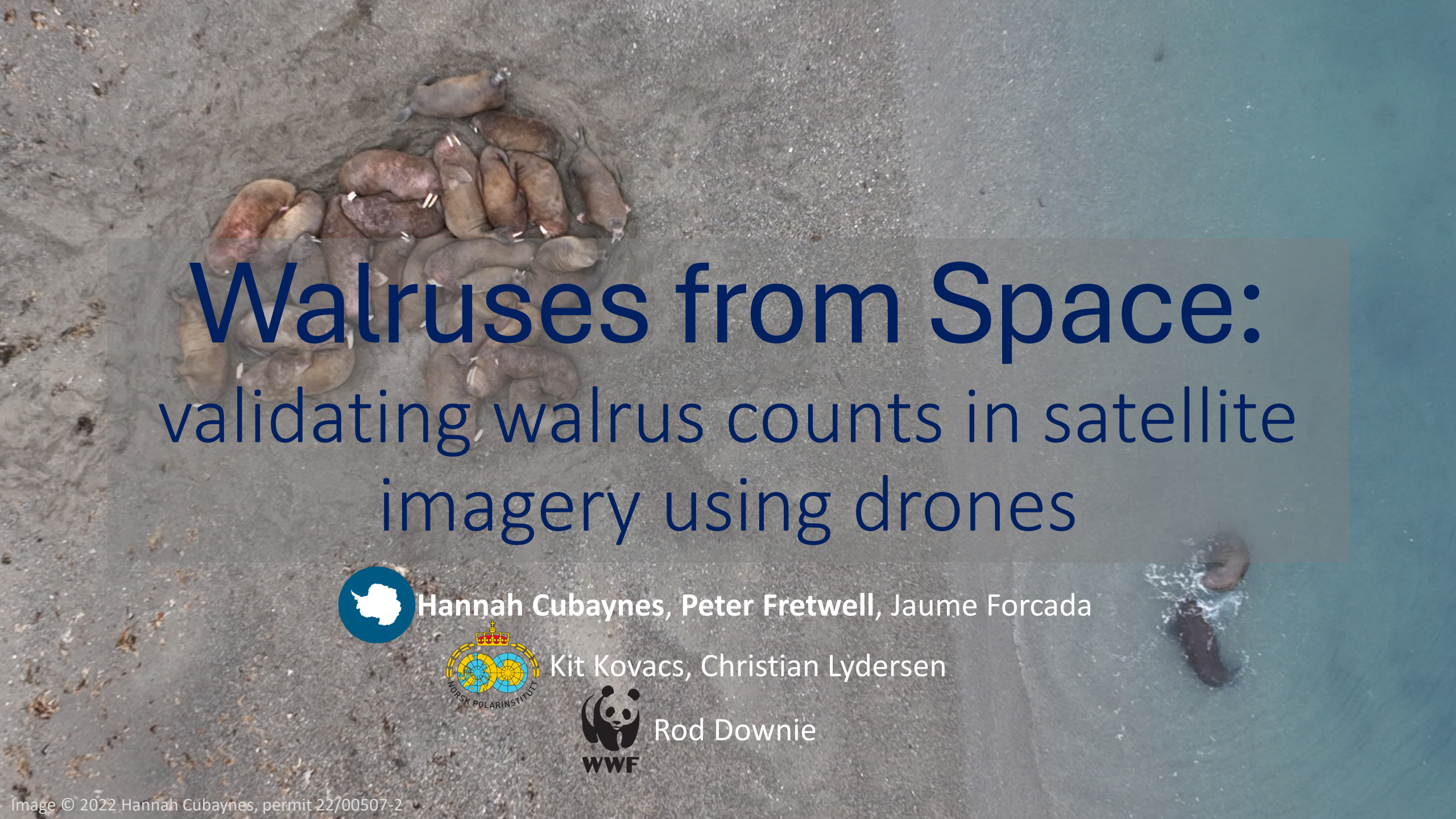


Walruses from Space:
validating walrus counts in satellite imagery using drones

Hannah Cubaynes, **Peter Fretwell**, Jaume Forcada

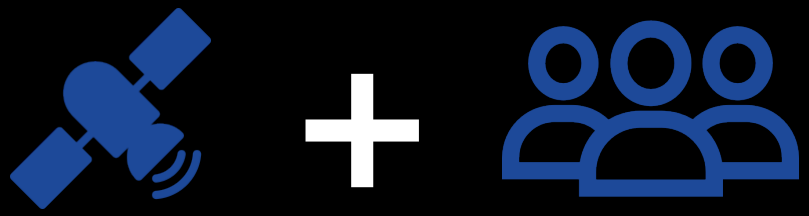
