# cryosat cs2eo

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**cs2eo** is a high performance geospatial-temporal query platform for **ESA** and **NASA** altimetry data. **cs2eo.org** has been built by Earthwave in partnership with **ESA** as part of the **CryoTEMPO** programme.

→ Intersect any pair of datasets from different missions
→ Query individual datasets in single mode
→ Flexibly define spatial and temporal filters
→ Run large queries in batch mode and receive results via email
→ Explore interactive visualisation of results
→ Use provided scripts to download intersecting data for your query
**cs2eo** provides 3 customised services: **Cryo2Ice, CryoVEx, CryoTEMPO EOLIS**



Example CryoSat-2 Predicted Ground Tracks query
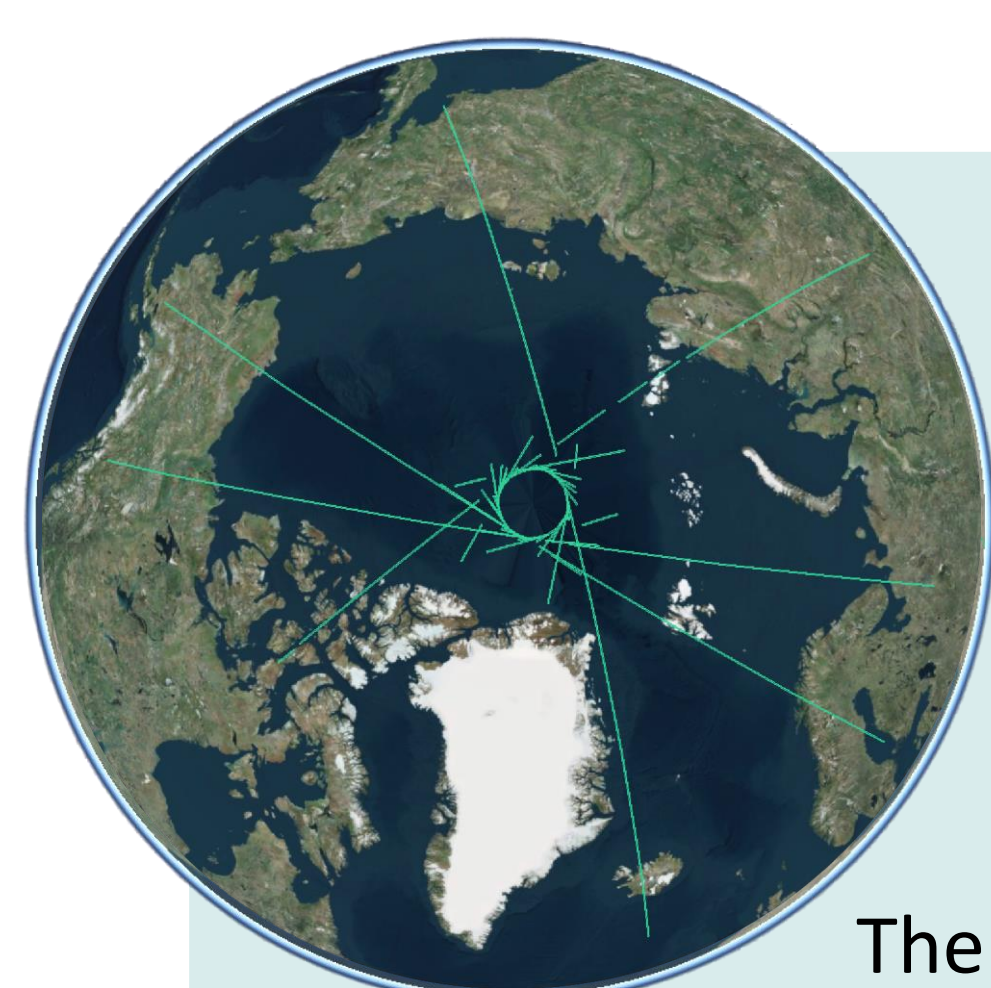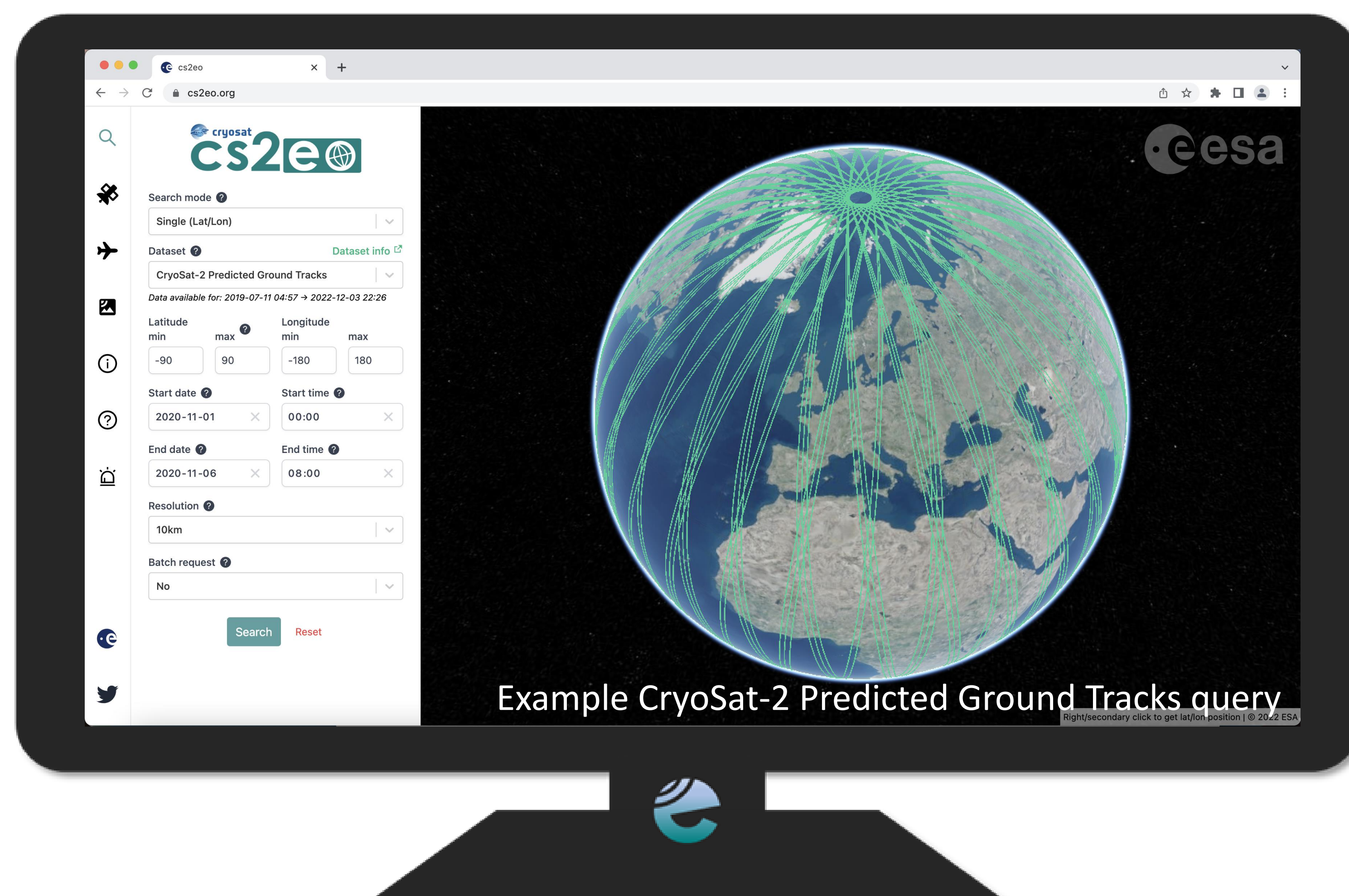
## cryo2ice

The **CRYO2ICE** campaign increased the ground track intersection of the **CryoSat-2** and **ICESat-2** satellites over short time intervals. The orbit change of **CryoSat-2** is an enabling step for applications that require coincident data, such as measuring snow depth and capturing the temporal variation. **cs2eo.org** allows users to easily find these measurements.

