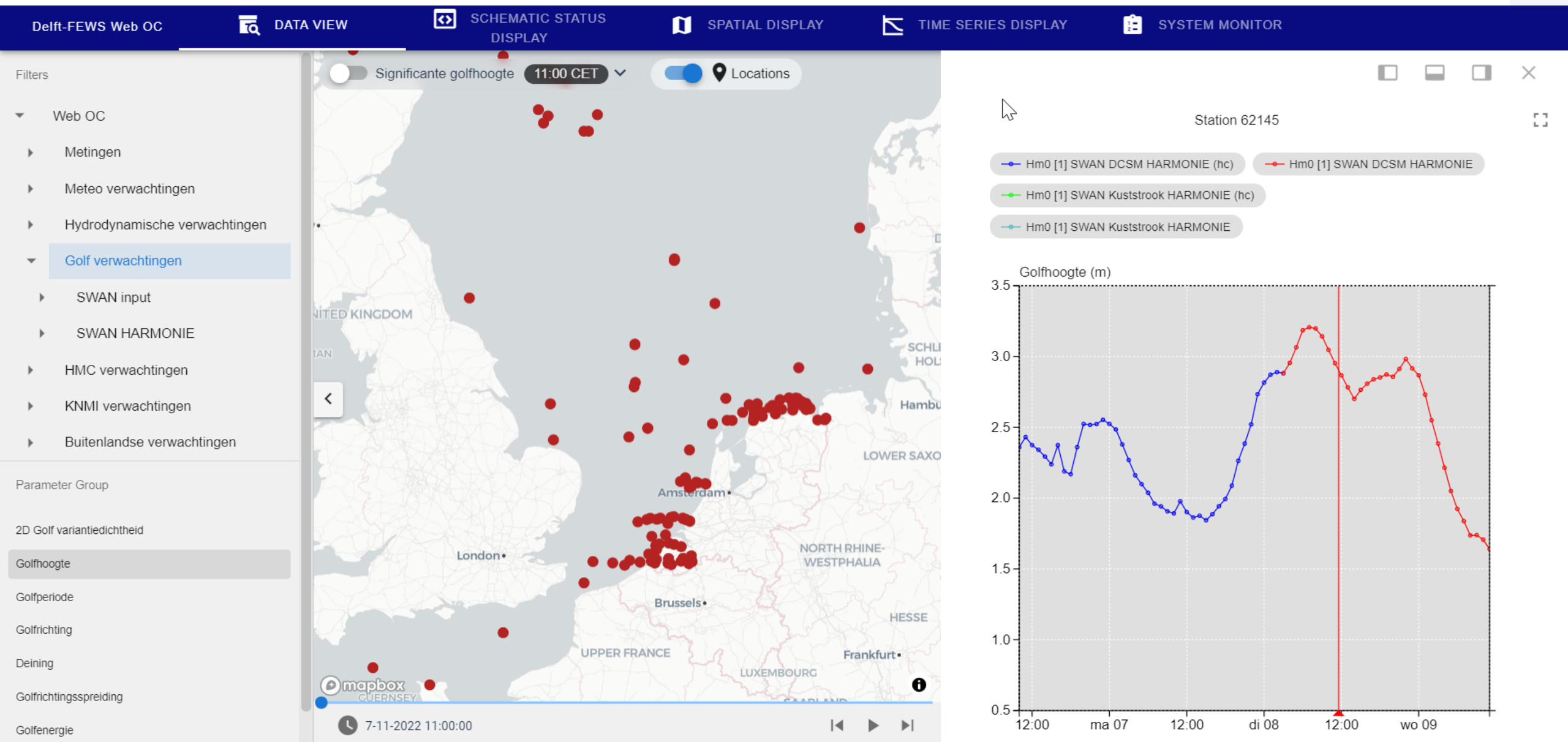
mapbox

7-11-2022 11:00:00

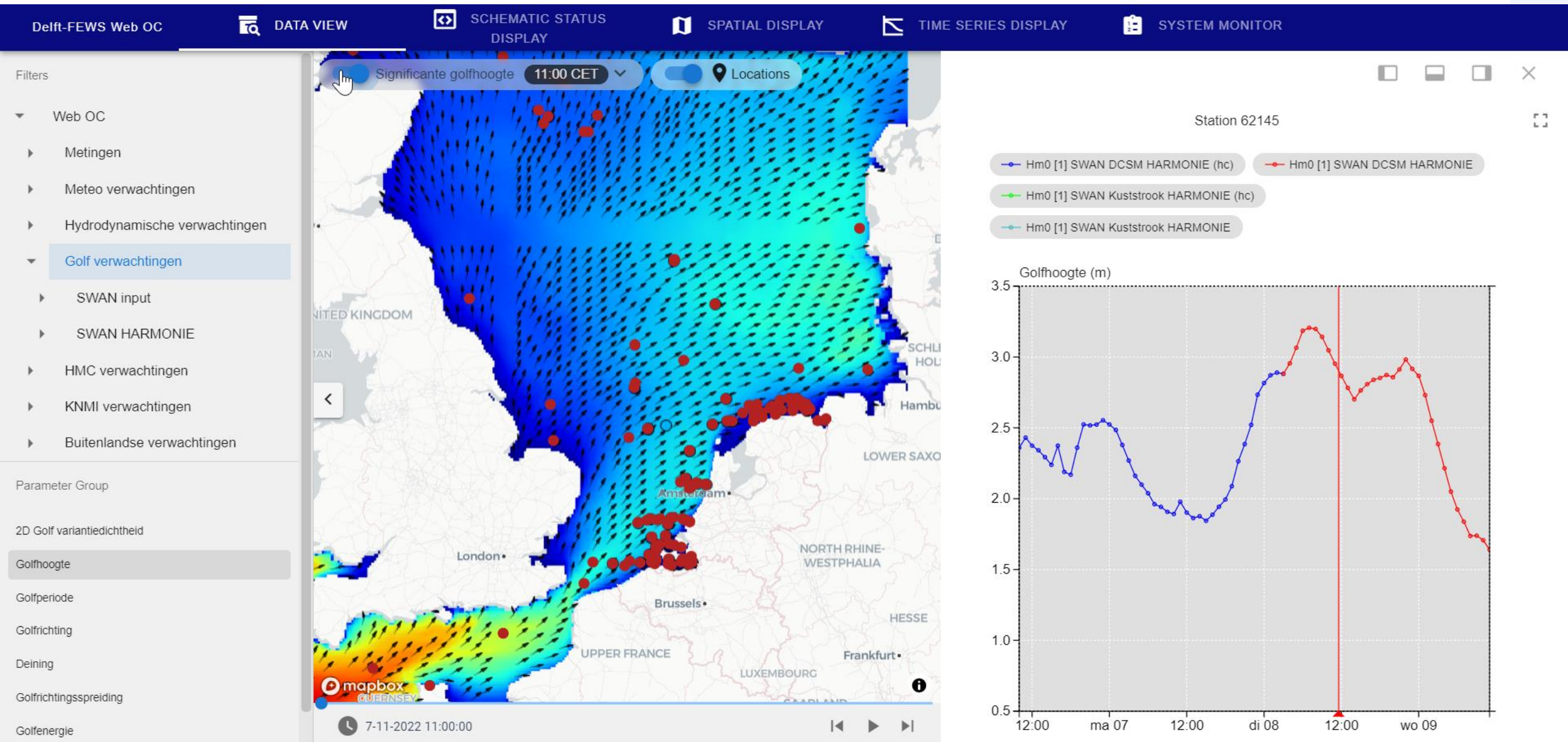


© CARTO, © OpenStreetMap contributors

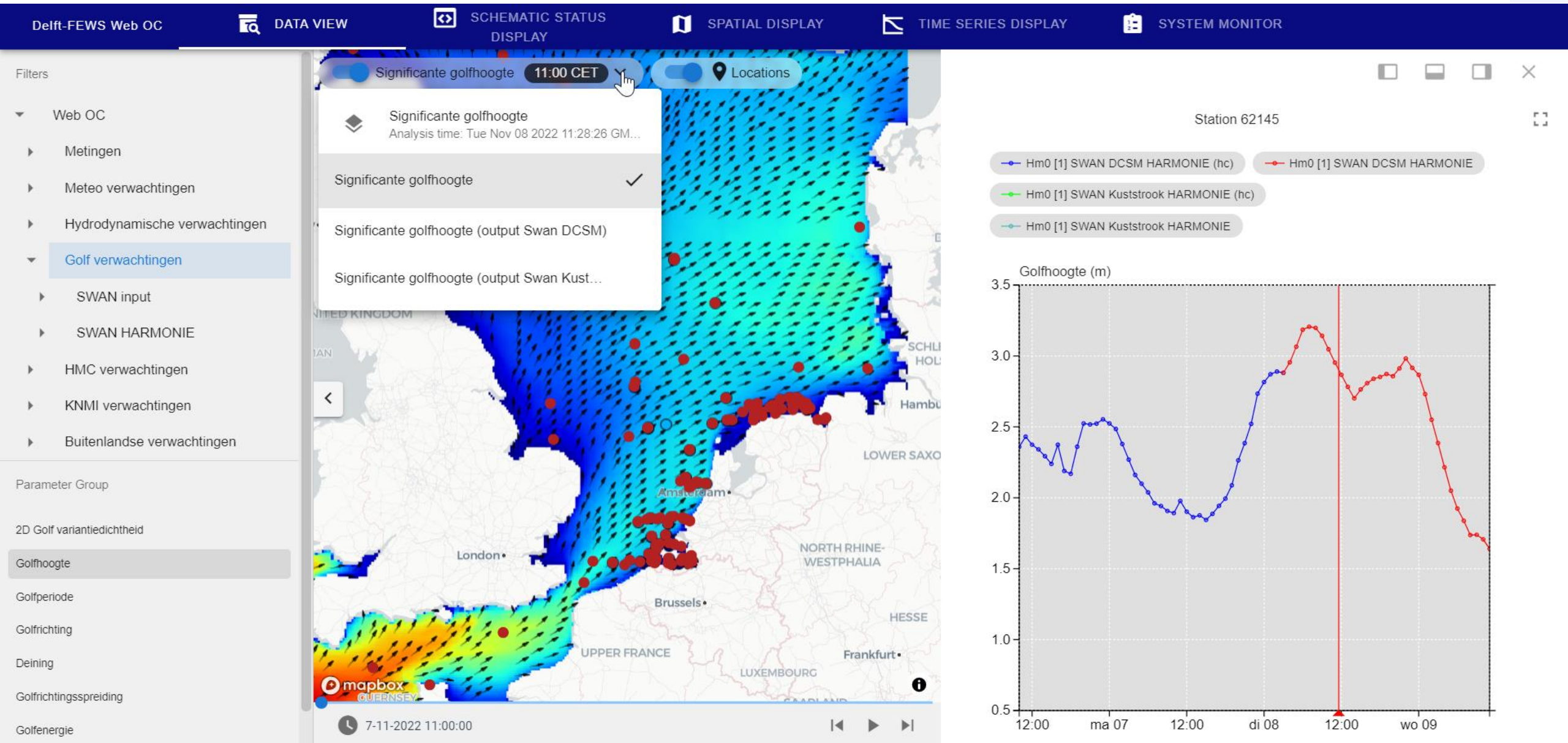














# System Monitor

Equivalent of Desktop OC System Monitor. Currently available:

- Running tasks
- Import Status



RUNNING TASKS

IMPORT STATUS

Task run id	Description	Workflow id	Dispatch Time	FSS id	Status	FDO
nlrimc01:000514153	Import externe data	Import_Externe_Data	2022-11-08T13:18:01Z	29604	running	
nlrimc00:011157266	Plateau 3 GM (RTC2-GM)	Plateau3_GM	2022-11-08T13:10:01Z	29980	running	
nlrimc00:011157353	Import externe data	Import_Externe_Data	2022-11-08T13:18:00Z	29940	running	