Kit Kovacs, Christian Lydersen

Rod Downie

Walrus from Space project

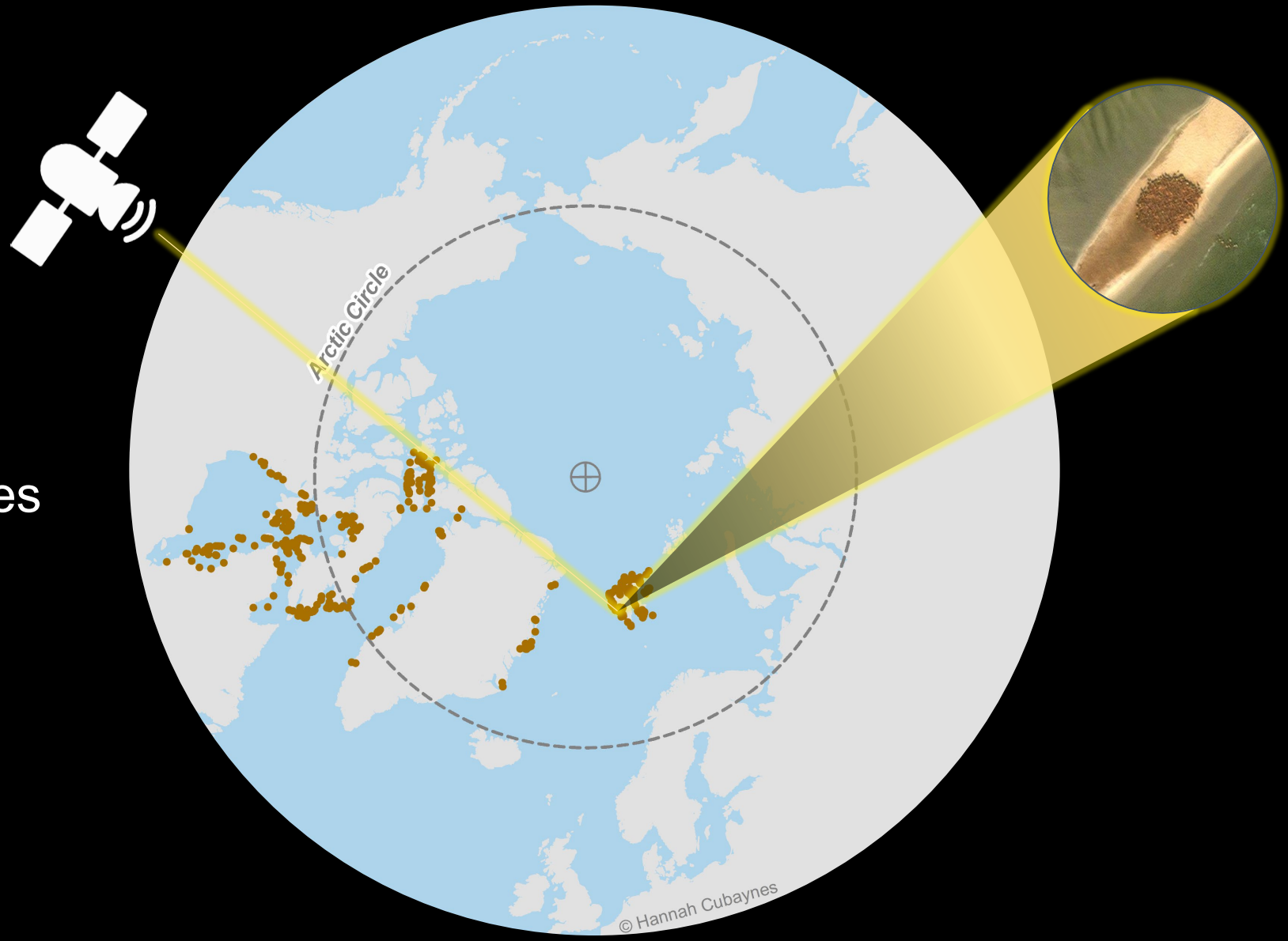
British Antarctic Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

