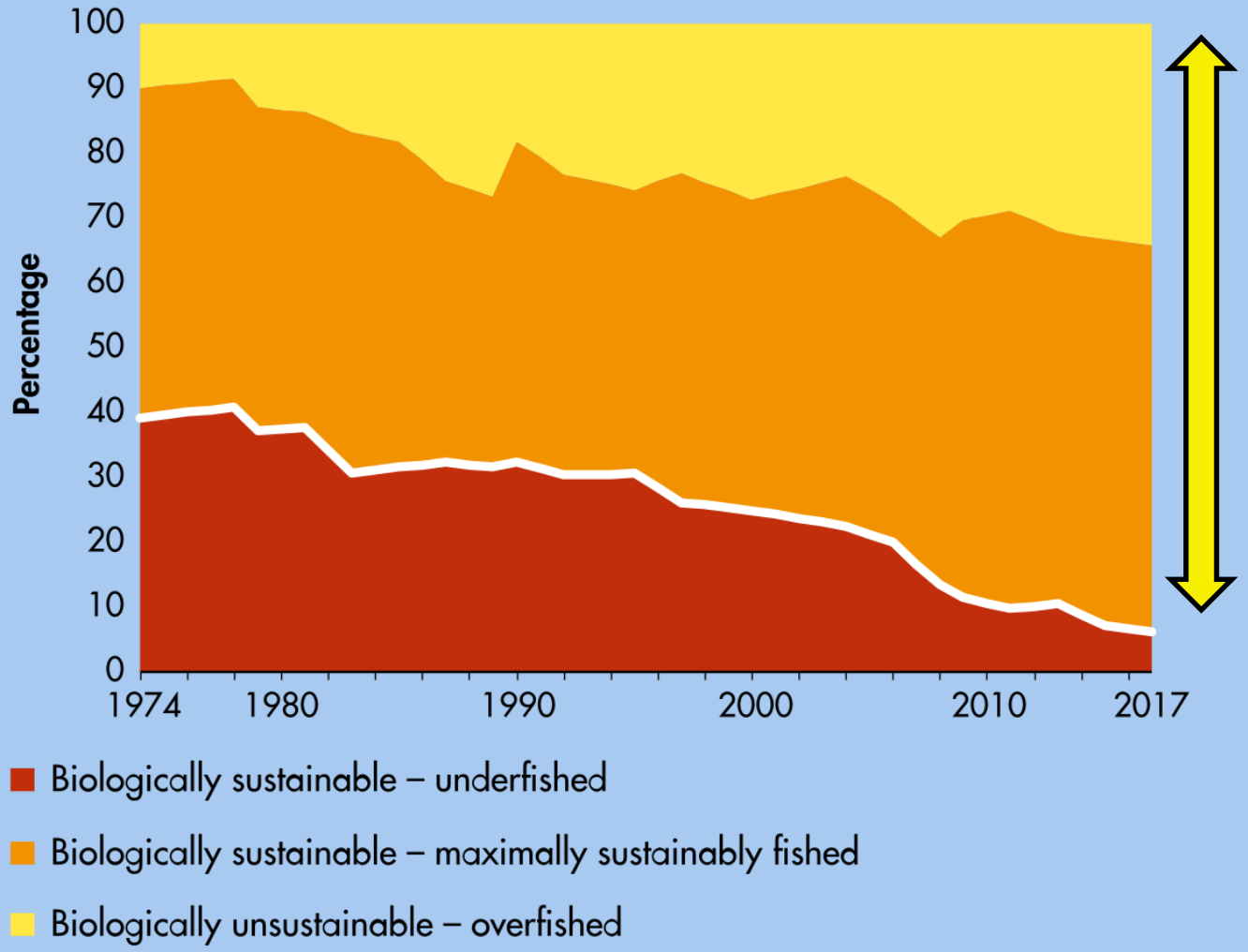
Sean Wheeler
Fisheries & Oceans Canada
Conservation & Protection
International Program