## RUNNING TASKS

## IMPORT STATUS

Source	Directory	Last import time	Last file imported
1_BOS-Brabant_verwachting	https://matroos.rws.nl	2022-11-08T09:00:08Z	2022-11-08 04:30:00:000
1_BOS_Brabant_verwachting_ens	https://matroos.rws.nl	2022-11-08T09:00:09Z	2022-11-08 04:30:00:000
1_DWD-COSMO-LEPS_verwachting	\\dfs-trusted.directory.intra\dfs\nlrinc00\tofss\Import\DWD_COSMO_LEPS	2022-11-08T09:29:35Z	cosmo_leps2hm_2022110800_9
1_FEWS-Vecht_metingen	\\dfs-trusted.directory.intra\dfs\nlrinc00\tofss\Import\FEWS_VECHT	2022-11-08T11:28:58Z	202211081115_export_fews_vecht_obs.nc
1_FEWS-Vecht_verwachtingen	\\dfs-trusted.directory.intra\dfs\nlrinc00\tofss\Import\FEWS_VECHT	2022-11-08T11:28:59Z	202211081115_export_fews_vecht_forecast.nc
1_HIC_metingen_verwachtingen	\\dfs-trusted.directory.intra\dfs\nlrinc00\tofss\Import\HIC	2022-10-05T18:59:55Z	3015183.wml2
1_IJsselmeergebied_Reevesluis_metingen	D:\fews\fs\101\temp\session\%IMPORT_FOLDER%\IJGREEVESLUIS	2020-07-16T13:09:27Z	none
1_IJsselmeergebied_metingen	\\dfs-trusted.directory.intra\dfs\nlrinc00\tofss\Import\IJG_KLEPSTANDEN	2022-11-08T11:28:51Z	ftp_spuu_11-08-2022_12-11-01.dat
1_KNMI-ECMWF-DET_verwachting	\\dfs-trusted.directory.intra\dfs\nlrinc00\tofss\Import\ECMWF_HRES	2022-11-08T07:08:35Z	WMCN_ECMWF_HRES_Set_1_2022110800_240_GB
1_KNMI-HARMONIE-EPS_EPS_verwachting	\\dfs-trusted.directory.intra\dfs\nlrinc00\tofss\Import\KNMI_HARMONIE_EPS	2022-11-08T09:38:58Z	HA40_N25_010_202211080600_04800_GB
1_KNMI-HARMONIE_EPS_verwachting	\\dfs-trusted.directory.intra\dfs\nlrinc00\tofss\Import\KNMI_HARMONIE_EPS	2022-06-23T09:38:58Z	HA40_N25_010_202206230600_04800_GB



# Next steps

- Sort out License and EULA
- Public Github repository
- Documentation on Github pages
- Run ZAP (OWASP scan) on Web OC components and demo Web OC.
- Front-end check on FewWebServices version
- Improve UX/UI design of existing components (break-out Martijn Kwant)
- Many ideas for functional developments: **what do you think is most important?**



# How to use the Web OC in your organization?

- Play around with a local Web OC for your FEWS system
  - Most FewsWebServices developments for the Web OC are available from FEWS 2022.02.
  - Ask FEWS PM / Deltares PL for a recent Web OC build (eventually public Git repos).
- Identify required developments / modifications
- Decide on development strategy: use Typescript libraries / Web OC components / Full stack.
- Discuss developments and strategy with Deltares (architecture / timeline / budgets etc.)
- Deltares to coordinate developments and to identify overlap with other Web OC projects
- Developments organized in Sprint sessions (1 to 2 weeks): back-end, front-end, UX/UI.



# Run Web OC locally

Provided on USB stick:

- Delft-FEWS 2022.02 development build (distributed for today's testing purposes only!)
- Recent 2022.02 patch
- Web OC

1. Unzip the Web OC code to: %REGION\_HOME%/Modules/weboc (create folder)
2. Run your SA with a 2022.02 FEWS build and recent patch.
3. Start FEWS embedded tomcat (F12 → O → Start embedded tomcat services) to run FewsWebServices and Web OC
  1. Log message will show you on which port services are running. Default FewsWebServices: <http://localhost:8080/FewsWebServices>, Web OC: <http://localhost:8080/>
4. Open a web browser and navigate to the Web OC



# Web OC Configuration

The Web OC application configuration consists (at the moment) of one single file:  
`%REGION_HOME%/Modules/weboc/app-config.json`

- **VUE\_APP\_FEWS\_WEBSERVICES\_URL** refers to the FewsWebServices instance used by the Web OC. Please modify in case you would like to test the Web OC on another FEWS instance. Note that FEWS 2022.02 webservices software is required.
- **VUE\_APP\_MAPBOX\_TOKEN** refers to a Mapbox token needed to display the Web OC map. The token distributed today can be used for local demonstration purposes only. For all other use: register at Mapbox.com (free of charge)



# Some remarks

- The “**system time**” of the Web OC is linked to the current time of your device. As such, Web OC plots will remain empty if you don’t have recent data in your localDataStore.
- In order to use the Web OC **Spatial Display**, your gridPlotIds (SpatialDisplay.xml) should be unique. In case of any duplications, an error message will be shown on the FewsWebServices WMS test page (<http://localhost:8080/FewsWebServices/test/fewswms/fews-wms-non-tiled.html>).
- Please report any **ideas for improvement** / bugs.



# Questions?

🏠 [www.deltares.nl](http://www.deltares.nl)

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