

Applied sea ice science at NASA

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Cryospheric Sciences Lab (615) and the University of Maryland

About me

Assistant Research Scientist with ESSIC

Sea ice scientist

British!

About us: The Cryospheric Sciences Lab (615)

Sea ice remote sensing and modelling

Land ice/terrestrial snow remote sensing and modelling

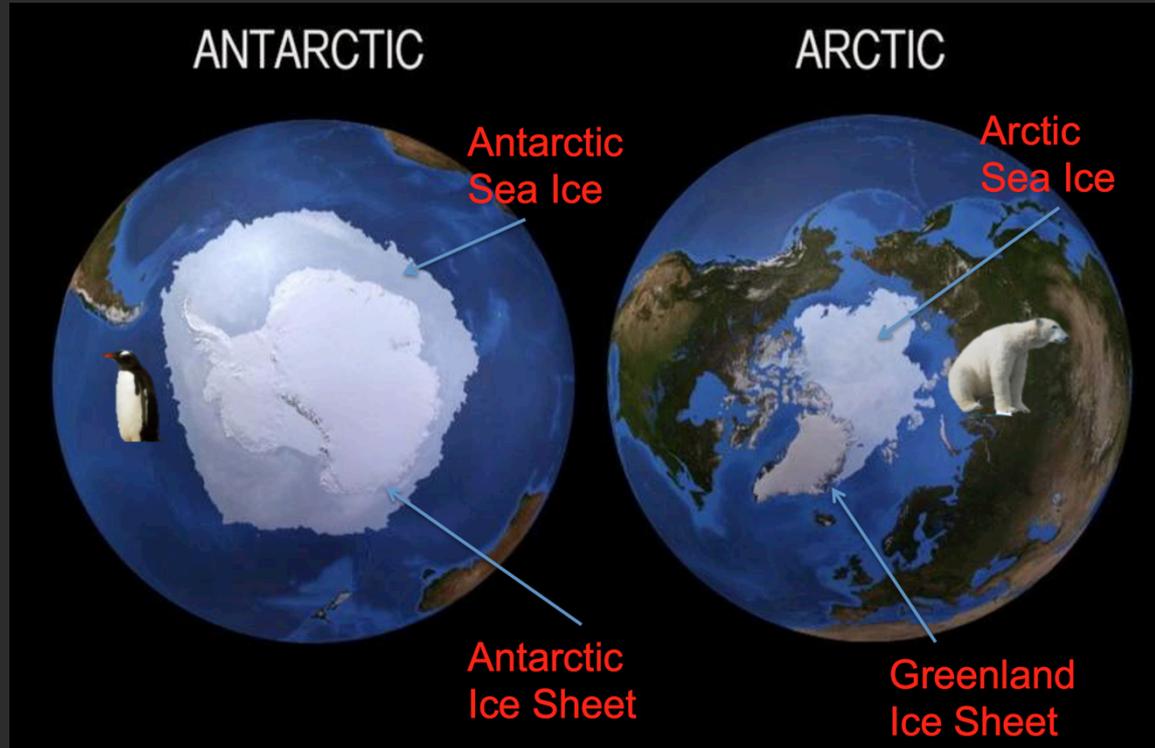
In-situ measurements (airborne and field campaigns in Antarctica currently underway!)

Produce LOTS of polar data products (cryosphere.gsfc.nasa.gov)

~30 scientists (~100 people in the lab)

