

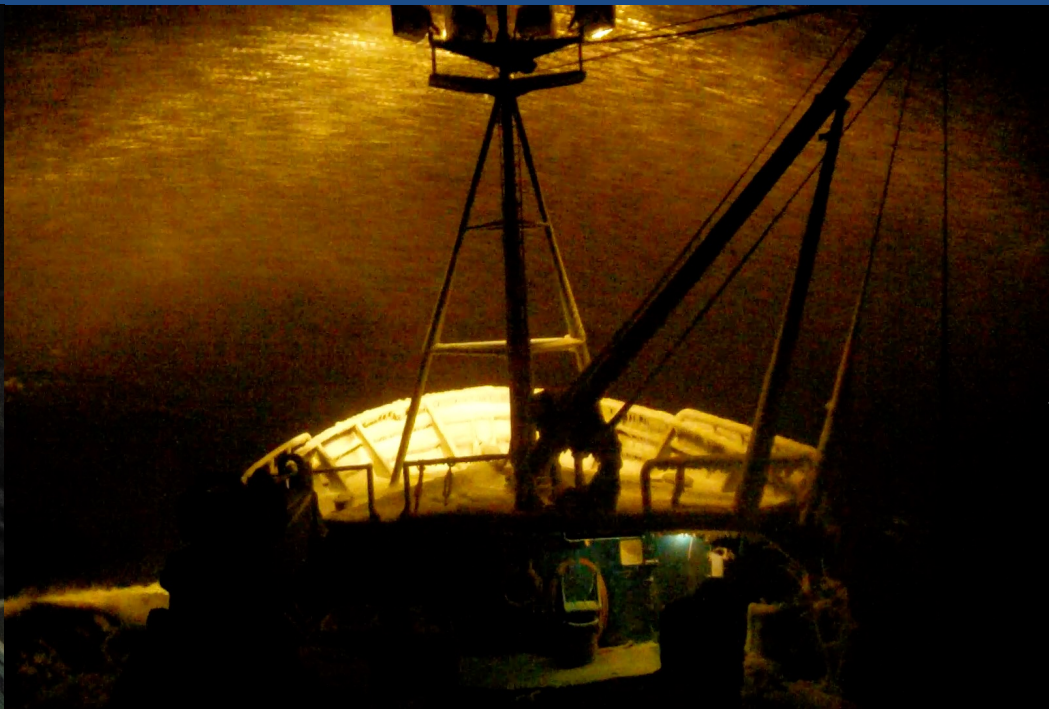
Global Fishing Watch

Supporting biodiversity beyond national jurisdiction with
satellite technology & machine learning

Dr. Tim White

April 2023

New satellite insights to complement existing data streams



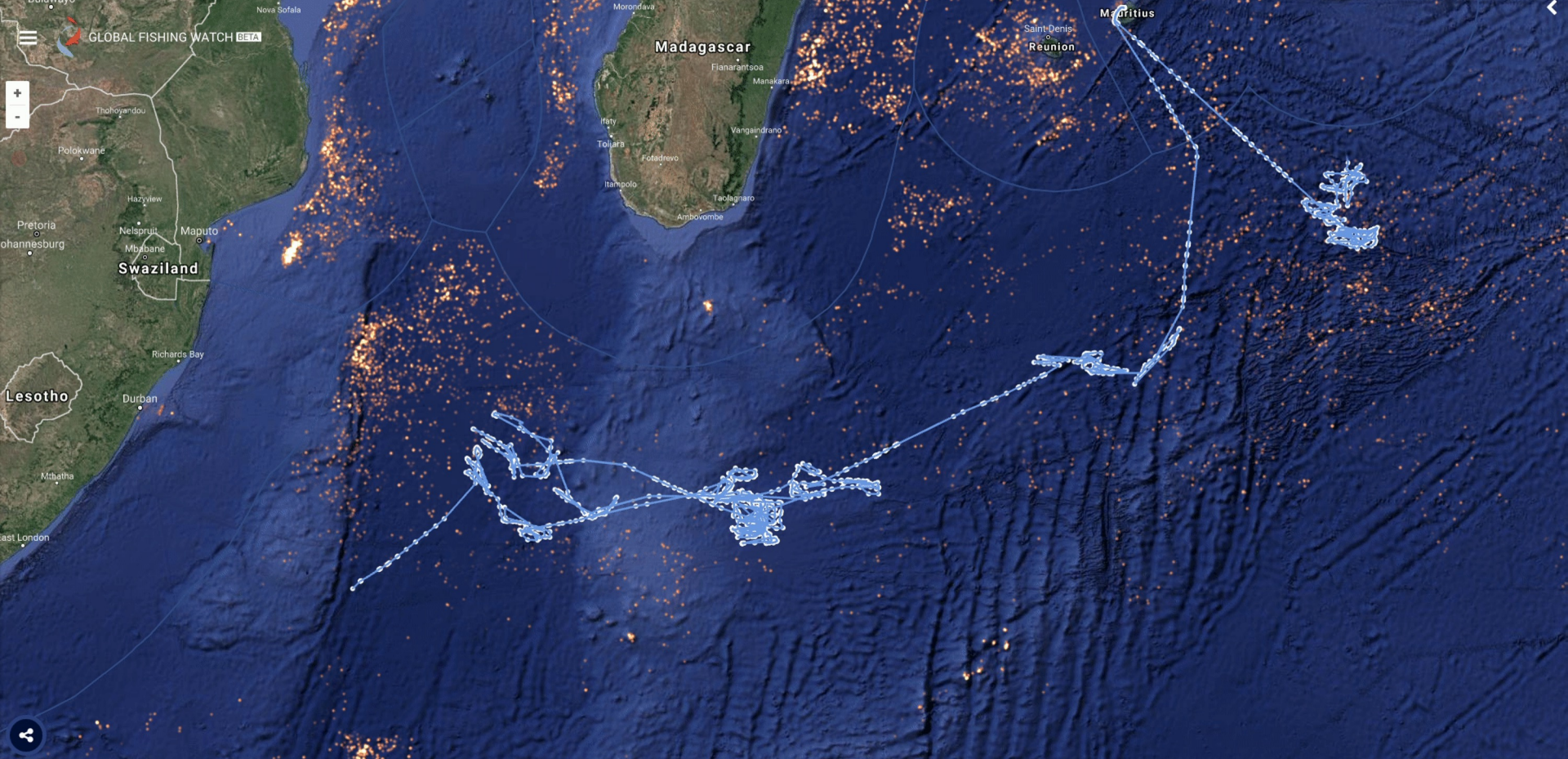
Global Fishing Watch

How I normally drive.



