

The SeaDataCloud Sensor Web Approach

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The SeaDataCloud Project

The publication of real-time observation data streams is an important factor to increase the value of such data (e.g. supporting the re-use by other researchers from potentially different domains). Doing this in an interoperable manner, e.g. based on the **Sensor Web Enablement (SWE)** standards of the Open Geospatial Consortium (OGC), will further facilitate the update of observation data sets by reducing the necessary data harmonisation and integration efforts. An important ongoing project within the marine community that aims at promoting and facilitating the interoperable access to collected measurement data is SeaDataCloud (EU Horizon 2020).

SWE Ingestion Service

The **SWE Ingestion Service** supports sensor operators and researchers during the publication of collected marine observation data. On the one hand it offers means for describing of the structure and content of data sets as well as metadata. On the other hand this information is used for auto-configuring an import mechanism for decoding and loading incoming observation data streams.

An ingestion workflow is declared through the description of the sensor or observatory as well as the processing steps in **OGC SensorML**. Each component of the workflow description represents a source, processor or sink in a Spring Cloud Data Flow Server. These components can be connected to create complex ingestion pipelines that adopt to the requirements of specific sensors, observatories, networks or ways of data distribution. Workflows can be created in the SensorML editor "smle" that additionally offers templates for typical ingestion scenarios.