April 2021



Big Picture

Est 4.6M fishing vessels in the world

<u>94% of global stocks are maximally or over fished</u>

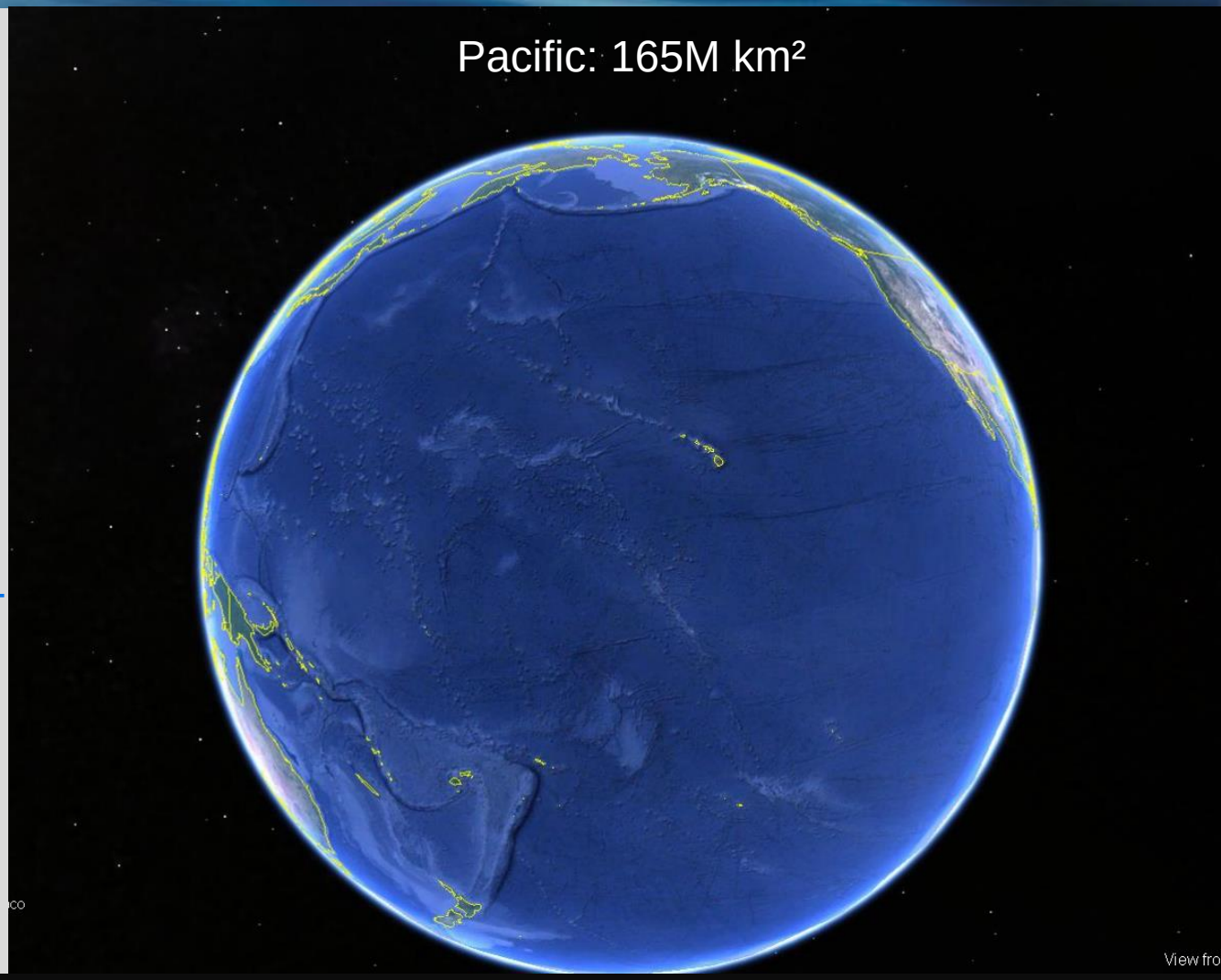
1/3 of global catch estimated to be result of ***IUU fishing***

Source: IMO, FAO, World Food and Agriculture – Statistical Yearbook 2020. Rome: FAO. 2020.

- Space-based sensing required given the distances involved
- Capabilities, sources and cost of data improving:
  - New commercial sources
  - Improved analysis
  - Power in combining sources & layered surveillance

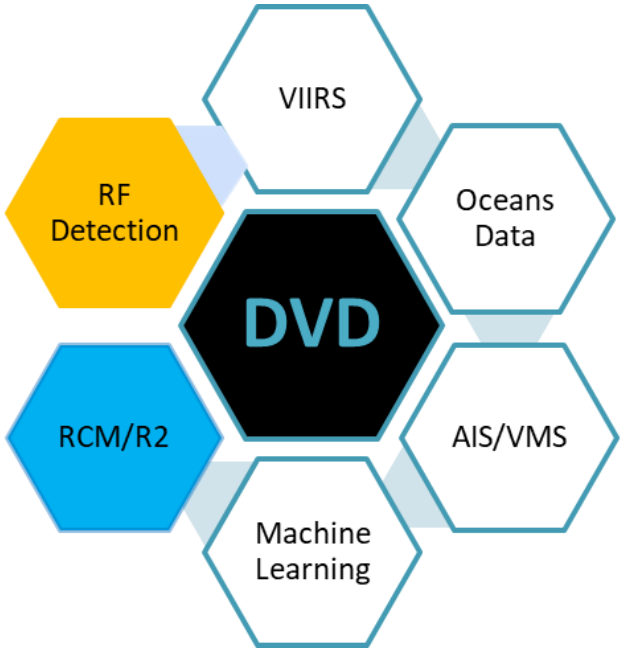
Canada is working to combat IUU fishing through space-based sensing by:

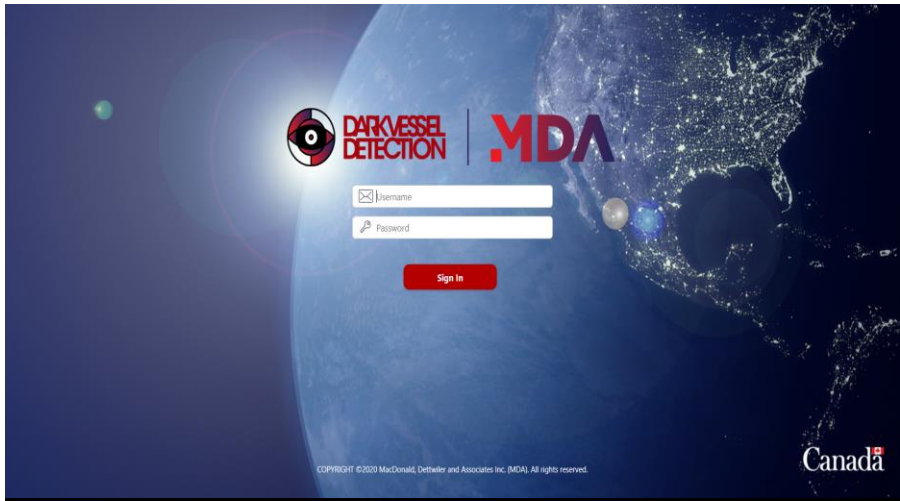
1. Investing in research and development of new capabilities
2. Engaging in partnerships to improve transparency & data access



Canada's Dark Vessel Detection Project

- Canada working to test layered approach to near real-time surveillance
- Working to identify vessels that extinguish transponders – 'Dark Vessels'
- Leveraging Canada's Radarsat Constellation Mission for SAR
- Partnered with Ecuador to provide monitoring support around the Galapagos Islands in 2021-2022



