

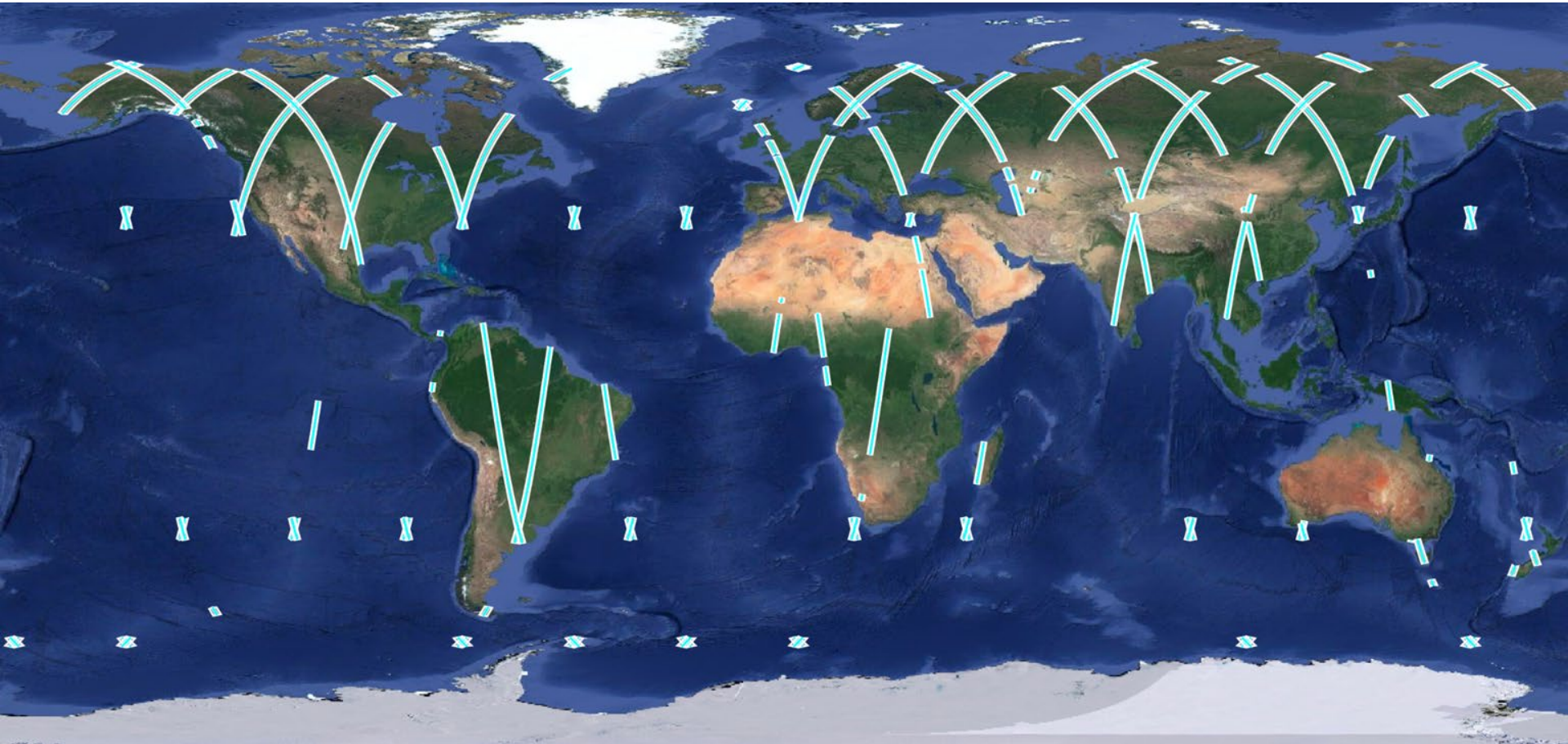
# **SWOT HR Coverage Update**

Tamlin Pavelsky, Sarah Gille, Claire Pottier

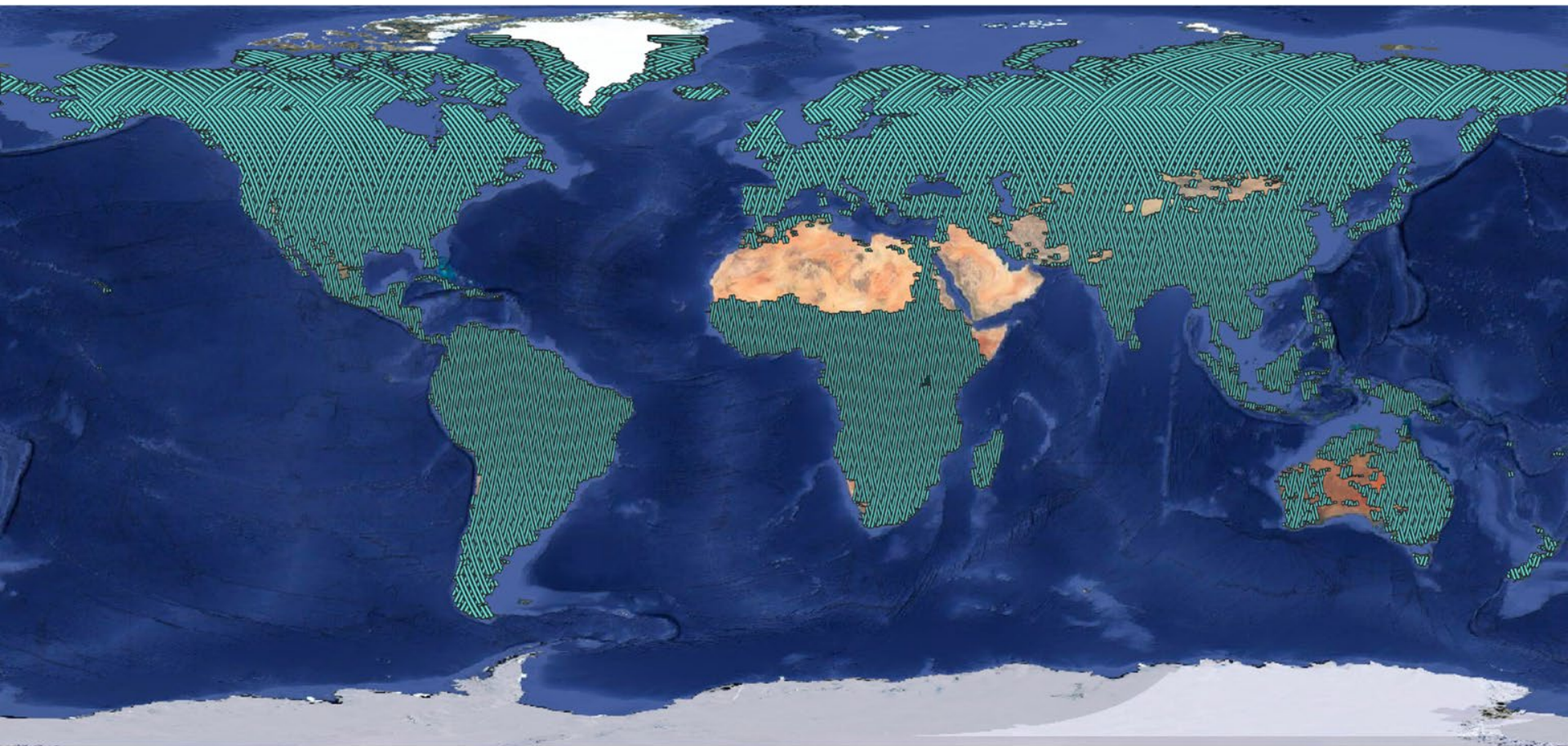
# HR Processing/Downlink Prioritization

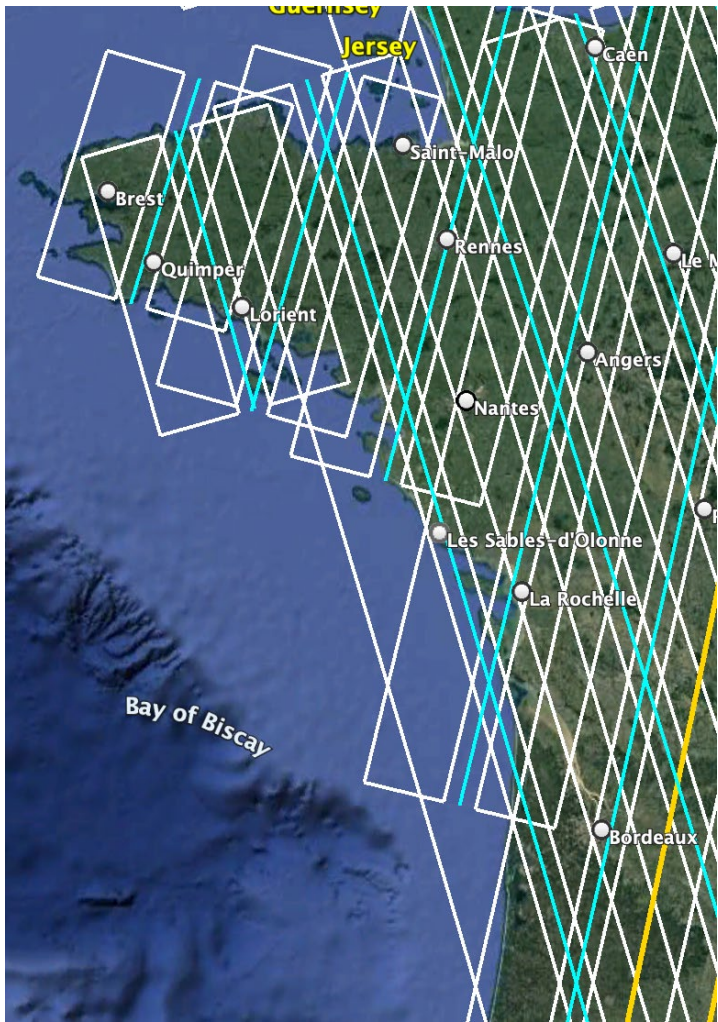
- SWOT HR data processing is quite resource intensive.
  - In part due to larger area of water observed by SWOT compared to prelaunch expectations
  - There may be a delay in processing some SWOT data that is downlinked due to capacity limitations. **All data are processed during reprocessing campaigns**
- SWOT downlink capabilities are potentially vulnerable to disruption
  - E.g., disasters such as forest fires
- We need a prioritization of SWOT HR data coverage for two purposes:
  - To prioritize which areas are downlinked in the event that downlink capacity decreases in the future
  - To prioritize which areas are processed rapidly if sufficient resources are unavailable to process all data as it is downlinked.

