DRIFT+NOISE
Polar Services

User Guide

February 2024

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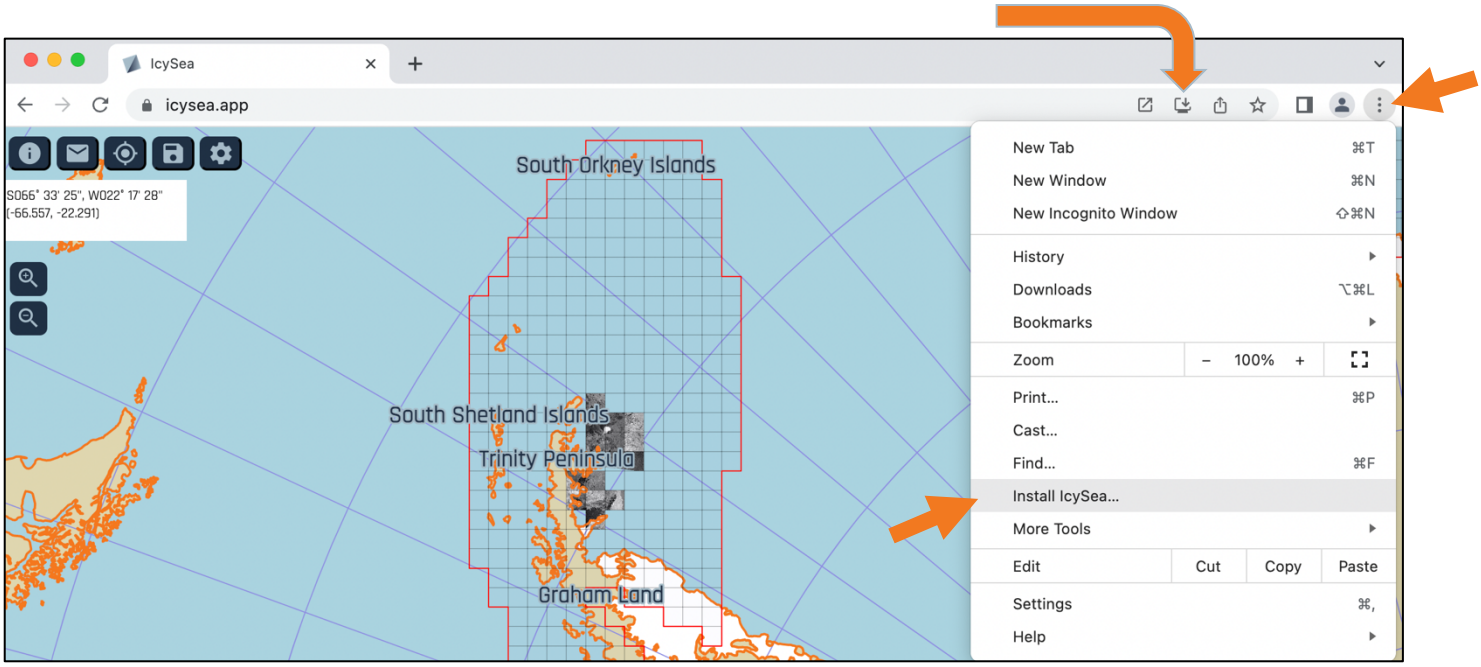
Installation

- Access IcySea via https://icysea.app in your preferred browser (we recommend CHROME or EDGE)
- After registration install IcySea as a 'Standalone App' on your device (see image below)
  - either click the 'Install' symbol in the browser bar
  - or click on the vertical dots and select 'Install IcySea...' from the dropdown menu



Buttons


Get more information **about IcySea** and **check for Updates**


Get in **contact** with the Drift+Noise team for feedback or support


Show your current **GPS position** in IcySea


Export your data from IcySea


Open '**Settings**' menu:
- *Switch between Arctic and Antarctic*
- *Manage your subscription*
- *Select source for GPS position*


Rotate the map to **North**


Data layer **guidelines** and **interpretation help**


Refresh data layer (get latest updates)


Check **age of satellite image** tiles (Radar and Optical images)


Delete outdate image tiles (Radar and Optical images)

Select **sea ice concentration** layer with **3.125 km resolution**

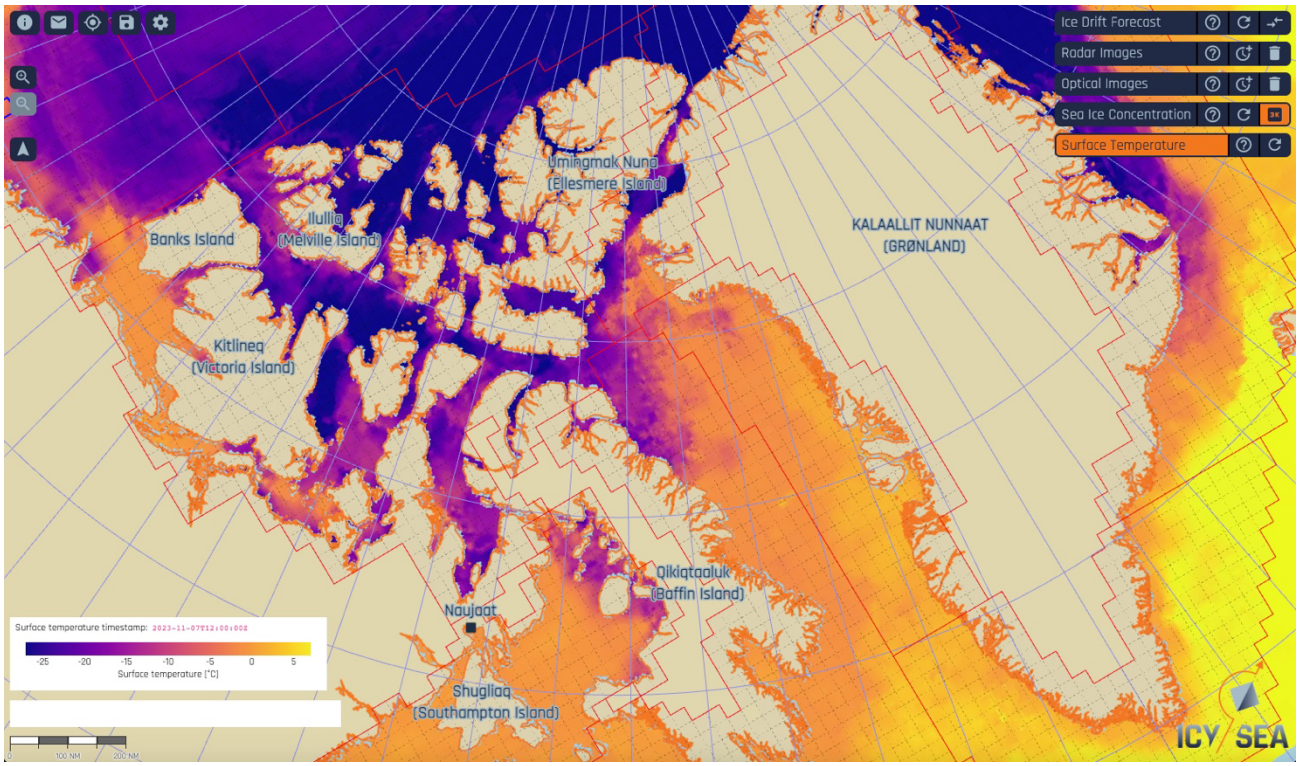

Additional **sea ice drift forecast** product for the **Svalbard** region

Data Layer: Surface Temperature

- Low resolution data layer for strategic planning purposes
- Shows temperature of the ice or ocean surface and complements other layers
    - **Resolution**: 0.05 x 0.05°
    - **Coverage**: Arctic
    - **Updates**: daily - **manually**
    - **Limitations**:
      - only available in the Arctic
      > **use sea ice concentration data for reference**

