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Enabling Particle Tracking in Operational Forecasting

FEWS International User Days 2020

Kun Yan, Martin Verlaan, Bas Stengs, Tom Bogaard, Onno van den Akker, Bart Adriaanse

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Motivation

- Applications
  - Oil spill
  - Search & rescue
  - Ocean cleaning
  - Water quality/Ecological
- Particle Tracking has got potential
- Question:
  - Can we make it an Operatioanl Forecasting Tool?

Flight MH370 debris tracking Oct 2014

The container ship MSC Zoe lost more than 340 containers near the Wadden Islands January 2019.

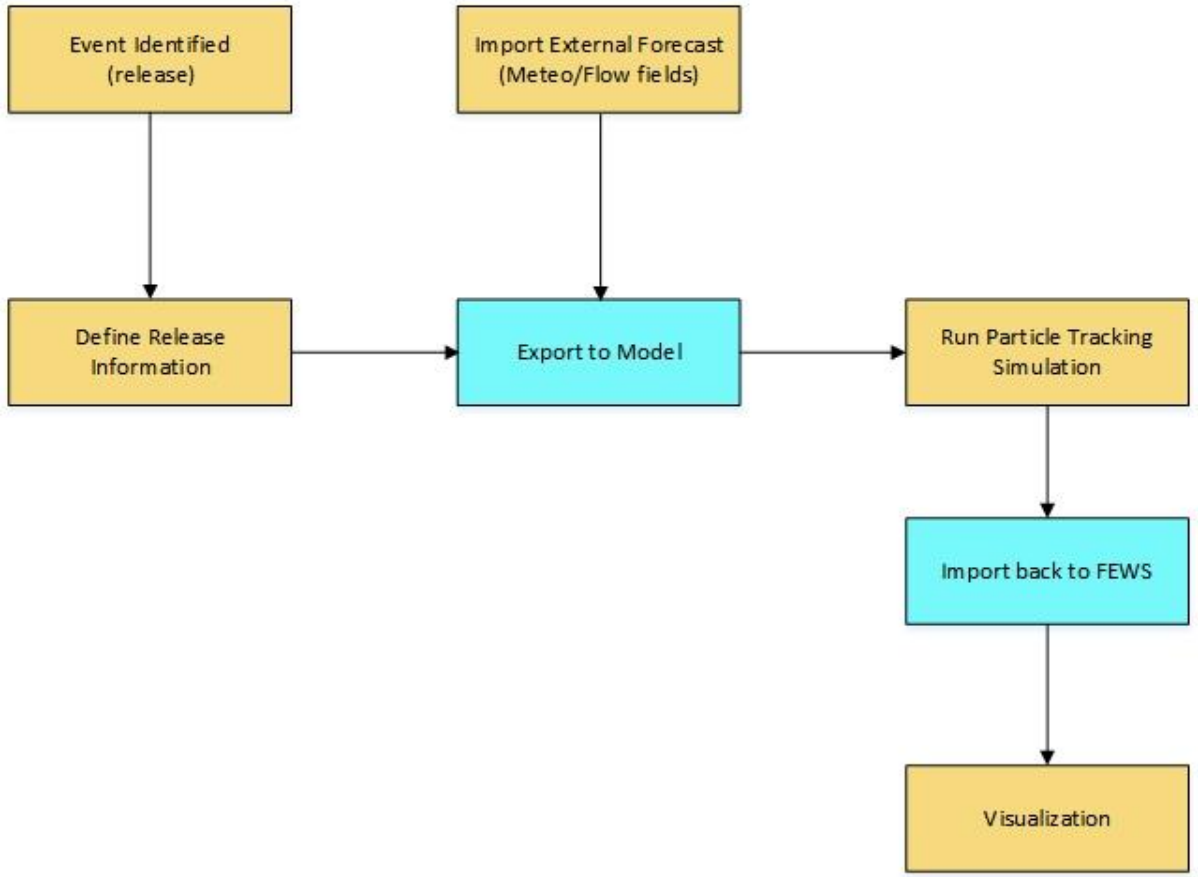
Concept

Particle Tracking in FEWS

- Objective:

A demo particle tracking application based on a partical tracking model and integrated in Delft-FEWS allowing interaction with users.