**CRYO2ICE Datasets Available on cs2eo.org**

- CryoSat-2 LRM, SAR, SARIn mode data, levels L1B, L2 and L2I
- ICESat-2 ATL06, ATL07, ATL10, and ATL12 products
- Merged CryoSat-2 dataset – query all L2 modes at the same time
- Merged ICESat-2 dataset – query ATL06 and ATL07 at the same time
- CryoSat-2 predicted grounds tracks through to Dec 2022
- ICESat-2 provisional and finalized ground tracks through to Sept 2022

**Combined Products**

**cs2eo**'s combined product functionality combines **CryoSat-2** and **ICESat-2** intersecting data into the same NetCDF files, saving users the trouble of filtering down the original files themselves and vastly reducing the amount of data to download.

A user can run a custom intersection query, view the results, and then request that a combined product of the intersecting data is generated and sent to their email address.

Additionally, a selection of monthly **Standard Combined Products** is pre-generated using parameters of common interest. These are immediately available and fast to download. The current products are:

- **SAR Sea Ice** - IS2 ATL07 vs CS2 SAR mode L2
  - Arctic, Antarctic regions
- **SARIn Land Ice** - IS2 ATL06 vs. CS2 SARIn mode L2
  - 10 regions across globe
- **LRM Land Ice** - IS2 ATL06 vs. CS2 LRM mode L2
  - Greenland, Antarctica regions
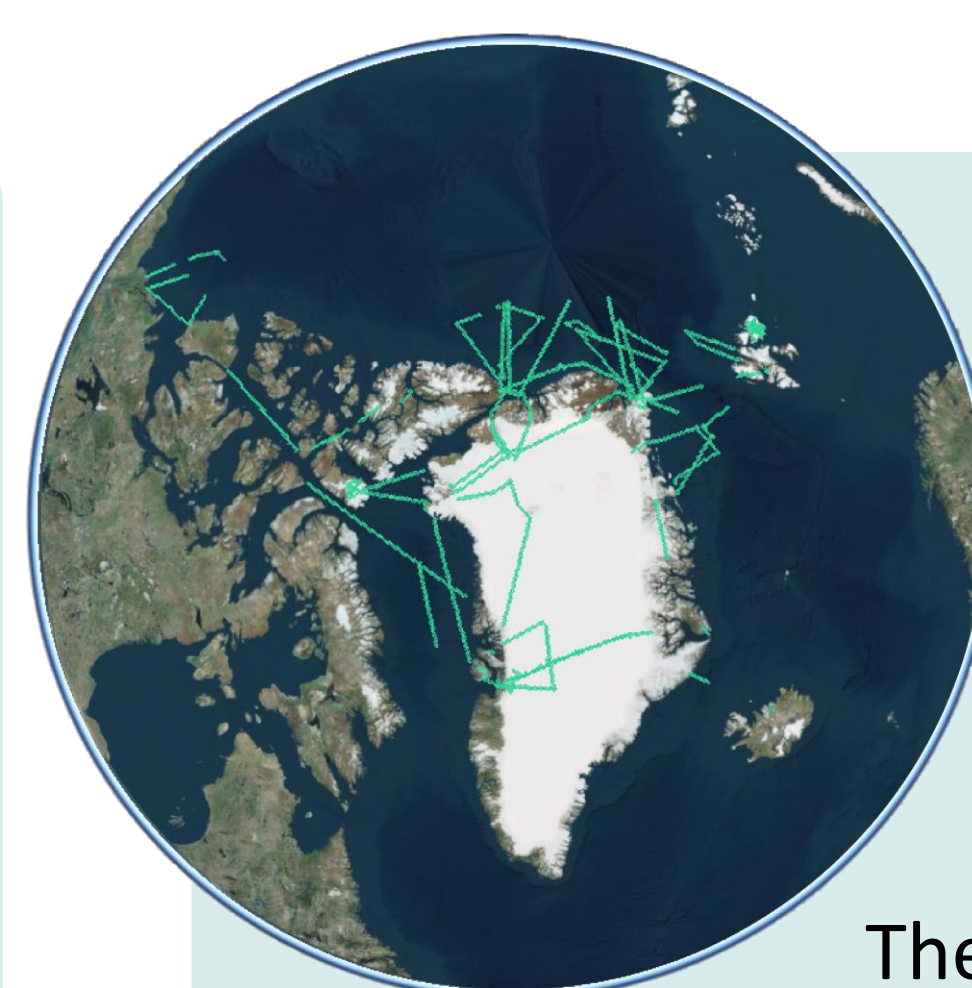
## cryoVex