Data layer details, limitations, interpretation help

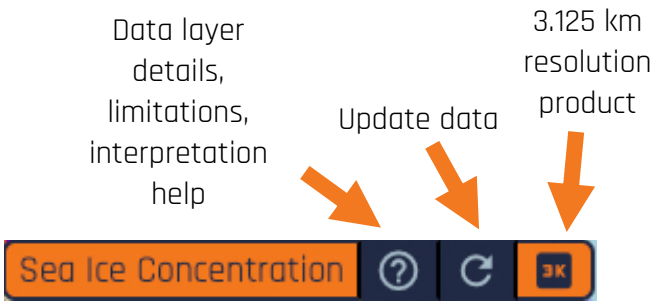
Update data

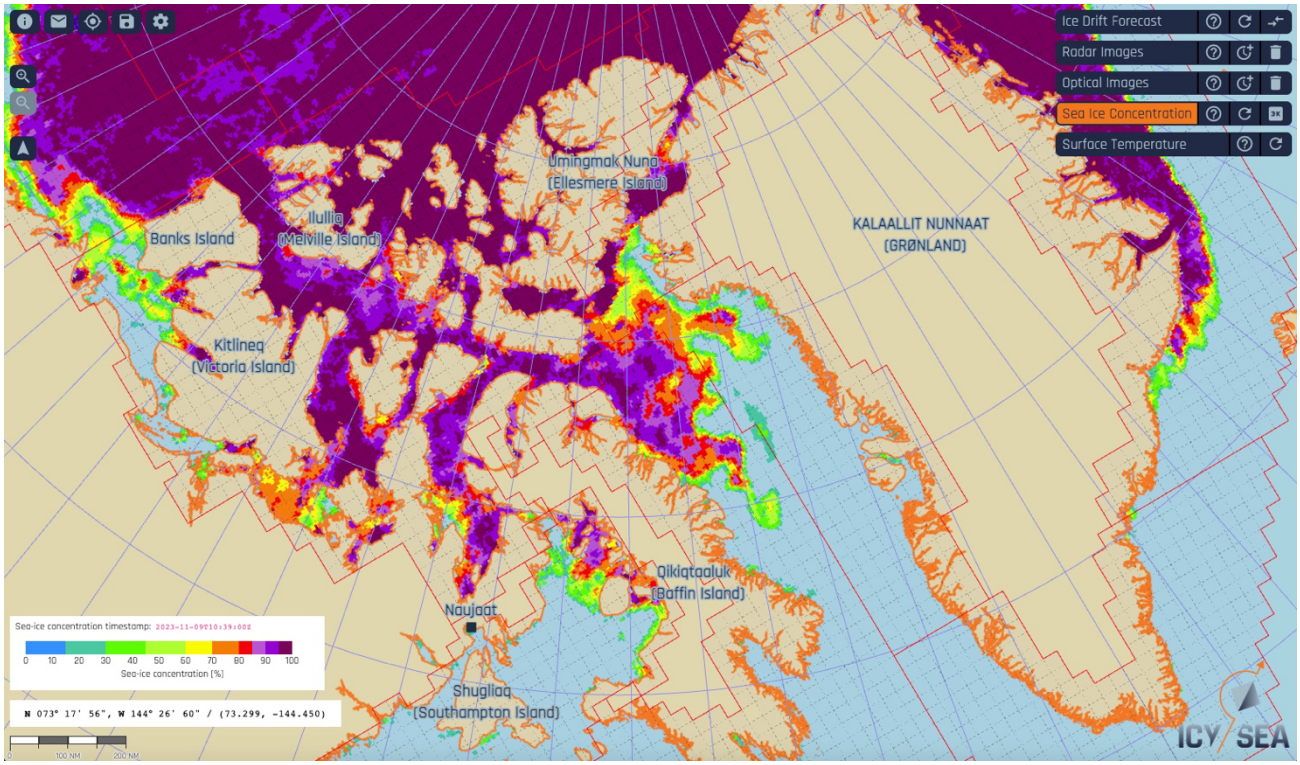


Data Layer: Sea Ice Concentration

- Low resolution data layer for strategic planning purposes
- Shows how much of an area is covered with ice (%)
  - **Resolution**: available with 6.25 (default) and 3.125 km resolution
  - **Coverage**: Arctic and Antarctic
  - **Updates**: up to 8 times per day - **manually**
  - **Limitations**:
    - *Coastal Bias*: Ice is indicated close to land, even if there is no ice
    - *10% Rule*: Areas covered with 10% or less sea ice are shown as 'no-ice' areas

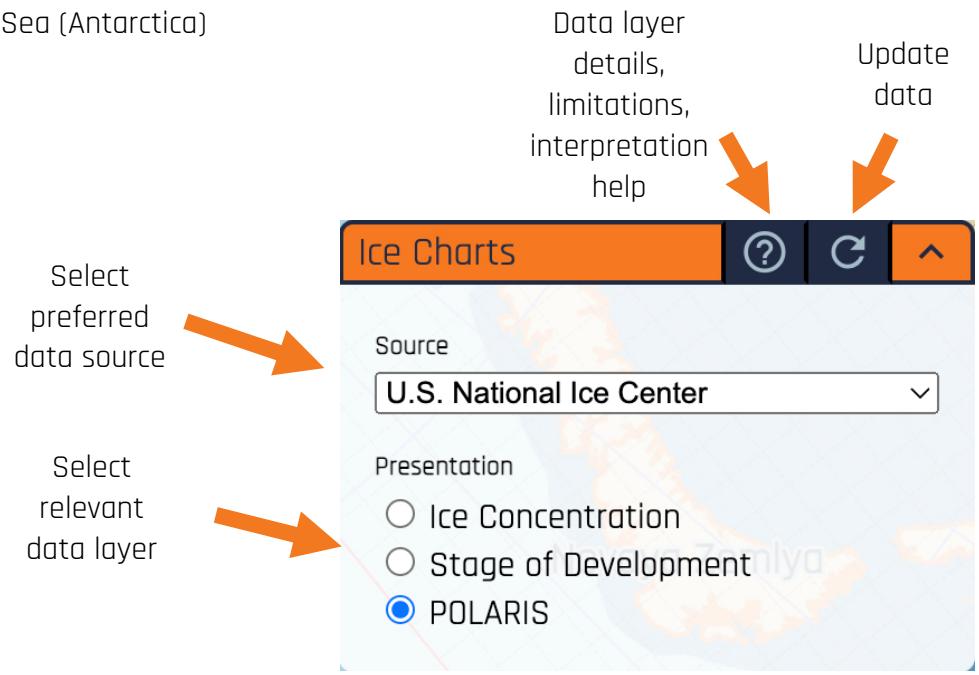
    > **use satellite data for reference**





