

# IHO Hydrographic Commission on Antarctica (HCA)

## National Report by United States

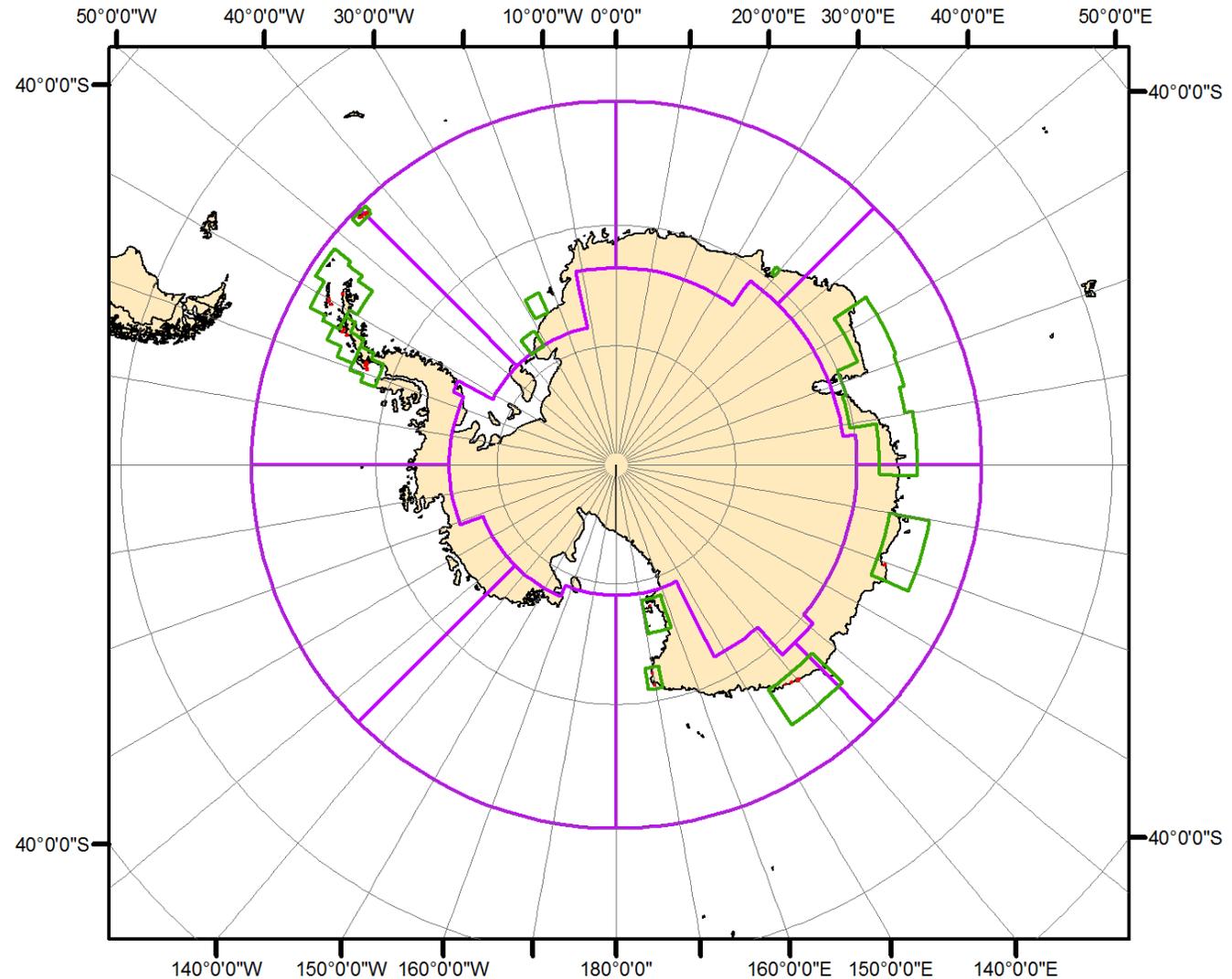
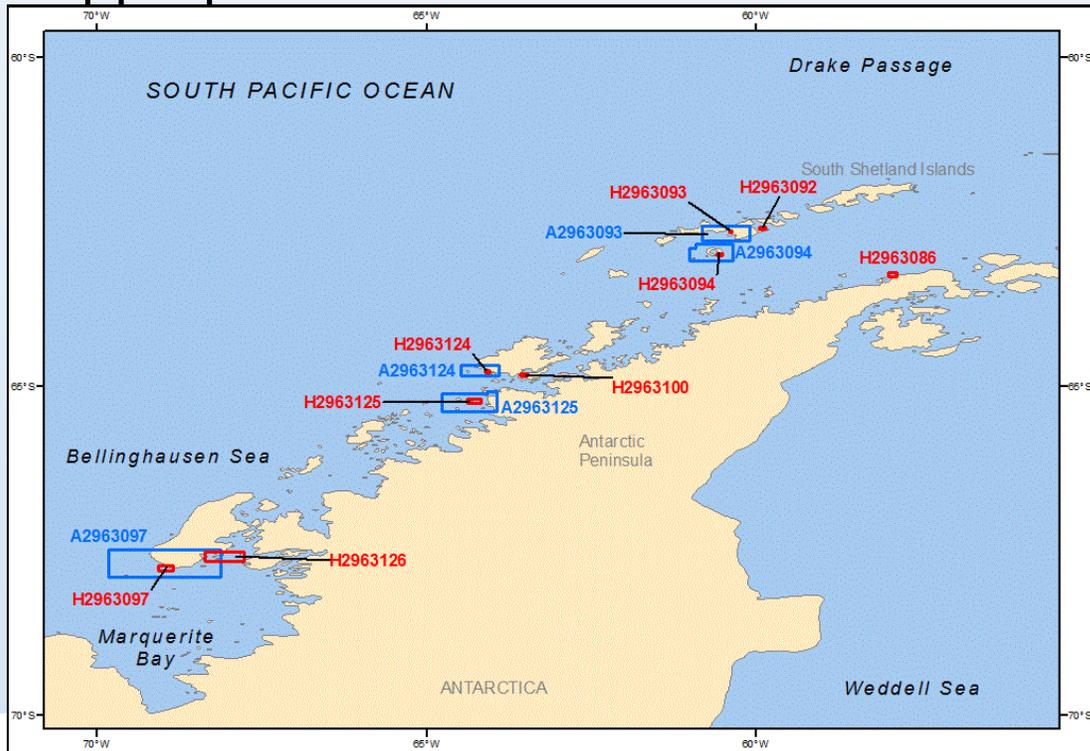