# 1 Day Fast Sampling Orbit HR Coverage



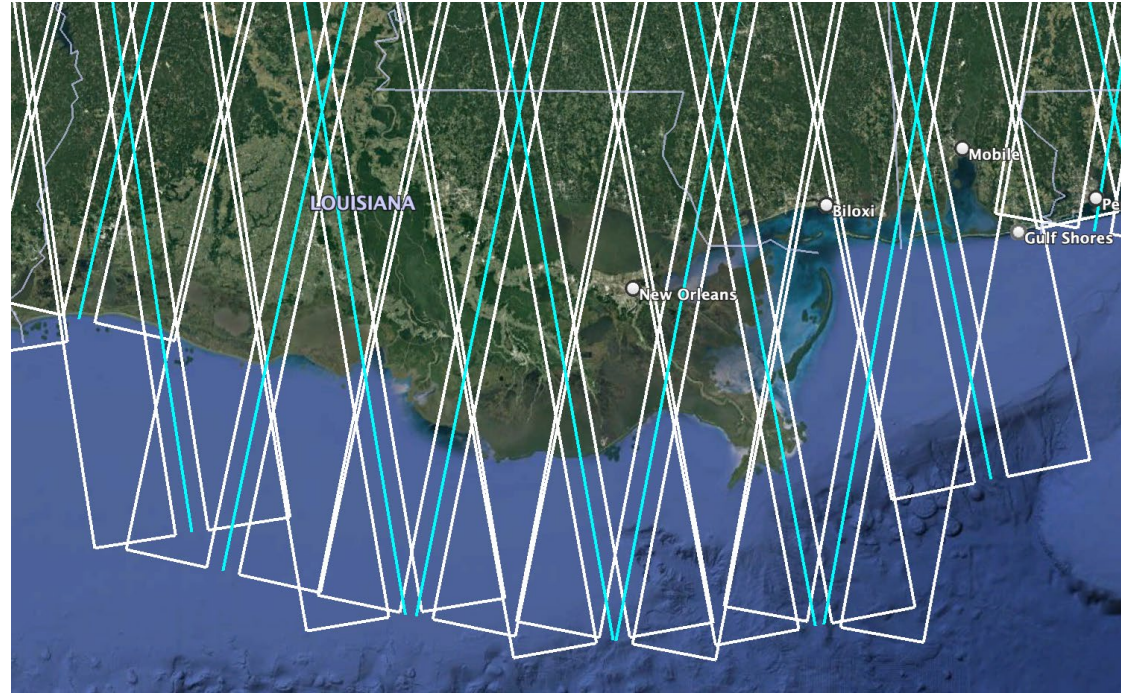
# Planned Science Orbit HR Coverage



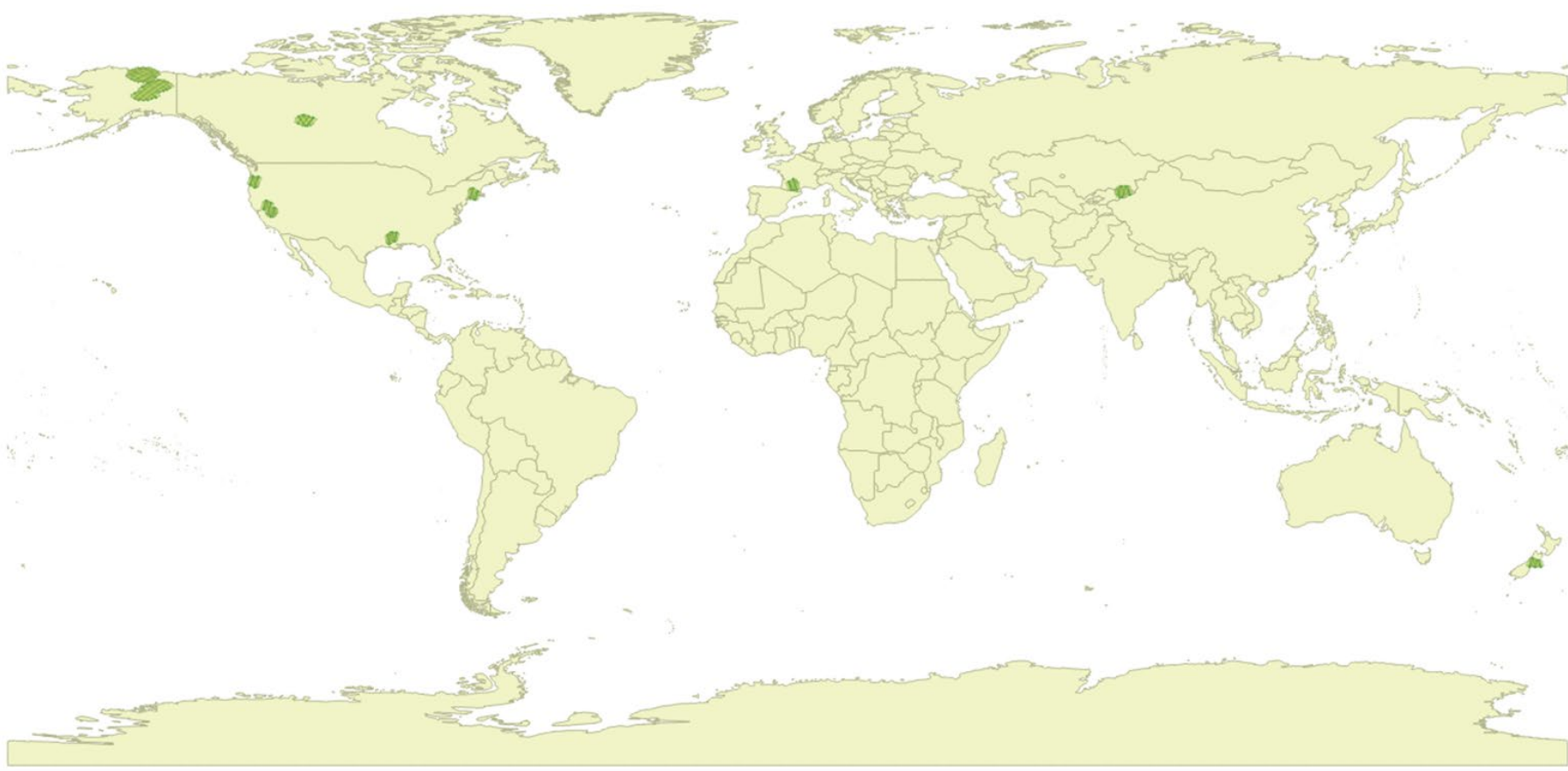


## Significant Coastal Ocean Data in Current HR Coverage