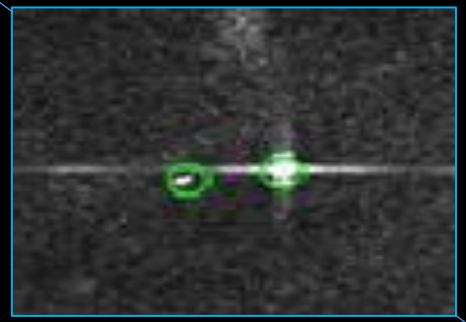


Building a layered approach

Canada

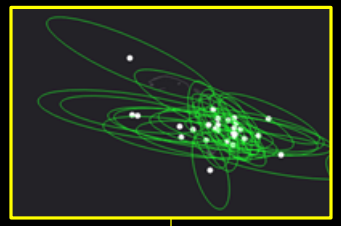
RCM/R2

Synthetic-Aperture Radar
Radarsat Constellation Mission



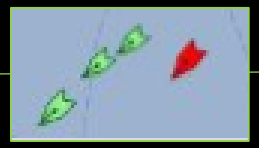
RF Detection

Radio Frequency Data

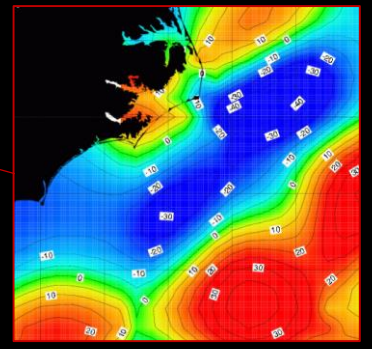


VIIRS WX Satellite
Light emissions

Voluntary Signals
AIS / VMS

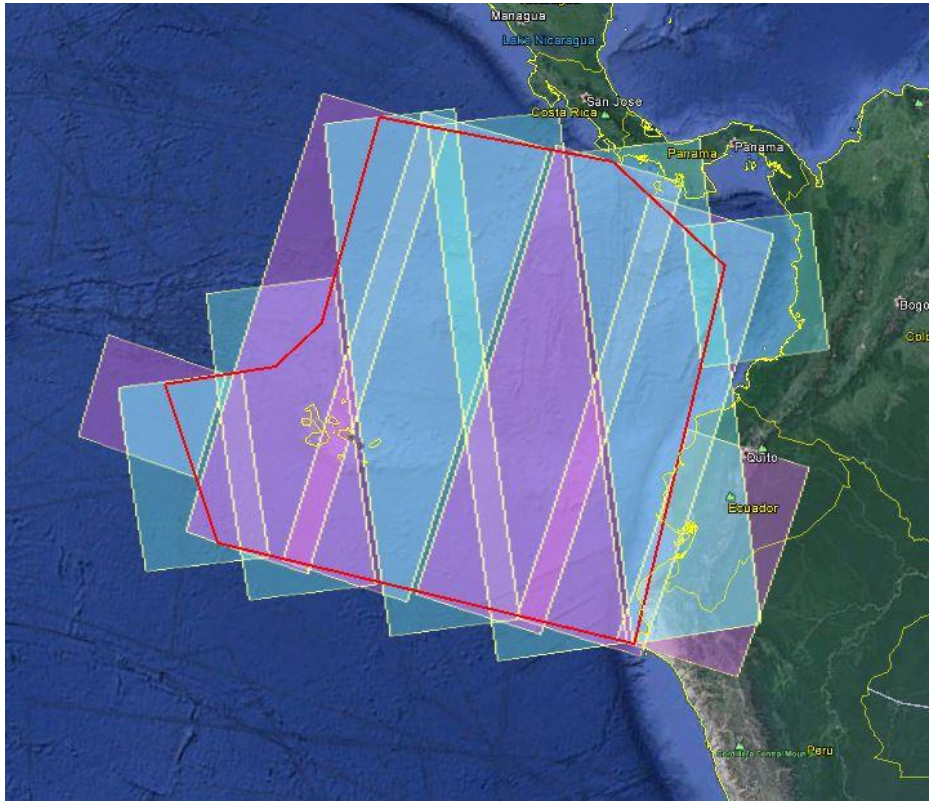


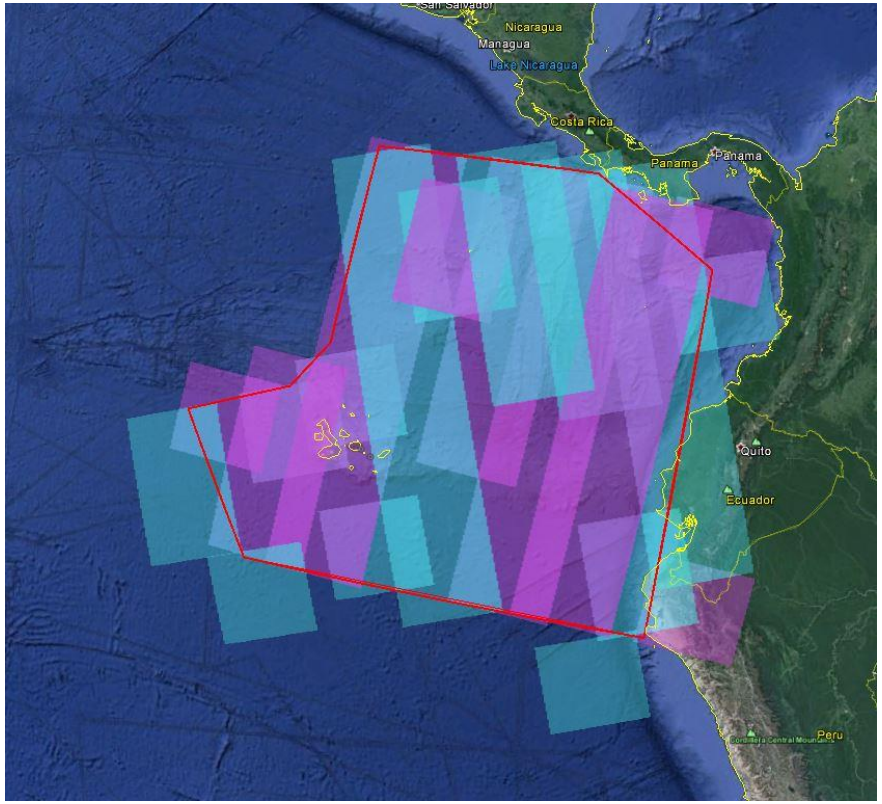
Sea Surface Data
Track the Fish

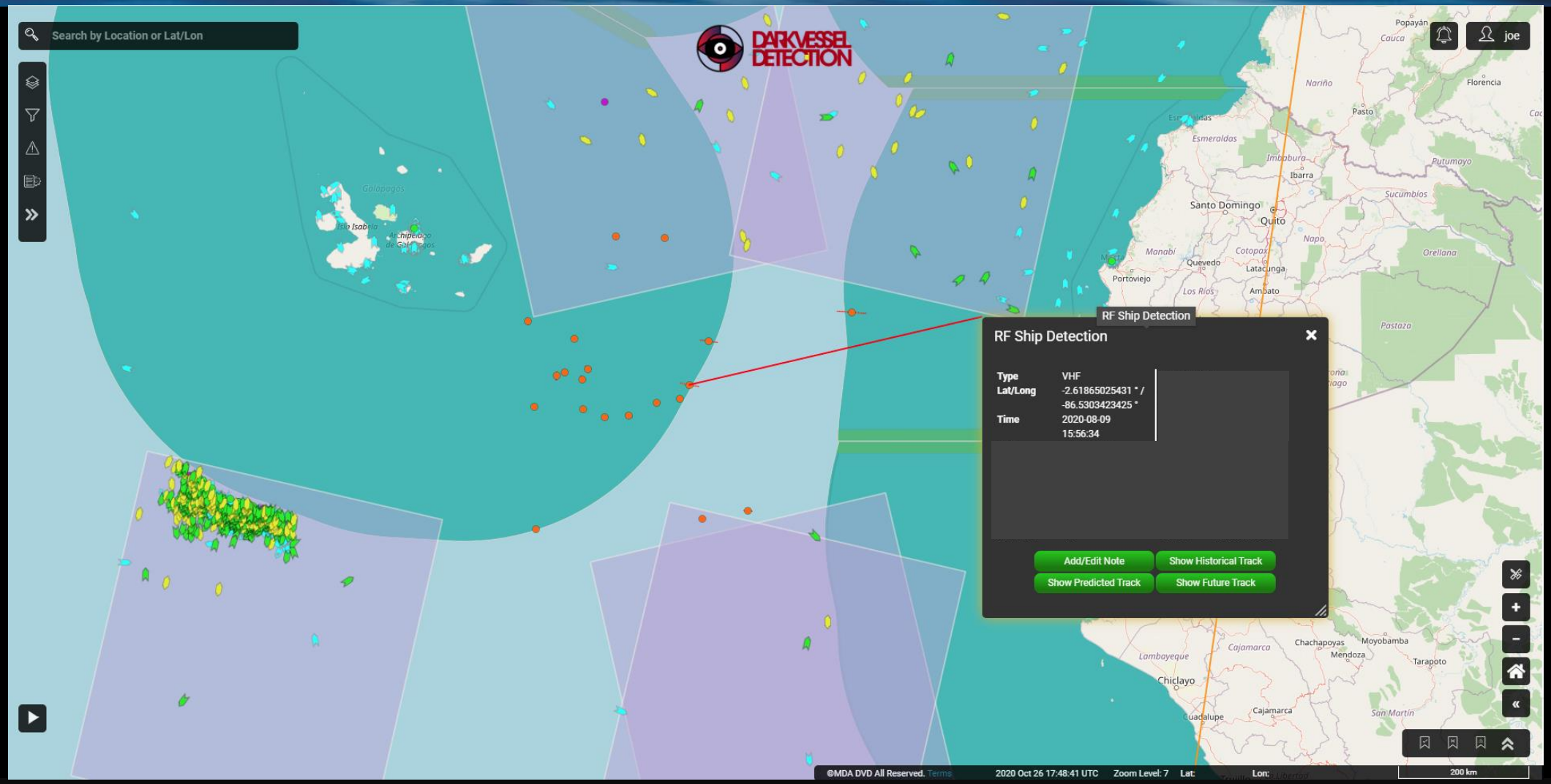


Example: Ecuador – 1 Week Access Opportunities

- Accessing multiple constellations can provide robust monitoring
- To have operational relevance, data must be rapidly processed and displayed (vessels are moving)







DVD platform & Pacific monitoring

- **Partnerships** are critical to addressing the vast area of our oceans, expansive fleets and multi-jurisdictional nature of illegal fishing
- Canada partners with Non-Governmental Organizations on the issue of IUU fishing to increase global impact
- Canada has a partnership with **Global Fishing Watch** to support their mission of bringing greater transparency through open data

Tony Long, CEO Global Fishing Watch &
Minister Jonathan Wilkinson, Fmr Minister DFO

Global Fishing Watch

Advancing ocean governance through increased transparency and use of space-based systems

Tony Long
CEO, Global Fishing Watch

April 2021

Global Fishing Watch

Our ocean is under immense pressure

A third of the world’s major commercial fish species are overfished and the United Nations estimates that two thirds of the marine environment has been significantly altered by human actions.