# Survey and charting progress in Antarctica since HCA-15

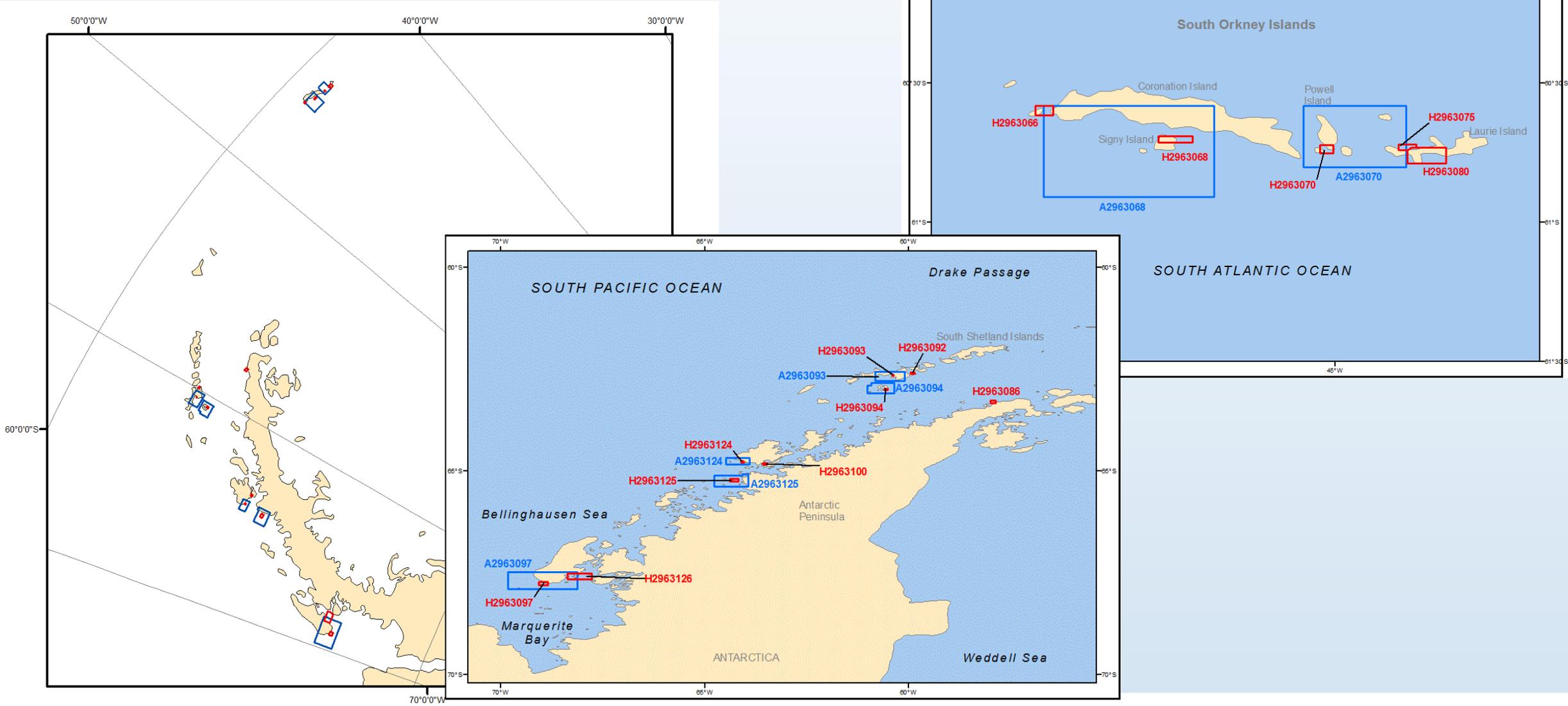
- New charts produced (national, INT, ENC): none
- Areas surveyed: none
- Risk assessment studies: none
- Impact of Polar Code on your activities: none