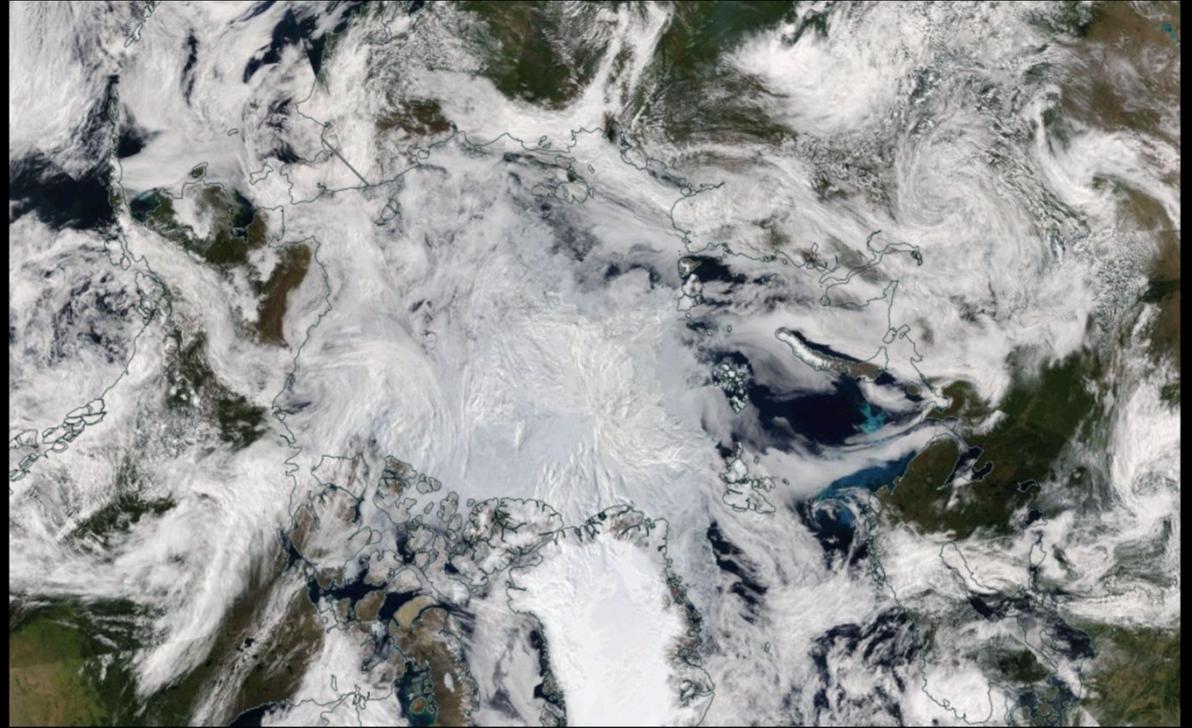
Sea ice and ice sheet mass balance variability – impacts/feedbacks with global climate.

The Cryospheric Sciences Lab (615)



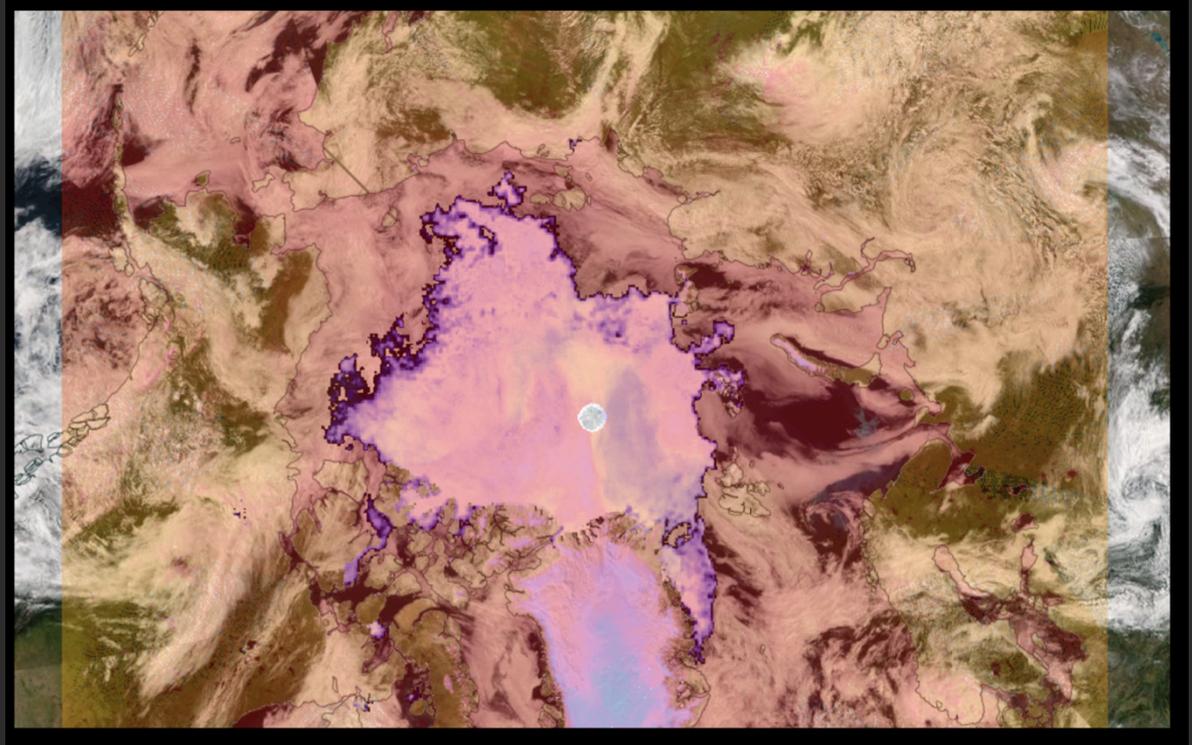
Sea ice cover

Passive
microwave sea ice
data records.