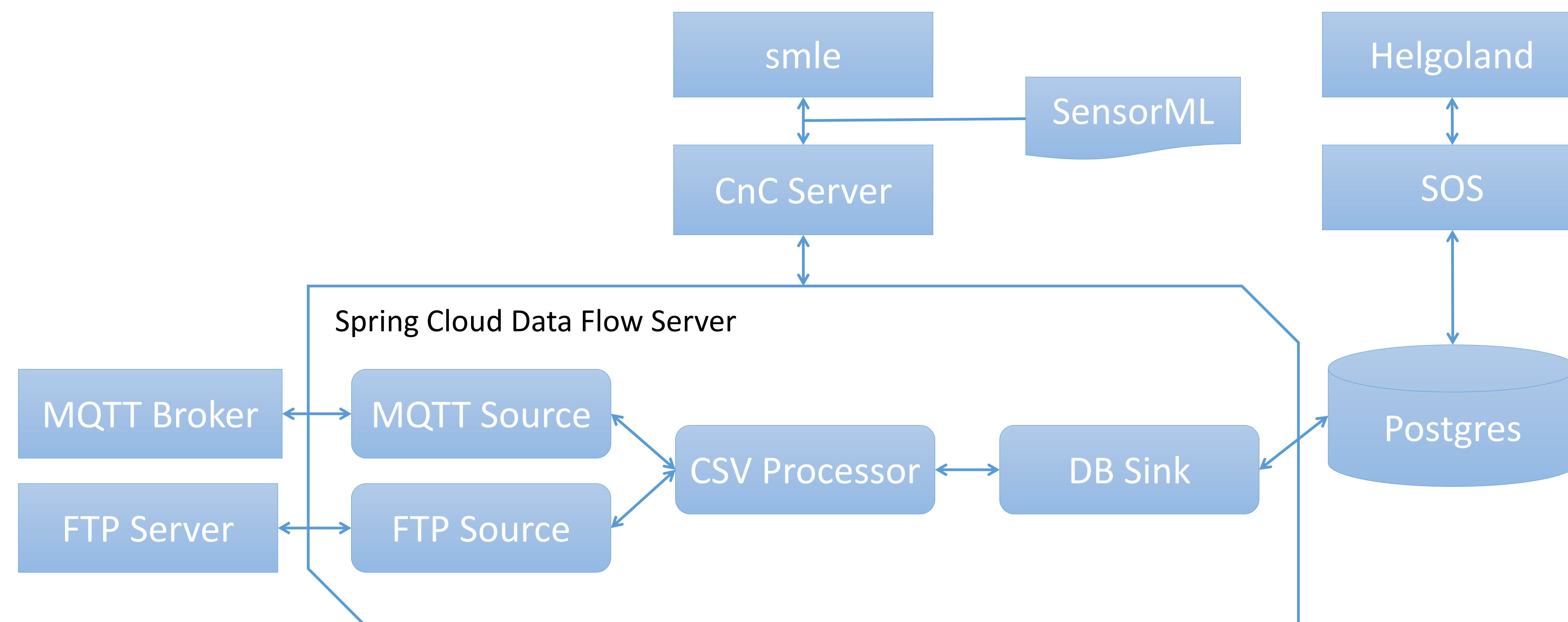


Figure 1: SWE Ingestion Workflow

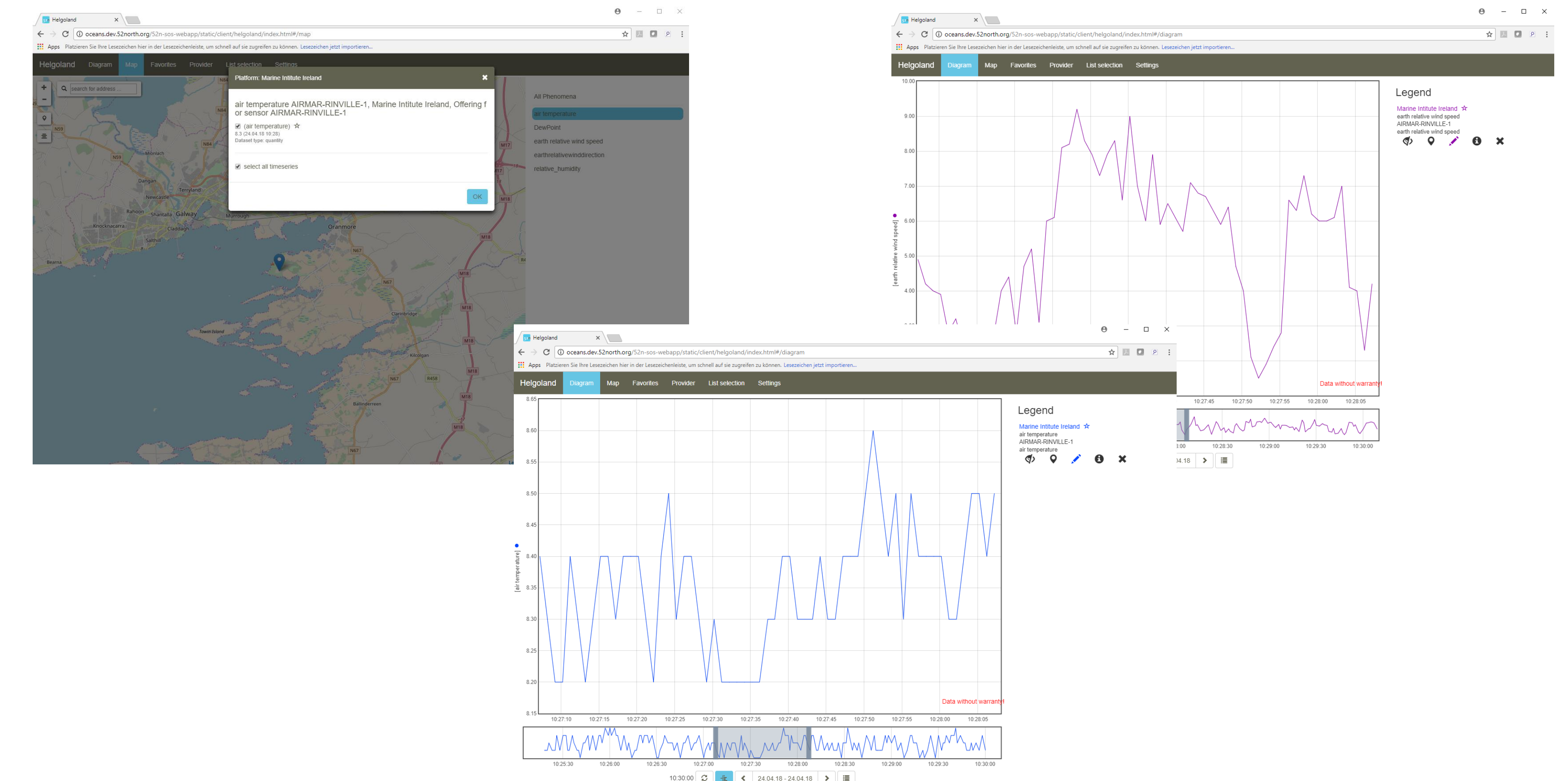


Figure 2: Data Visualisation in the Helgoland Sensor Web Viewer

52°North Helgoland Sensor Web Viewer

The **Helgoland Sensor Web Viewer** is an open source lightweight Web application, which enables the exploration, analysis and visualization of Sensor Web data:

- Explore stations or mobile sensor platforms in a map
- Visualize time series data, trajectories, and profile measurements
- Support visual analysis by combining multiple data sets
- Exploration of data sets, including temporal zooming and panning
- Data export/download (e.g. CSV files of displayed observation data sets)

52°North Helgoland is based on HTML, JavaScript and CSS and can connect to different Sensor Web endpoints. This comprises the **52°North Sensor Web REST-API** as well as OGC SOS Servers encapsulated by Sensor Web REST-API instances. Support of the OGC SensorThings API is currently in development.