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Finn Danielsen  
Lisbeth Iversen  
with many partners

**Improving and expanding the  
environmental monitoring efforts  
by expedition cruise ships  
in the Arctic**

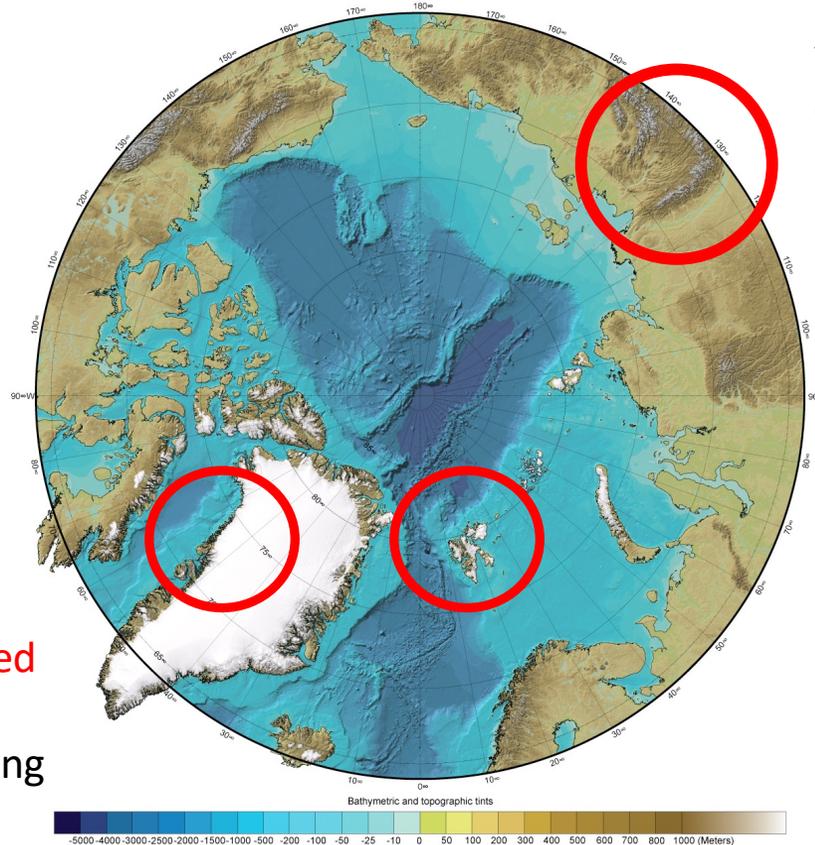
**ASSW 2022**

Photo by M. Enghoff





## *Co-developed Citizen Science and Community-Based Monitoring networks*



### Greenland

- Citizen seismology
- Expedition cruise-based observing
- Fisher-based monitoring of natural resources (PISUNA)

### Yakutia:

- Herder-based monitoring of wildlife resources

### Svalbard

- Citizen seismology
- Expedition cruise-based observing
- Networking for knowledge co-creation

## Report from workshop

### Cruise Expedition Monitoring Workshop and Dialogue-Seminar

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On improving and expanding the  
environmental monitoring efforts  
of cruise ships in the Arctic

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March 7-8 2019,  
Longyearbyen, Svalbard