Sea ice cover

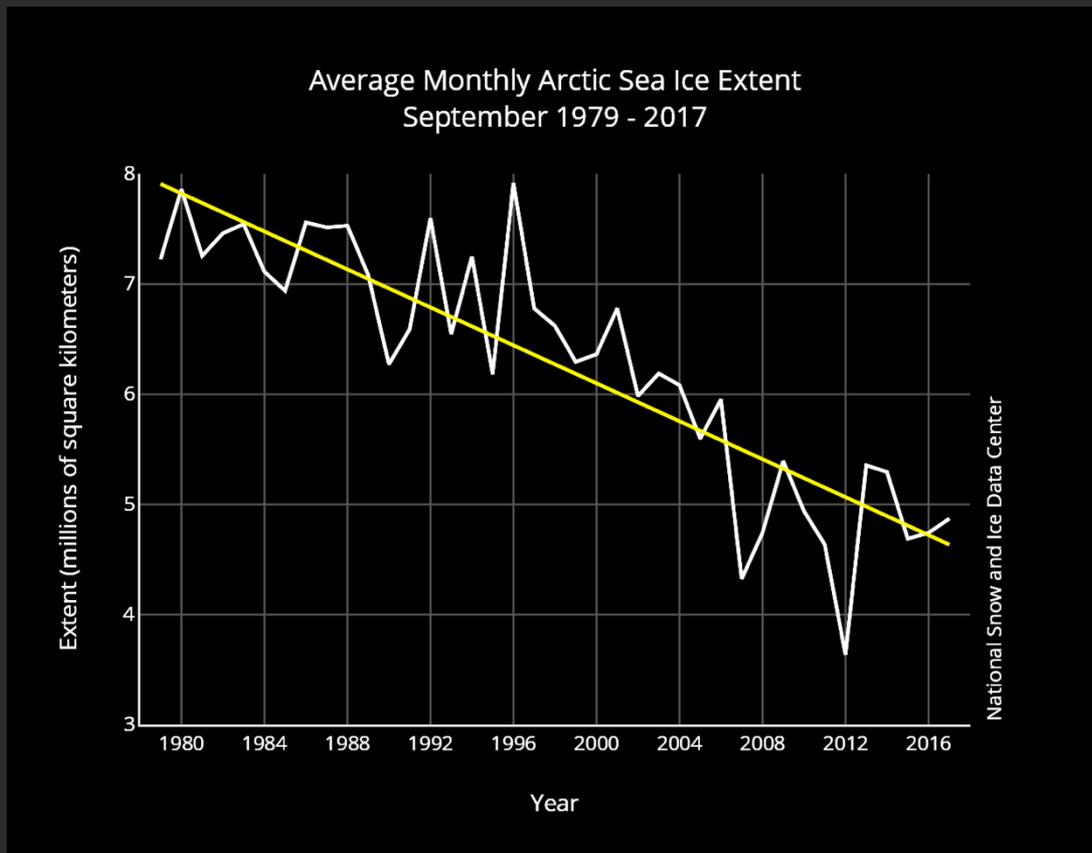
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Sea ice cover