How I drive when I see a cop.





GLOBAL FISHING WATCH BETA

Madagascar

Mauritius
Reunion

Swaziland

Lesotho

12 NOV 2013

+ -

10 FEB 2014

||

NOV

DEC

JAN

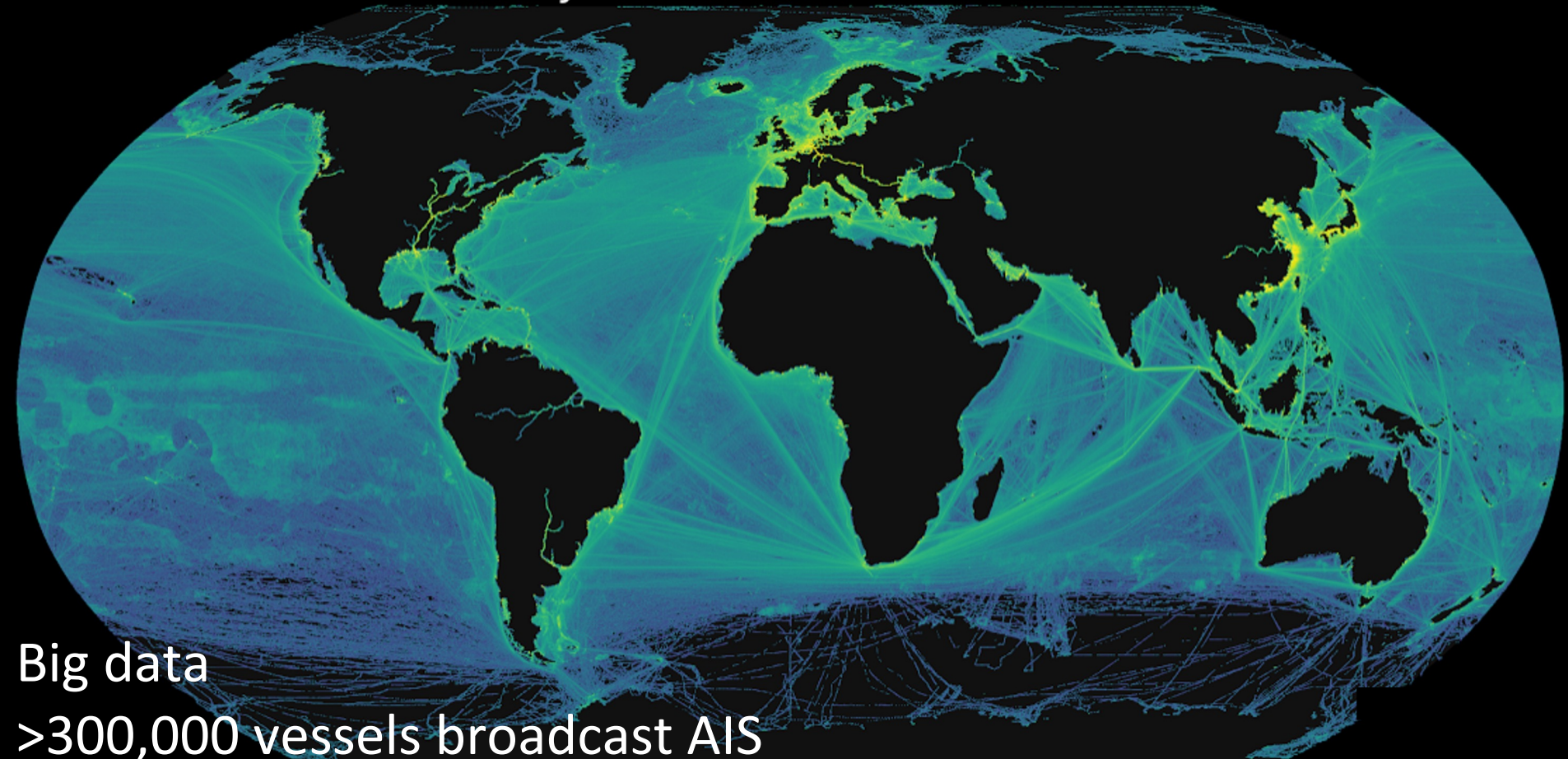
FEB

MAR

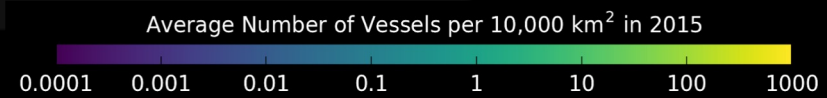
2014

90 days

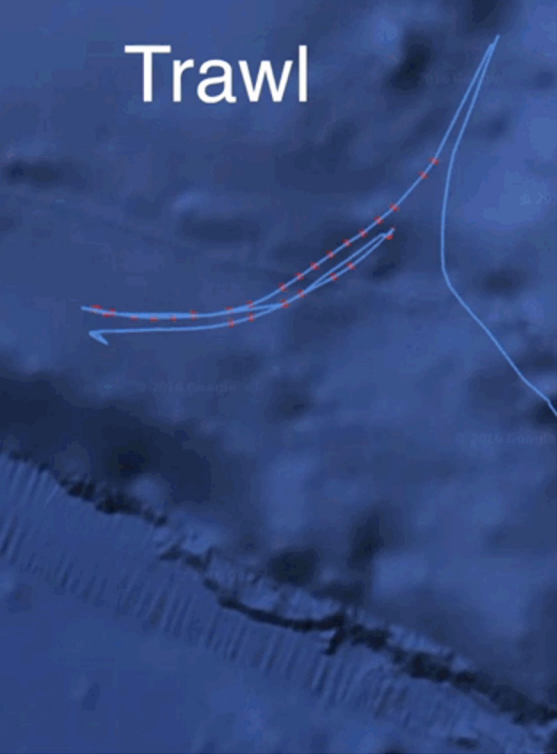
-39.6226, 27.9053



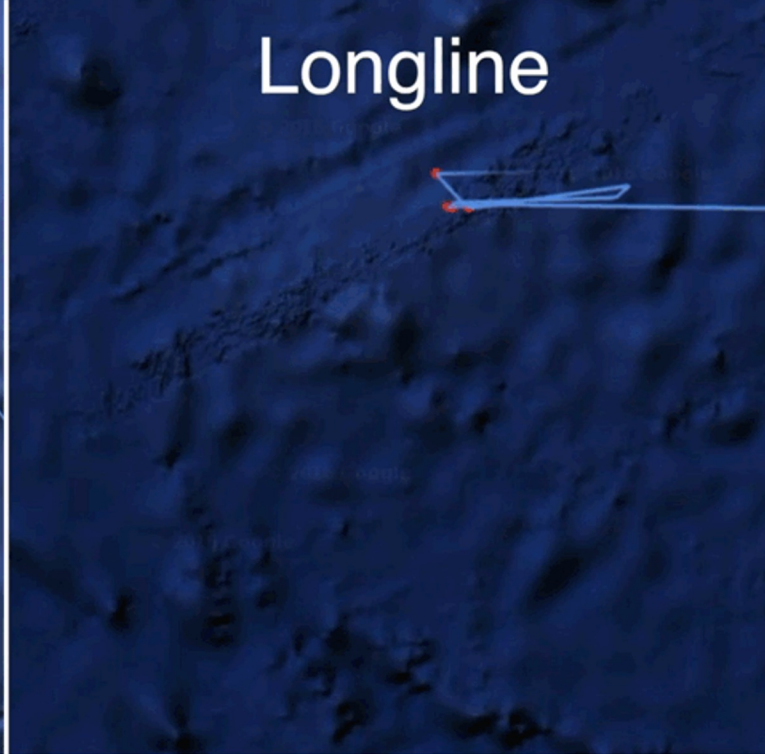
Big data
>300,000 vessels broadcast AIS
>50 million messages per day