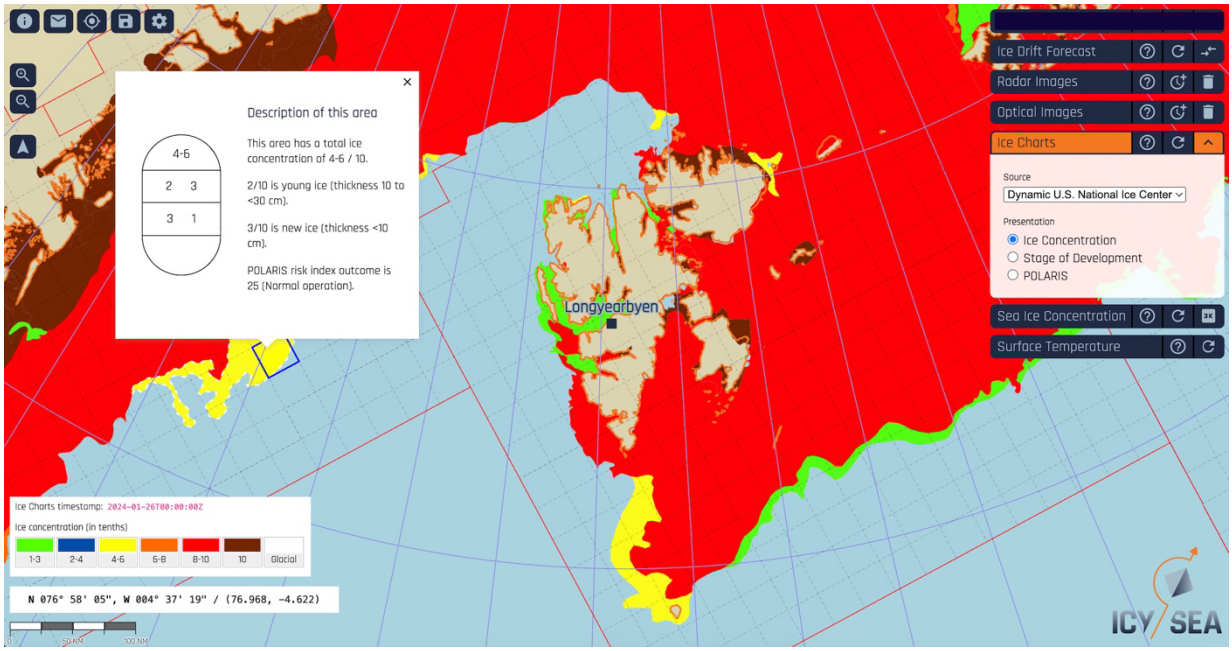
Data Layer: Official Ice Charts

- Ice charts provide official sea ice information following WMO and IMO Polar Code protocols.
- They are analysed and quality controlled by sea ice experts from the national ice services
- Data layers available via the ice charts: sea ice concentration, stage of development, POLARIS risk index
    - **Coverage**: Arctic-wide, Ross Sea (Antarctica)
    - **Updates**: Weekly

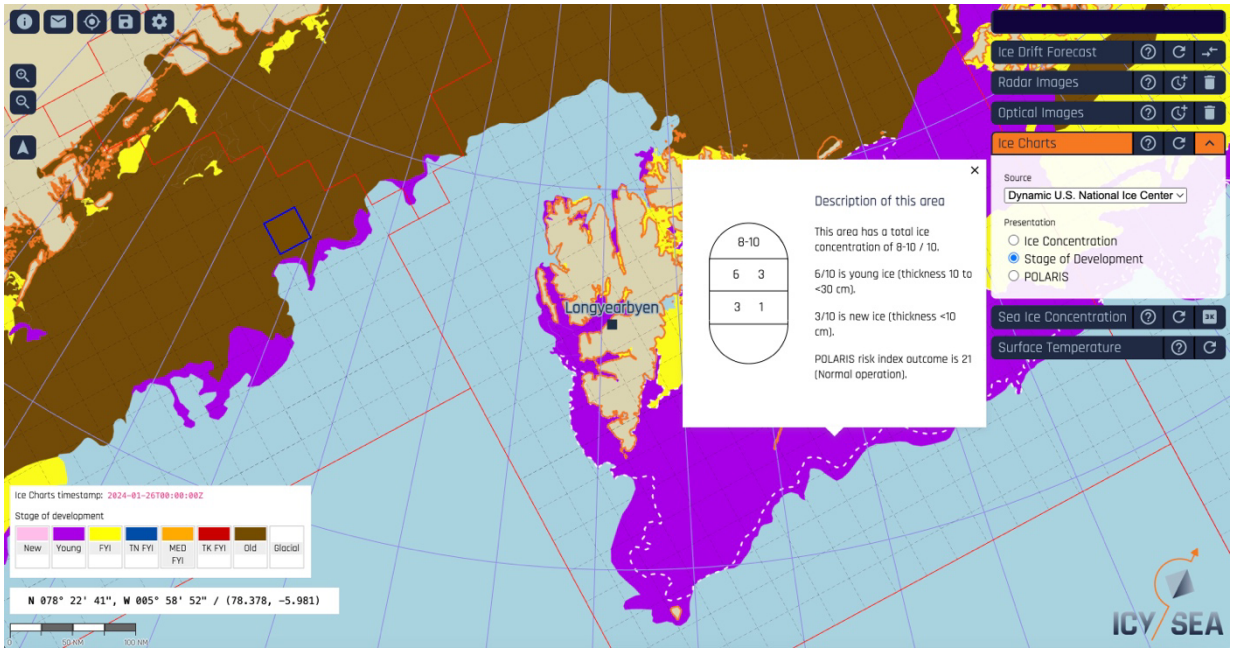


- ***'LEFT CLICK'*** on a polygon to receive additional information via the official **Egg Code**

Sea ice concentration layer:

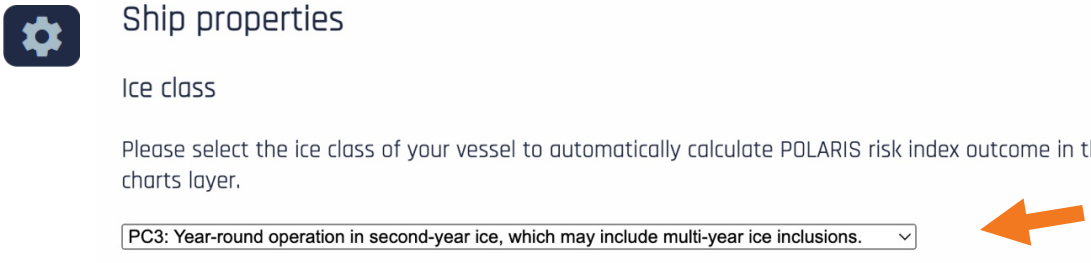


Stage of development layer:

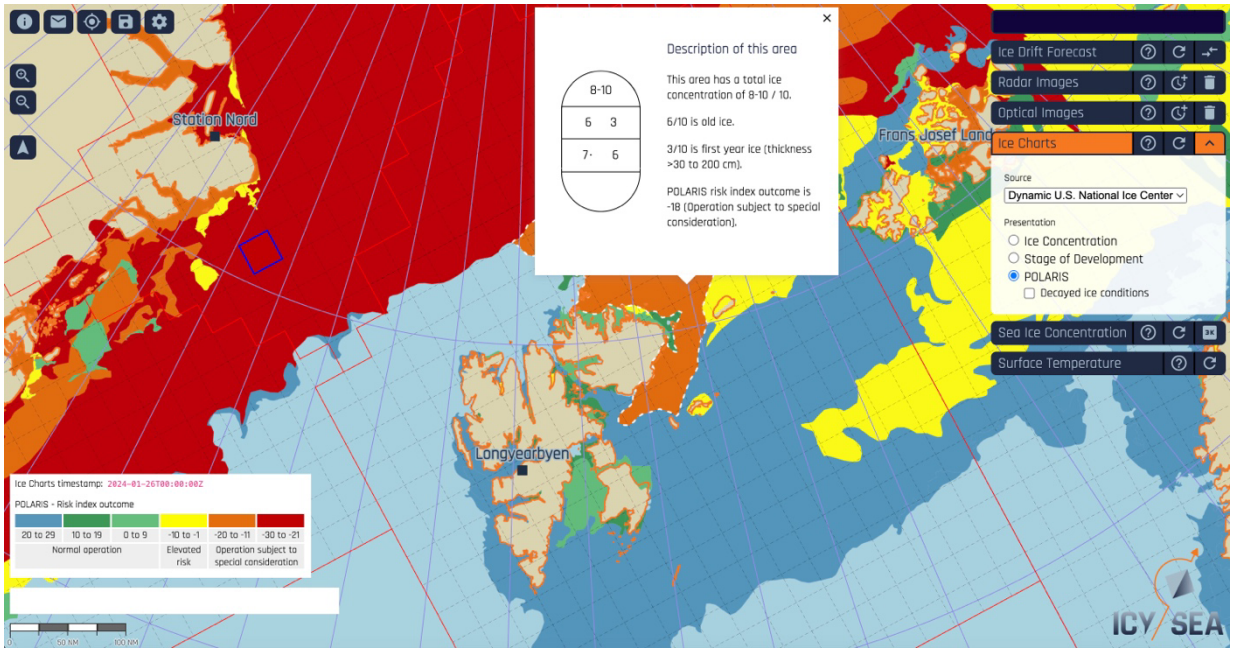


POLARIS Risk Index Outcome (RIO)

- Customize the POLARIS risk index layer by providing the characteristic ice class for your ship via the 'Settings/Ship Properties' menu:

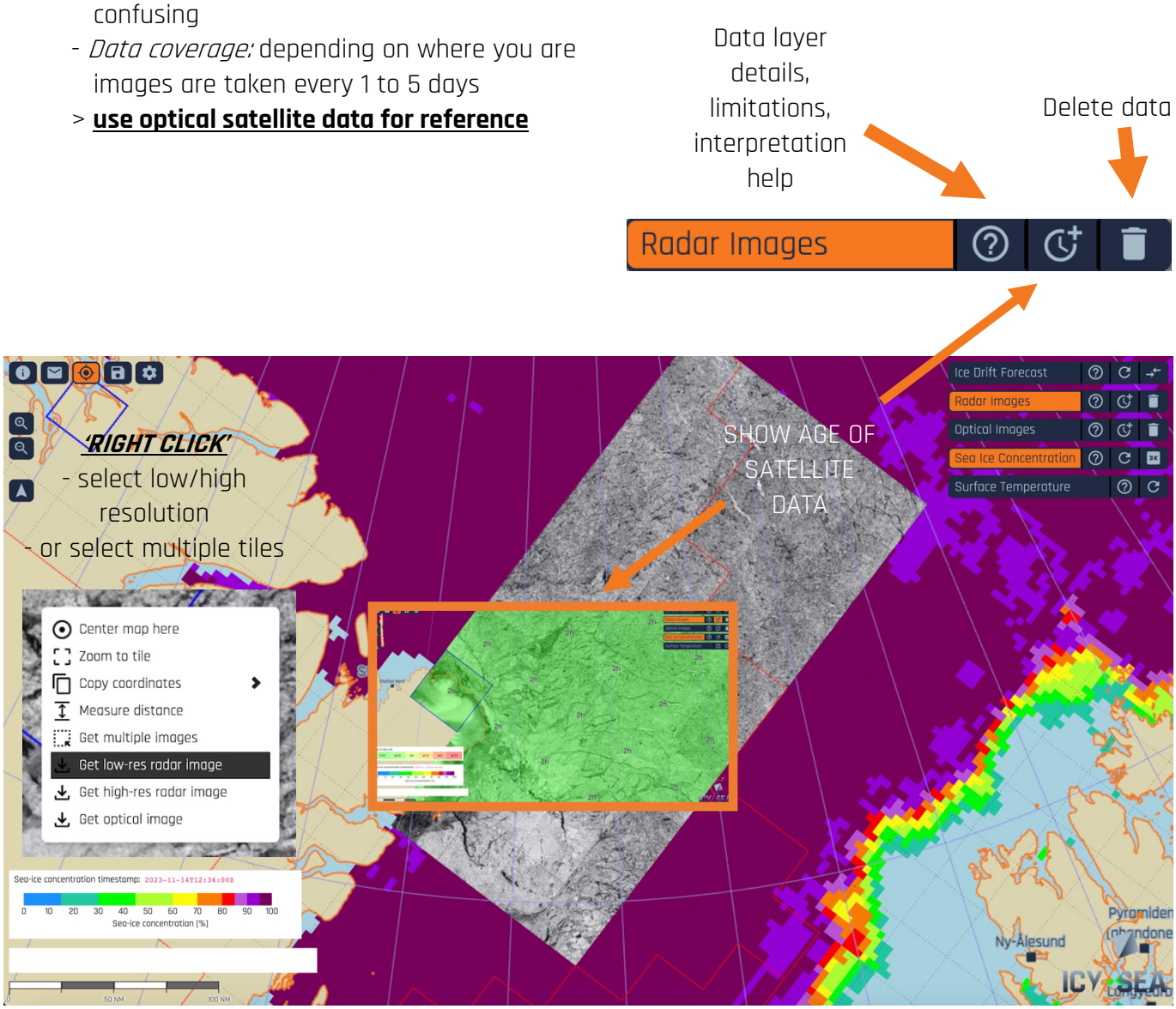


Select your ship's ice class



Data Layer: Satellite Radar Images

- Radar satellite images (ESA) are able to show individual ice feature, floes and open water areas
- Radar images are available 1-8 hours after satellite recording
- Images **NEVER SHOW CLOUDS**
    - **Resolution**: high (30 meter), low (300 meter)
    - **Coverage**: Arctic and Antarctic
    - **Updates**: every 1 - 5 days - **manually**
    - **Limitations**:
        - *Interpretation*: different grey scales can be confusing
        - *Data coverage:* depending on where you are images are taken every 1 to 5 days
        > **use optical satellite data for reference**



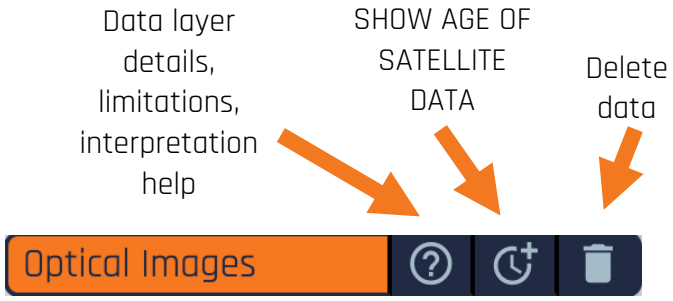
- Please contact us at support@driftnoise.com for radar image interpretation help