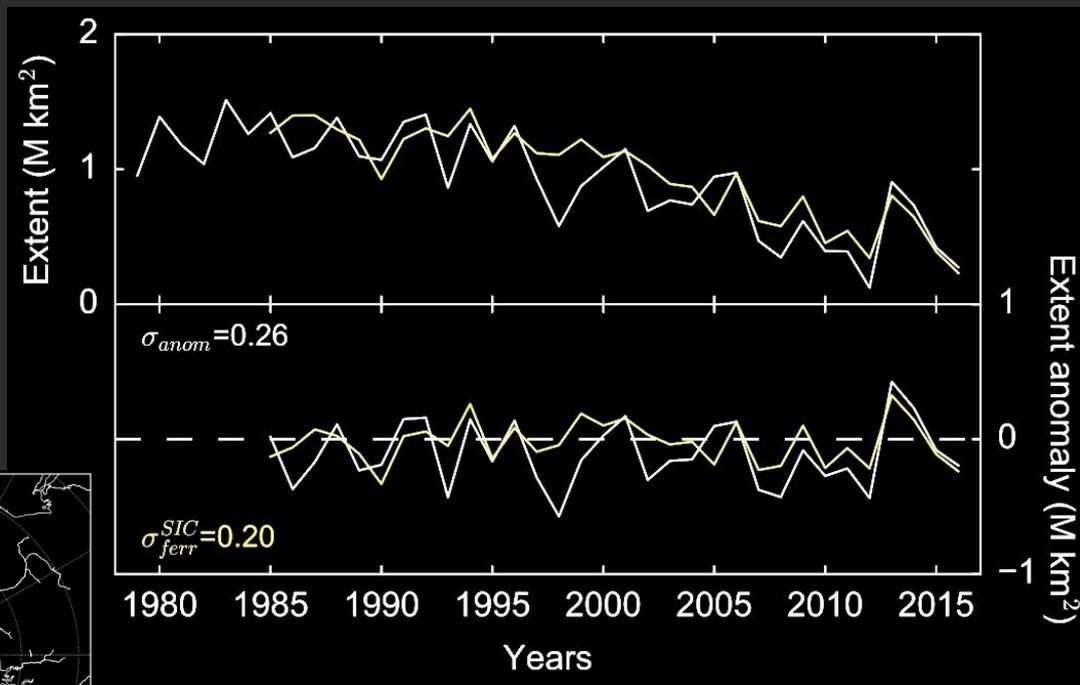
Passive
microwave sea ice
data records.

Understanding
Arctic climate
change.



Sea ice forecasting: A new application!

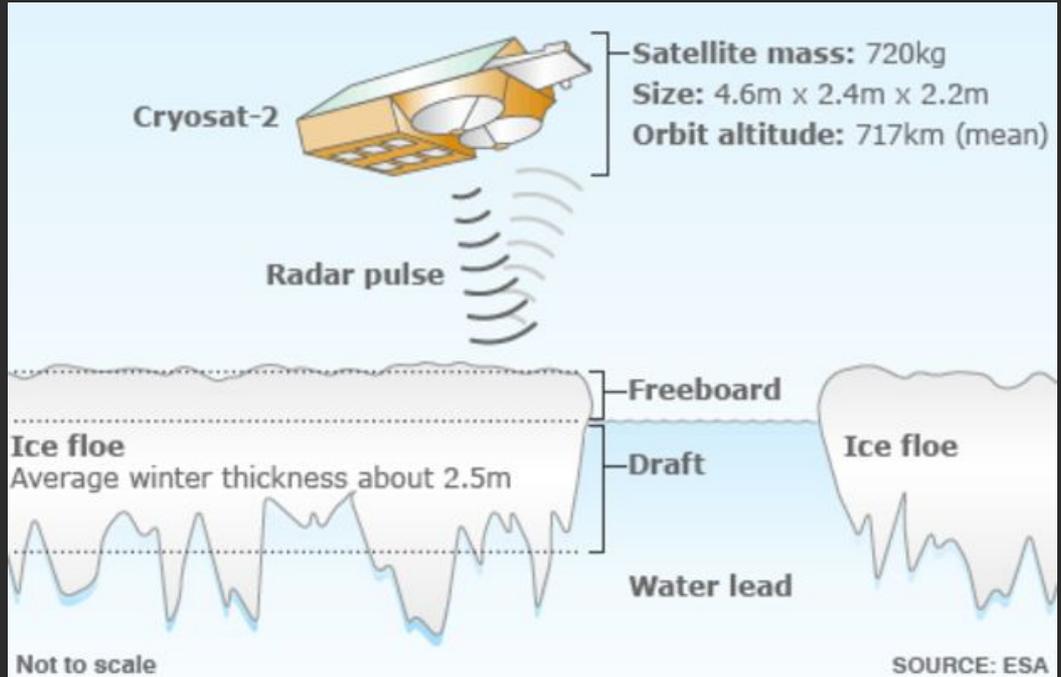
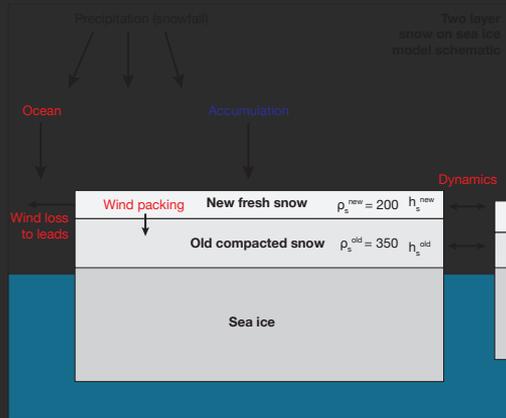
Trying to provide stakeholder relevant information - focus on regions of importance