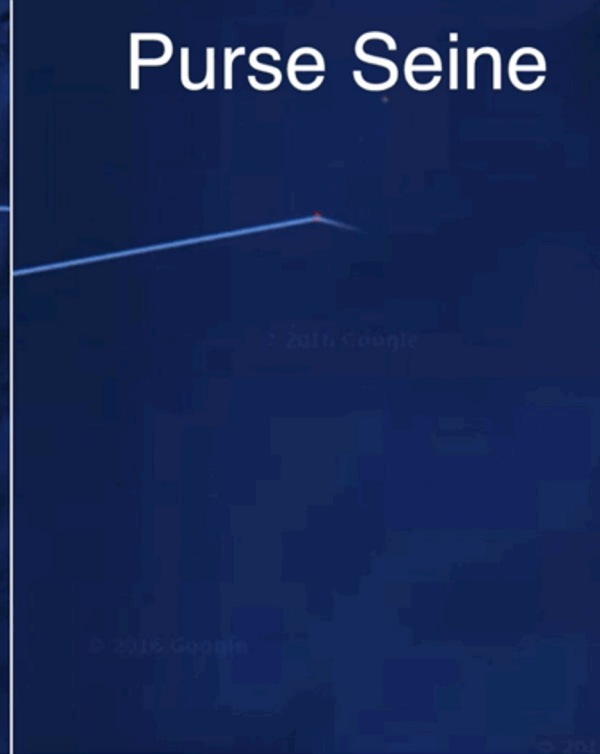
Trawl



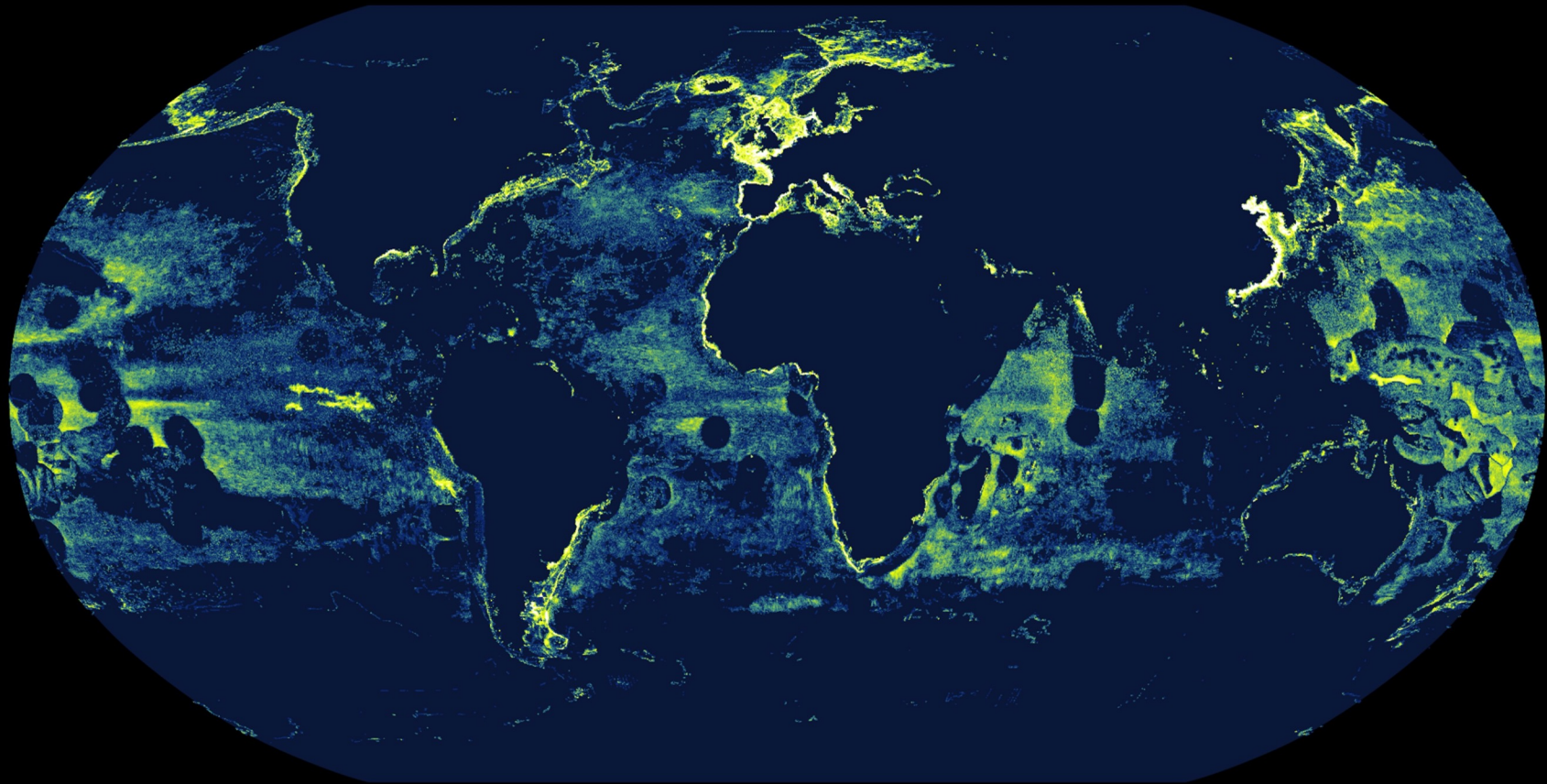
Longline



Purse Seine



Fishing by Vessels with AIS, 2018



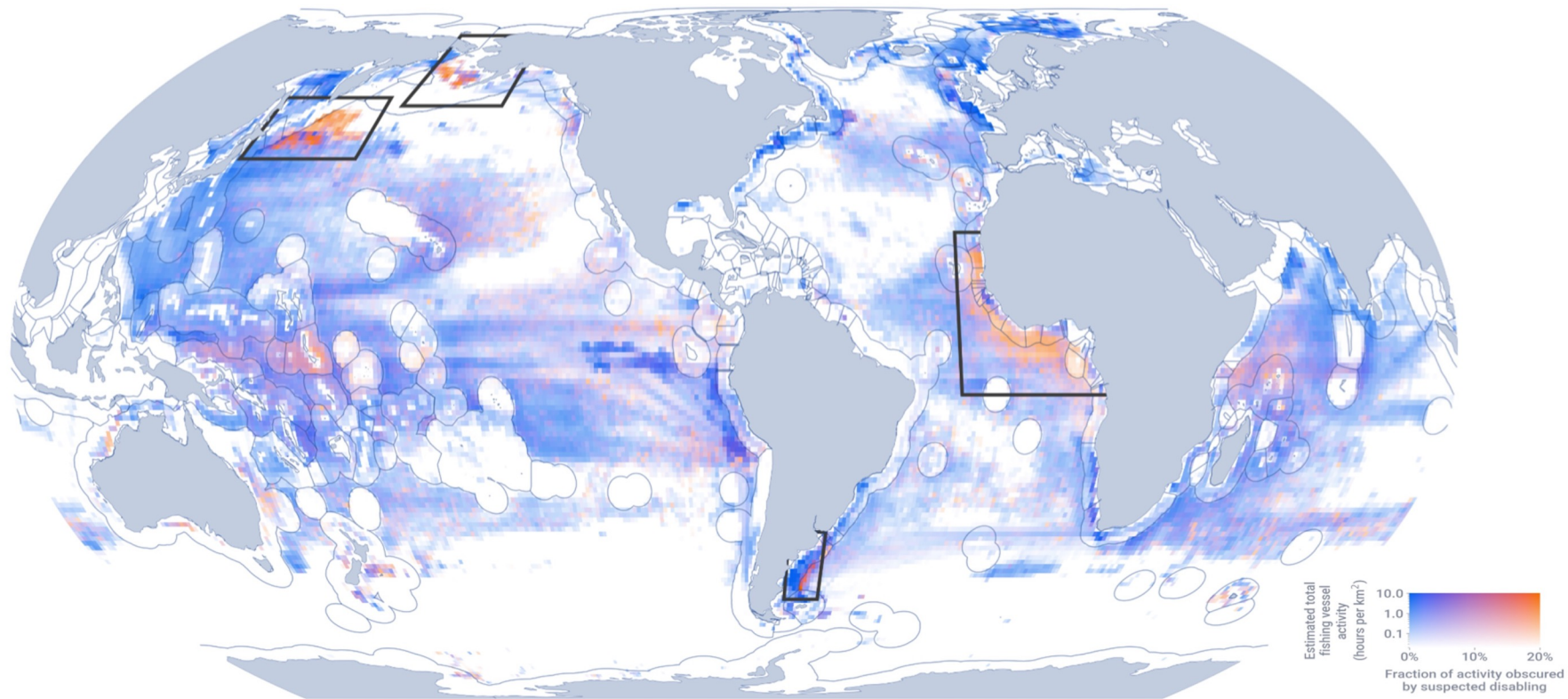
fishing hours per 100 km²



Global Fishing Watch


Kroodsma et al. 2018. *Science*

Global hotspots of tracker disabling



**Providing
support for
USCG patrols in
the North