# Planned Activities for 2019-2020

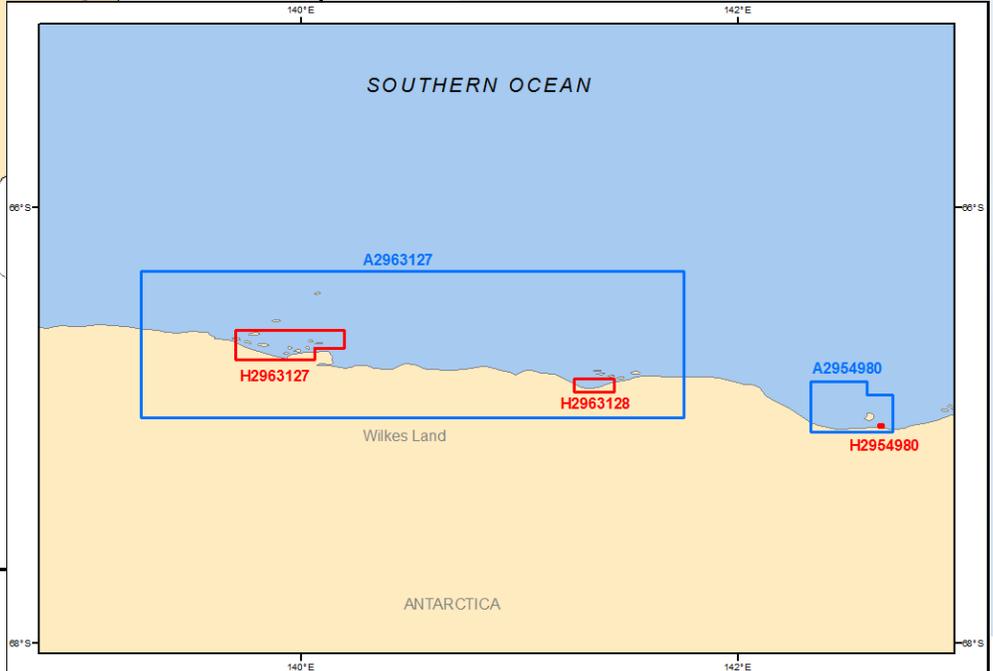
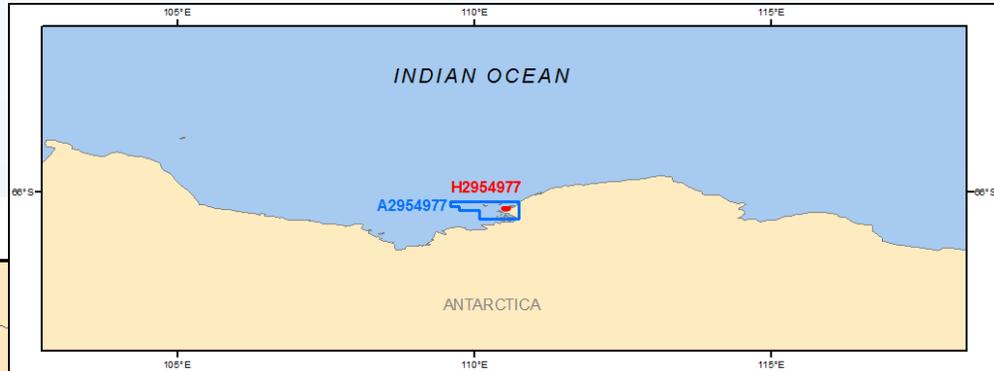
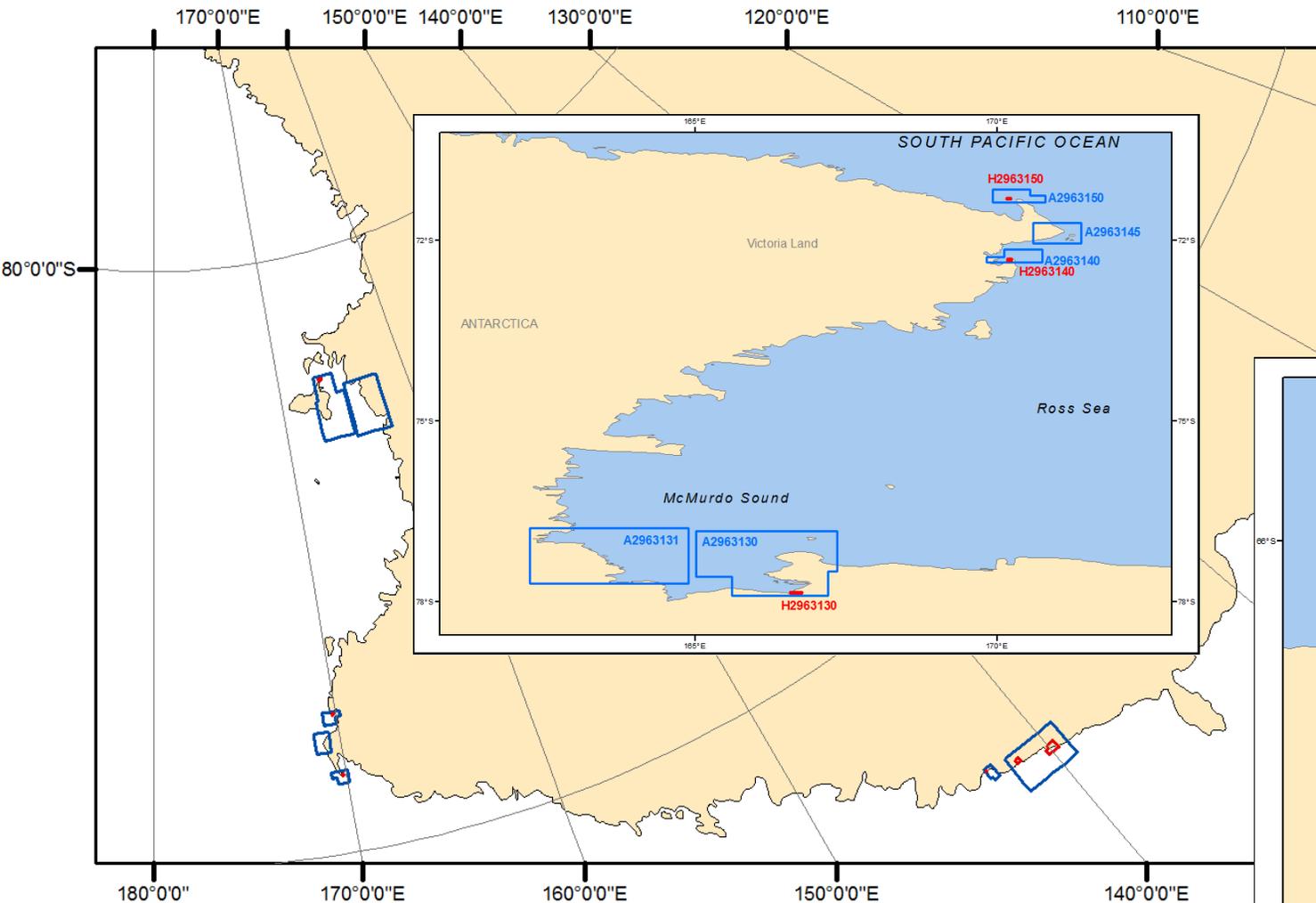
- New charts: no new charts currently planned but NGA willing to work with the HCA ICC to convert DNCs to ENCs to provide improved coverage where appropriate.