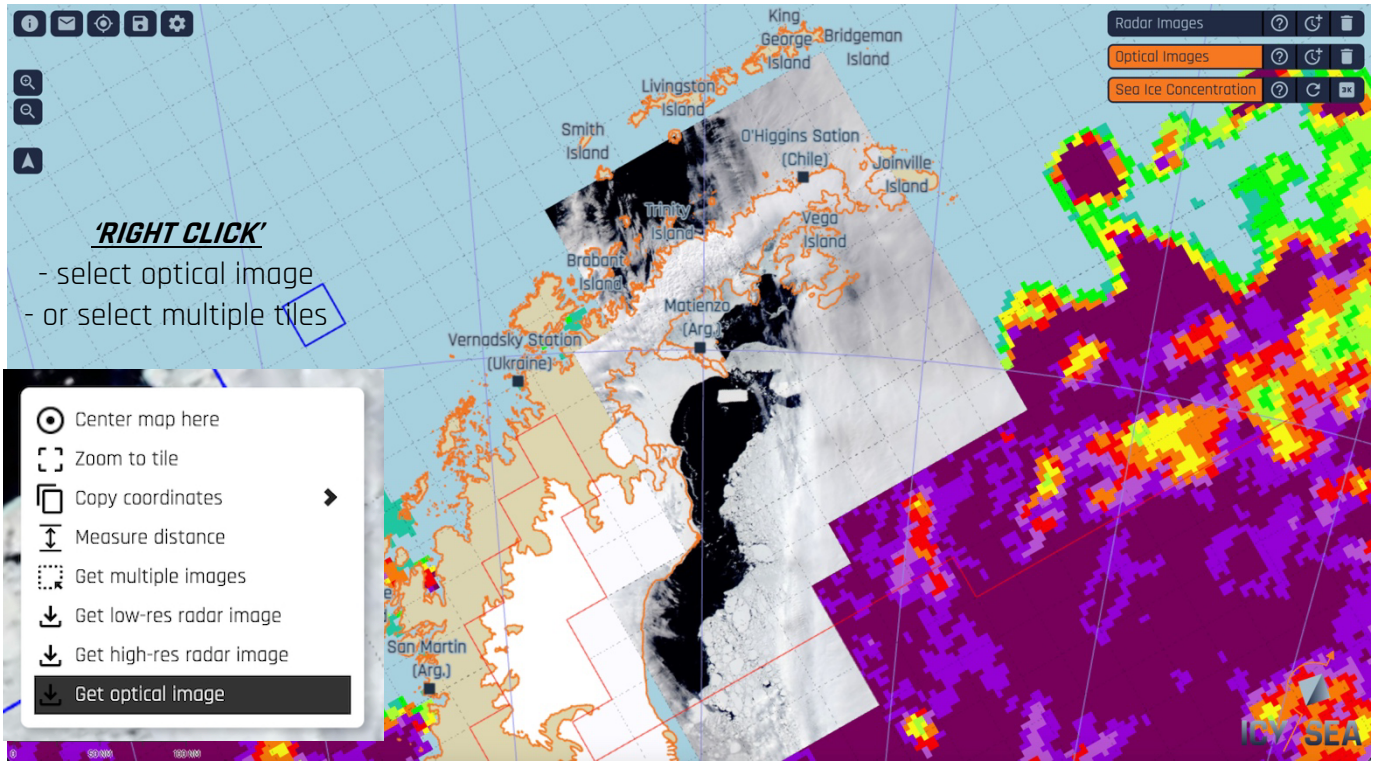
Data Layer: Satellite Optical Images

- Low resolution optical satellite images (NASA) are able to show individual ice features, floes and open water in cloud-free conditions

- **Resolution**: 250 meter
- **Coverage**: Arctic and Antarctic
- **Updates**: daily - **manually**
- **Limitations**:
  - *Clouds*: when your area of interest is covered by clouds, ice won't be visible
  - *Night*: in darkness (e.g. polar night) the surface is not visible

  > **use radar data for reference**

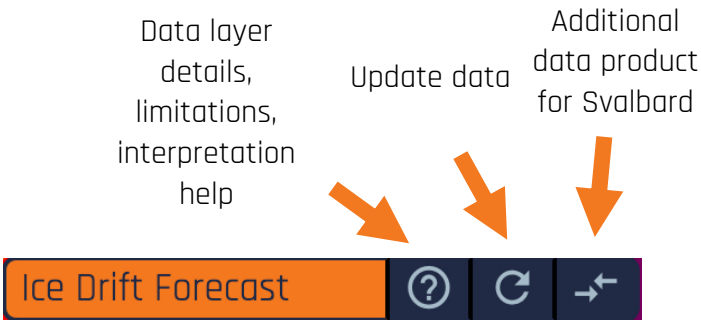


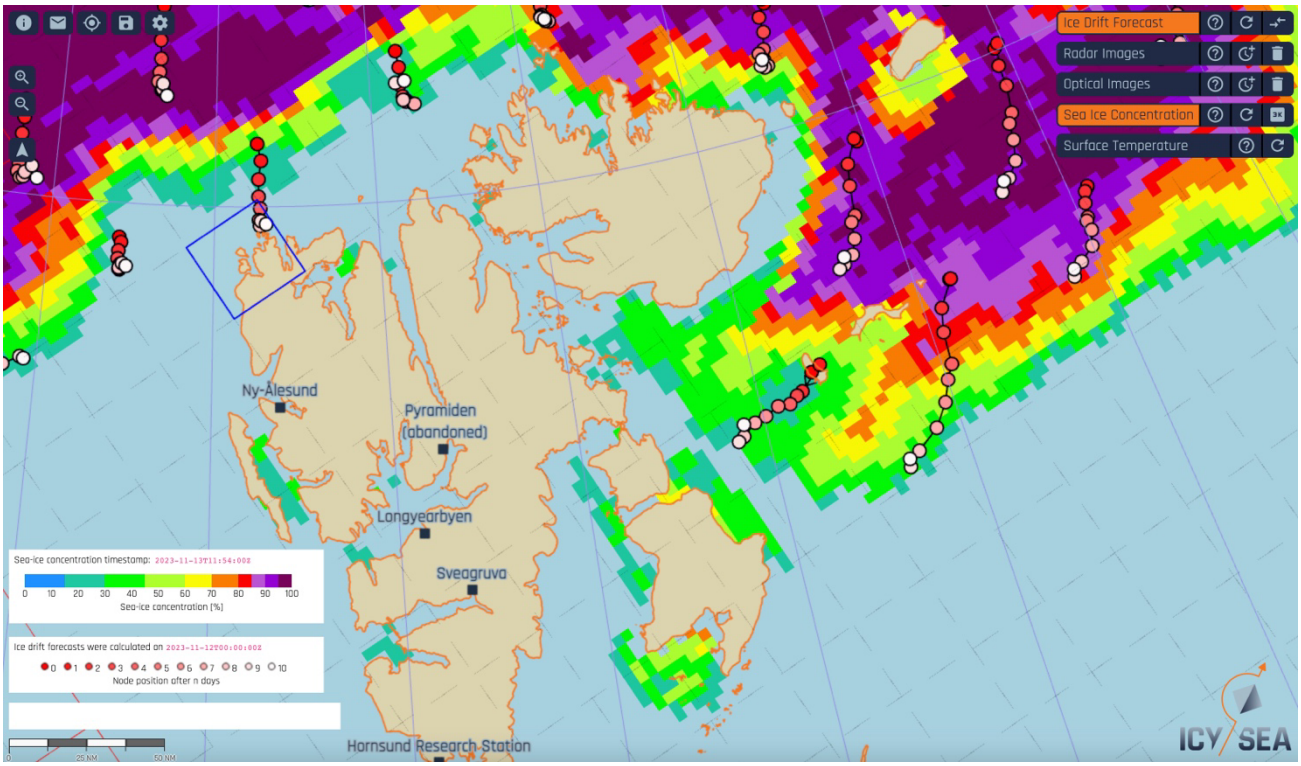


Data Layer: Sea Ice Drift Forecast

- Predicted pathways of an imaginary ice floe over the next days
- Each dot shows where ice is predicted to be in 1, 2, 3, 4,..., 10 days
- Distance between two points gives the predicted drift over one day
    - **Resolution**: distance between dots shows drift over one day
    - **Coverage**: Arctic, additional product for Svalbard region
    - **Updates**: daily - **manually**
    - **Limitations**:
        - *Model uncertainties*: model forecasts come with uncertainty, the longer into the future the ice drift prediction the larger the uncertainty

