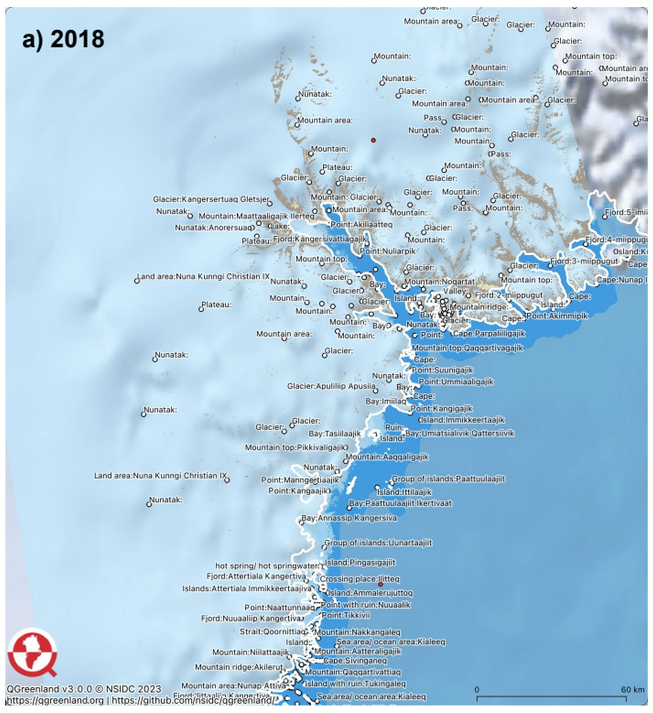
Sentinel-2 10m Land Use/ Land Cover data produced by Esri and Impact Observatory (2018-2023)

