A. Haas[1], B. Heim[2], A. Bartsch[3], A. Walter[1], M. Wieczorek[2], G. Grosse[2, 4], F. M. Seifert[5]
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ALFRED-WEGENER-INSTITUT
HELMHOLTZ-ZENTRUM FÜR POLAR- UND MEERESFORSCHUNG

DATA SCIENCE SUPPORT

permafrost cci

GLOBPERMAFROST

ESA Climate Change Initiative (CCI) Permafrost – AWI WebGIS visualisation of Permafrost Essential Climate Variable (ECV) time series

The European Space Agency (ESA) Climate Change Initiative (CCI) is a global monitoring program which aims to provide long-term satellite-based products to serve the climate modelling and climate user community. Building on GlobPermafrost (2016-2019), **Permafrost ECVs** are elaborated during Phase 1 CCI+ (2018-2021) and continued during Phase 2 of CCI+ (2022-2025).

Permafrost_cci EVC yearly timeseries products from 1997 to 2021 in 1km resolution are:

- Permafrost Temperature
- Active Layer Thickness
- Permafrost Fraction

ESA Circumpolar LandCover (Additional product service)

Earth-data.de is a frontend and point of access to data viewers that show data published as digital data services based and realised upon GIS (Geographical Information Systems)-based geodata infrastructure at AWI. GIS server technology enables the digital publication and therefore visualization of multidisciplinary project data in the World Wide Web. **Permafrost_cci** datasets have been published as WebGIS services relying on OGC-standardized Web Mapping Services (WMS) and Web Feature Services (WFS). Due to this, all services are interoperable and can be integrated into various desktop GIS applications. **Permafrost_cci** WMS are embedded in a JavaScript GIS viewer application based on a leaflet library.

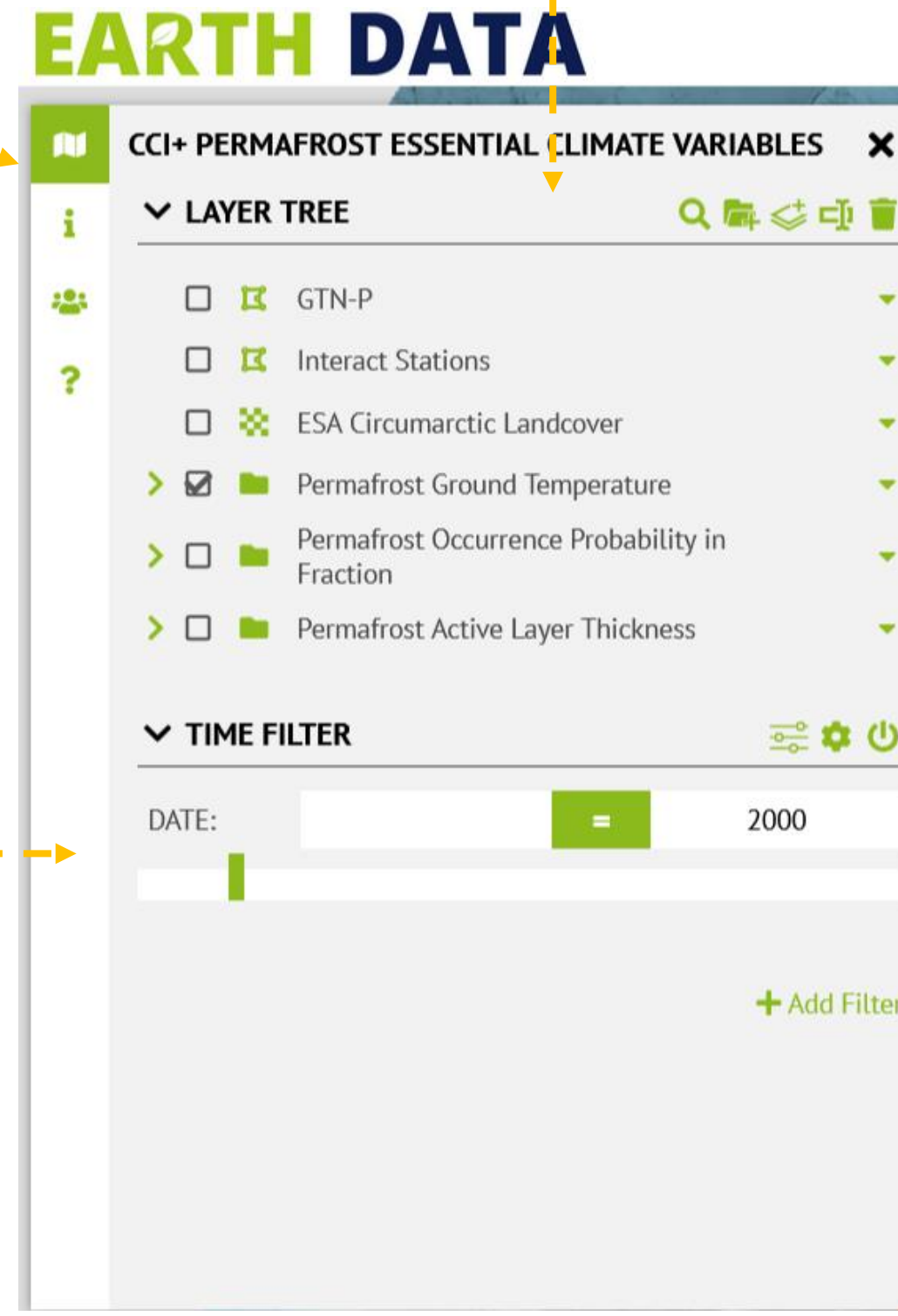## Permafrost_cci Time-Series Viewer Functionalities