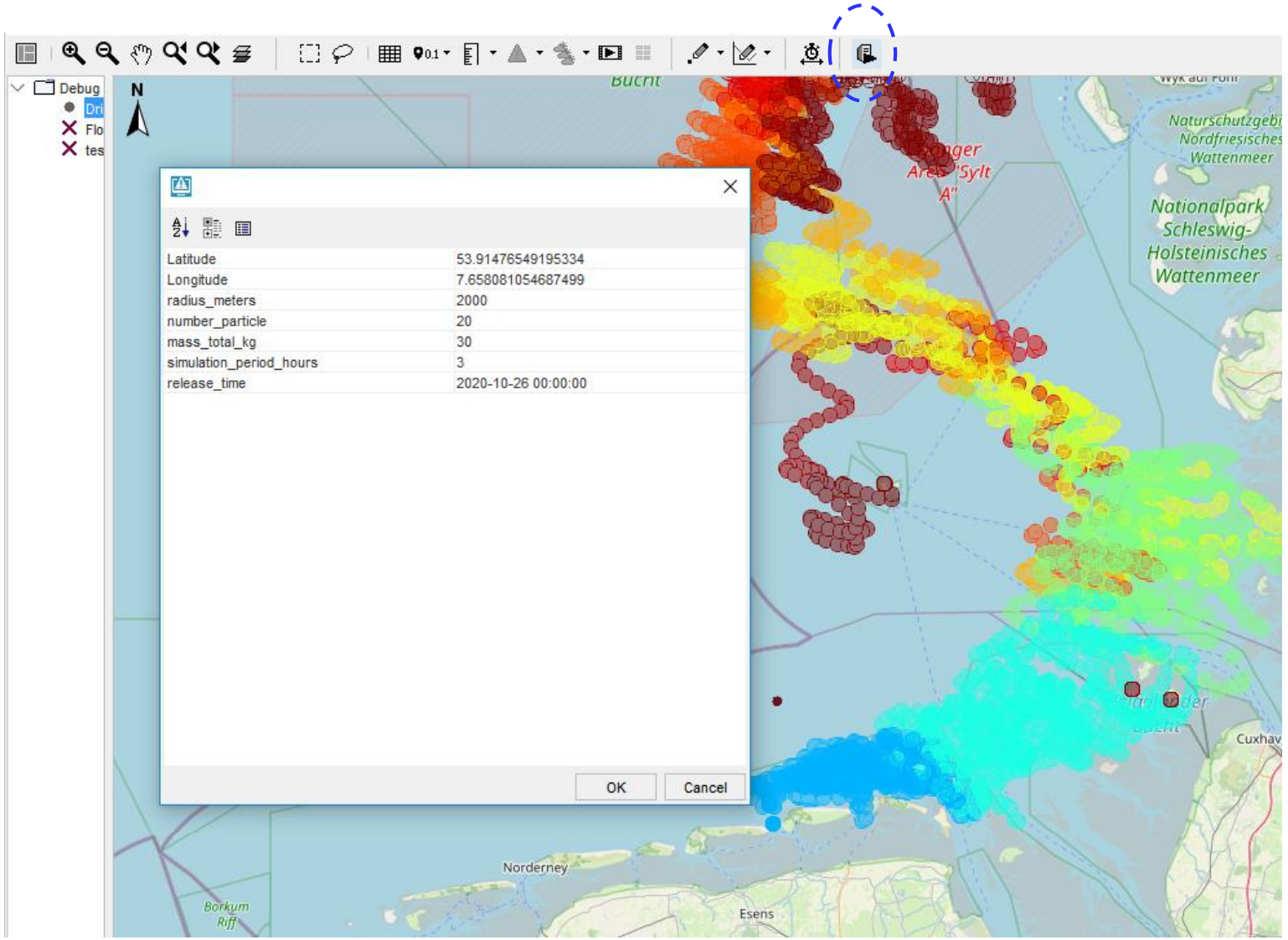
- Needs relese information
- User Interaction is the Key



Enabling User interaction

- Specifying Release information in **Spatial Display**
  - Location of release
  - Number of particles
  - Mass total
  - Radius
  - Time of release
  - and more…
- Run forecast workflow
  - Pass numbers to a template file (.csv)
  - Export to particle tracking model
    - Adapters for format conversion