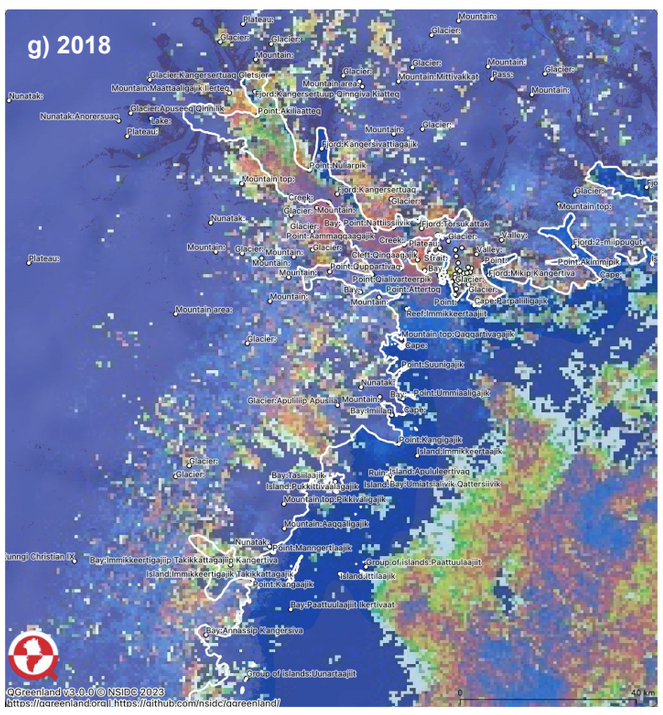


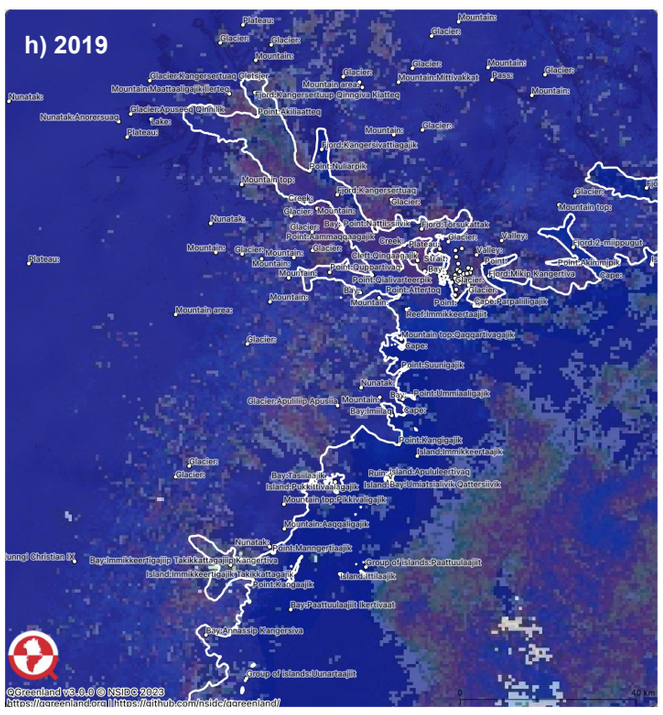
OCEAN COVER
ICE/ SNOW COVER
RANGELAND COVER
BAREGROUND COVER

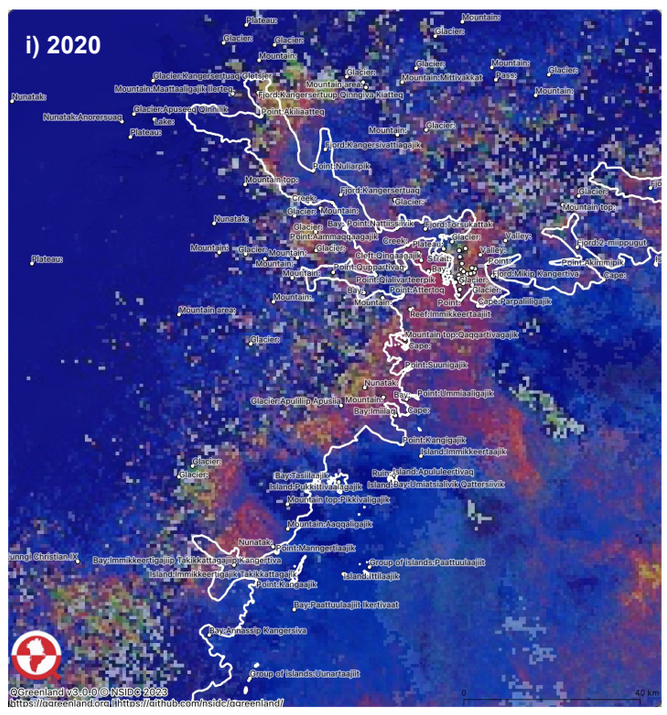
2018: retreat
2019: large advance
2020: advance
2021: retreat
2022: small retreat
2023: large retreat

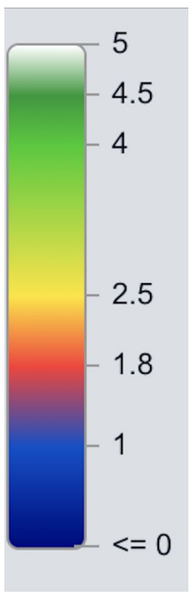
During the years of glacial advance, there are lower chlorophyll contents. Vice versa, during years of glacial retreat, there are higher chlorophyll contents.

Sentinel-3 The Terrestrial Chlorophyll Index (OLCI) (2018-2023)









The Terrestrial Chlorophyll Index (OTCI) is estimated based on the chlorophyll content in terrestrial vegetation and can be used to monitor vegetation condition and health. Low OTCI values usually signify water, sand or snow. Extremely high values, displayed with white, usually suggest the absence of chlorophyll, like bare ground, rock, or clouds.

The chlorophyll values range from red (low chlorophyll values) to dark green (high chlorophyll values) and are used to determine vegetation health.

In this case, I was using chlorophyll content to broadly demonstrate biomass.

The QGreenland vegetation data classifies this area as glacier, non-carbonate mountain complex, and herb barren.

While low OTCI values typically indicate non-vegetative surfaces like water, sand, or snow, and extremely high values might suggest bare ground or clouds, the intermediate values (red to dark green) can indicate varying levels of algae presence. Algae on glacier surfaces would appear in this range, helping to distinguish them from non-biological features.