Information panel

Switch here for details about:

- the project
- the project coordination and project partners
- or Help

Time Slider Tool:

Filter data products by time

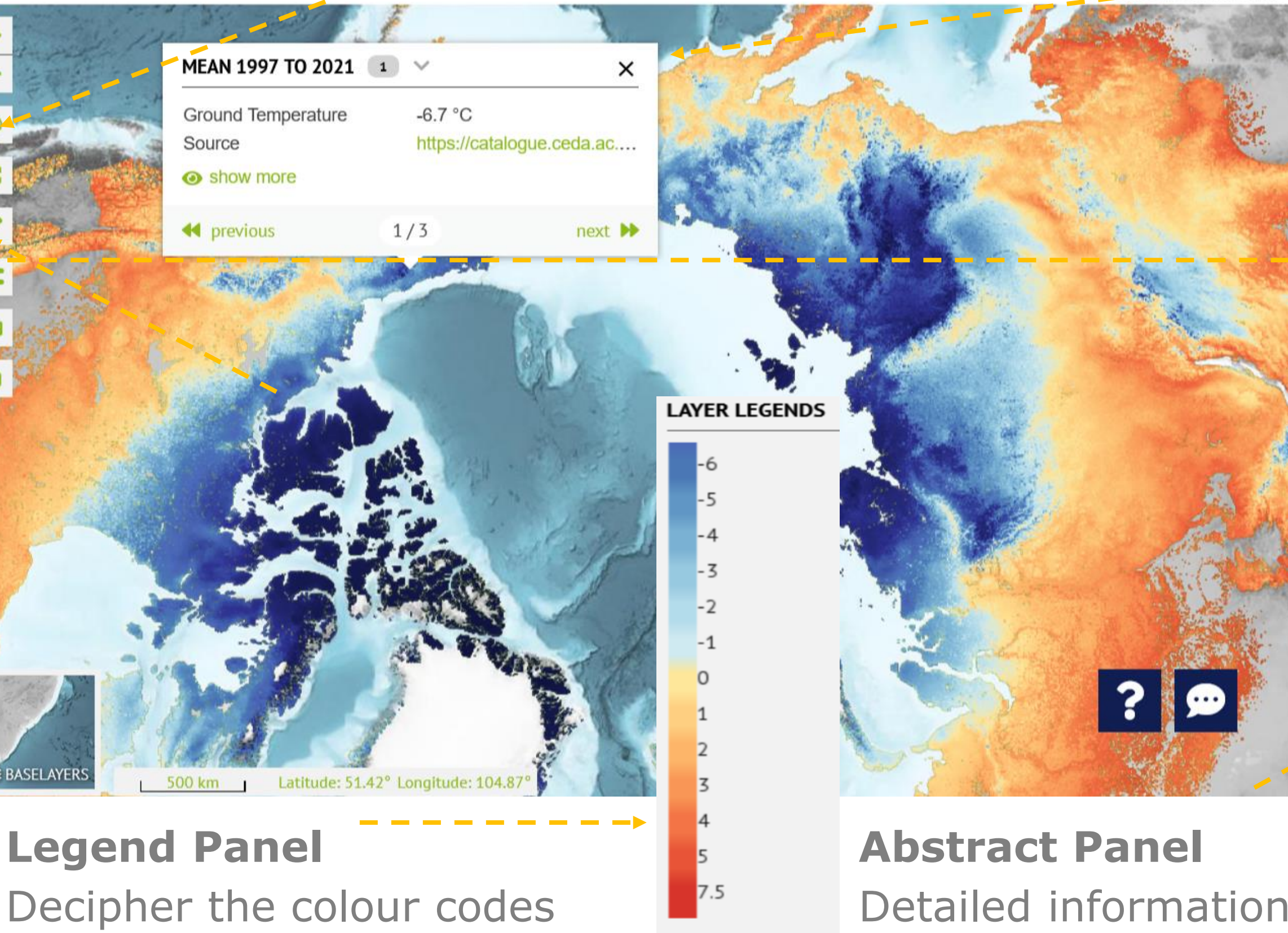**Data Layers Panel**