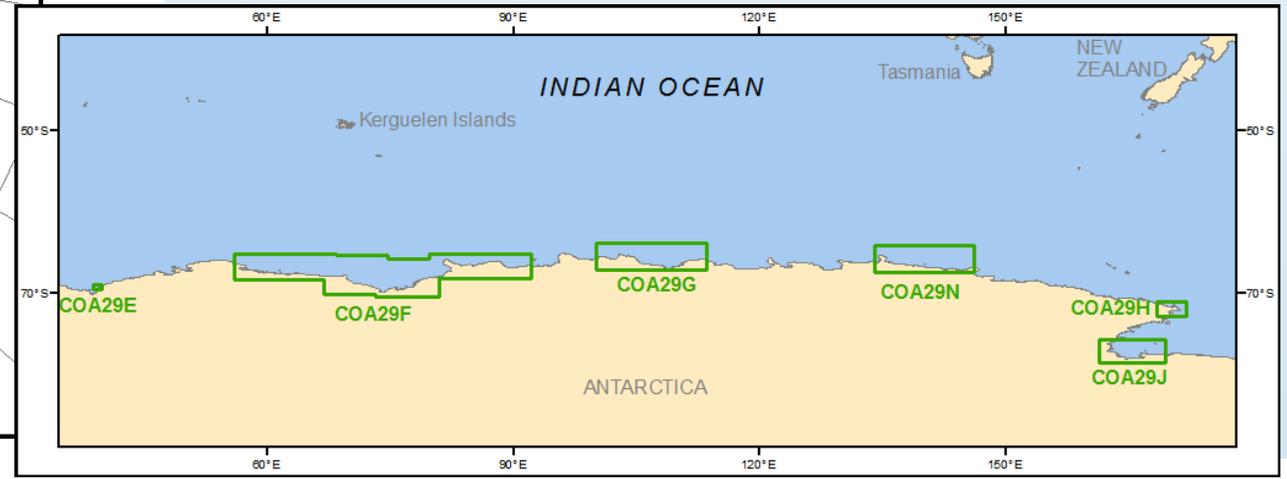
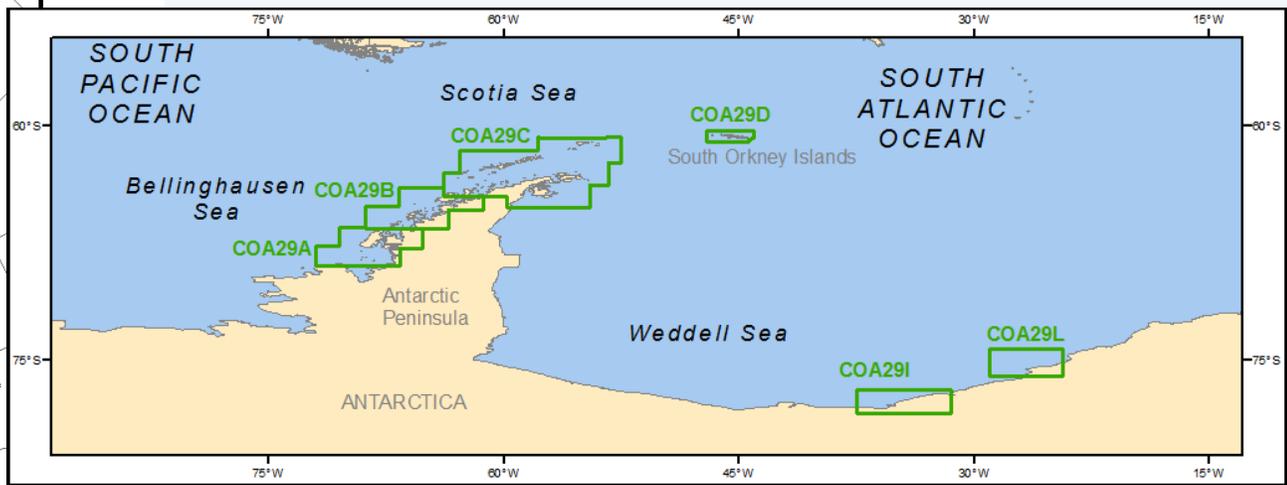
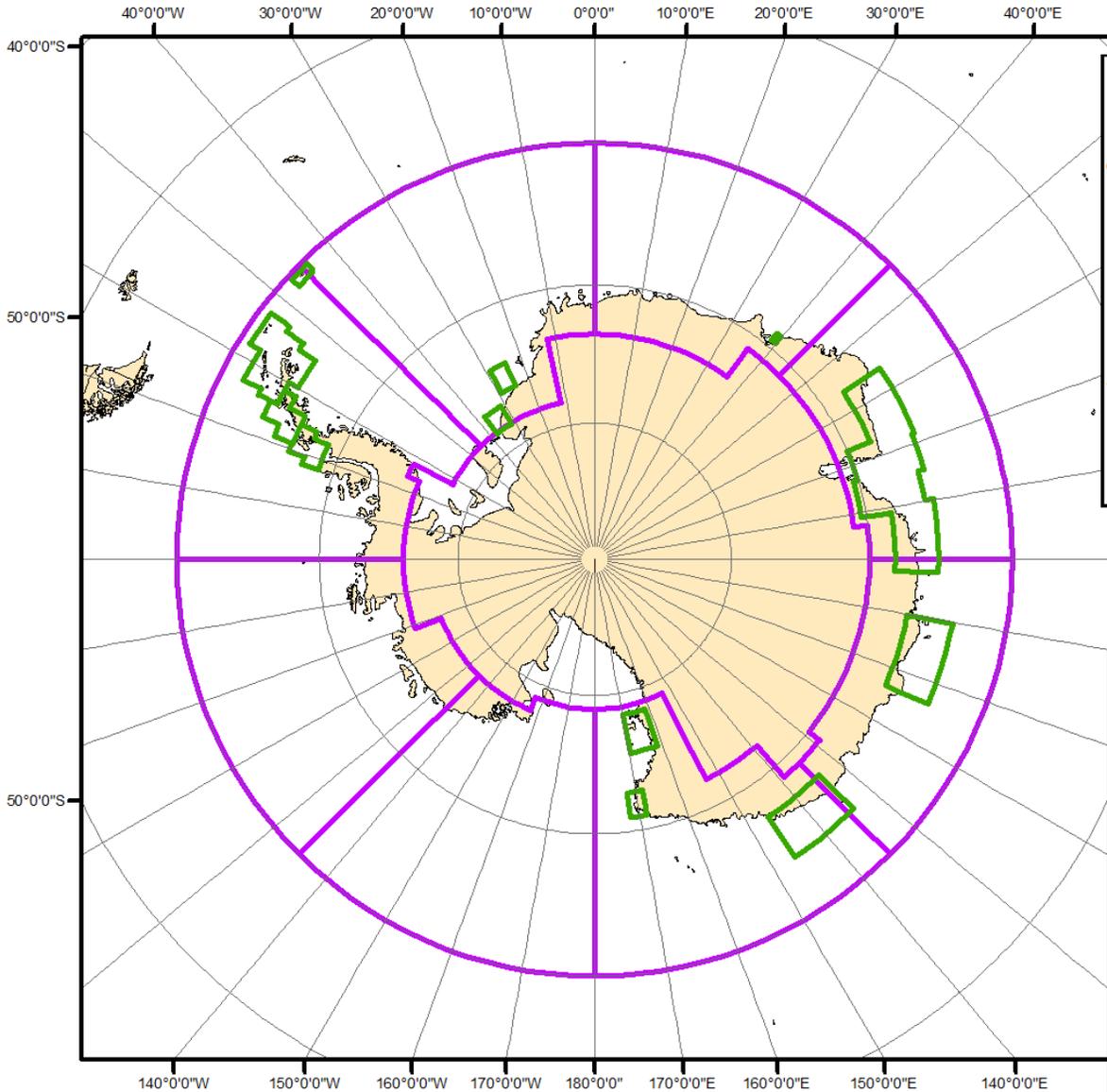
# DNC29 (Harbor and Approach) Library