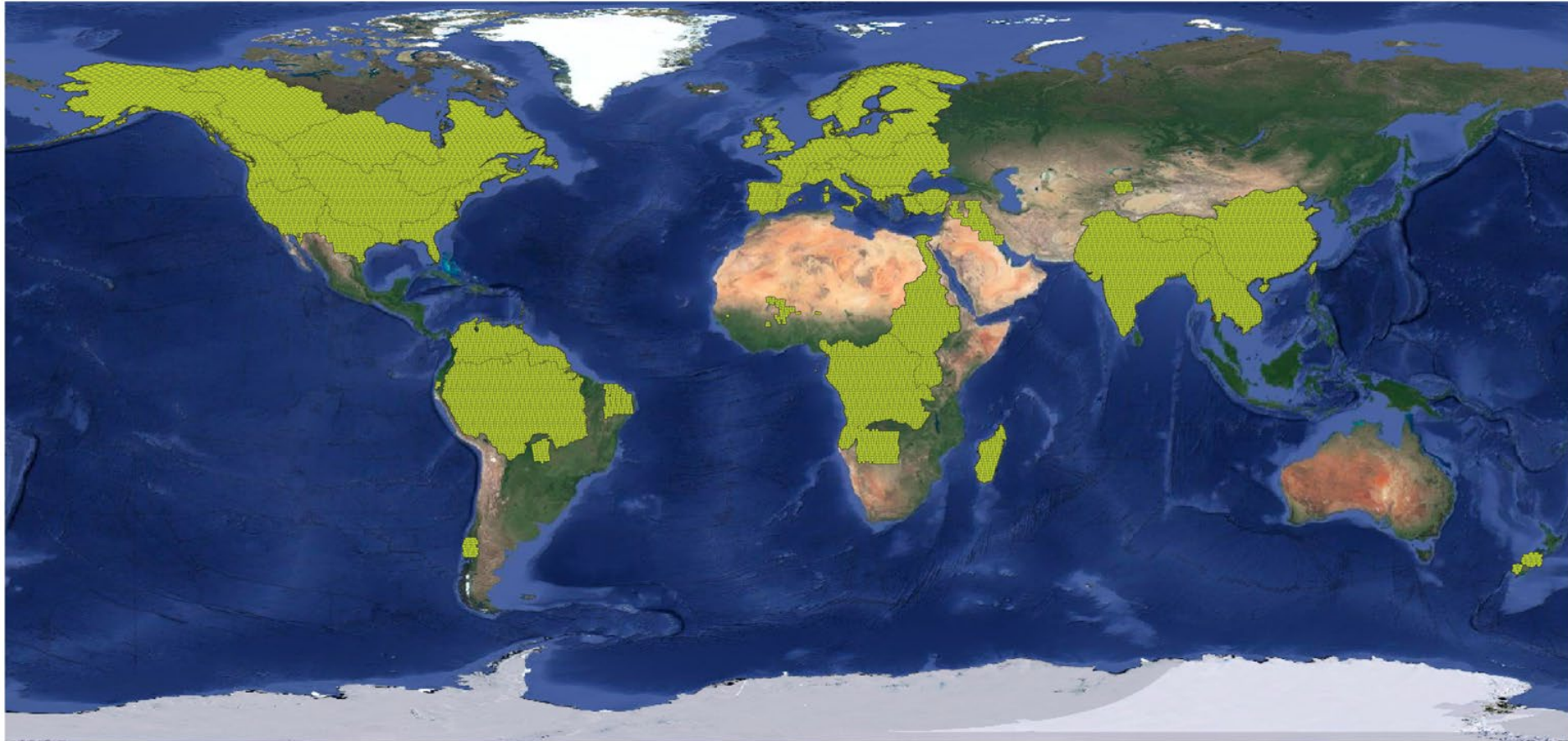
Note: HR data over the ocean should be viewed as an expert-only product for experimentation. Due to presuming it may be less accurate than LR data at the same resolution.