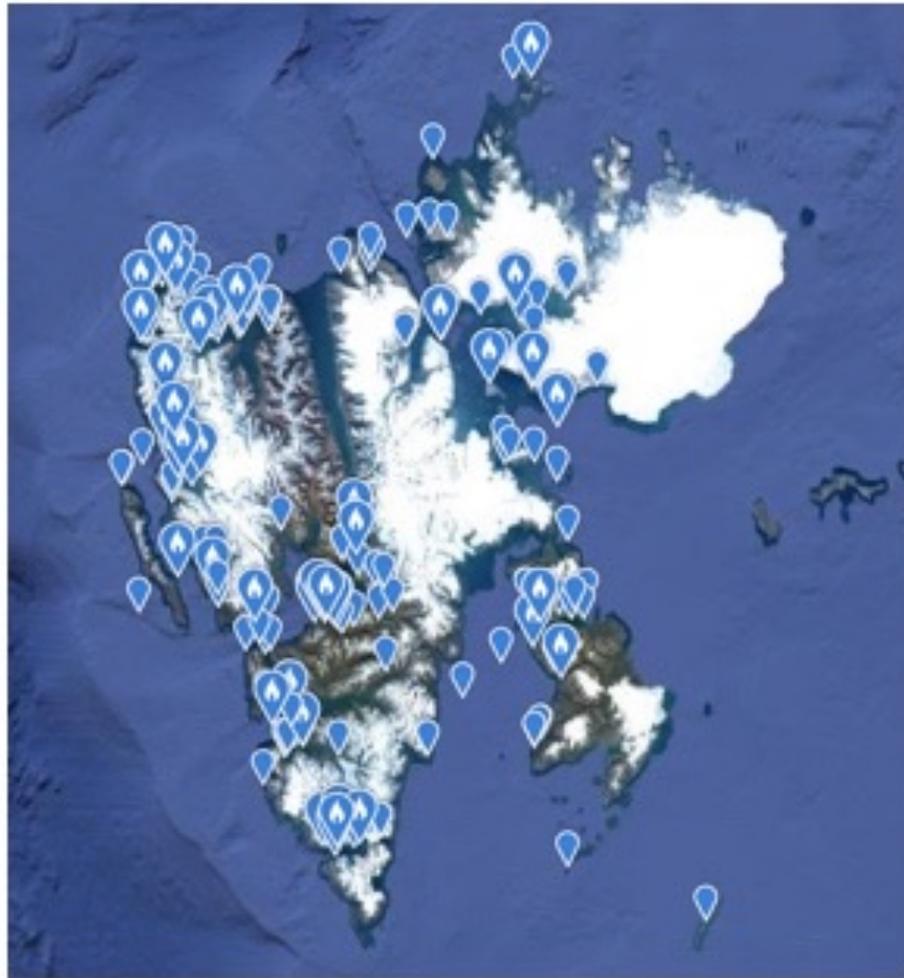


## *Expedition cruise based Citizen Science*

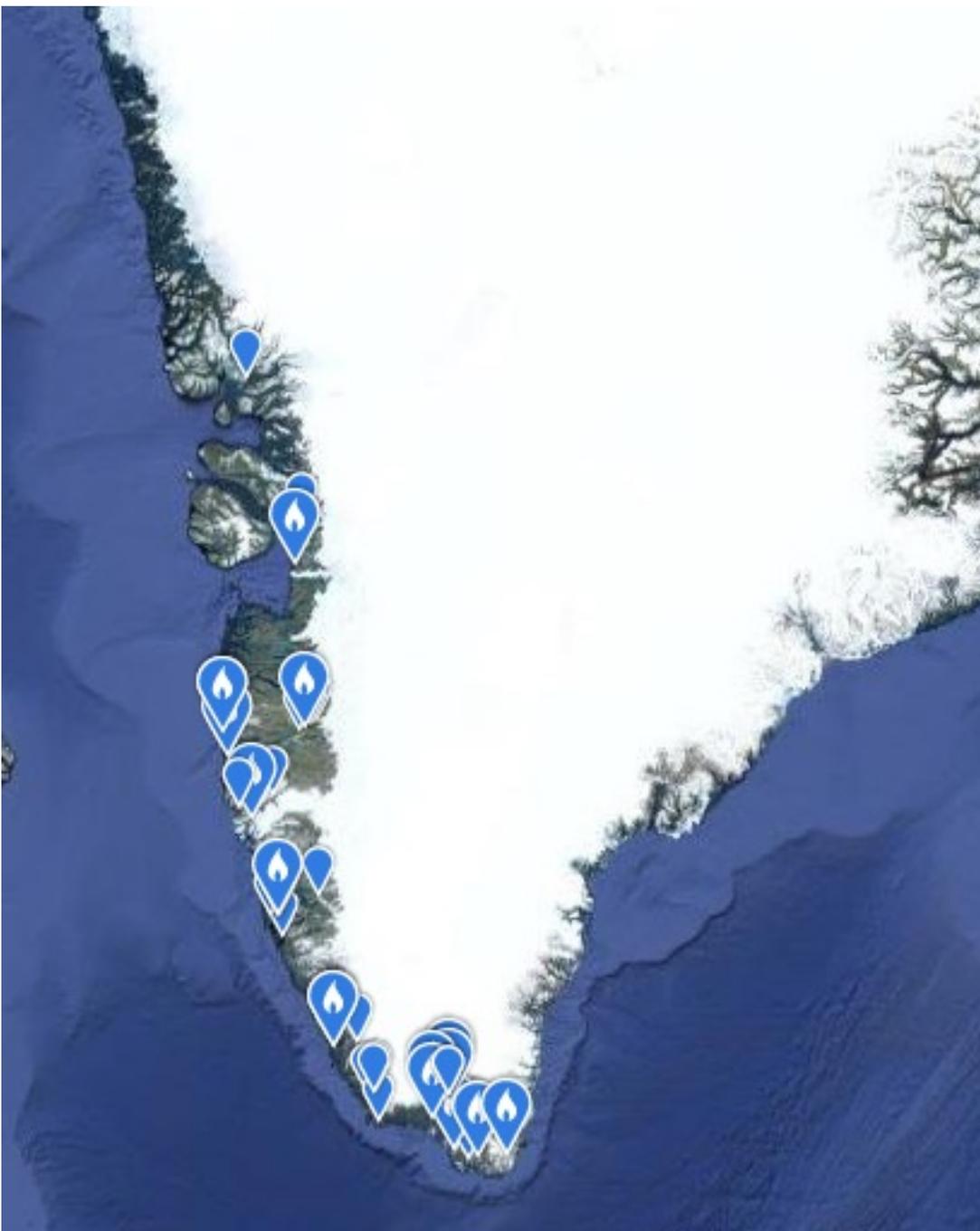
- Initiated a **dialogue** on coordinated expedition cruise operator-based observing, w. operators, scientists, decision-makers
- We tested the use of four Citizen Science programs among cruise operators in Disko Bay and Svalbard
- A total of **165 people** contributed observations during one cruise season