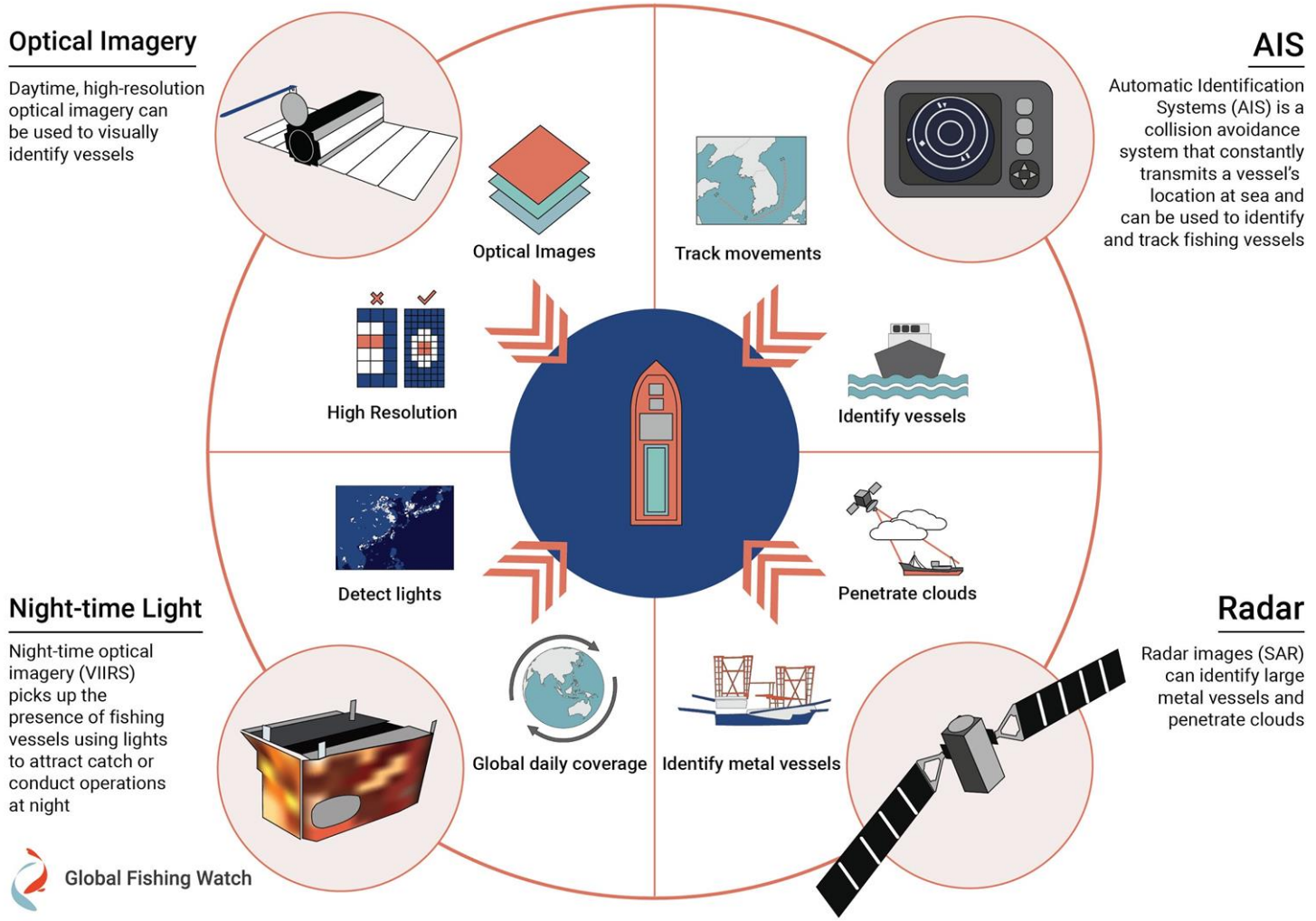
There is huge cost to the sustainability of the fisheries, to the coastal communities that depend on this source of food and to the environment.

Our ocean is poorly monitored

There is no global picture of all human activity at sea and we cannot truly understand humanity’s impact on life below water. This lack of visibility allows illegal, unreported and unregulated fishing to thrive.

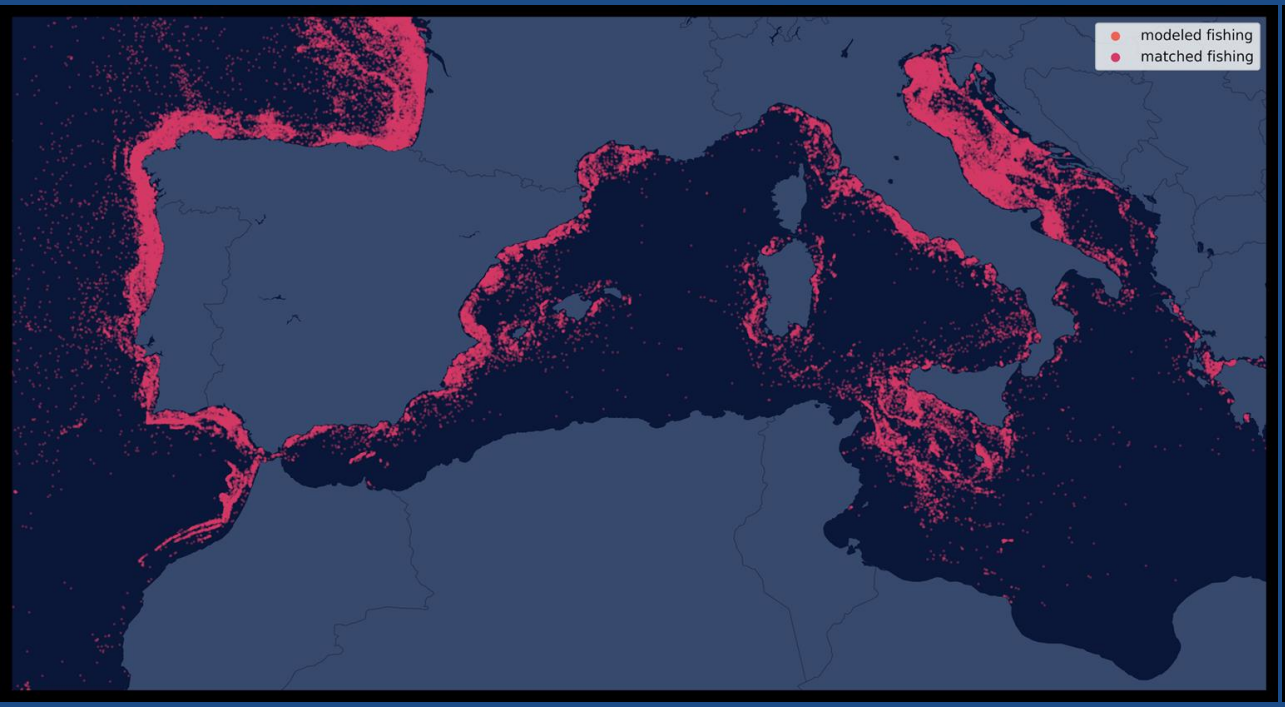
But, advances in big data and the access and affordability of space-based technology are rapidly transforming our ability to generate new insights at global scale and make them public and visible.