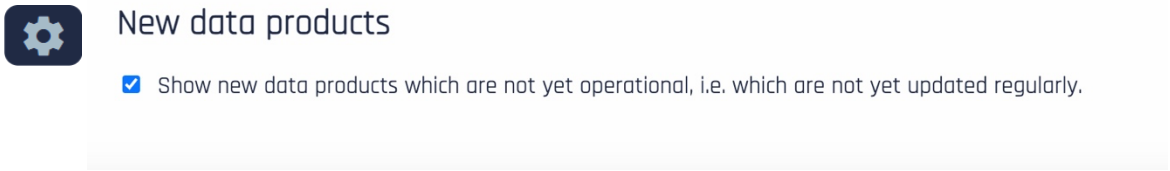
        > **update daily to confirm predictions**





Data Layer: Classified Optical Image

- Experimental data set from ongoing research
- Automatically classified sea ice types from optical image (Sentinel-3)
- Add data layer/button via 'Settings' menu:

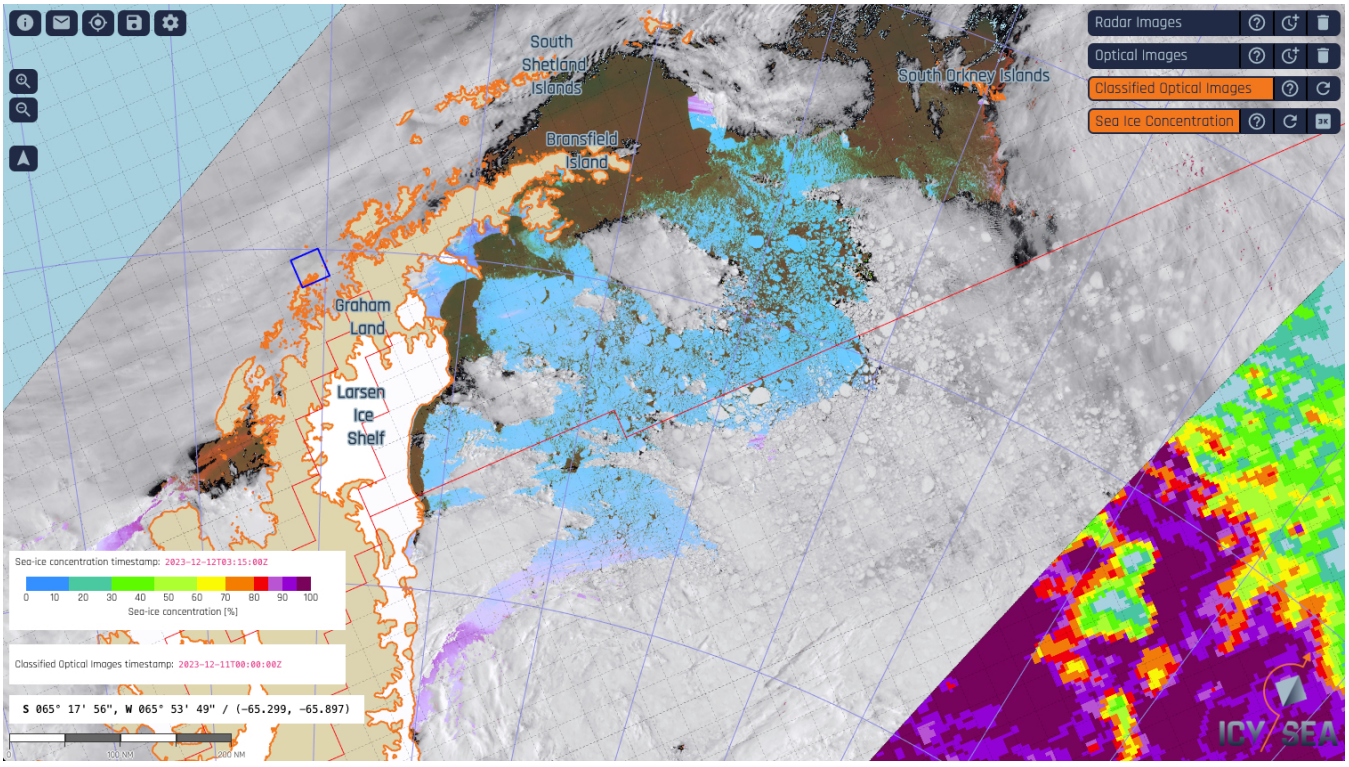


- **Resolution**: 450 meter
- **Coverage**: Antarctic Peninsula
- **Updates**: daily - **manually**
- **Limitations**:
  - *Ongoing research*: images are classified automatically, still being validated
  - *Clouds*: when your area of interest is covered by clouds, ice won't be visible