Photo by M. K. Poulsen

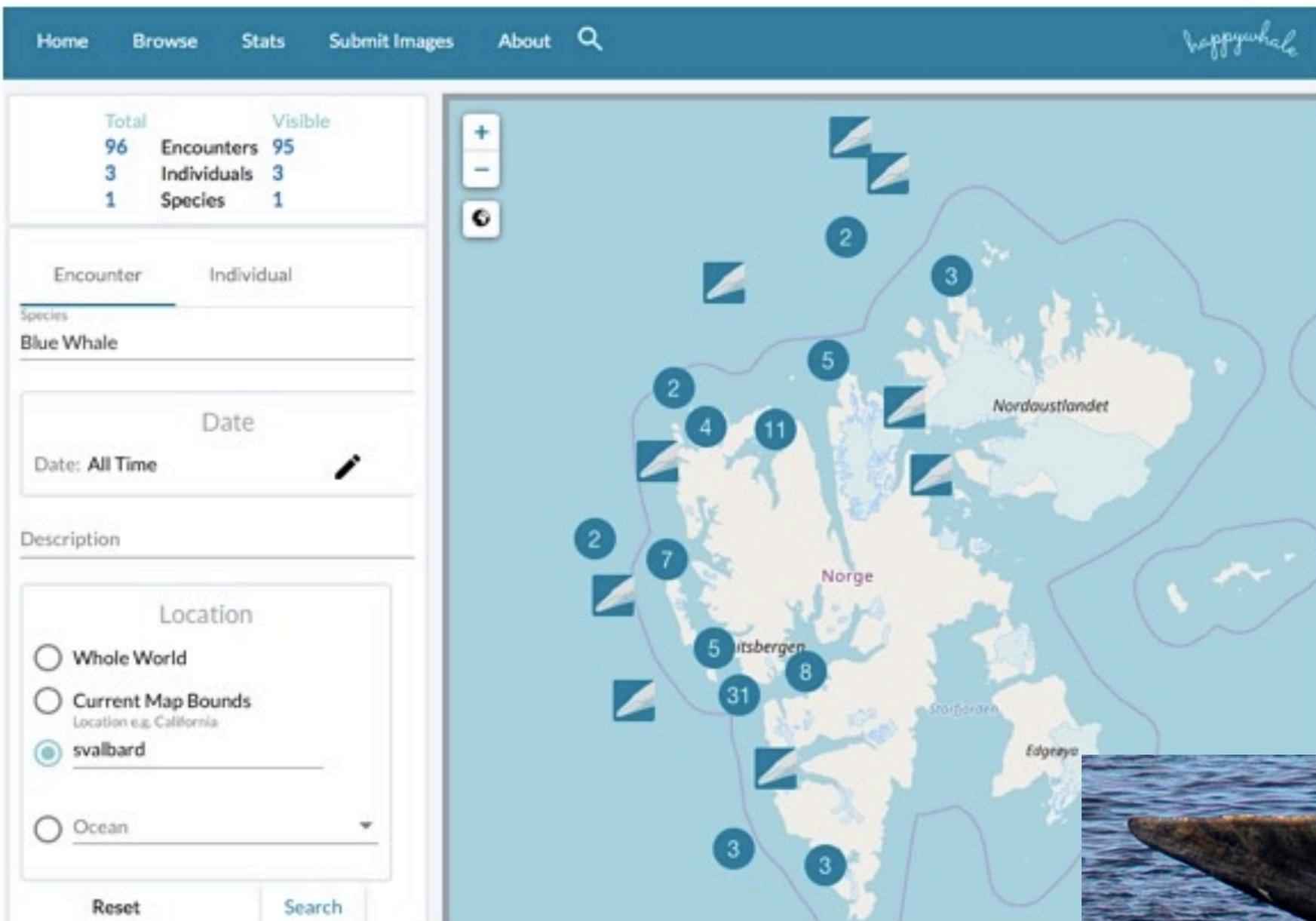


Records of (A) Pink-footed goose *Anser brachyrhynchus* (left:  $n = 583$  records) and (B) Atlantic puffin *Fratercula arctica* (right;  $n = 622$  records) from Svalbard 2002-2019