Combining more satellite data to reveal more activity at sea

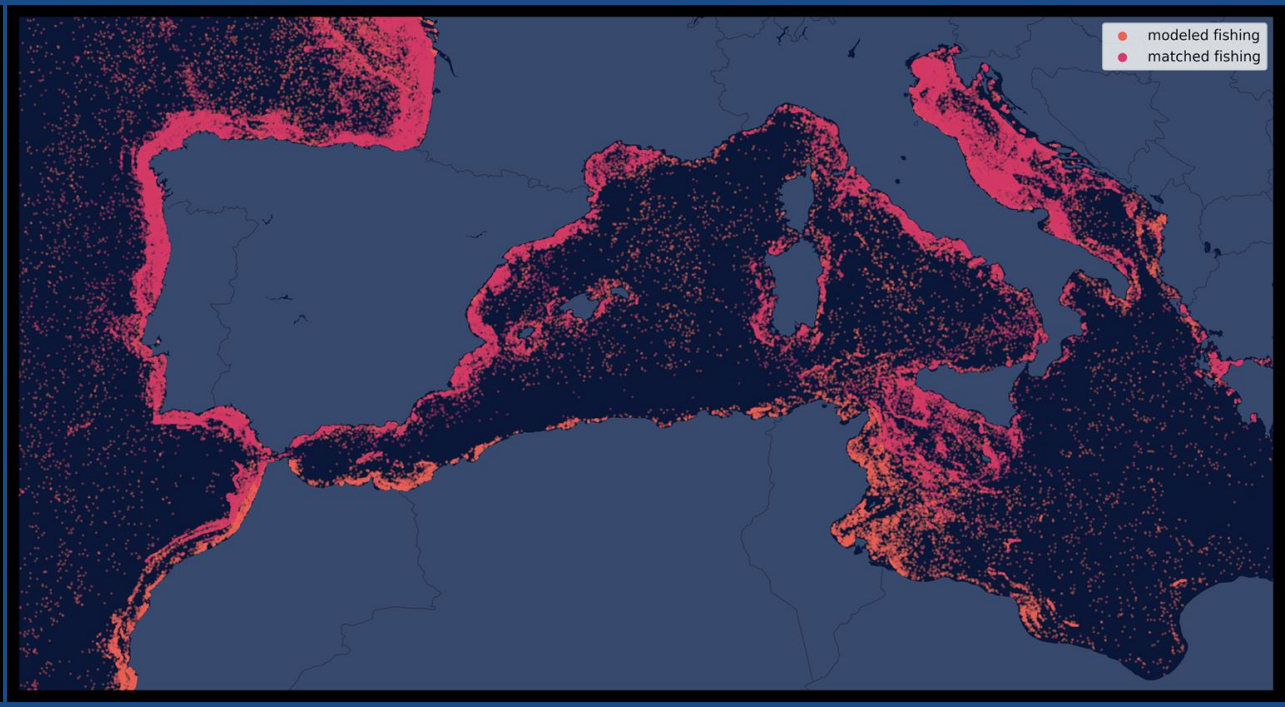


Satellite Radar Can Illuminate “Dark” Fishing

AIS Only:
Fishing appears only in Europe



AIS + Satellite Radar:
Widespread fishing along the African continent

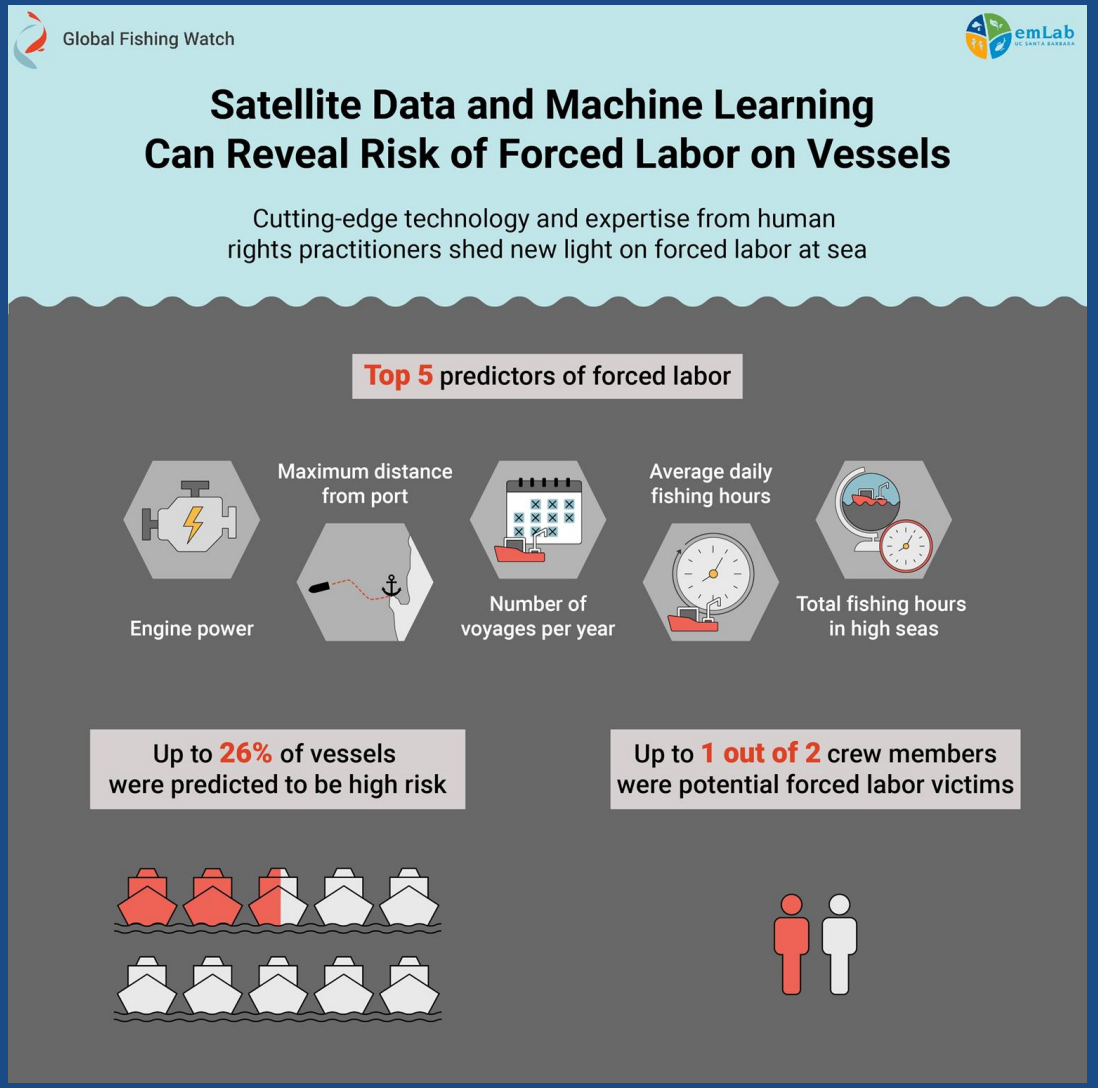


We are processing more than 1000 terabytes of satellite radar to identify all fishing vessels > 15m that do not use AIS