Run workflow from Spatial Display



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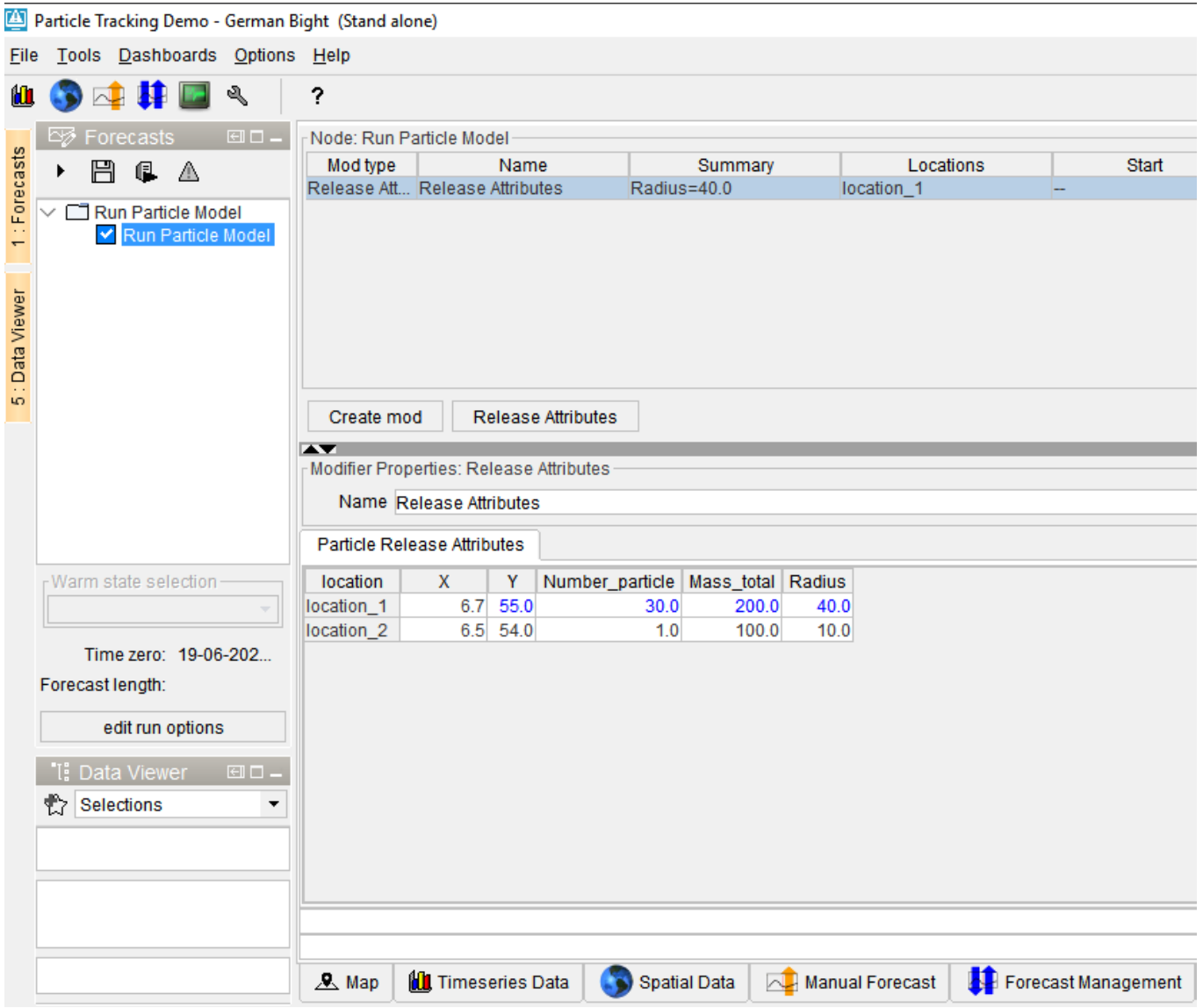
Enabling User Interaction – Method Two