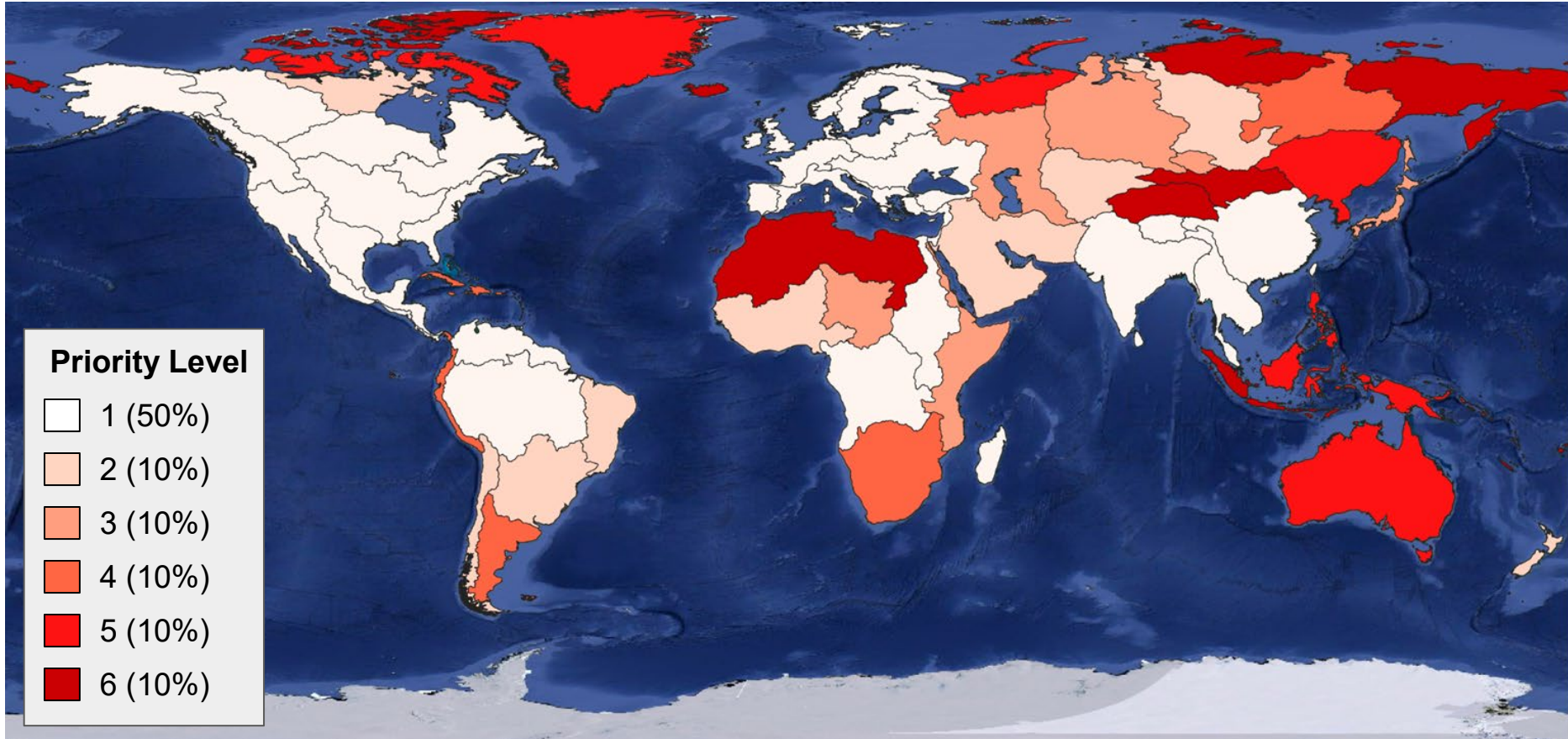
# HR Coverage Aug. 10-Aug. 21 (due to Inuvik Outage)