Records of White-tailed eagle *Haliaeetus albicilla* from Greenland 2005-2019 in the eBird database ( $n = 68$  records).

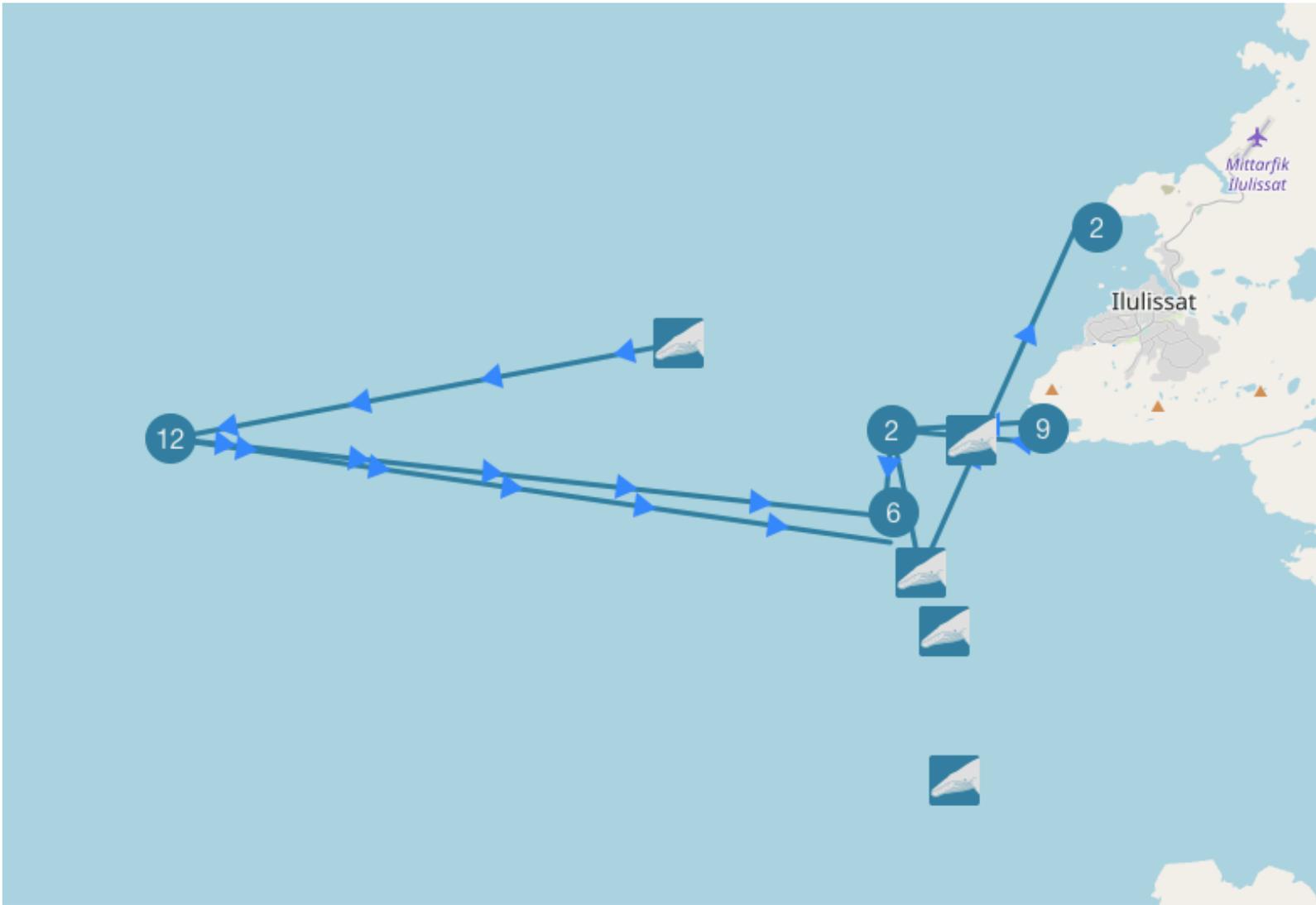
Records highlighted with a white flame are from eBird hotspots, areas with “many” checklists.