The CryoSat Validation Experiment (**CryoVEx**) is a series of ground and airborne collection campaigns designed to generate validation data for **CryoSat-2** and other **ESA** missions.

**The ESA CryoVEx campaigns held from 2010 onwards are available on the cs2eo portal.** To make the data easier to use, all datasets have been converted to the NetCDF format. These can be downloaded using scripts generated by **cs2eo**. The available datasets include:

- Laser – ALS
- Radar – KAREN, ASIRAS
- Dual Ku/Ka band radar - CReSIS
- Airborne ice thickness – AEM
- High resolution imagery
- Ground data
- Supplementary data – GPS, INS, KML flight tracks
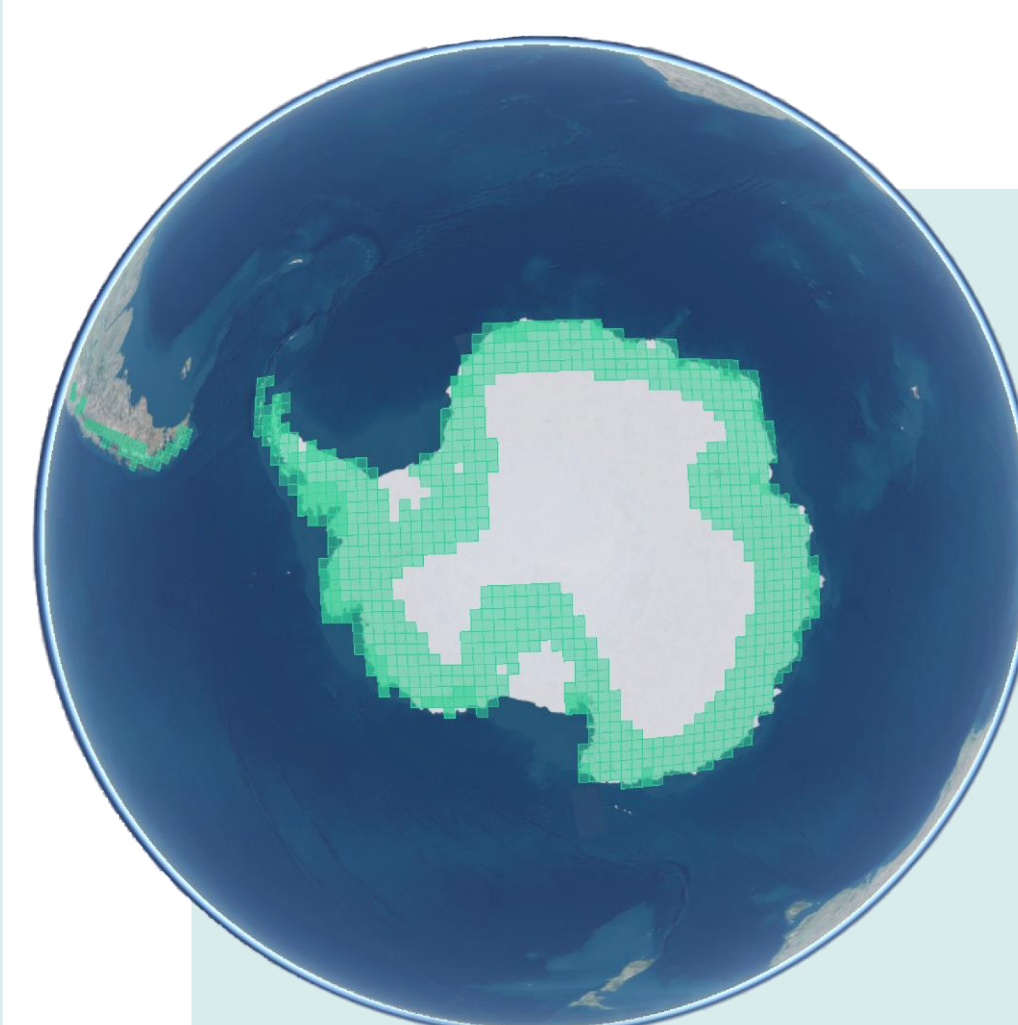
## cryoTEMPO EOLIS