# HR Coverage Aug. 21-~Sept. 15 (due to Inuvik Outage)



# HR Prioritization Mask (1st step: Hydrosheds L2 basins)





## Are HR data useful in the open ocean?

- A priori the answer is “no” for SSH, but possibly for phenomenology studies ...
- Recommendation to start with what we have: opportunity for experts to test existing HR data from one-day repeat and near-coastal areas along with 250-m resolution LR data (especially in areas where additional data e.g. HFR or adopt-a-crossover campaigns are also available)
- Identify:
  - Whether HR data are actually useful over the ocean (eg, wave, sea-ice phenomenology...)
  - If so, priorities in the event that downlink capabilities become available



Coastal continuum (France): Trace 17 (Day 1)

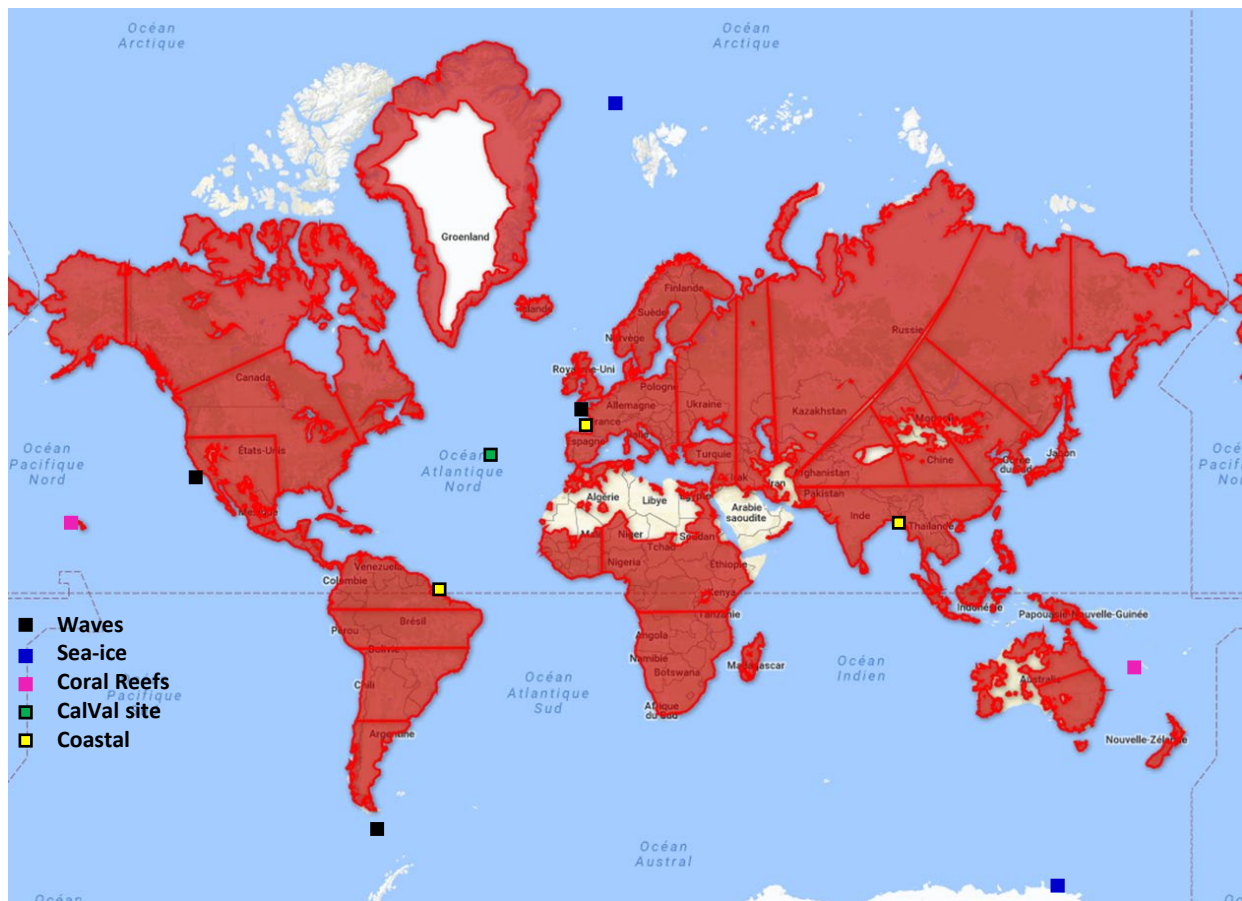
## Reminder: What was the open ocean HR plan, pre-launch (2017)?