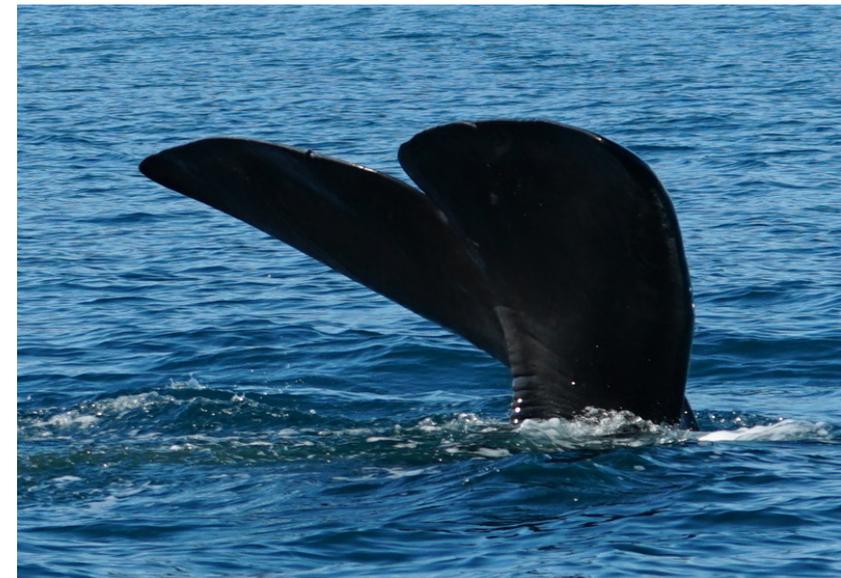
Bowhead Whale sighted from “Barnaby” on 24 June 2019, Spitsbergen, Svalbard, when sailing with Lindblad on board Geographic Expeditions. Photo: David Hone.



Happywhale records of marine mammals from Svalbard in 2019 (81 encounters of 13 species).



Sperm Whale sighted by “MTurcot” on 1 August 2019, Tasiilaq (Ammassalik), East Greenland.



Some of the Humpback Whales *Megaptera novaeangliae* in Disko Bay, Greenland, in 2019 were repeatedly photographed at locations close to the town of Ilulissat. The digits refer to number of encounters and these will show up when zooming in.

Location for entries of Secchi depth 2013-2019  
Each marker represents a vessel (or reading).