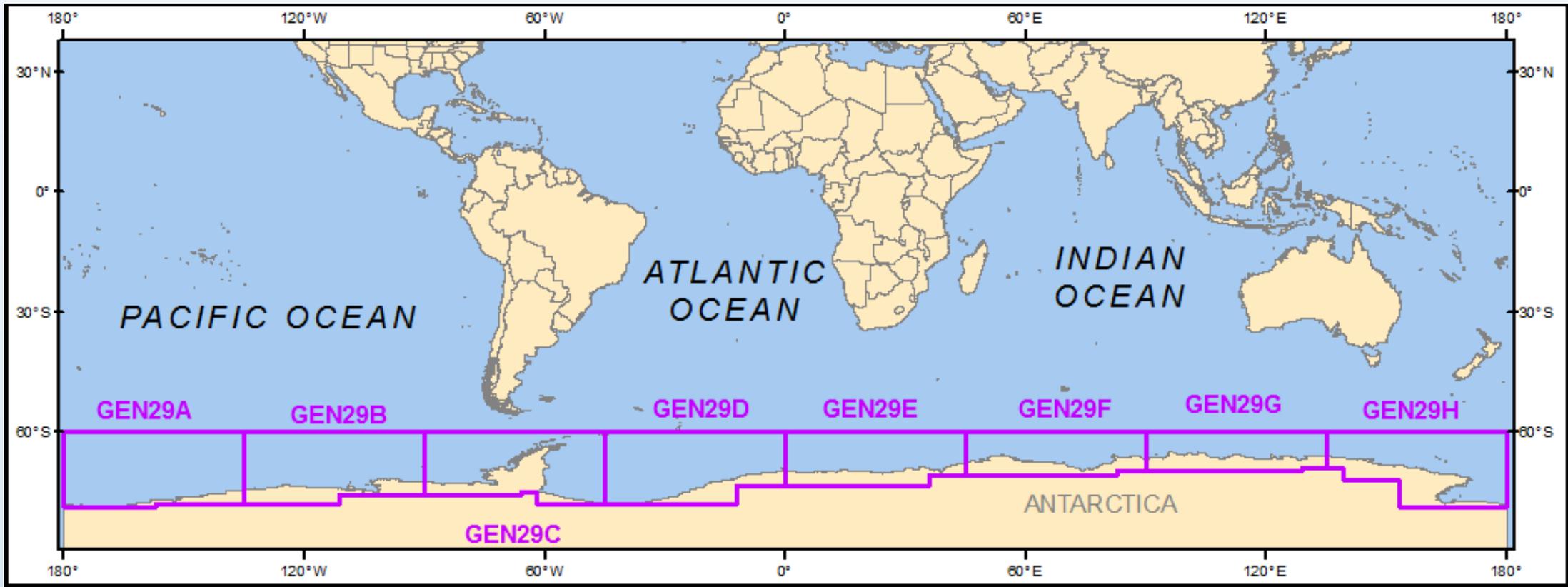
# DNC29 (Harbor and Approach) Library



# DNC29 (Coastal and General) Library



# DNC29 (General) Library



## Any other matters of relevance to HCA

- New surveys: no surveys currently planned
  - ATCM XLII WP061 *Hydrographic Surveying of Antarctic Waters* to encourage vessels
    1. Review existing bathymetric holdings for inclusion in the IHO DCDB
    2. Undertake bathymetric collection on all Antarctic voyages
    3. Utilize IHO guidelines, including the IHO *Publication B-12 – Crowdsourced Bathymetry Guidance Document*
    4. Share all data with the IHO DCDB, directly or through their national hydrographic office
- US view of data collected within the Antarctic Region
  - Consistent with the U.S. Open Data Policy
    - Government-supported scientific data should be available without charge whenever feasible
    - Partners in international science and technology cooperative activities should establish a data management plan at project initiation that considers the full data lifecycle for scientific data
    - Federal agencies should encourage technical and legal interoperability to facilitate international sharing of scientific data, using compatible, publicly available and open source formats
    - Federal agencies should work with international science and technology partners to adopt policies and data standards that encourage open sharing of data for collaborative activities

# Status of Relations with Other Organizations

## National Science Foundation

October 2018 release of the first digital high-resolution DEM of Antarctica's ice and terrain. NGA, NSF and other institutions cooperated in its production with a horizontal ground resolution of 8 meters