Shows the data layers that are available > select to display

Projection button

Change view: Polar or World

PopUp window

- Shows individual information per pixel (value)
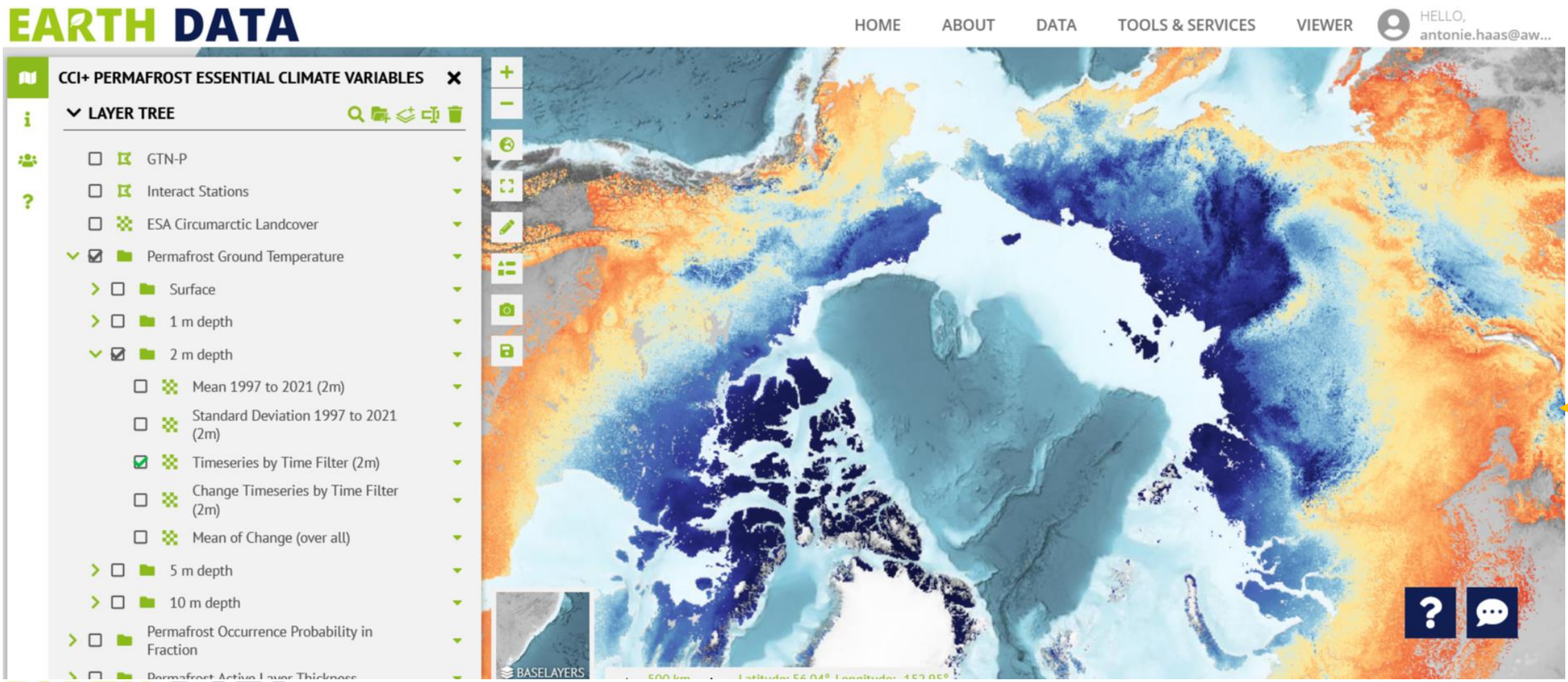- Information about the data layer
- Access to the data source