Pacific**





The marine manager
portal provides
dynamic, interactive
data

Founded by Dona Bertarelli. Data to support
marine spatial planning, MPA management,
and scientific research.

Marine Manager portal data layers



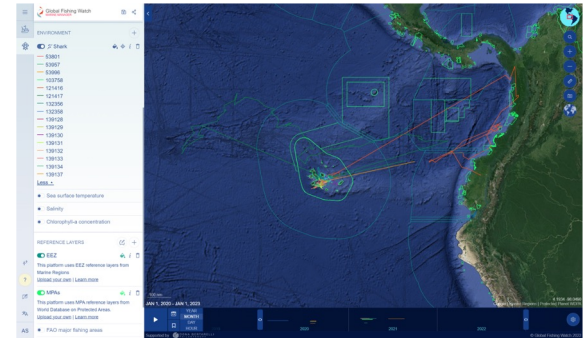
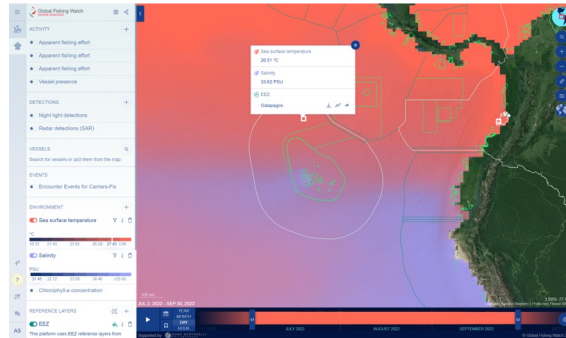
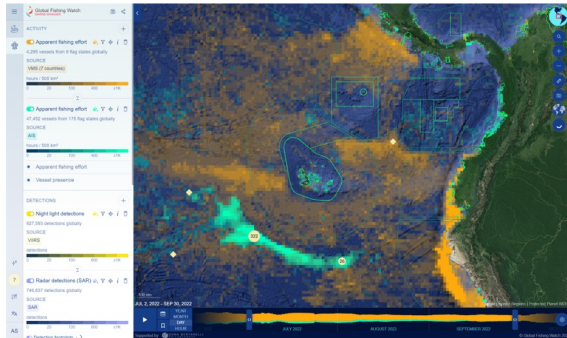
Human Activity Data



