

Context - St3TART project

- The St3TART project is aimed at **preparing a roadmap** and providing a preliminary proof of concept for the **provision of Fiducial Reference Measurements (FRM)** in support of the **validation activities** of the **Sentinel-3 (S3) radar altimeter** over land surfaces of interest, i.e. **inland water bodies** (lakes, reservoirs, rivers including estuarian areas), as well as **sea ice** and **land ice** areas (ice caps, mountain glaciers).
- Typically, **St3TART** and its follow-up activities should **ensure a supply of fiducial data** for the **Cal/Val** activities of the **ESA S3 Mission Performance Center/Cluster** and of the S3 Validation Team.
- The **FRM Data Hub** will provide a **centralized access to these FRM measurements**. It aims at **federating** the Cal/Val community by **sharing** these reference observations in a free and accessible manner, with **fully characterized** and documented **FRM processing** and measurements.

FRM Data Hub: What kind of data?

PROTOTYPE : All data acquired during St3TART campaigns

Hydro campaigns :
Water height measured by all vorteX.io micro-stations, LIDAR drone, Cyclopée



Sea-Ice campaigns :
Measures of freeboard, Sea Ice thickness, Snow thickness, Surface roughness, acquired by : LIDAR/camera drone, IceT buoy, CReSIS, DTU Space Airborne Laser Scanner (ALS).

NEXT STEP (not included in the project): Any FRM data for, at least, the S3 Land STM data products.



Permanent sensors data
(ex : vorteX.io micro-stations, Upward Looking Sonars, etc.)



Periodic campaigns data
(ex : Drone/airborne campaigns, Drifting buoys)



Connection to existing databases or portals
(ex : USGS - USA, FOEN - CH)

FRM Data Hub: Which format?

All datasets hosted on the FRM data hub will be of **NetCDF** type. This format has two main advantages:

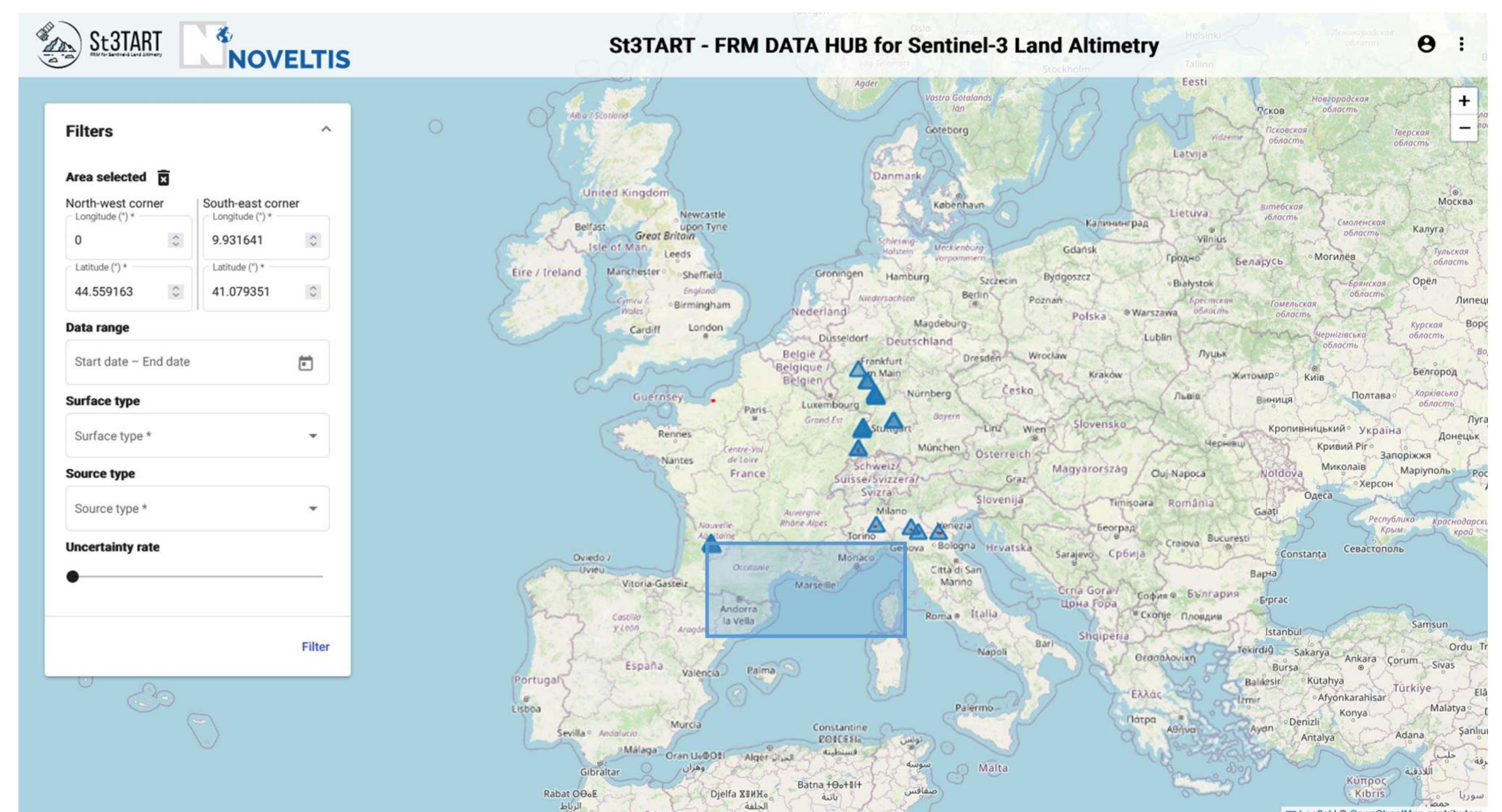
- ▲ The **self-documented** nature of these files eases the publication and viewing of metadata. It also means it is not possible for users to lose said metadata;
- ▲ NetCDF files are **ubiquitous in earth sciences**. Therefore, they are fully supported by an extremely wide array of software solutions (QGIS, Panoply, ncvie, nco, cdo, etc.) and libraries in most common languages (Fortran, C/C++, Python, Java, etc.).

In order to have a coherent set of metadata between the different files, **global and local attributes** have been defined in a **“Data file name convention and format specification requirement”** file.

This document also describes the **uncertainty variables** that may be included in the NetCDF files, and corresponding **local attributes**.

Finally, it describes the **naming convention** of these files. The name will contain information on the surface type (inland waters, sea or land ice), on the geographic area, on the sensor and platform types.

FRM Data Hub: First overview



FRM Data Hub first version – Work in progress

Need more info?

If you are interested by the FRM Data Hub, please contact us through the project website contact form: <https://sentinel3-st3tart.noveltis.fr/contact/>, and we will keep you informed as soon as this platform is available online and operational.