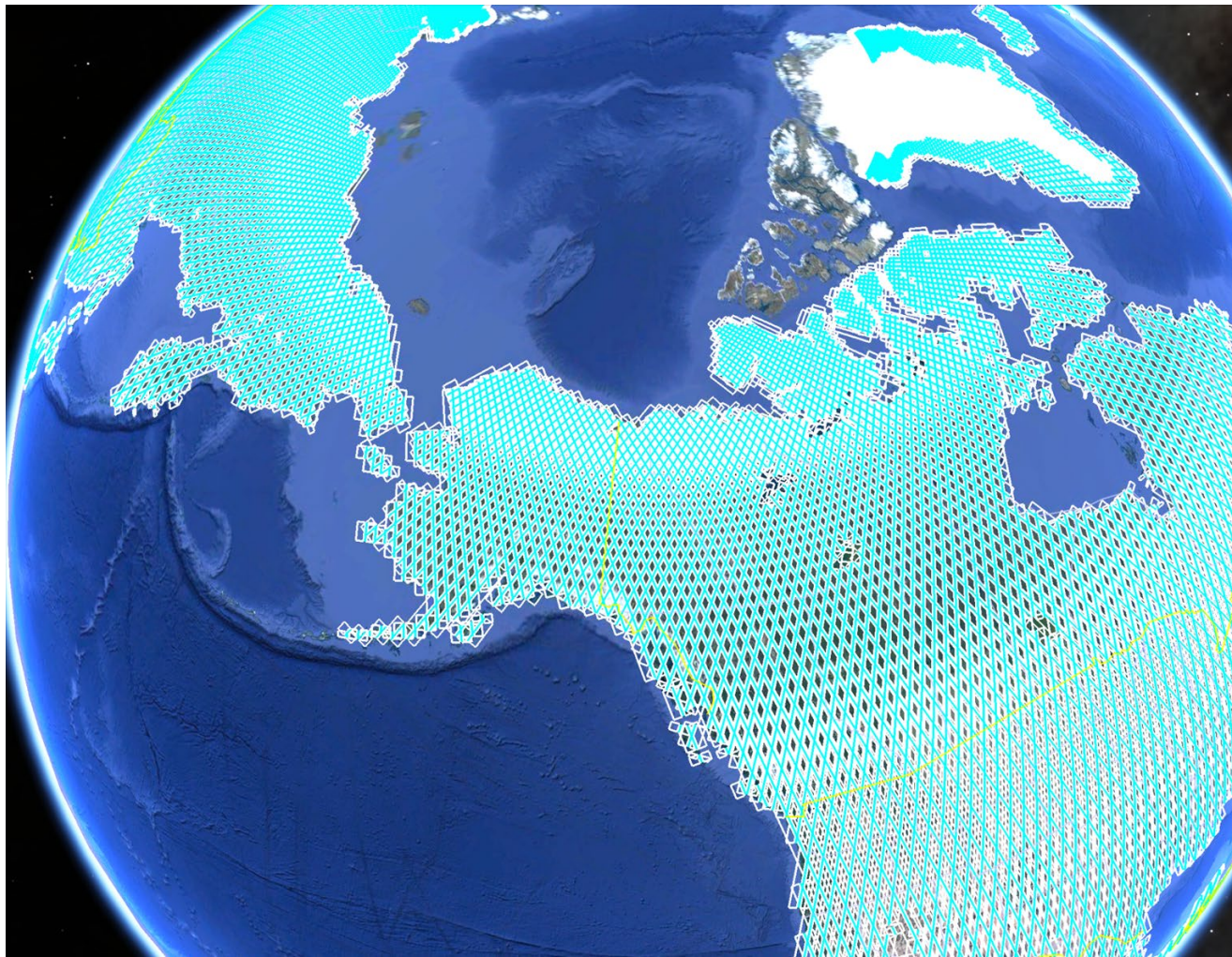
- Prioritized clear measurement targets for first 12 months
- Proposed a strawman plan for subsequent years
- Suggested a call for opportunity every 6 months to revise the ocean patches mask for science studies ...
  - coastal, sea-ice, coral reefs,
  - sub-mesoscale in-situ campaigns,
  - new and innovative opportunistic science (e.g., Tropical Instability Waves, the Gulf Stream, the Kuroshio Extension, and the Agulhas Retroflexion region, Eastern boundary currents),
  - => island wake regions (e.g., downstream of the Galapagos, Kerguelen)