WWF

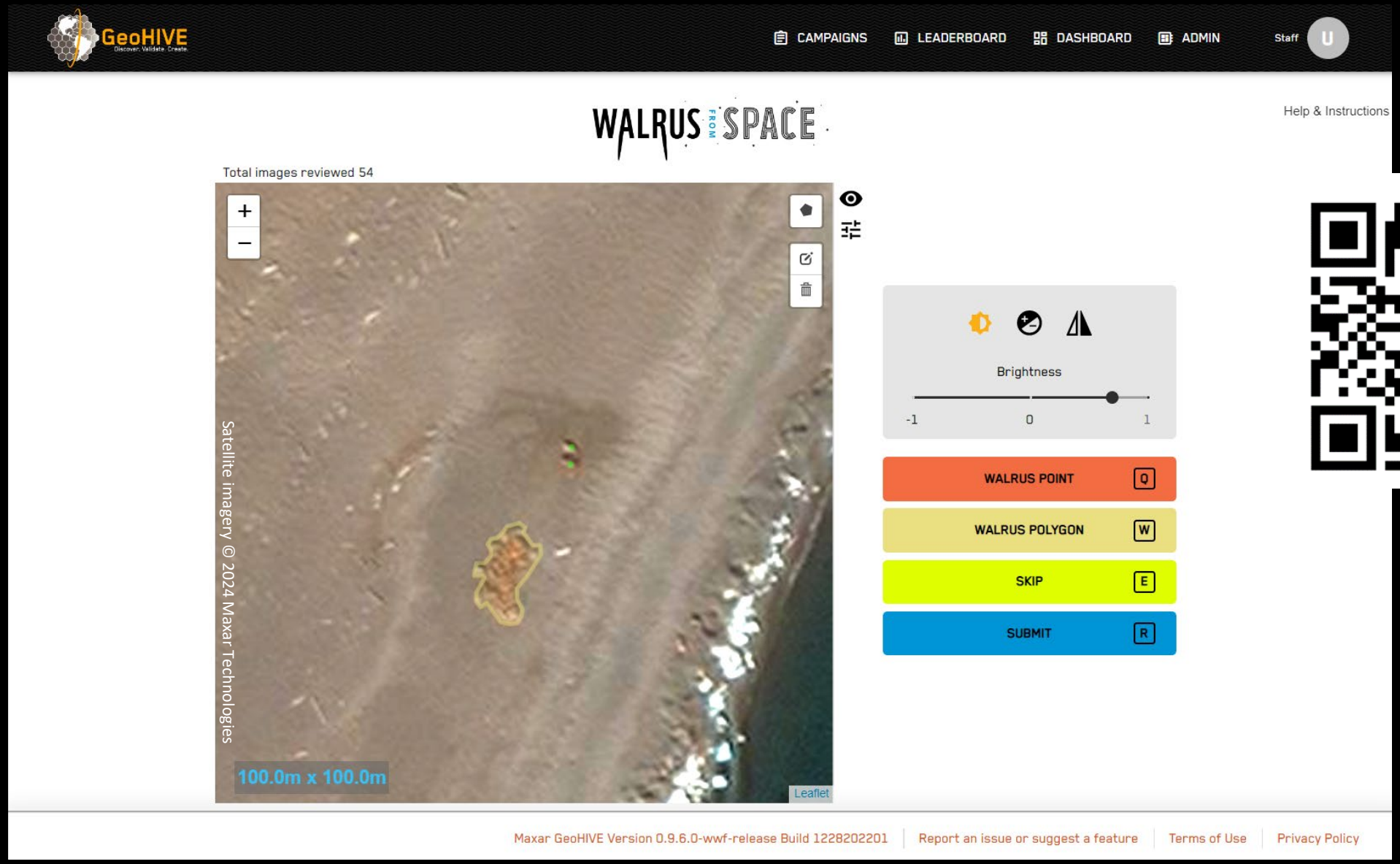


Counting walruses in satellite images

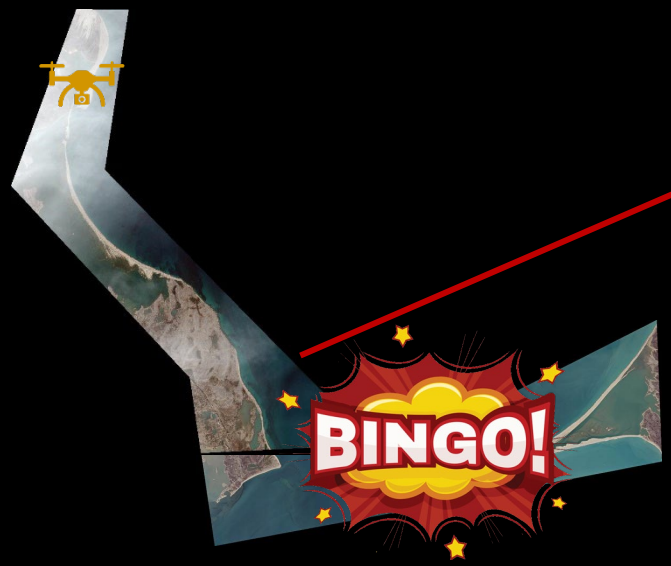
382 haul-out sites