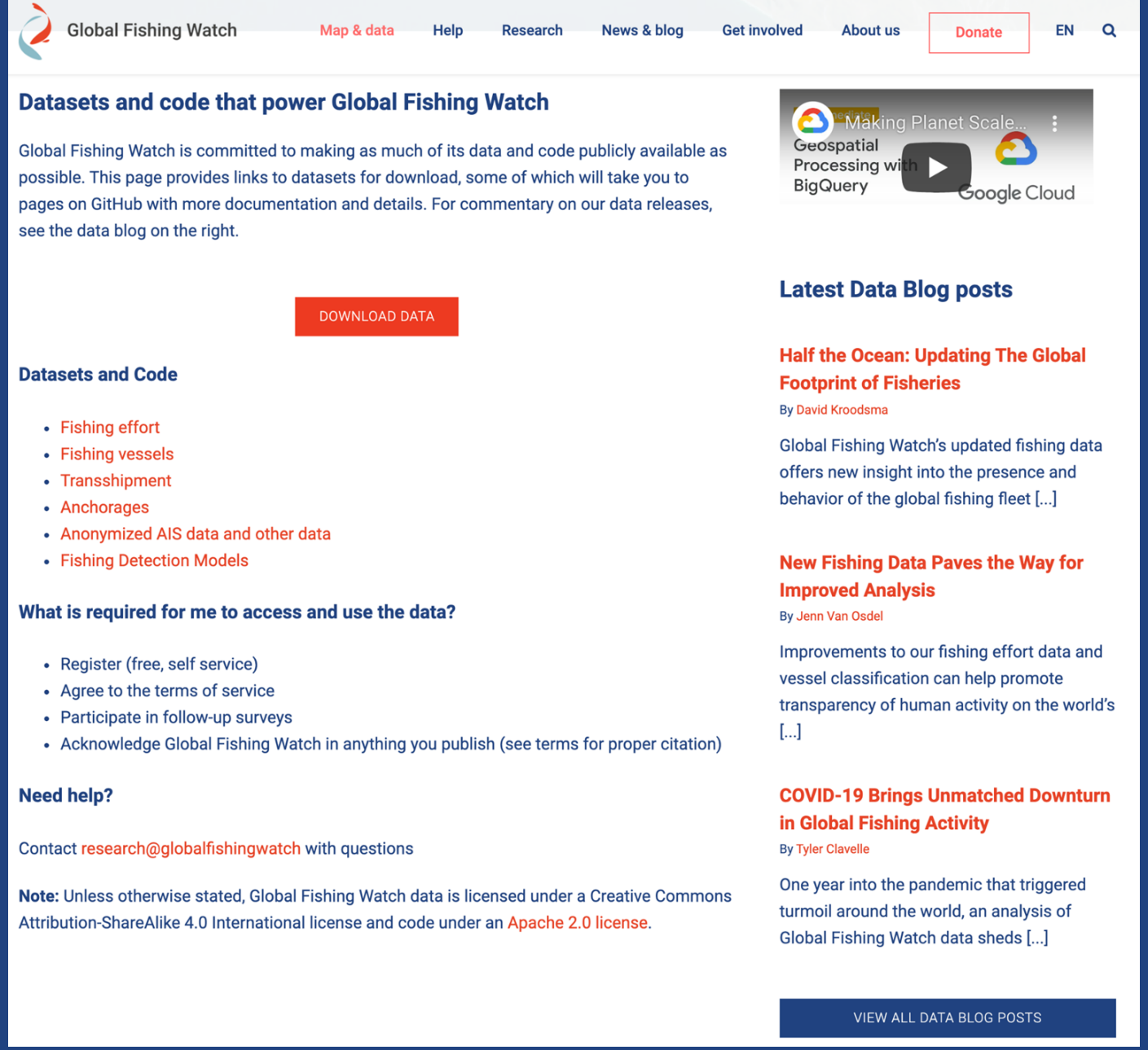
Global Fishing Watch

Scientific study reveals risk of forced labor in fishing fleets

Vessels known to have crew that are subject to forced labor behave in systematically different ways to the rest of the global fishing fleet. The discovery was used to build a first-of-its-kind model to identify and predict vessels at high risk of engaging in these abuses.