# Straw plan from 2017

4 open ocean patches of 120 km x 120 km, 3 years, seasonally varying

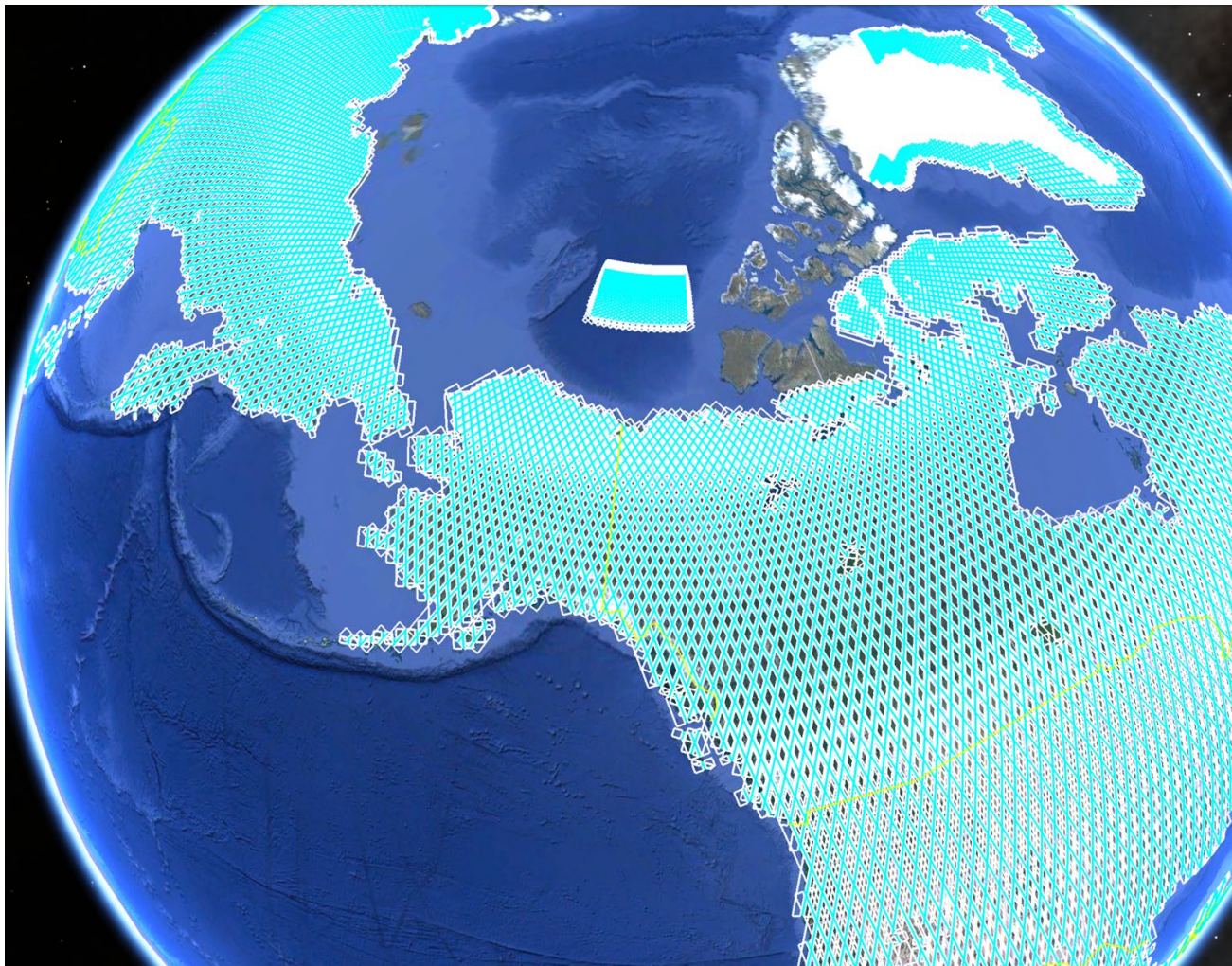
	Yr 1	Yr 2/Yr 3
Waves	California Drake (6 m) Iroise (6 m)	Waves site x (6 m)
Sea-ice	Arctic (6 m) Antarctic (6 m)	Arctic (6 m) Antarctic (6 m)
Coral reefs		Coral site 1 (3 m, yr 3) Coral site 2 (3 m, yr 3)
Coastal		Coastal 1 (3 m) Coastal 2 (3 m)
CalVal	Ocean CalVal site	Ocean Val site (12 or 6 m)
Science		Science





## Nominal SWOT HR Coverage

- Active March-November
- Does not include coverage over sea ice



## Seasonal SWOT HR Coverage

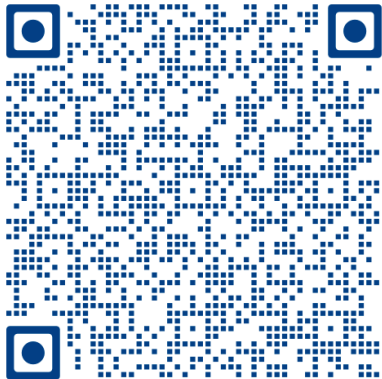
- Active Dec-Feb
- Removes part of Canadian archipelago to collect data over sea ice
- Approximately 100,000 km<sup>2</sup>
- Coverage area can be moved elsewhere as desired by the community.

**Are we happy with this overall approach?**

**Is the currently identified area a good one to keep in the mask?**

# Next Steps

- Solicit feedback from the Science Team on L2 basin prioritization
  - May be challenging due to competing priorities
- Catalog requests from the Science Team for higher prioritization for particular SWOT tiles that might be particularly important
  - e.g. tiles covering specific field campaigns
  - Relatively easy due to small changes relative to overall number of SWOT tiles.



Download Shapefile of L2 Basins with Prioritization in field SWOT\_Cat

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