(2024 update)



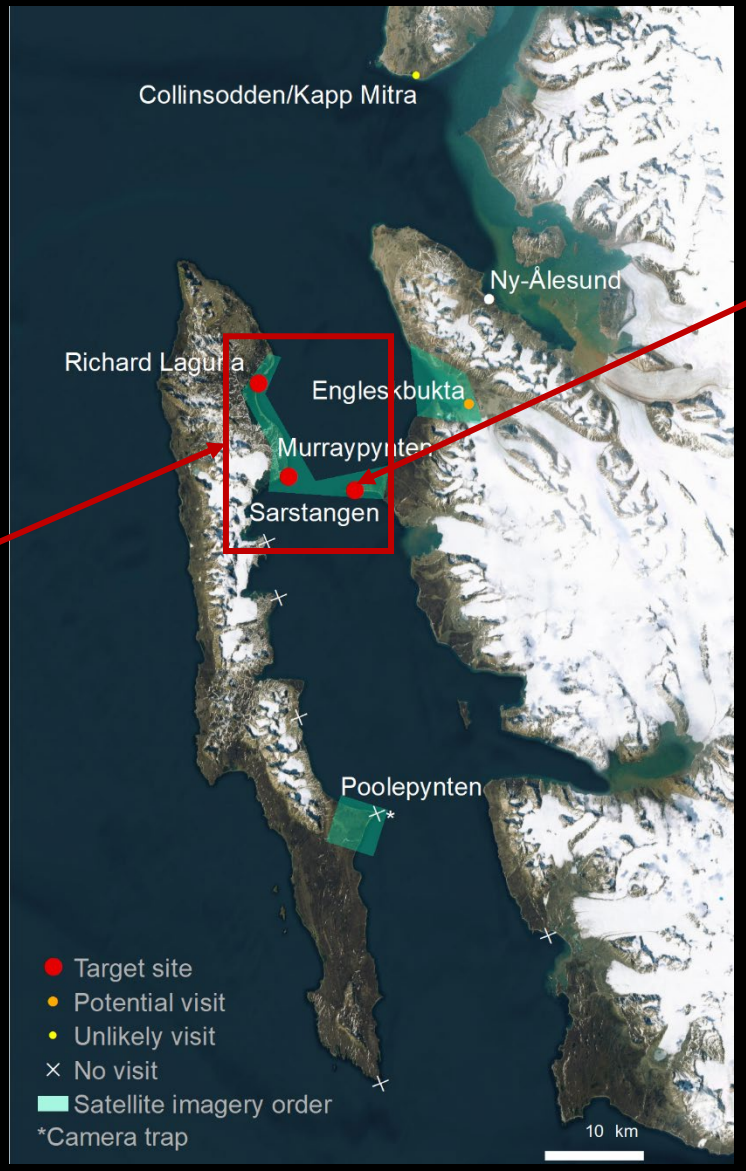
Citizen science campaign: counting walruses



We got a satellite imagery match!