Global Fishing Watch



https://globalfishingwatch.org/datasets-and-code/

+30 peer-reviewed papers published

NATIONAL GEOGRAPHIC
PRISTINE SEAS

UBC

DALHOUSIE UNIVERSITY

Marine Geospatial Ecology Lab

msi
Marine Science Institute

FAO
FIAT PANIS

Stanford

emLab
UC SANTA BARBARA

FRA
Fisheries Research Agency

UNIVERSITY OF WOLLONGONG

Marine Manager

Human Use Data

AIS Fishing, AIS Non-Fishing, VMS, Dark Targets, Seismic Resource Testing, Underwater Noise, Mining, Tourism,...

Oceanographic Data

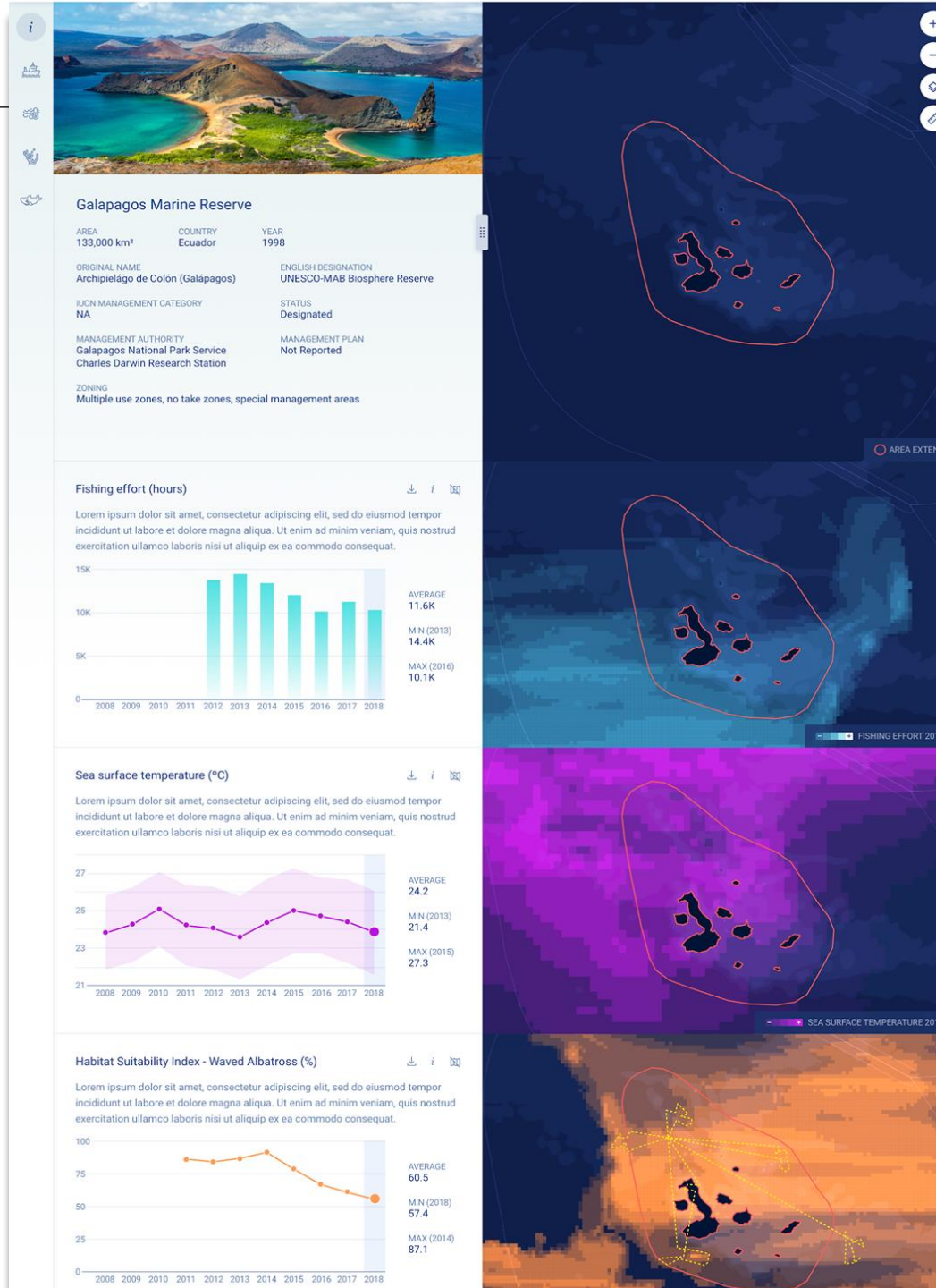
Sea Surface Temperature, Bathymetry, Salinity, Currents,...

Biological Data

Net Primary Productivity (Chl a), Migratory Patterns, Habitat Suitability, Coastal & Deep Sea Ecosystems, Animal Telemetry (upload capability), and more

DONA BERTARELLI PHILANTHROPY

Global Fishing Watch



Thank you

Global Fishing Watch is an international nonprofit organization dedicated to advancing ocean governance through increased transparency of human activity at sea.
By creating and publicly sharing map visualizations, data and analysis tools, we aim to enable scientific research and transform the way our ocean is managed.
We believe human activity at sea should be public knowledge in order to safeguard the global ocean for the common good of all.

Discover more at globalfishingwatch.org

Global Fishing Watch