ATCM XLII IP006 *The Reference Elevation Model of Antarctica*

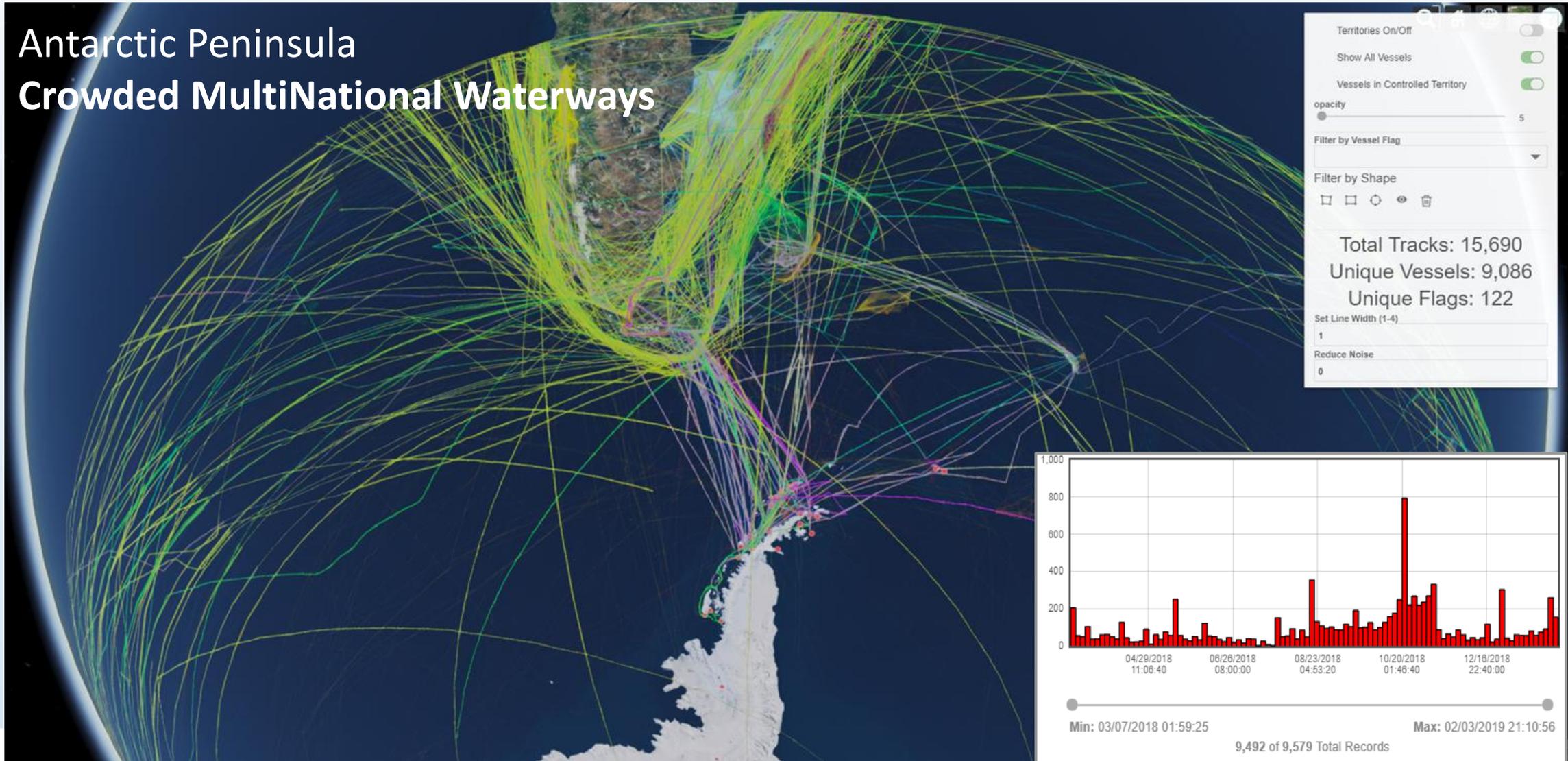
<https://www.pgc.umn.edu/data/rema>



# Any other matters of relevance to HCA



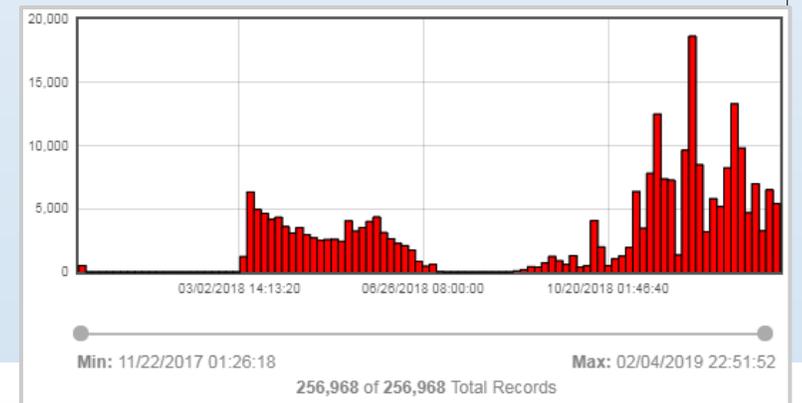
## Antarctic Peninsula Crowded MultiNational Waterways



# Any other matters of relevance to HCA



Antarctic Peninsula  
220 Tracks & 43 Flags Represented in this Area Alone



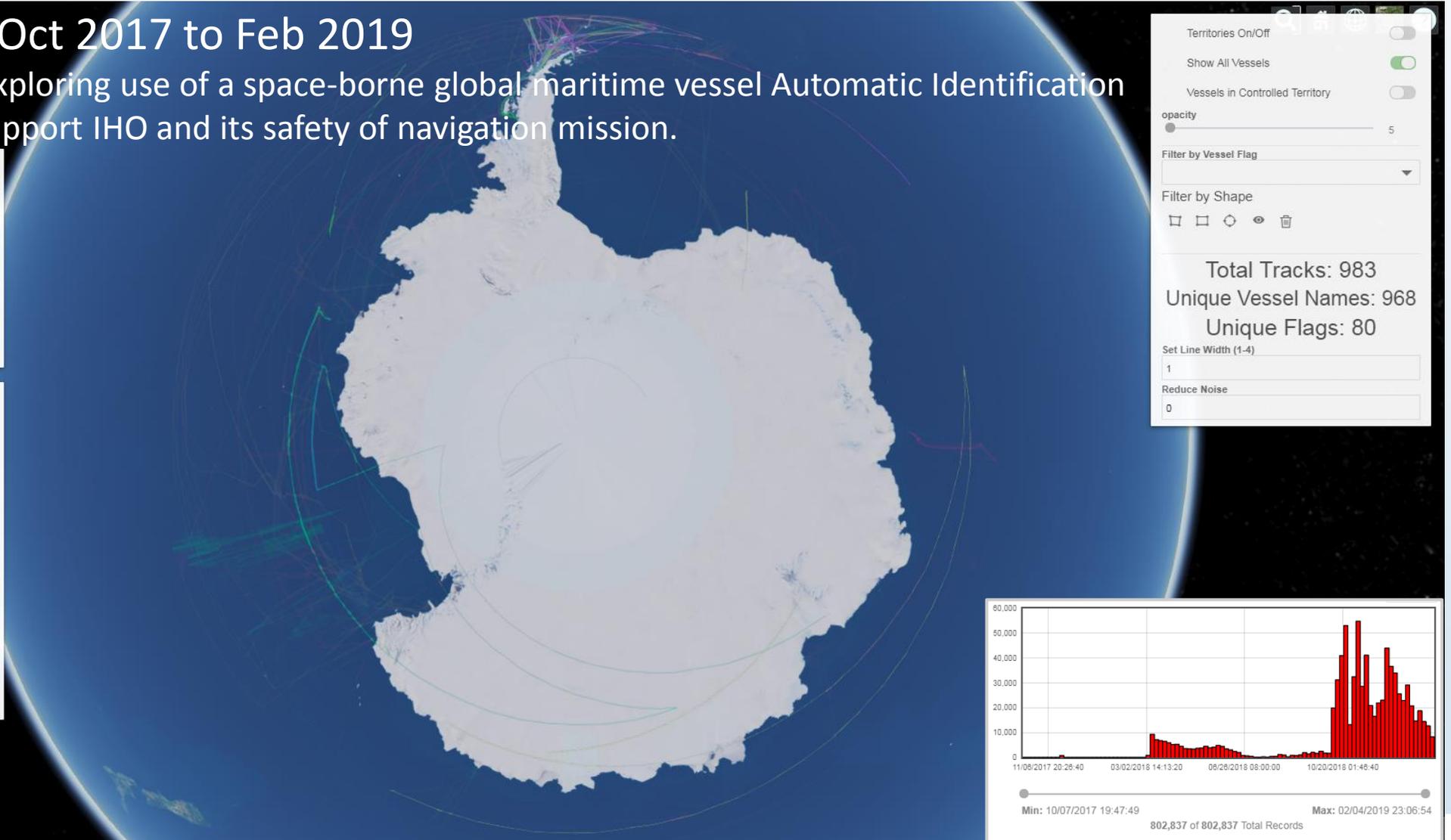
# Any other matters of relevance to HCA

Sample time Oct 2017 to Feb 2019

The U.S. NGA is exploring use of a space-borne global maritime vessel Automatic Identification System (AIS) to support IHO and its safety of navigation mission.