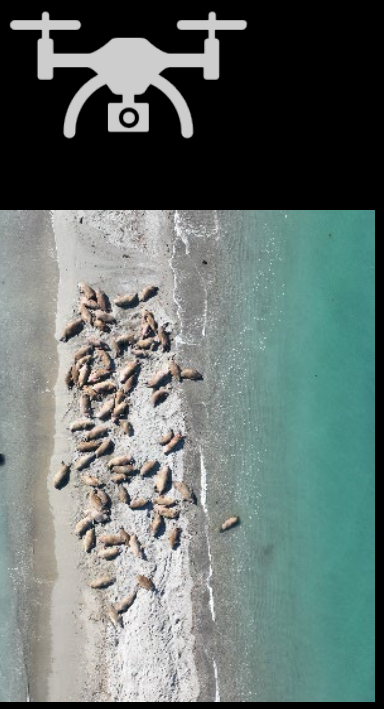
15th July



15th July

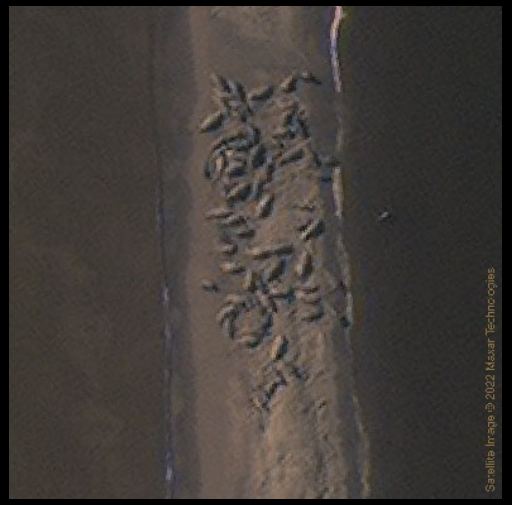
Selfie with walruses… From space!

Near-simultaneous comparison: 15 minutes apart



1.5 cm

15 cm



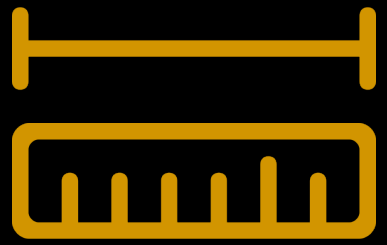
30 cm

50 cm

Counting from satellites – questions……

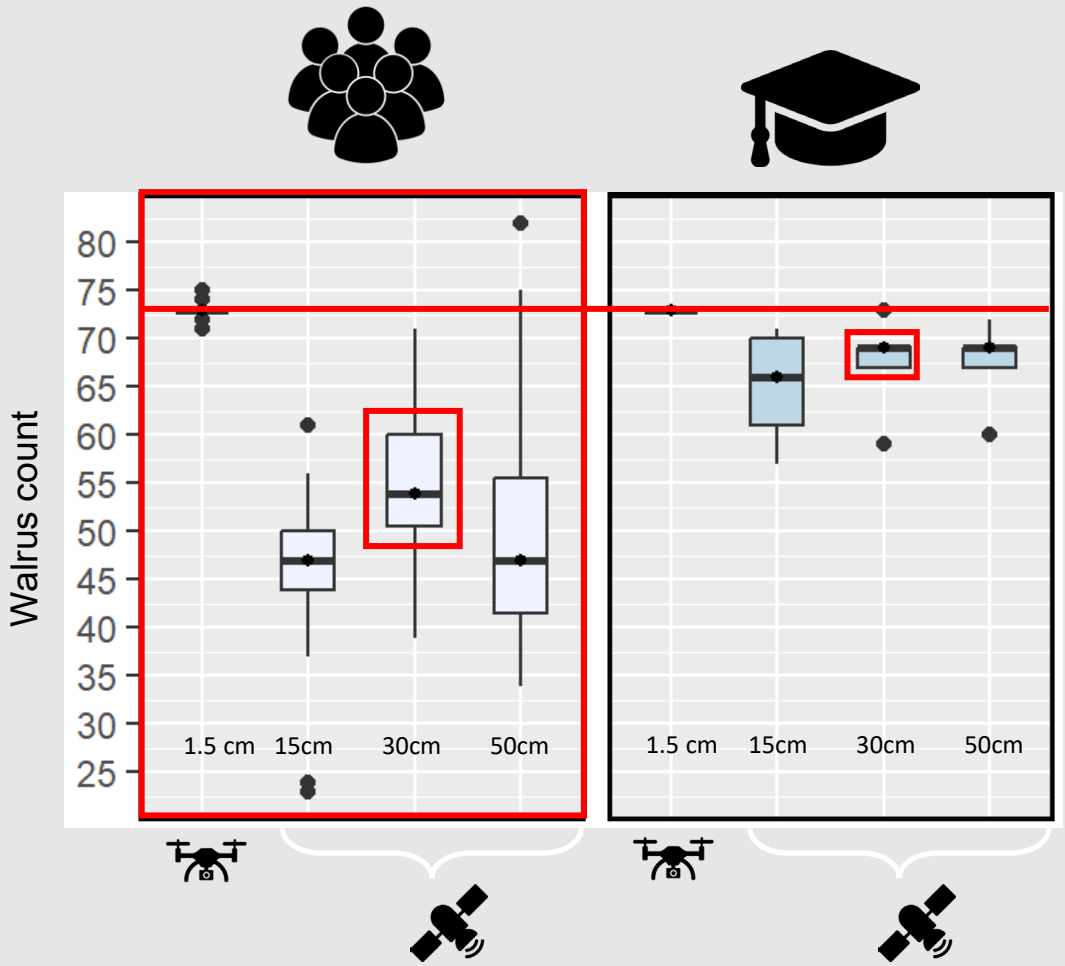
1.
How good are **experts** at counting walrus in satellite imagery?