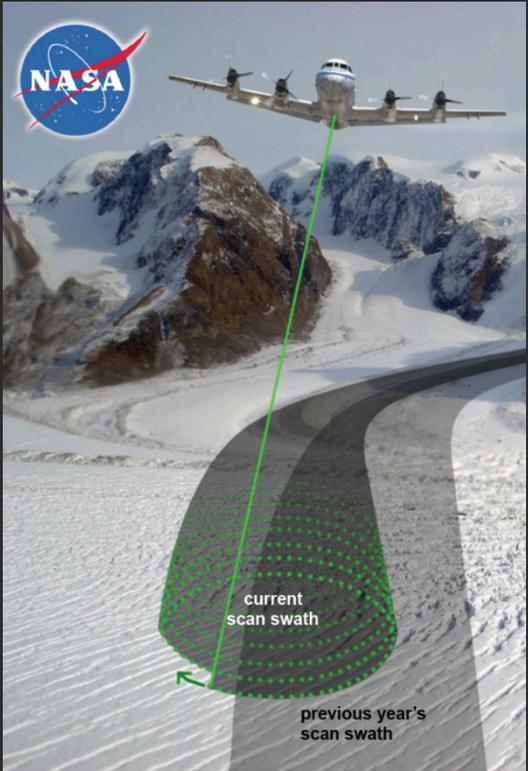
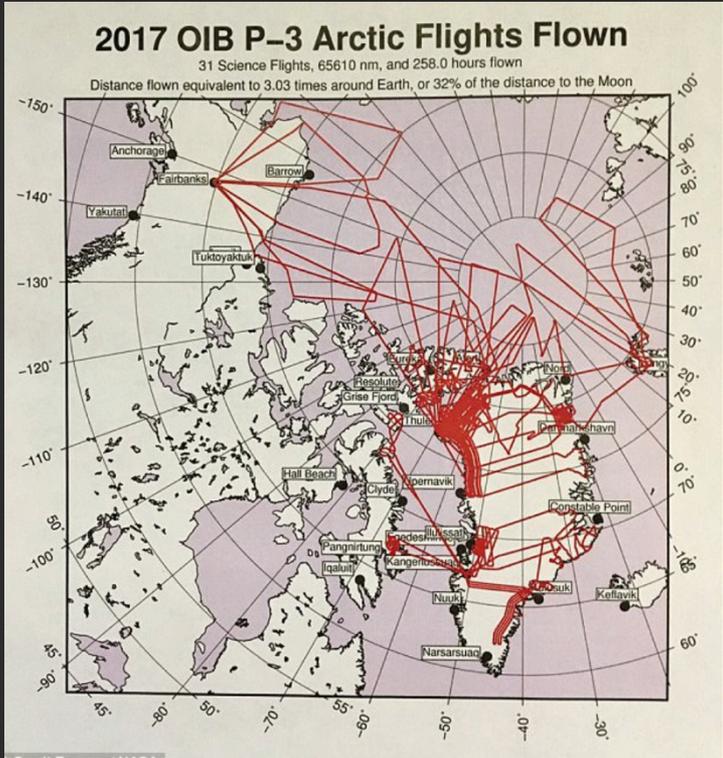
Petty et al., [2017, Earth's Future]