Secchi  
SECCHIDISK.ORG

HOME SECCHI DISK PROJECT WHO ARE WE? PRIVACY AND DATA

Define search boundary  
 Limit by boat

Secchi Depth =

From Date

To Date

Free Search

Enter a Location

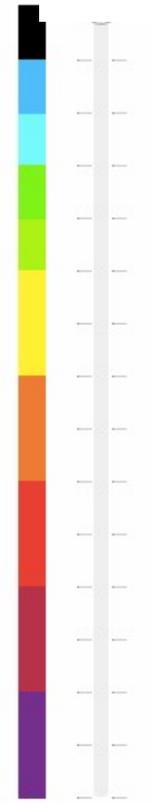
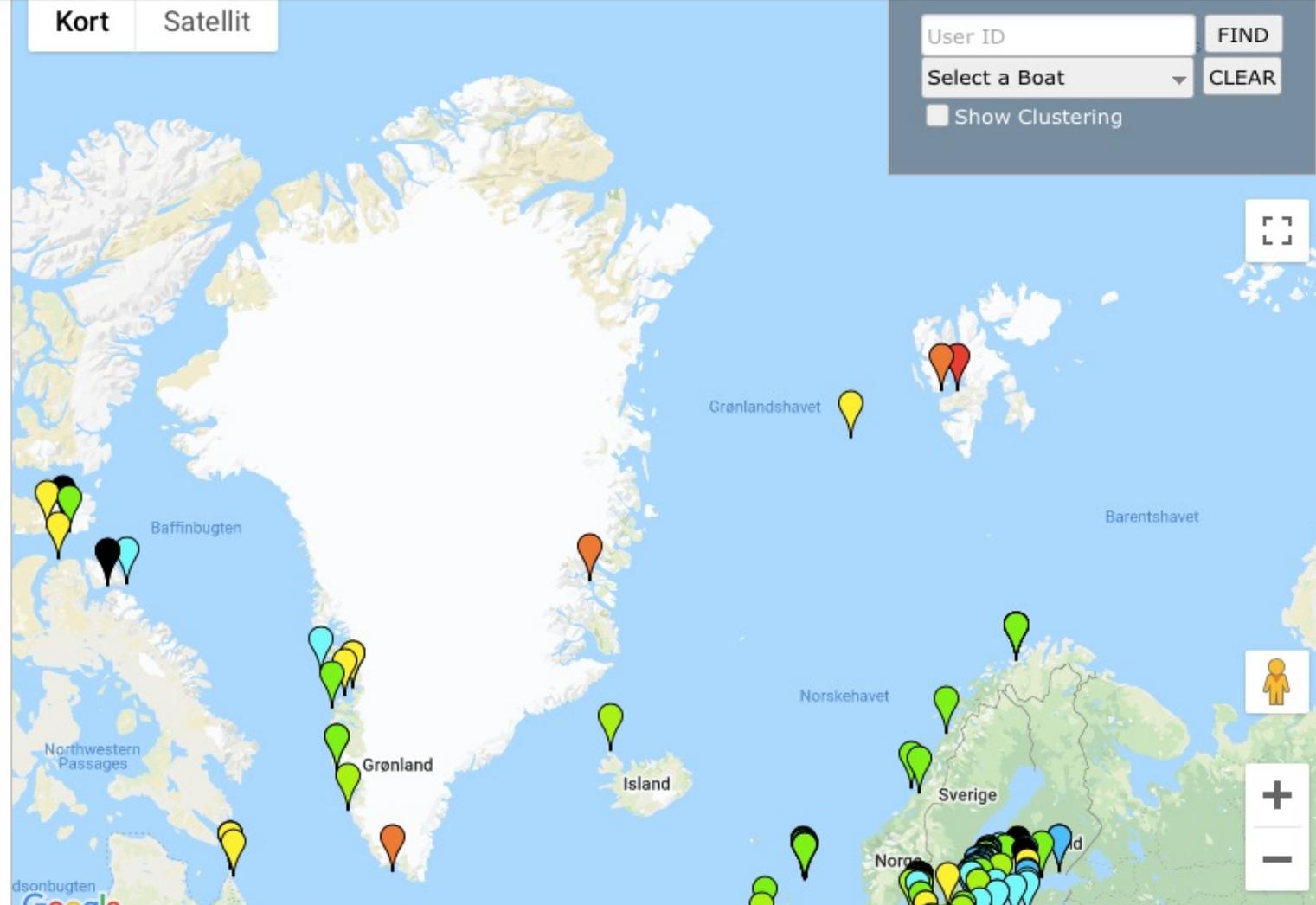
Radius around Free Search

