



ORBITAL EOS

Maritime Environmental Crimes from Space:
using satellites to generate Marine Pollution
Geointelligence

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MSc Remote Sensing



COMPLIANCE ENVIRONMENTAL LAWS

MARPOL

Anex I: pollution by oil

Anex II: pollution by liquid noxious substances

OCEANS

Maritime Surveillance at Scale

Oceans = 2.5 X Land



90.000 ships

World Merchant Fleet

Equasis
Maritime Database



MARPOL SURVEILLANCE

Complex
Expensive





10 YEARS

At Sea

SASEMAR
Spanish Coast Guard



ORBITALEOS
Earth Observation Solutions

10 YEARS

At Sea

SASEMAR
Spanish Coast Guard

SATELLITES

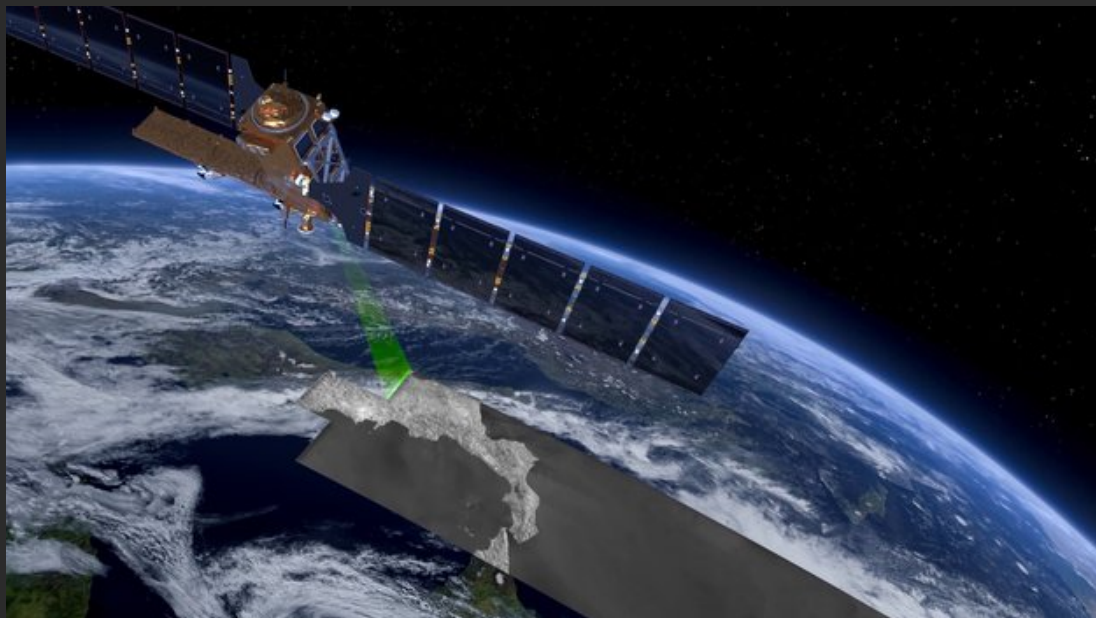
Our eyes in the space

Scan the earth several
times a day

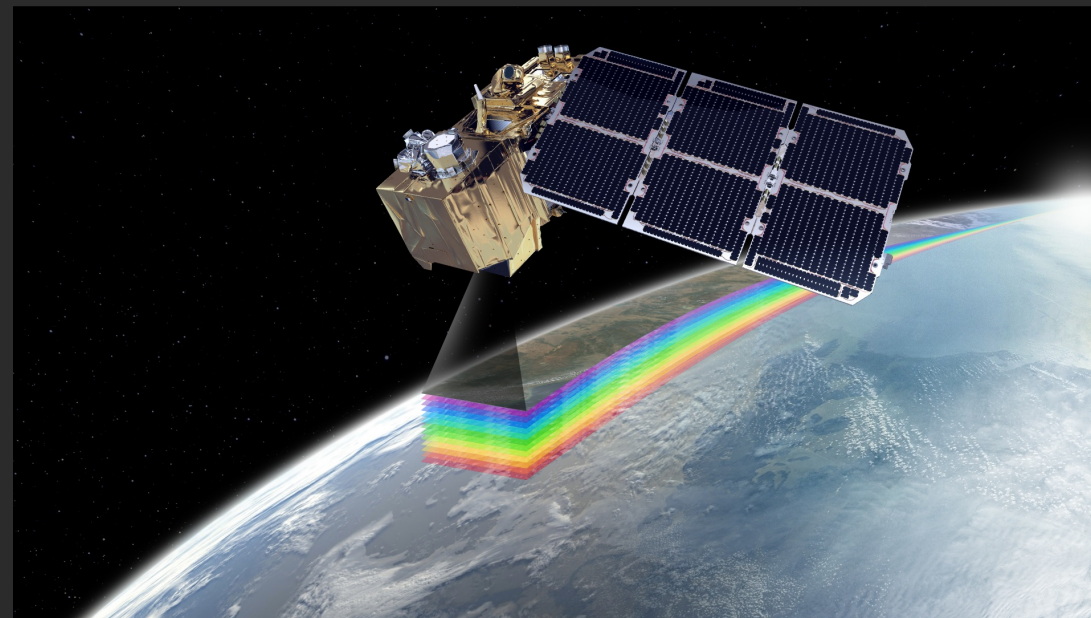
ORBITALEOS
Earth Observation Solutions



Radar Satellites



Optical Satellites



SATELLITE Constellations

Radar + Optical

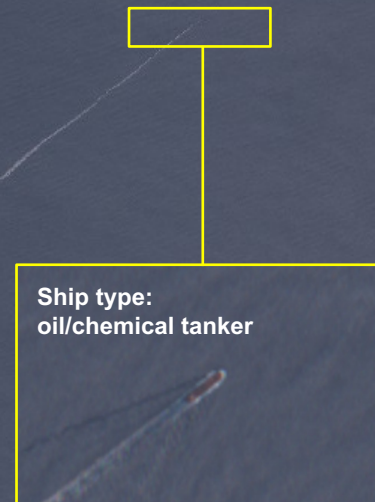


DATA

Analytics

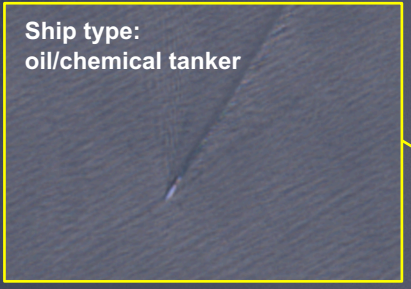
From data to Intelligence

AIS & Image Processing & AI

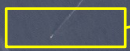
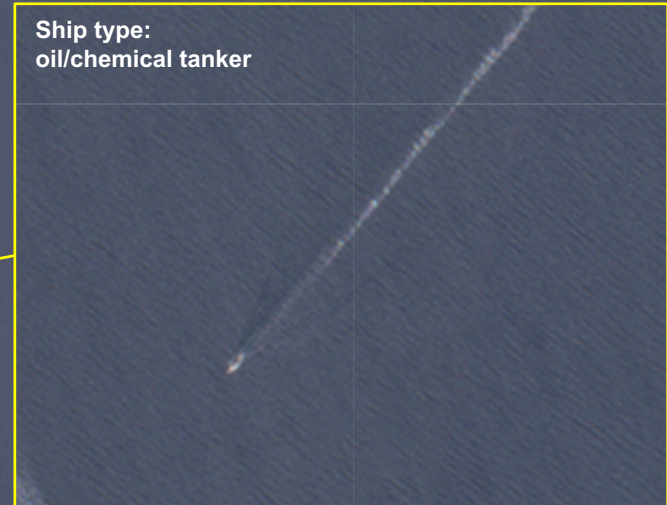
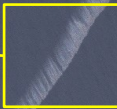


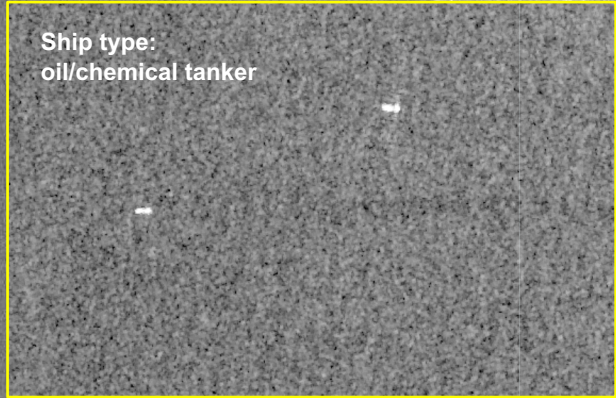
Total polluted Area: 13.4 km²
Thick oil Area: 8.2 km²
Vol min: 41.7 m³

A yellow rectangular box containing statistical data about the pollution event. It is connected to the main satellite image by a thin yellow line.



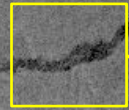