Vessel Type	
Cargo	230
Other	202
Fishing	156
Passenger	141
Tanker	72
Tug	68
Pleasure Craft	55
Sailing	49
	10

Vessel Flag	
CN	124
	115
MH	91
LR	68
NL	42
AR	40
BS	36
US	36
WF	32
CL	32
RU	28
PA	27
CA	21
AU	18
GB	18



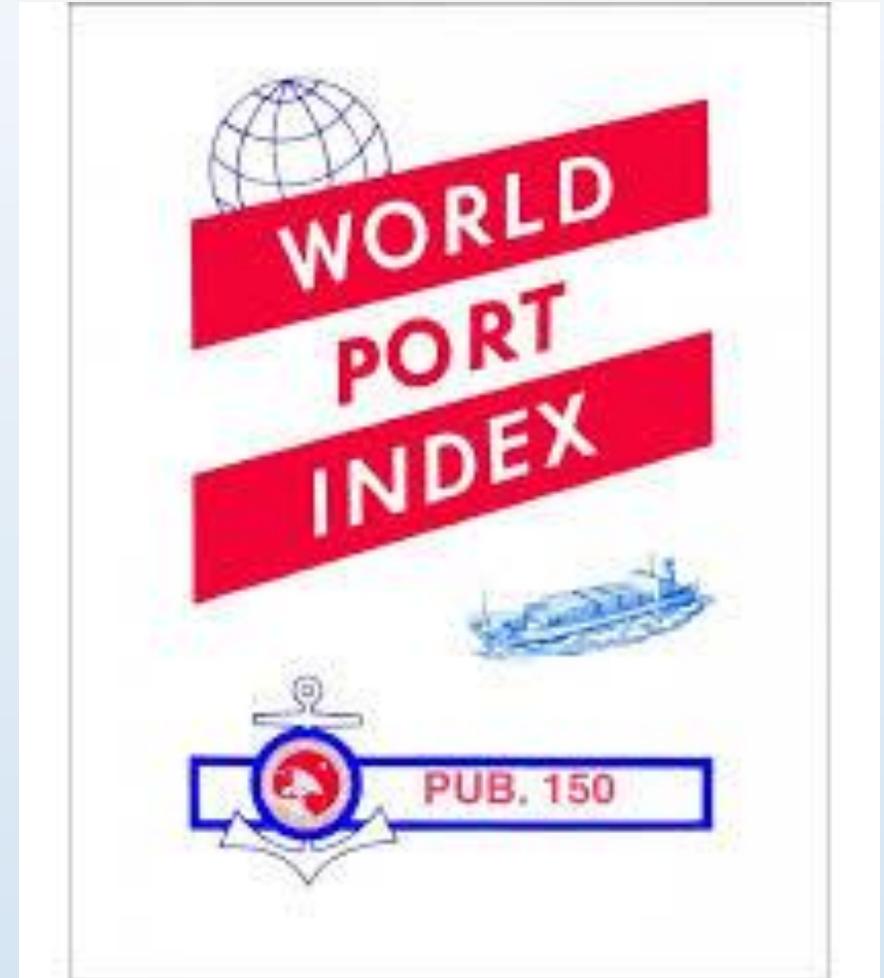
## Any other matters of relevance to HCA

- **NGA Dynamic World Coastline project**
  - GIS vector line data set 1:50,000 scale horizontal accuracy or better
  - Coastline collected using high resolution commercial satellite imagery
  - Worldwide coverage including Antarctica
  - Antarctica/Arctic collection start scheduled for July 2019 with completion date of Jan 2020



## Any other matters of relevance to HCA

- **World Port Index (WPI) Modernization**
  - Effort to enable crowd sourced information to be entered into WPI
  - Started May 2019
  - Test version planned for end 2019
  - Submission details still being worked out



# Any other matters of relevance to HCA

- OGC-IHO Marine Spatial Data Infrastructure Concept Development Study (MSDI-CDS)
  - Goal: to assess the current state of data and product management and exchange technologies used in the marine domain that support discoverability, accessibility, and interoperability of marine geospatial data across the globe.
  - Structured project organized by Open Geospatial Consortium (OGC) and is supported by the National Geospatial-Intelligence Agency (NGA) on behalf of the IHO, specifically IHO MSDIWG.
    - MSDI-CDS Workshop (23 OCT 2018)
    - Request For Information (RFI) (07 FEB 2018)
    - MSDI-CDS Roundtable (27 MAR 2019)
    - Final Engineering Report (ER) pending OGC Technical Committee approval and edits (JUN 2019)
      - Joint report furthers the collaboration and common interests of IHO and OGC, established in their Memorandum of Understanding (MOU), and contributes to the development of a foundational report for the development of MSDIs worldwide.

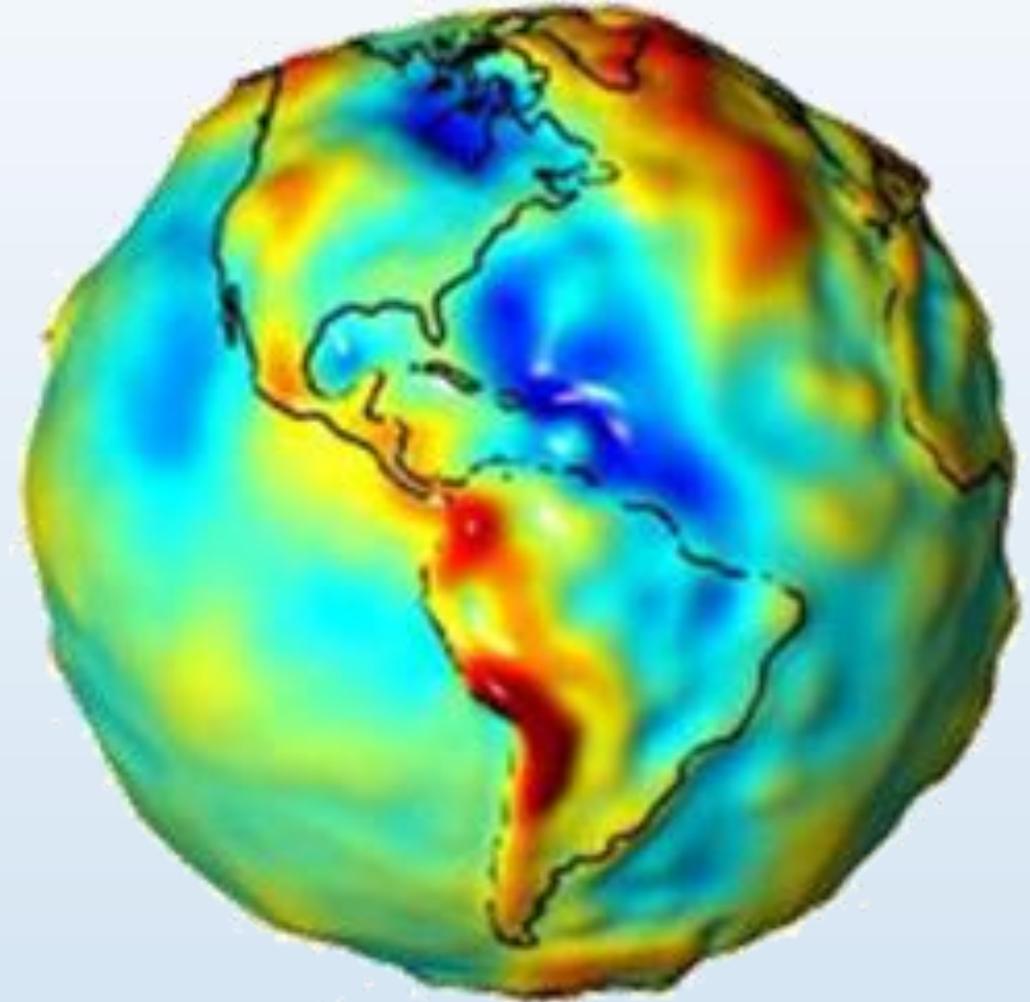
For more information:

- <https://www.opengeospatial.org/projects/initiatives/msdi-cds-2018>

# Any other matters of relevance to HCA

## Geodesy Update

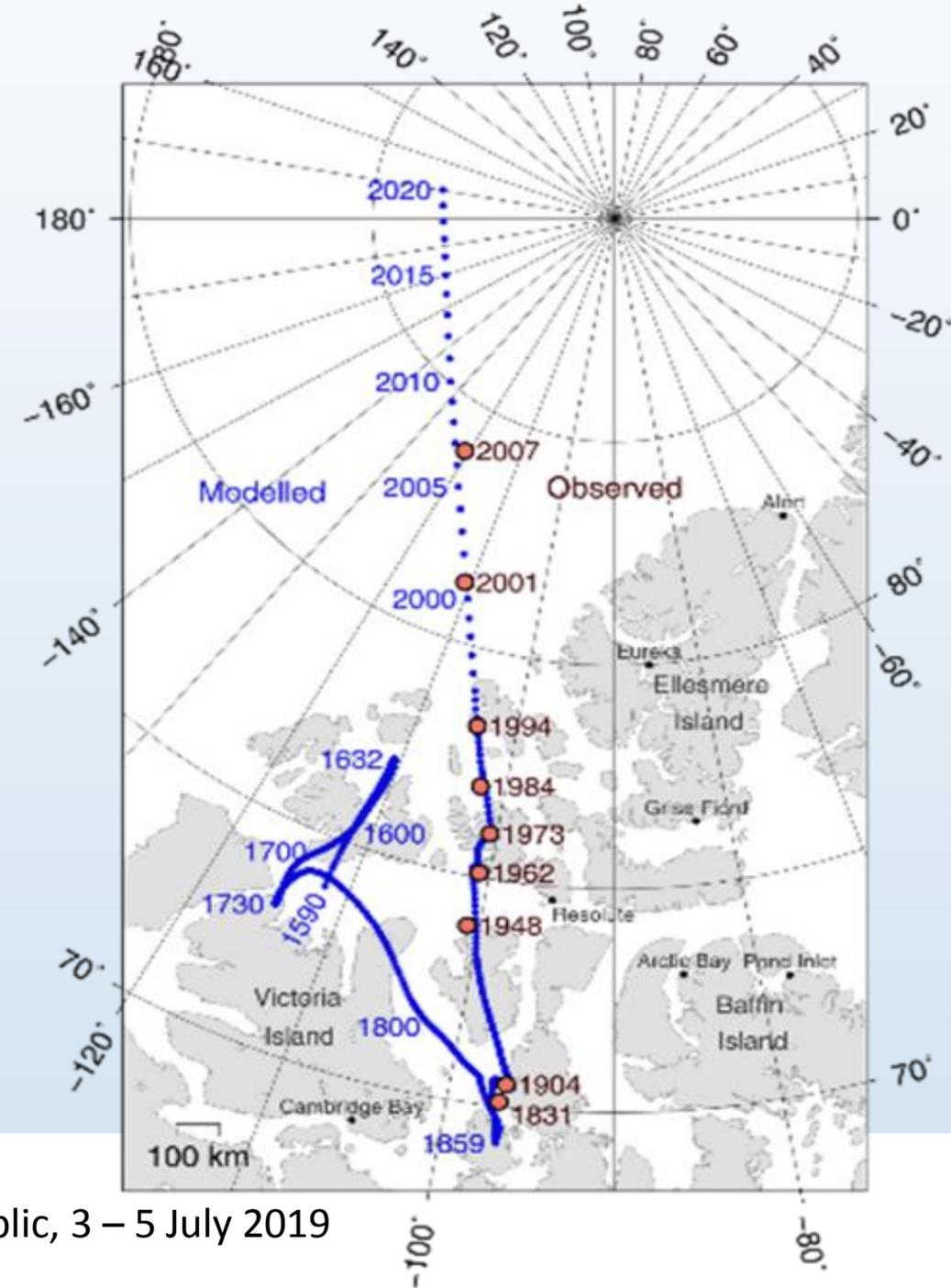
- New Earth Gravity Model (EGM) in 2020, important for MSL and WGS
- The **Earth Gravity Model** is updated to reflect the variance in gravity based on the uneven mass distributions found across the irregular shaped Earth



# Any other matters of relevance to HCA

## Geodesy Update

- The World Magnetic Model (WMM) helps define the difference between true north and magnetic north, and predicts the change over time
- This correction is required to safely navigate across the Earth surface
- Out of cycle version of the WMM was released in February 4, 2019 due to increasing inaccuracies
- Current plan to is to release the regular 5 year release of the WMM in 2020 on schedule



Any other matters of relevance to HCA

## Magquest – Innovation to improve the WMM

- A \$1.2 million competition to advance how we measure Earth's magnetic field. Additional funds for later phases
- A call to Innovators to submit novel approaches to geomagnetic data collection for the World Magnetic Model
- This open innovation challenge is designed to attract new ideas to increase the efficiency, reliability, and sustainability of geomagnetic data collection
- With MagQuest, NGA aims to inspire domestic and international solvers to apply their expertise to spaceborne, aerial, terrestrial, and other potential solution areas
- [Magquest.com](http://Magquest.com)



# Any other matters of relevance to HCA



View of McMurdo Station in Antarctica.  
Credit: Peter Rejcek, NSF

The NSF Antarctic Infrastructure Modernization for Science Project will overhaul McMurdo Station. A 10-year undertaking to overhaul McMurdo Station into an energy- and operationally efficient platform from which to support world-class science.

# United States National Report - HCA-16

Thank you for your time