Kilometers

210 240 270 300 330 360 390 420 450 480 500

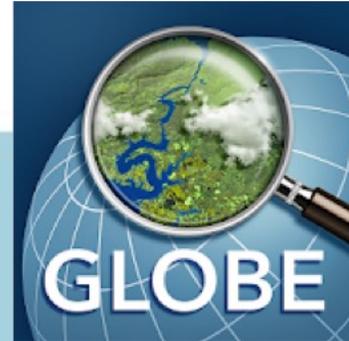
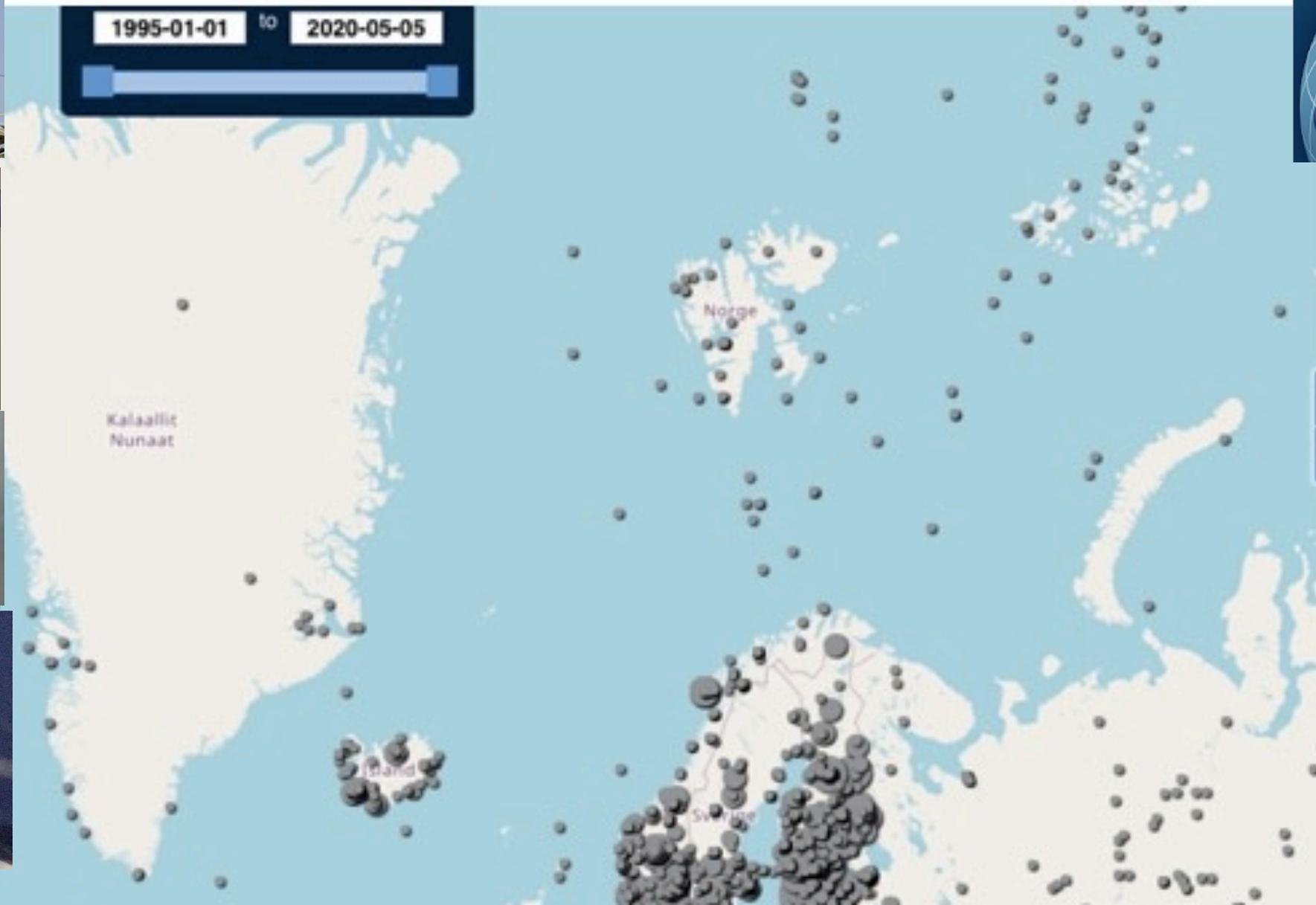
180 150 120 90 60 30 0