2.
How good are the **public** at counting walruses compared to **experts**?



3.
What **spatial resolution** is best to count walruses?

Results



1. Undercount in VHR satellite
2. 30 cm resolution is better
3. Crowd more variable

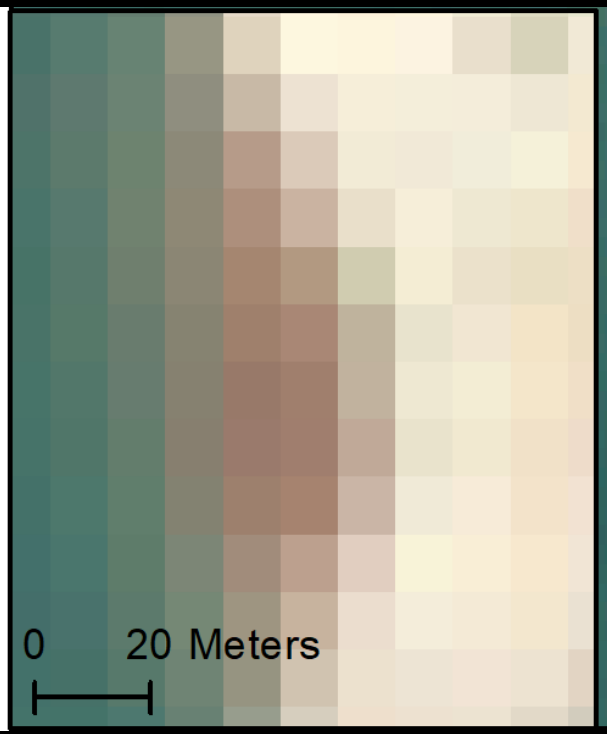
Cubaynes *et al.*, *2024,* Remote Sens. Ecol. Conserv.


Image © USGS permit #MA801652-8

Spectral analysis Of Haulout timing Using Sentinel2

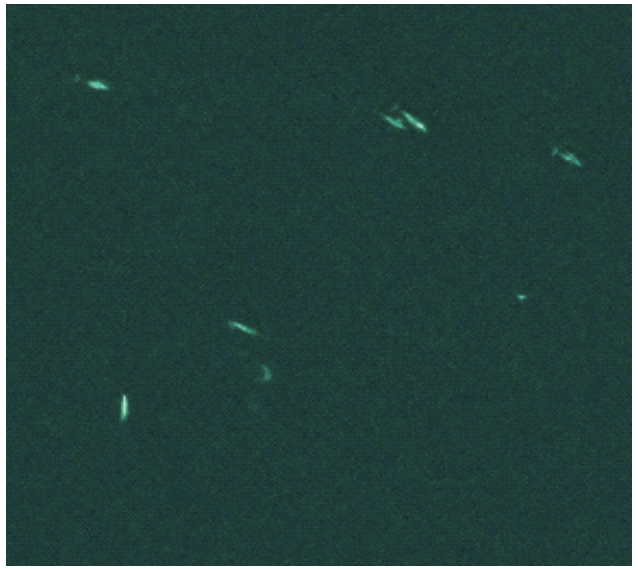
WorldView-3

Resolution: 31cm
Date: 08/08/2018
Time: 06.05am



Sentinel-2

Resolution: 10m
Date: 08/08/2018
Time: 05.26am



- We have many projects, most in polar regions, using VHR, AI, Citizen Science.
- Polar regions are the fastest changing regions of the planet. Using VHR imagery we are starting to see the impact at a species level
- This technology could be used around the globe for hundreds of species. But some strategy and plan is needed to prioritize the effort.