Basemap List

Select an appropriate basemap

Legend Panel

Decipher the colour codes and get information about the unit

Abstract Panel

Detailed information on the individual data layer as well as information about the citation and access to the data
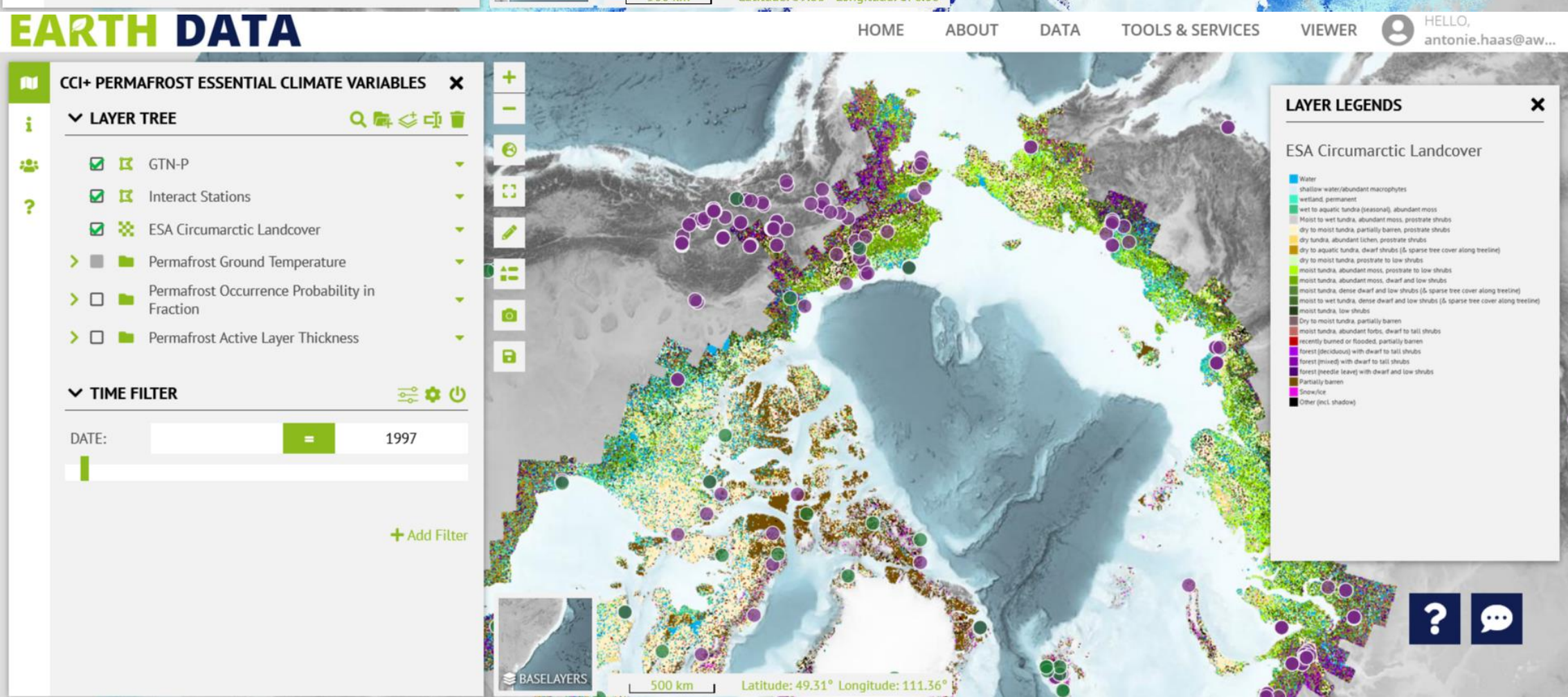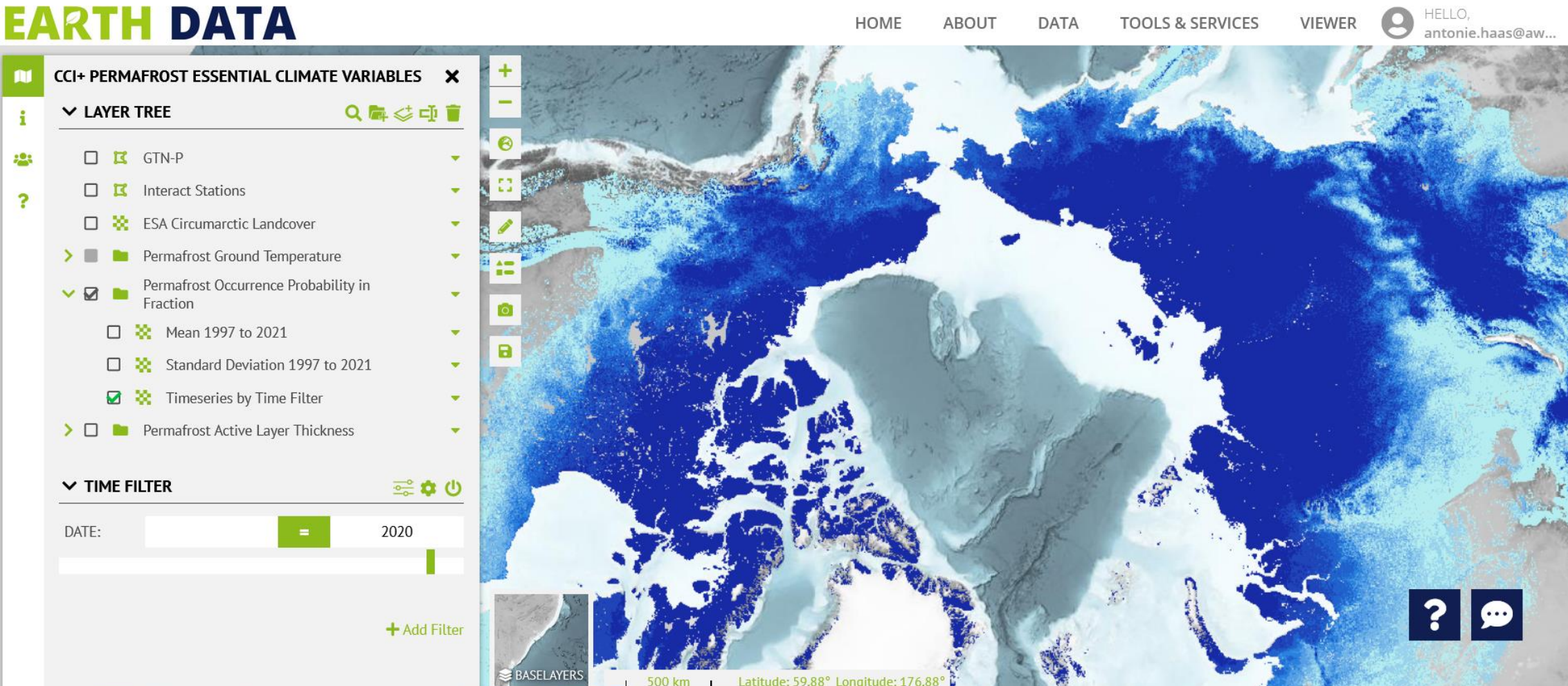
Permafrost_cci Data Products

Ground temperature per Depth
GTD [°C]
Surface**,** 1, 2, 5, 10m depth
Yearly, Yearly Mean, Yearly Std, Yearly Change (2m)

Permafrost Occurence Probability in Fraction [%]
Yearly, Yearly Mean, Yearly Std

Active Layer Thickness (ALT) [m]
Yearly, Yearly Mean, Yearly Std, Yearly Change

- Permafrost Circumarctic Landcover
- Global Terrestrial Network (permanent temperature validation sites)
- Interact Research Stations

UiO: University of Oslo | b:geos | esa | H2O Geomatics | GAMMA REMOTE SENSING | DATA SCIENCE SUPPORT | ALFRED-WEGENER-INSTITUT HELMHOLTZ-ZENTRUM FÜR POLAR- UND MEERESFORSCHUNG | HELMHOLTZ GEMEINSCHAFT