20.0

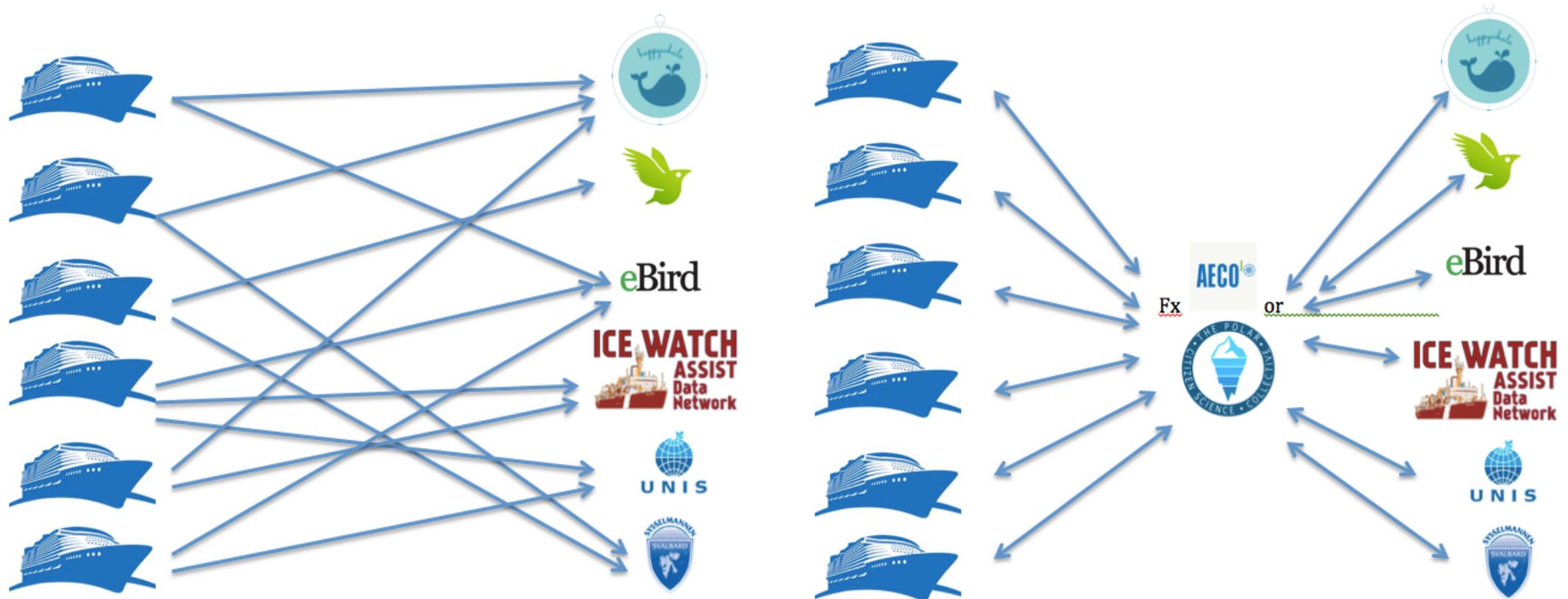


Secchi Depth  
> 0m

Extract of global map of positions from where cloud cover records have been obtained by the Cloud Observations program 1995-2019.



What can be done to facilitate dialogue between cruises, Citizen Science programs and decision makers in the Arctic?



	Programs tested			
Low (1-10) ●				
Medium (11-100) ●	eBird	Happy-whale	Secchi Disk	Cloud Obs.
High (101-1000) ●				
Very high (>1000) ●	eBird			
Number of observations	●	●	●	●
Number of locations	●	●	●	●
Number of attributes observed	●	●	●	●
Education and awareness raising potential*	●	●	●	●
Relevance to decision-making*	●	●	●	●

**Improved data support for understanding the status of the environment**



**Policy brief** “3) Clear lines of communication should be developed...”



**Thank you!**

More information  
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