The CryoSat ThEMatic PrOducts - Swath (**Cryo-TEMPO - Swath**) project is based upon the *CryoSat+, CryoTop, CryoTop evolution* and *CS2 Mountain Glaciers* **ESA** research and development projects. Cryo-TEMPO - Swath provides two distinct *Elevation Over Land Ice from Swath (EOLIS)* products, both provided with an associated elevation uncertainty:
- *EOLIS Point Product*: a point cloud roughly following the satellite's ground track.
- *EOLIS Gridded Product*: a spatial resampling of the point product onto a uniform grid at 2km spatial and monthly temporal resolution.
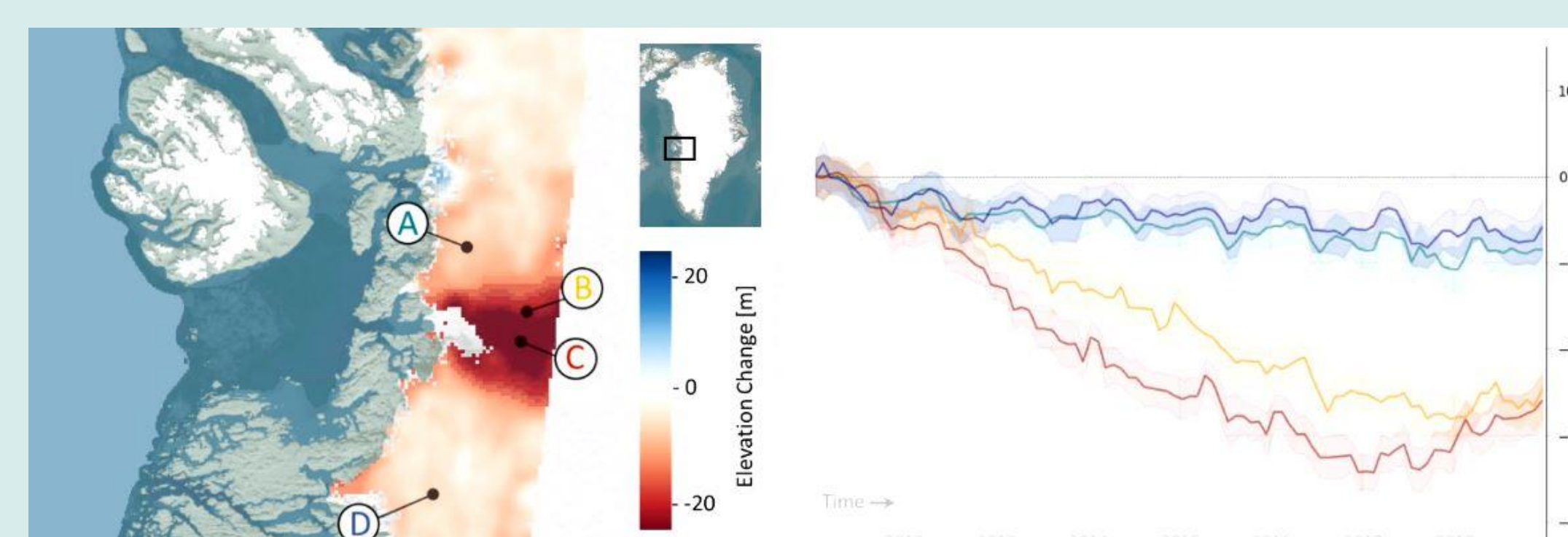


**EOLIS Point and Gridded products are available on the cs2eo portal.**

# www.cs2eo.org