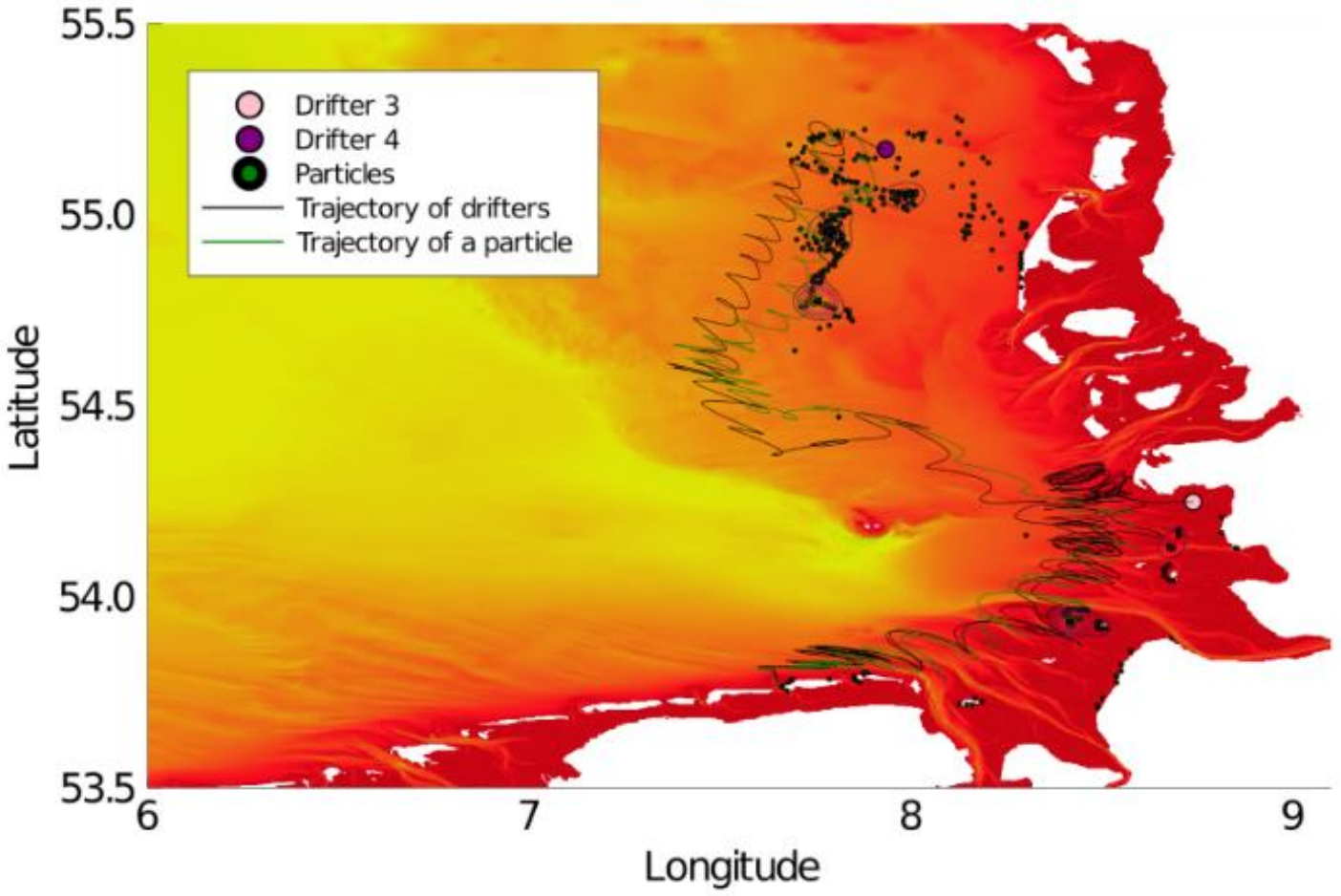
- Define Release Attributes as Modifier
  - Define release attributes
  - Apply the modifier
  - Export release (location) attributes
  - Run simulation

- Define multiple releases



Test Case

- Location: German Bight (North Sea)
- Based on Surface currents of a 3D hydrodynamic model
- Allow users to define release information
- Visulization simulated particle tracks with measurements