Total polluted Area: 20.8 km²





4 Nautical
Miles

A vertical dotted line with yellow dots at both ends, indicating a distance of 4 nautical miles between two points on the ship's wake.

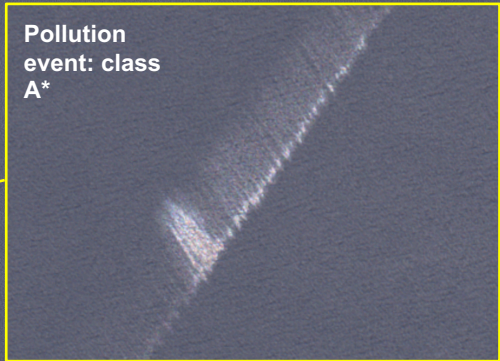


Total polluted Area: 15.5
km²

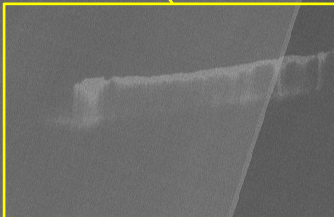
A yellow box containing the text, with a line pointing to the overall extent of the polluted area on the map.



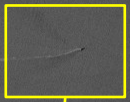
Total polluted Area: 8.1 km²



Pollution event: class B*



Total polluted Area: 14.5 km²



Ship type:
oil/chemical tanker

Results

60 cases detected “red-handed” in 3 years

CLASS A
35%

Environmental Crime

CLASS B
20%

High Likelihood Environmental Crime

CLASS C
45%

Low Likelihood Environmental crime

Spill classification

Based on expert assessment

A

The spill is mineral oil (100 % conclusive)

B

The spill is most likely mineral oil

C

The spill is less likely mineral oil

ADVANTAGES

High Reliability (Team of experts)

40X cheaper than traditional tools (surveillance aircraft)

Geographical scalability
(possibility of monitoring any place)



Event List

20180510-SDN-A-SH

20181112-ESP-B-SH

20180421-OMN-A-SH

Event Data

Event detected:

Event Date:

Satellite:

Event Position:

Event Area: Thick Oil
Area:

Cursor Position

LatLng(36.095233, 3.144536)

Tools



THANK YOU

Question ?

Orbital EOS

Smart data, better decisions



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