Moving beyond ice cover to thickness

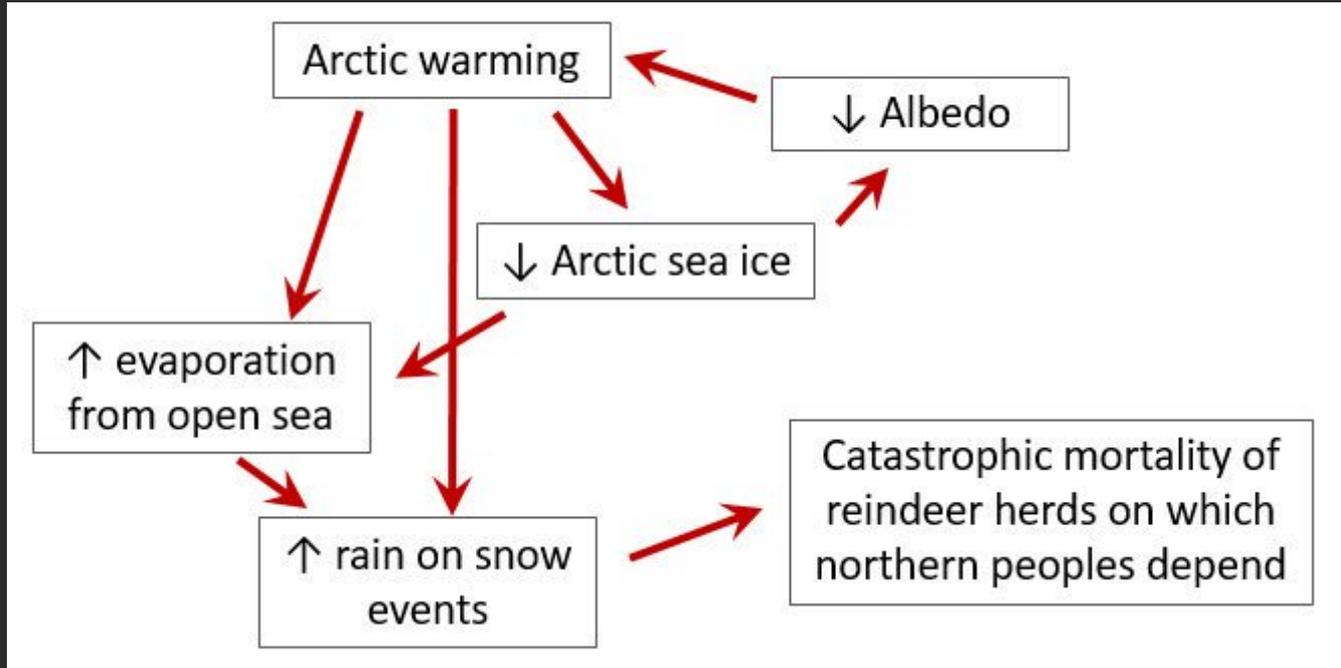
A new NASA funded snow on sea ice project - NESOSI



NASA's Operation IceBridge



Atmosphere-ice-ocean interactions, e.g.:

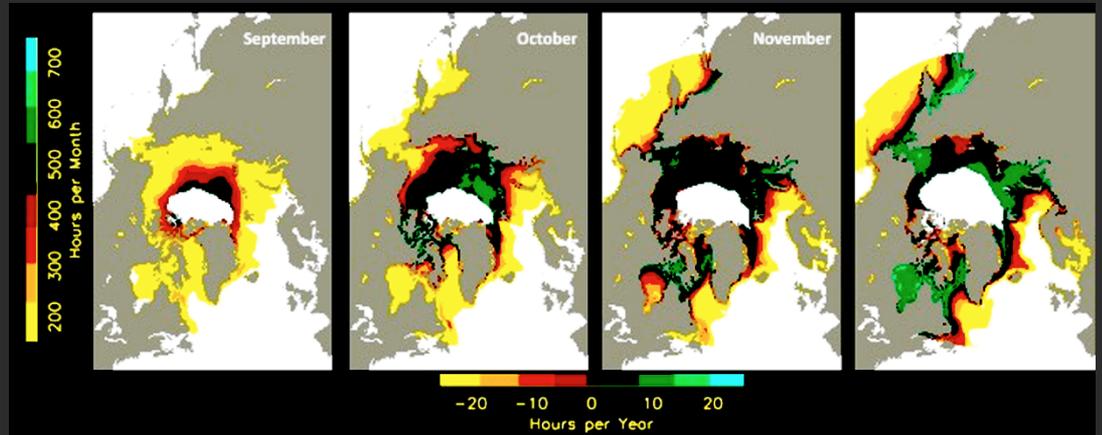


Vessel icing: a new application!

Apply a simple empirical model with winds, ice cover and surface temps as an input: generate vessel icing rates.



National Weather Service interested in providing better information for safer Arctic shipping.



Boisvert et al., [in prep]

Future activities/plans

Sea ice cover/vessel icing forecasts

- Web portal for NRT forecasts?
- Exploring new funding opportunities.

ICESat-2

- Routine measurements of sea ice freeboard.
- Can derive sea ice thickness.
- Expected 49 day data latency but exploring quick look products for sea ice.