Drifter tracking in German Bight by Martin Verlaan & Stijn Ruiter

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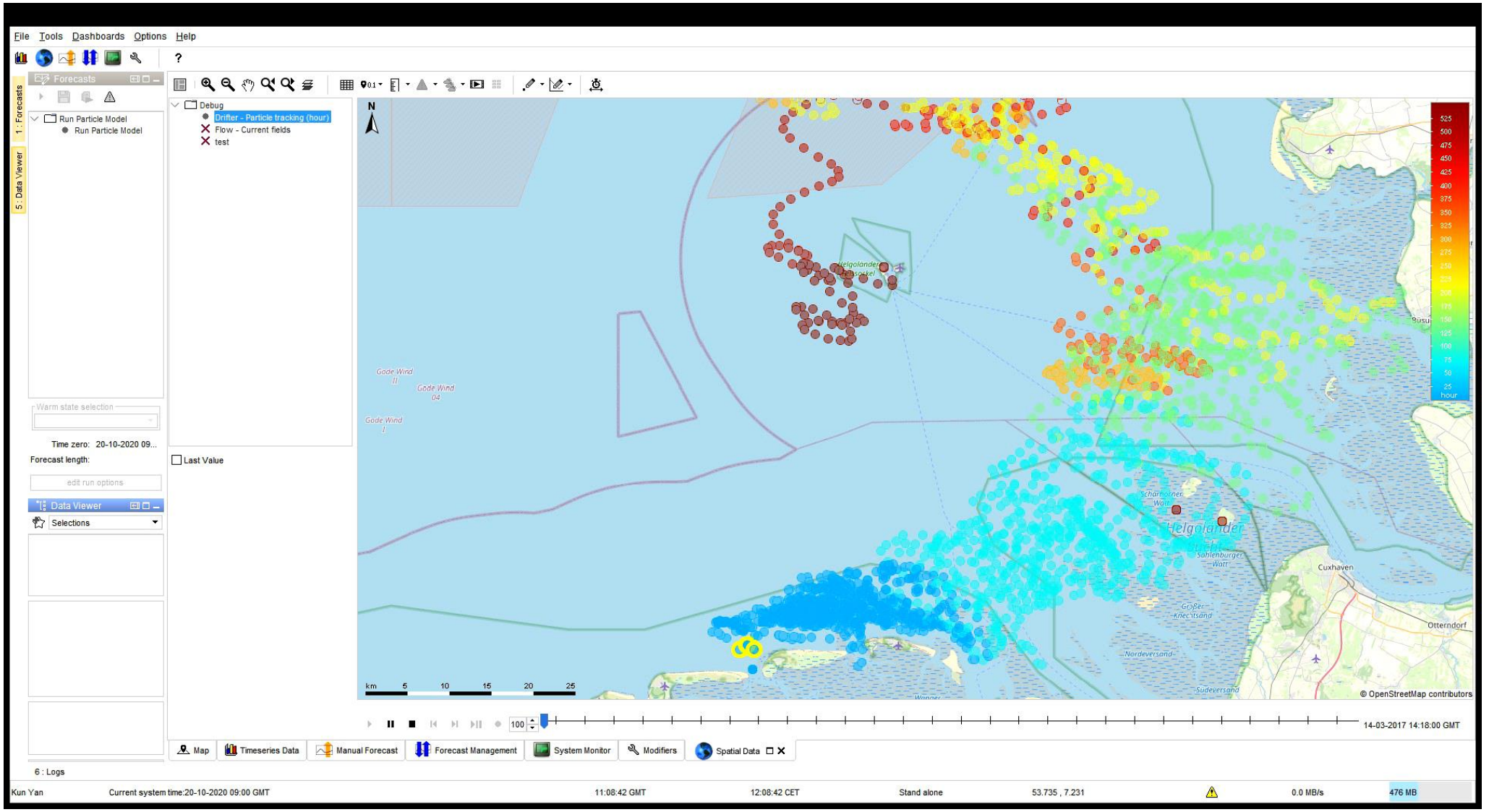
Demo results



Questions and feedback

www.deltares.nl

@deltares

linkedin.com/company/deltares

Kun.Yan@deltares.nl

@deltares

facebook.com/deltaresNL