Oceanographic Data

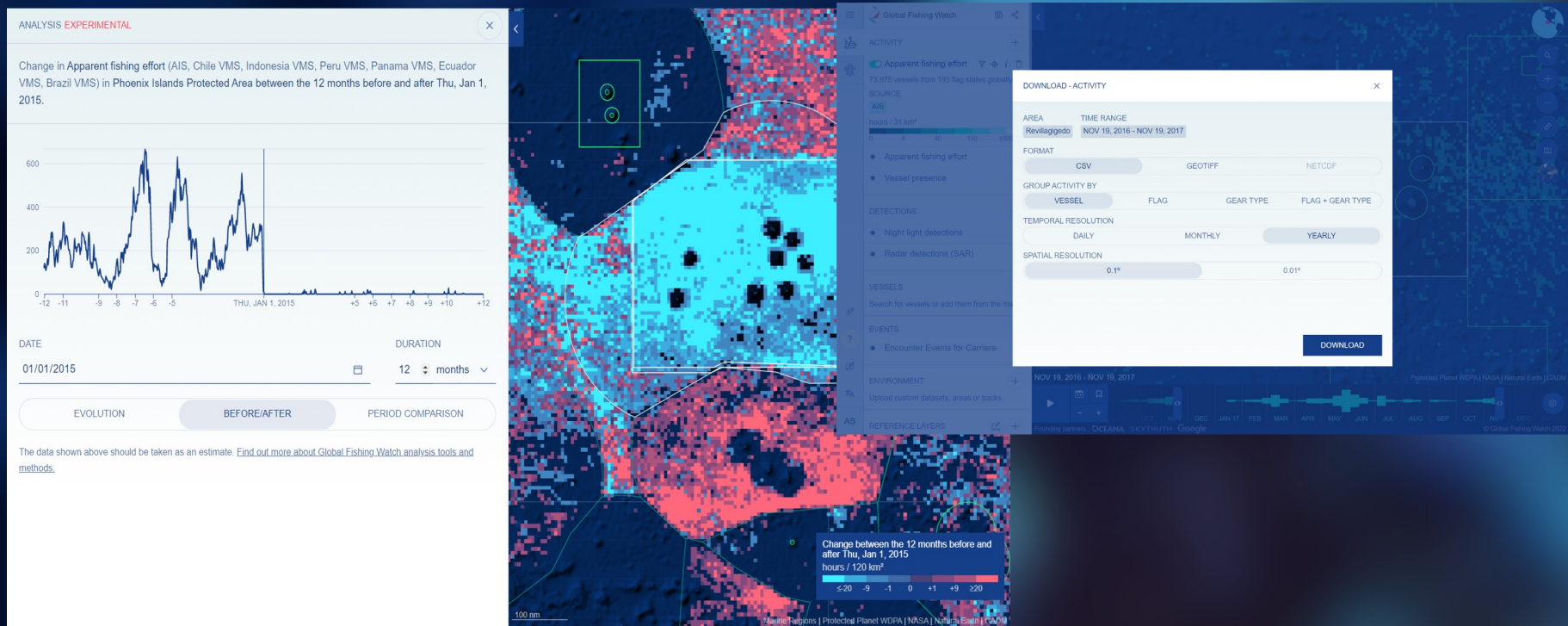


Biological Data



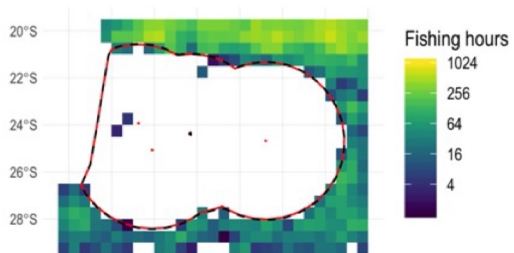
Marine Protected Area Analytics

What are the effects of protection? What changes on the water?



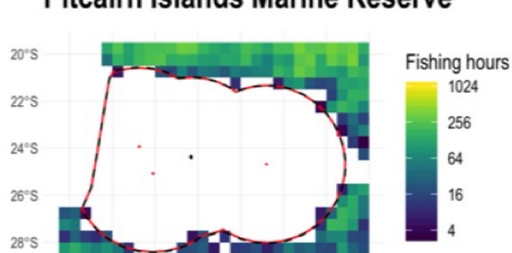
Using open data to assess marine policy

Pre-MPA

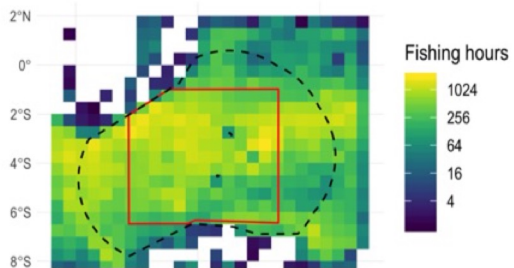
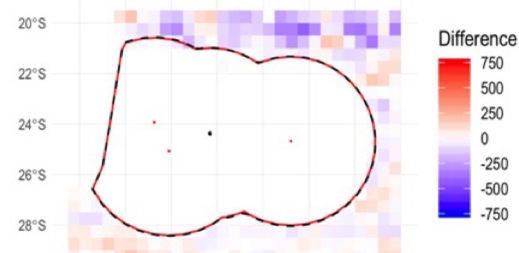


Post-MPA

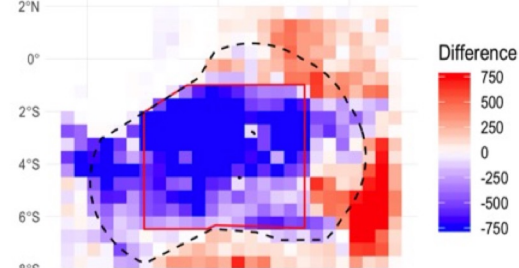
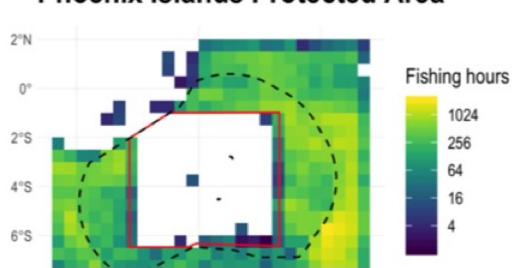
Pitcairn Islands Marine Reserve