  > **use radar images for reference**

Data layer details, **Classification Legend**

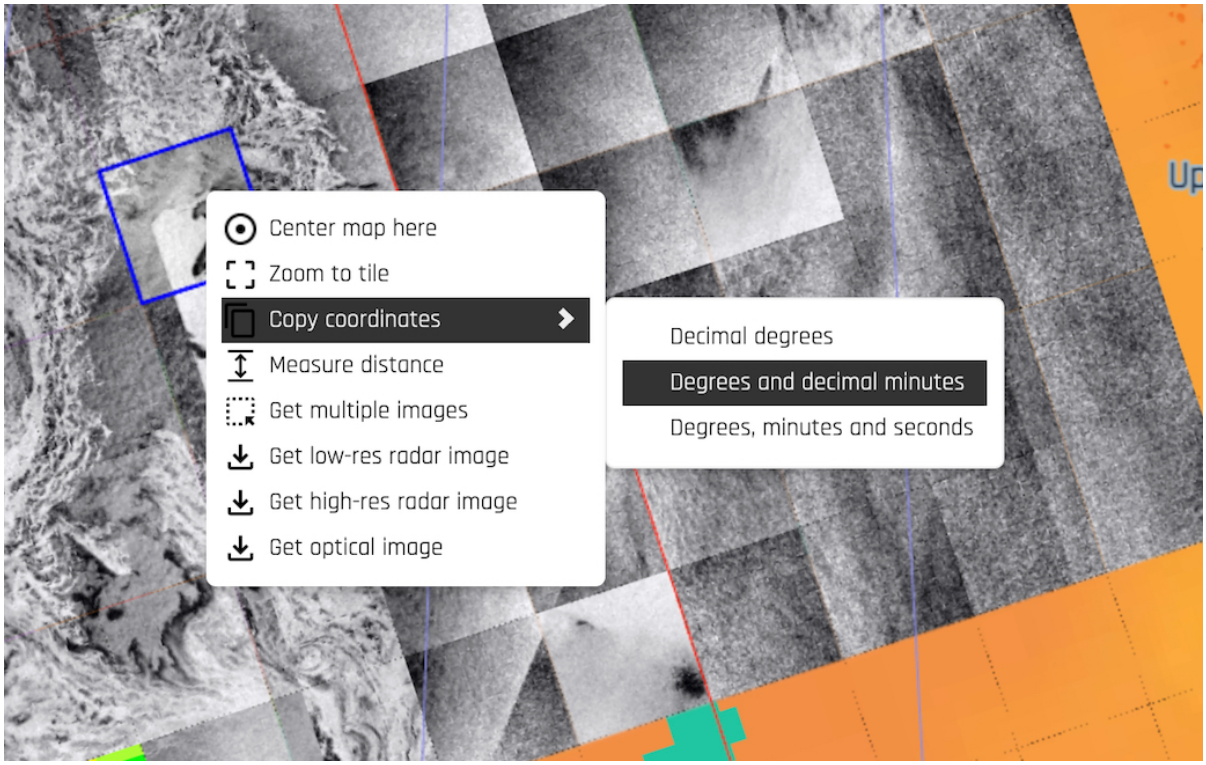
Update data



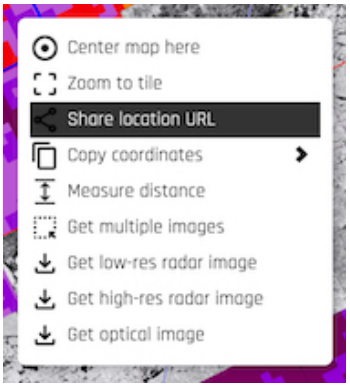
Functions: Adjust Map and Positioning

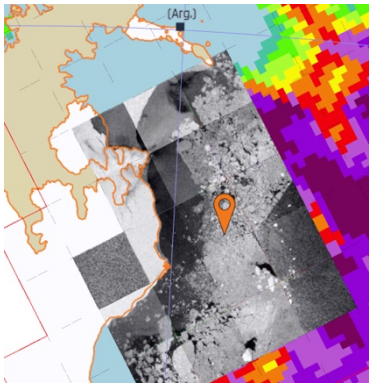
'RIGHT CLICK' to open the ***'Dropdown Menu':***

- **'Center Map':** - centers map around point of the ***'RIGHT CLICK'***
- **'Zoom to Tile':** - zooms into the selected tile
- **'Copy Coordinates':** - copy coordinates from the point of ***'RIGHT CLICK'***
  - paste coordinates wherever you need them

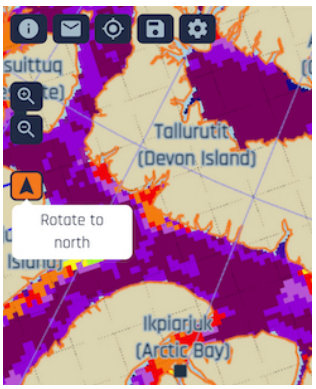


Select '**Share location URL'** to share an exact location with another user:

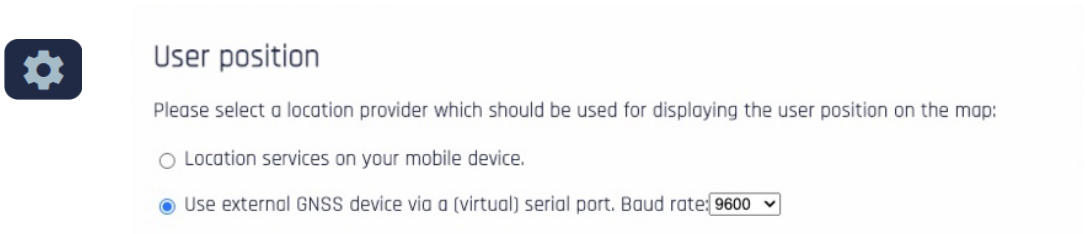




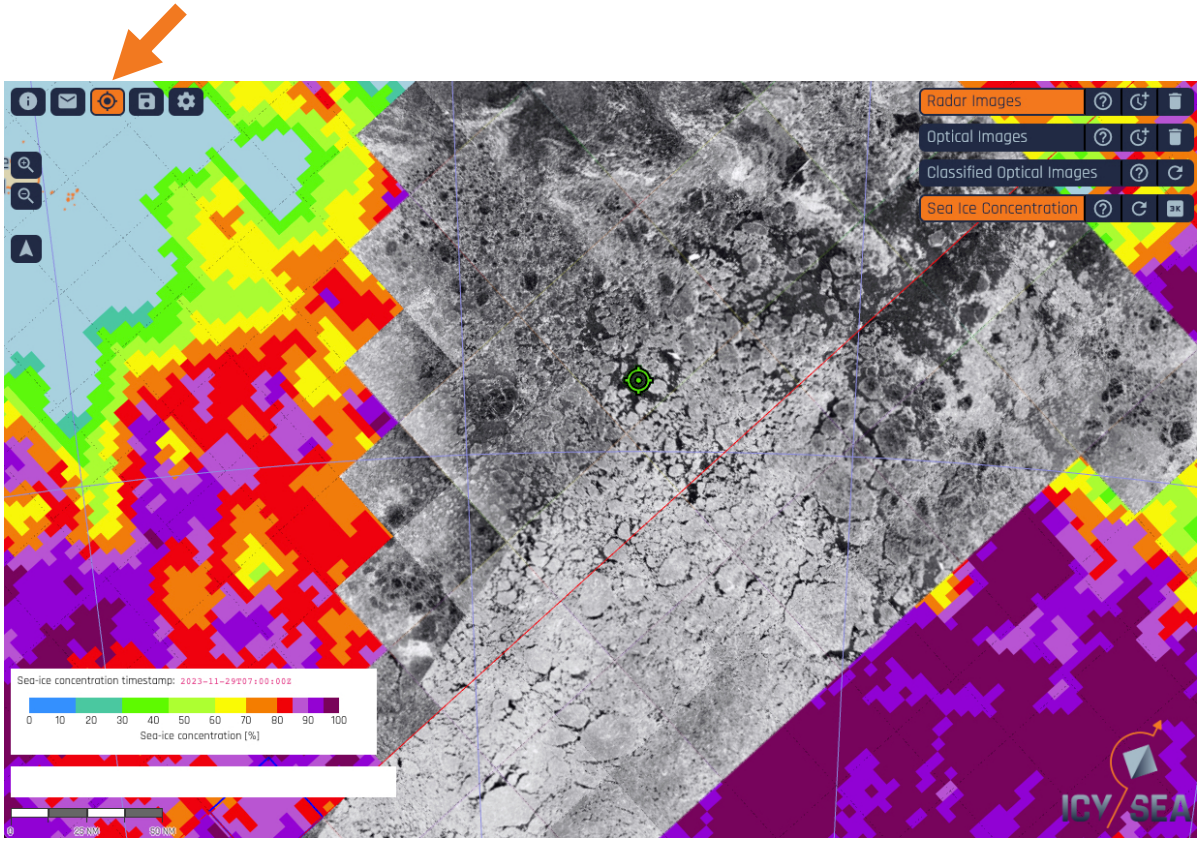
'Rotate Map to North':



'User Position': displays your current position in IcySea:
- open 'Settings' menu and select the source for your GPS Position
  - 'Location Services' for mobile devices (phones and tablets)
  - External GNSS sensor when using a plug-in GPS sensor or the ship's GPS:



After selecting the GPS data source click the **'User Position'** button to display the position on the map:



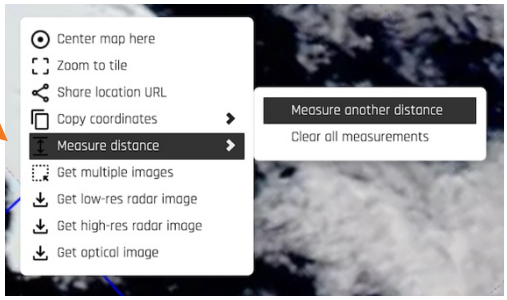
Functions: Measure Distance Tool

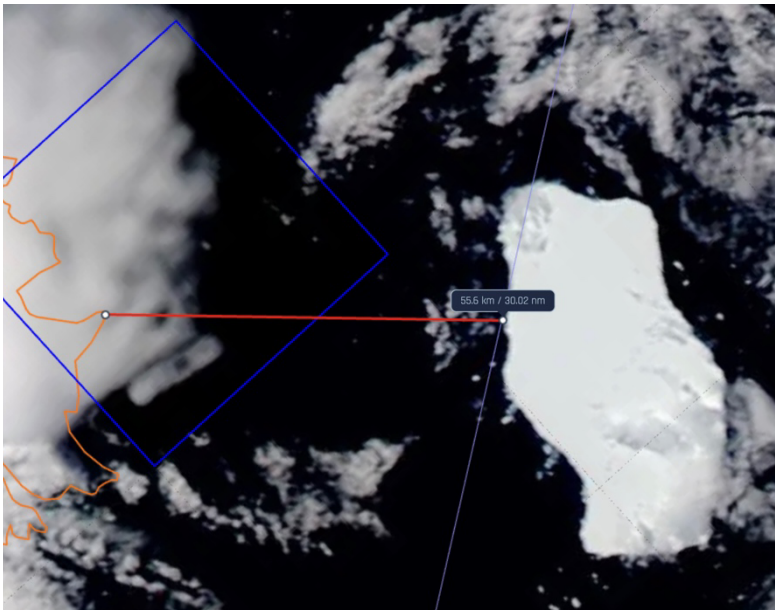
Distance measurement starts at position of ***'RIGHT CLICK':***

1. ***'Straight line'*** measurement
2. ***'Free-hand'*** measurement

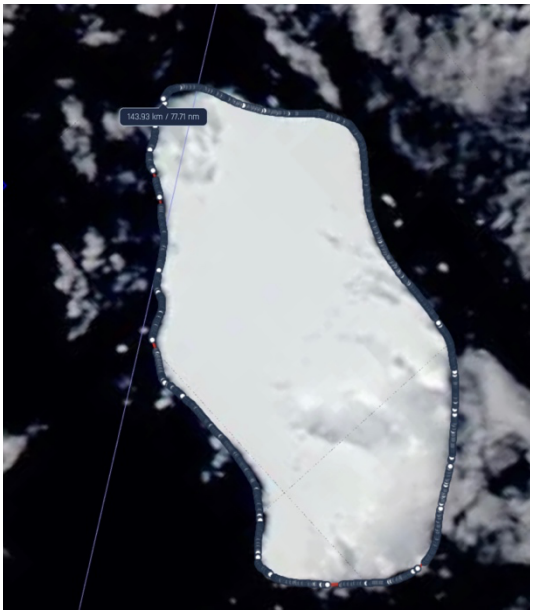
Finish measurement with ***'DOUBLE LEFT CLICK'***

- distances shown in *km* and *nm*
- measurements available until deleted
- multiple measurements can be displayed at the same time





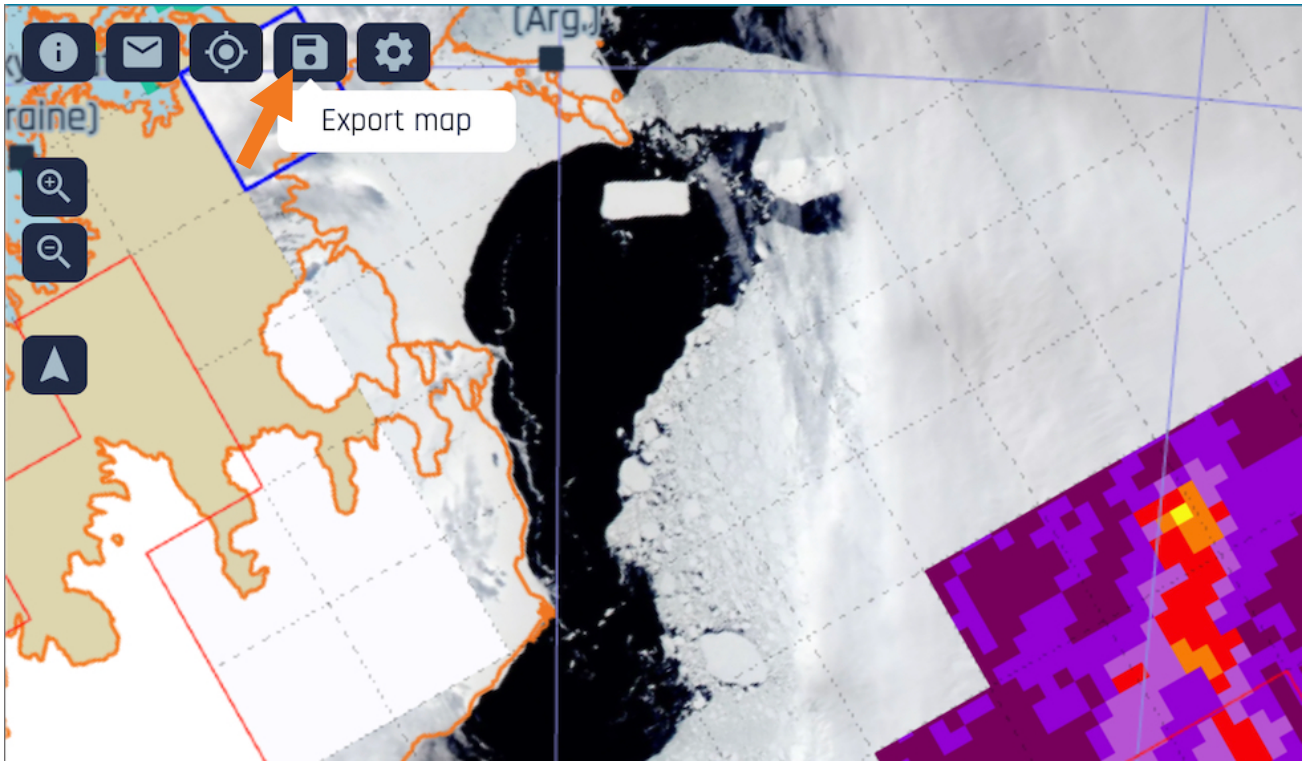
'Straight line' measurement with *'LEFT CLICK'*



Hold *'SHIFT + LEFT CLICK'* for ***'Free-hand'*** measurement

Functions: Data Export

- The data you download via IcySea can also be exported and used in various GIS applications
  - data is exported in *png* format with an associated *aux* file that contains the georeference information
  - *png* and *aux* files need to be saved to easily '*drag and drop*' the *png* image into your GIS project



Take Part in the Development!

Please share IcySea with your colleagues.
Test the app and
SEND US YOUR FEEDBACK!
support@driftnoise.com

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Polar Services