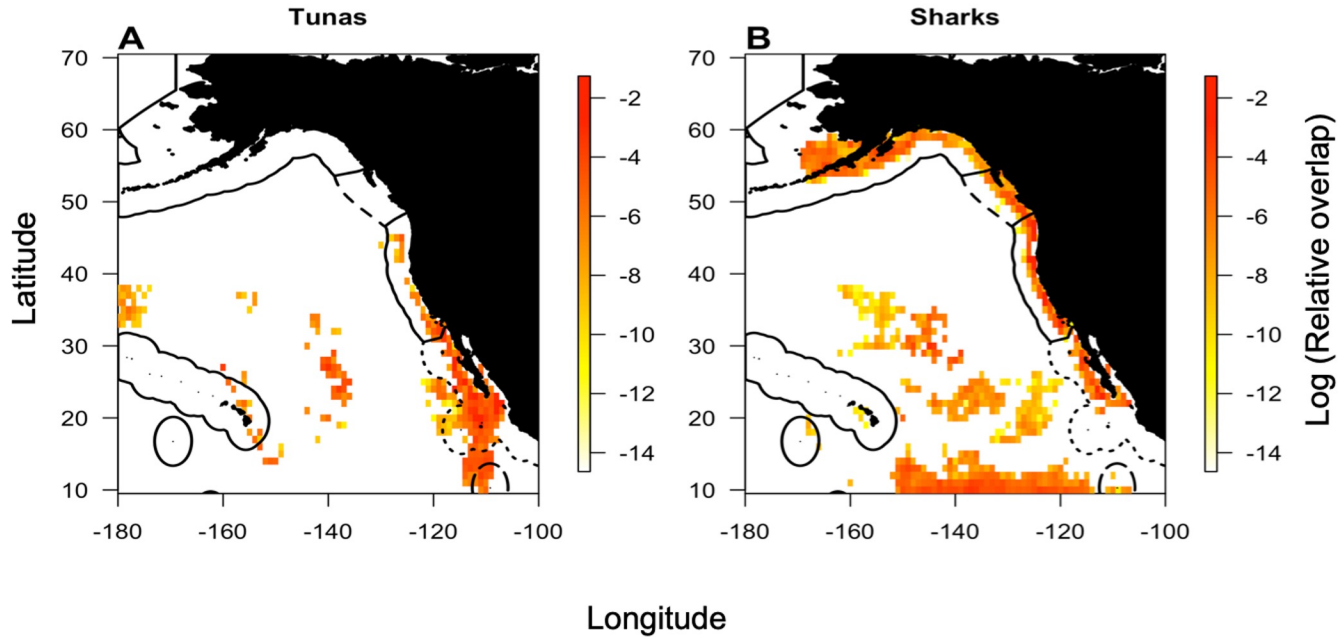
Change



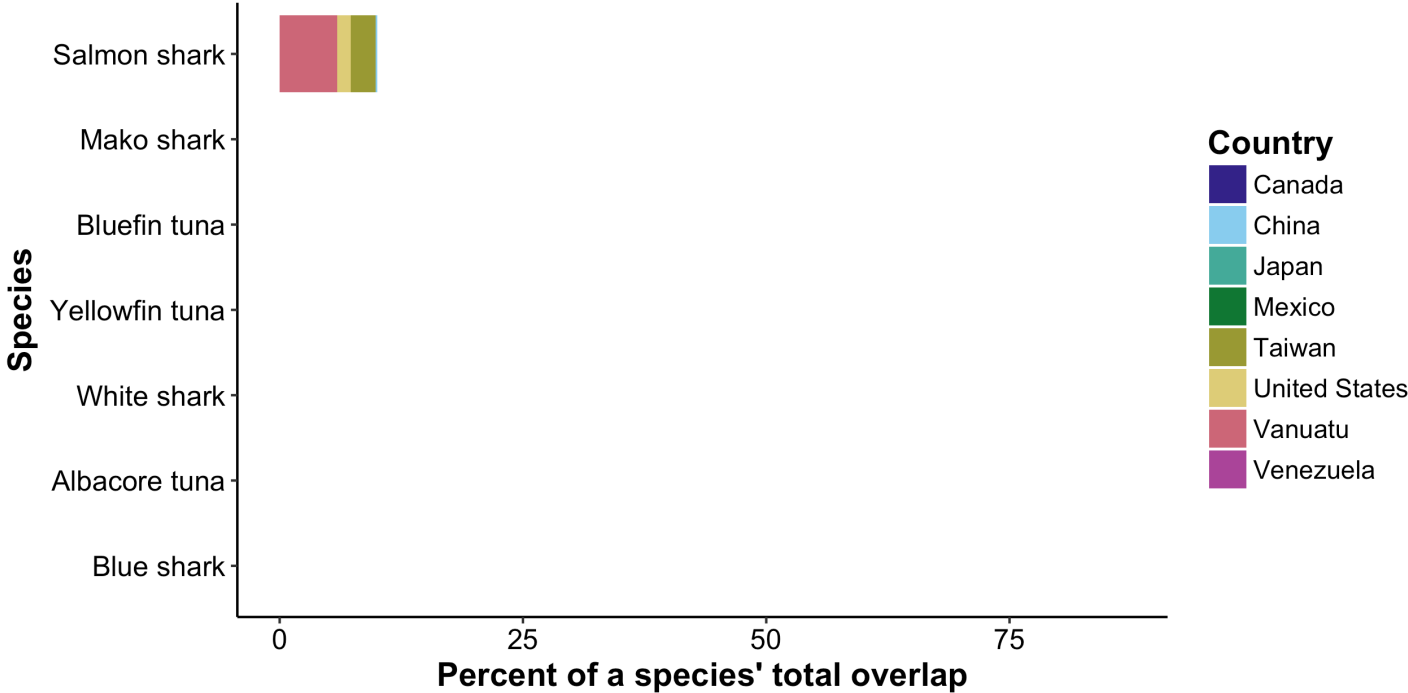
Phoenix Islands Protected Area



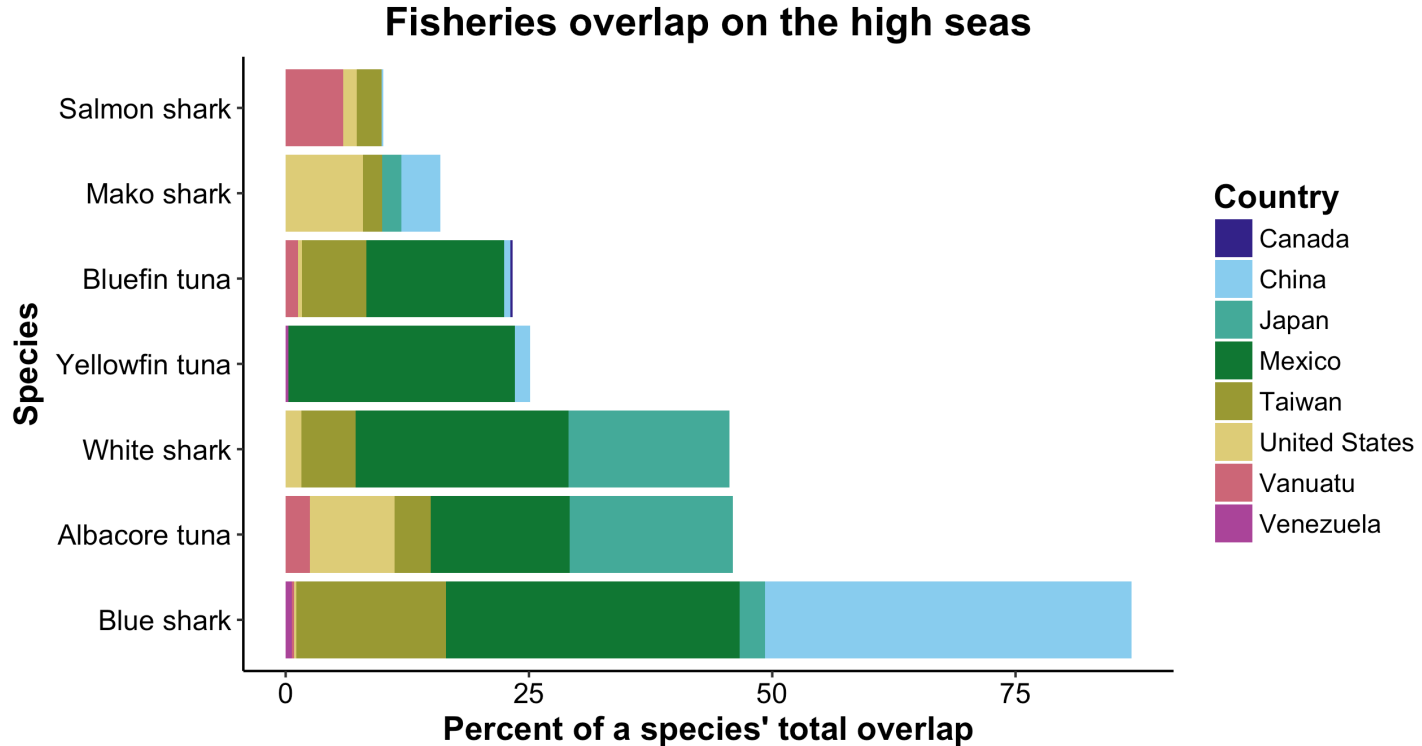
Predicted hotspots of overlap for tunas and sharks



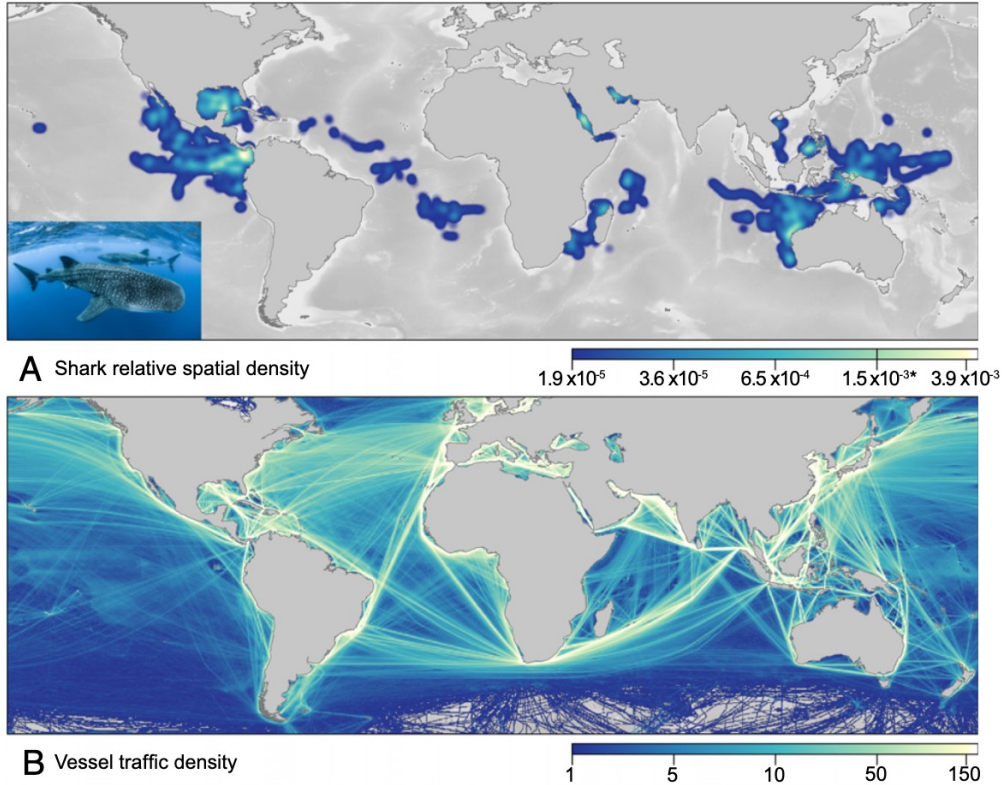
Fisheries overlap on the high seas

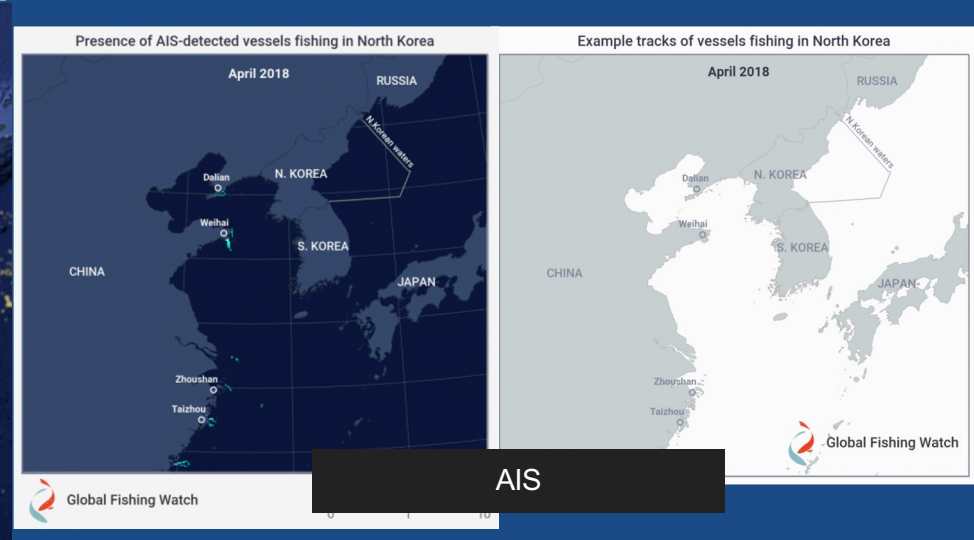
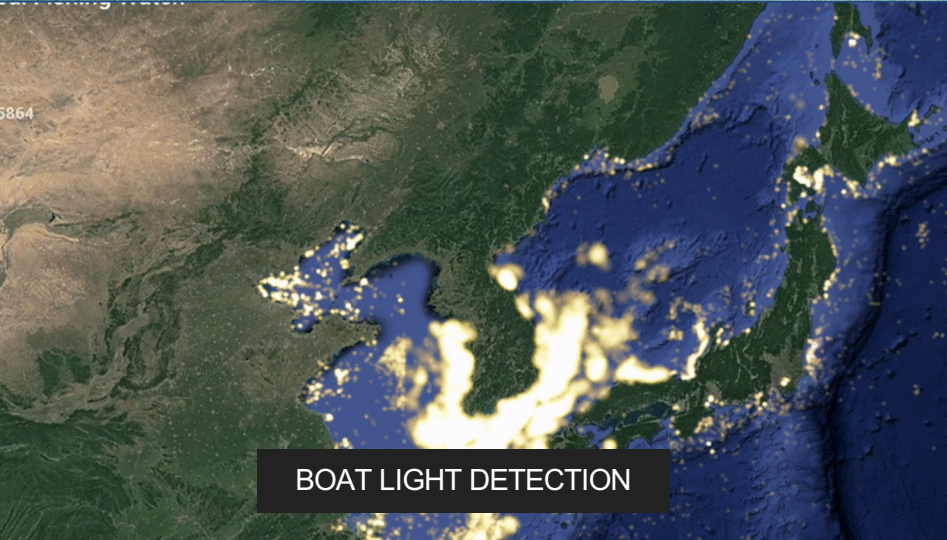
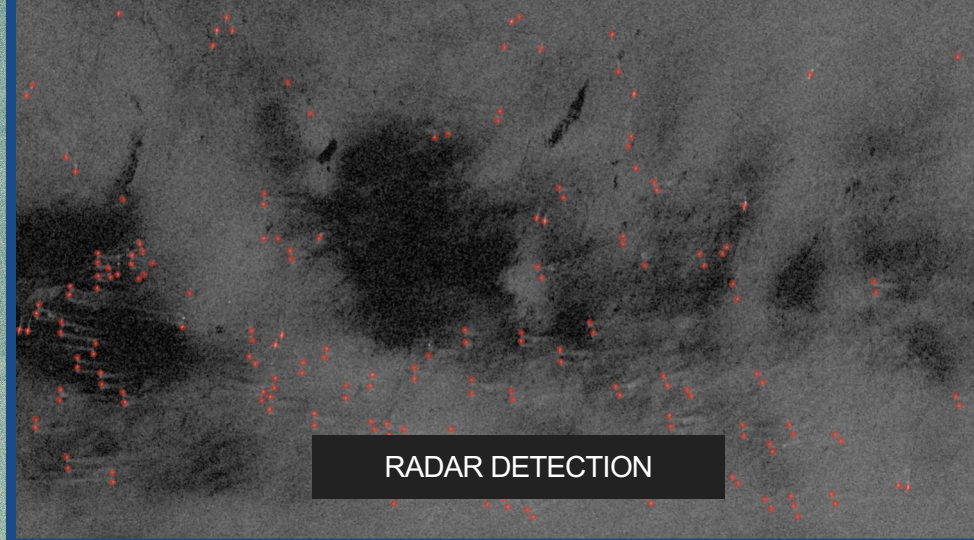
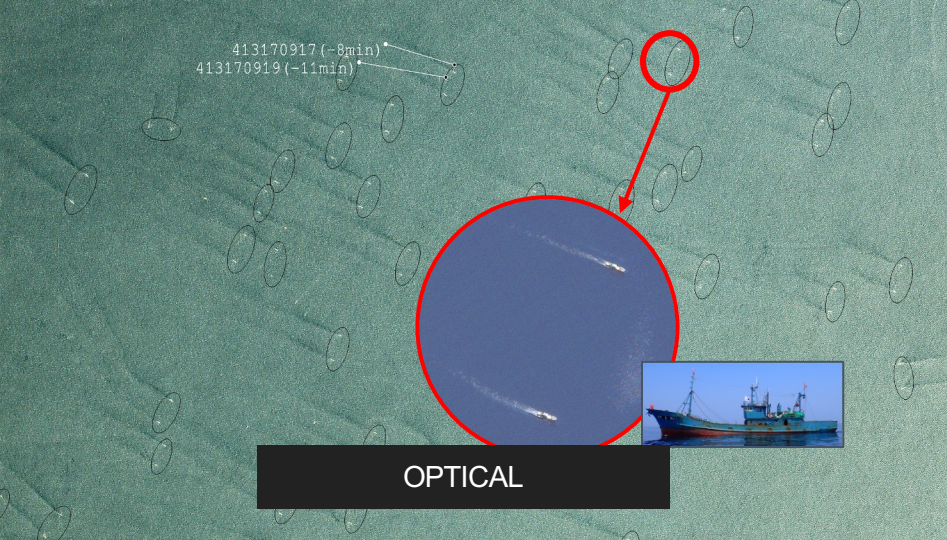


5 nations drive 95% of high seas overlap in the NE Pacific



Whale sharks + shipping impacts





Illuminating The Dark Fleet



Chinese Pair Trawlers

>790 in 2017

>580 in 2018

Detected in North Korean waters using **high resolution images** and **radar**

North Korean Small-Scale Fishing Vessels

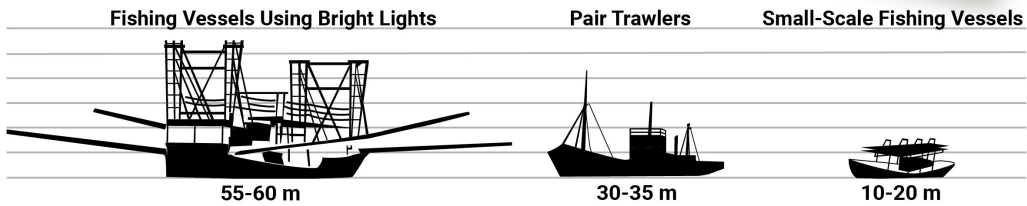
~3,000

Detected in Russian waters in 2018 using **satellites that detect night-time lights**

Chinese Fishing Vessels Using Bright Lights

>100 in 2017 >130 in 2018

Detected in North Korean waters using **satellites that detect night-time lights**



Questions

