

Chronic oil pollution

New insights, enhanced tools, and emerging solutions

Eric Teller | Impact Program Manager
Christian Thomas | Geospatial Engineer



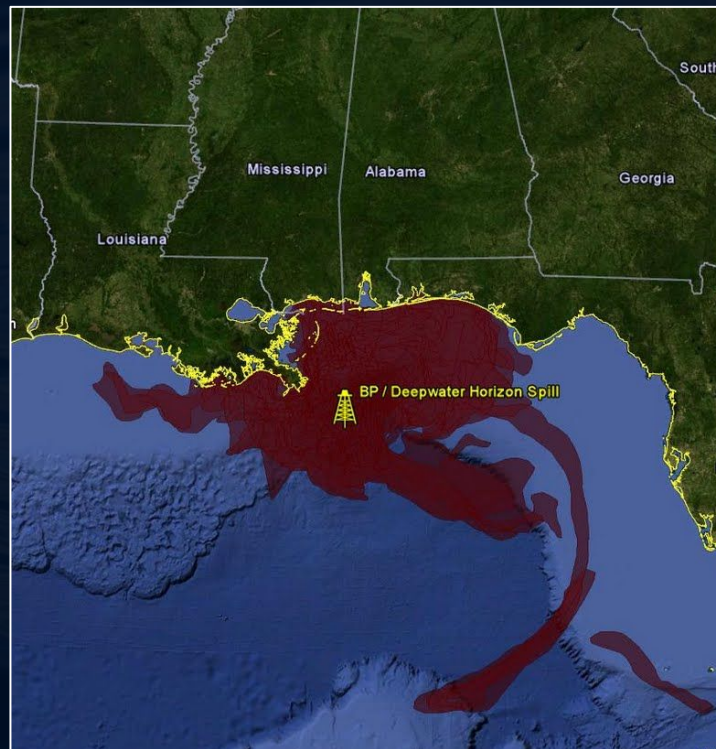
Who is SkyTruth?

- Non-profit organization that builds **conservation technology** using **earth observation data**
- Visualize hidden impacts of **ocean industrial activities**





Photo courtesy of the US Coast Guard



Hidden and chronic pollution

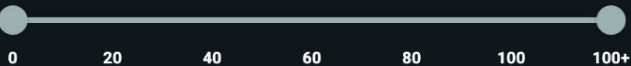


SLICK FILTERS

2024-08-04 – 2025-08-04



Area 0 km² – 100+ km² ⓘ



▼ SOURCE FILTERS ⓘ

☒ Vessel identified nearby

Filter by MMSI



Filter by Vessel Flag



☐ Dark Vessels Only ⓘ

☒ Oil and Gas Infrastructure identified nearby

Filter by Structure ID



☐ No potential sources identified nearby

Filter by Tag



[Learn more about Tags](#)

> ADMIN FILTERS

SKYTRUTH
Cerulean

Choose a Country or Type Lat, Lon To Zoom



mapbox

2,000 km

6,037 Slicks | 29,352 km²

Depth: 5000 meters

30.611, -25.144

Cerulean enhancements and pollution research



Christian Thomas, Geospatial Engineer

Terminology

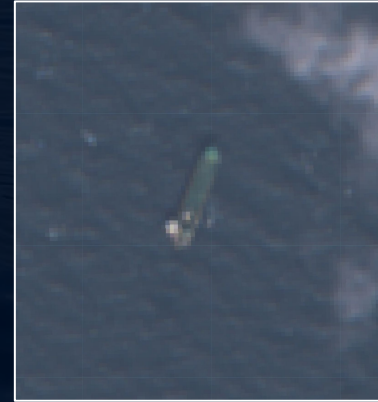
Fixed Oil Infrastructure

- Stationary offshore oil structures

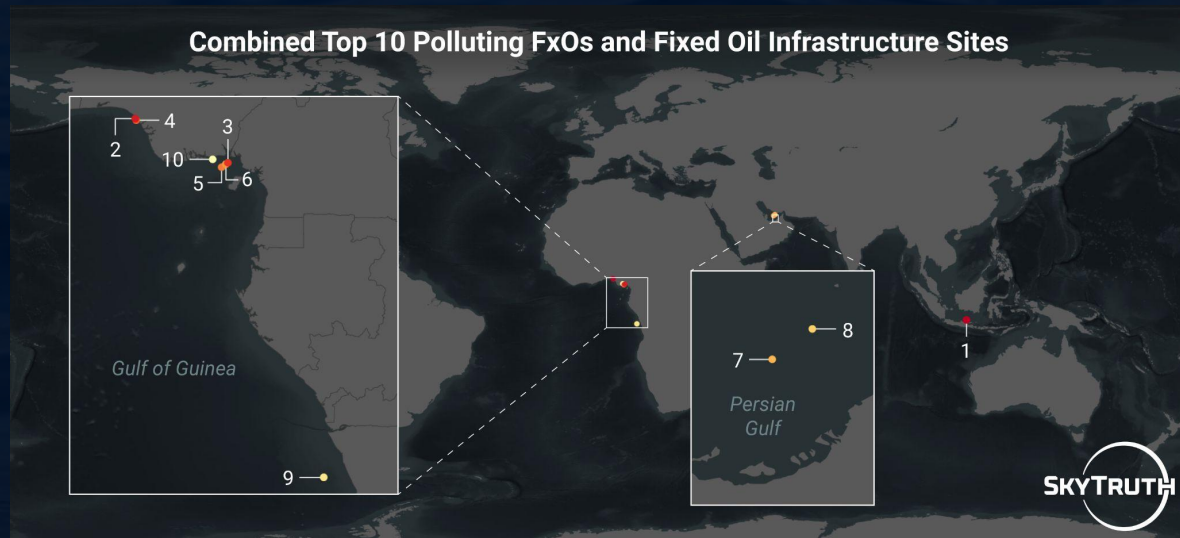


FxO

- Vessels engaged in the production, storage, and offloading of oil and gas
 - e.g. FPSO, FSO, FLNG



Report Available



Exposing the Environmental Costs of Offshore Oil: Greenhouse Gas Emissions, Oil Slicks, and Flaring

Authors: Christian Thomas, Susan Stillman, Pete Davis, Isabel Mahon, Birmini Horstmann, Jona Raphael, Kristen Moreau, Eric Teller, Kelly Franklin, David Kroodasma

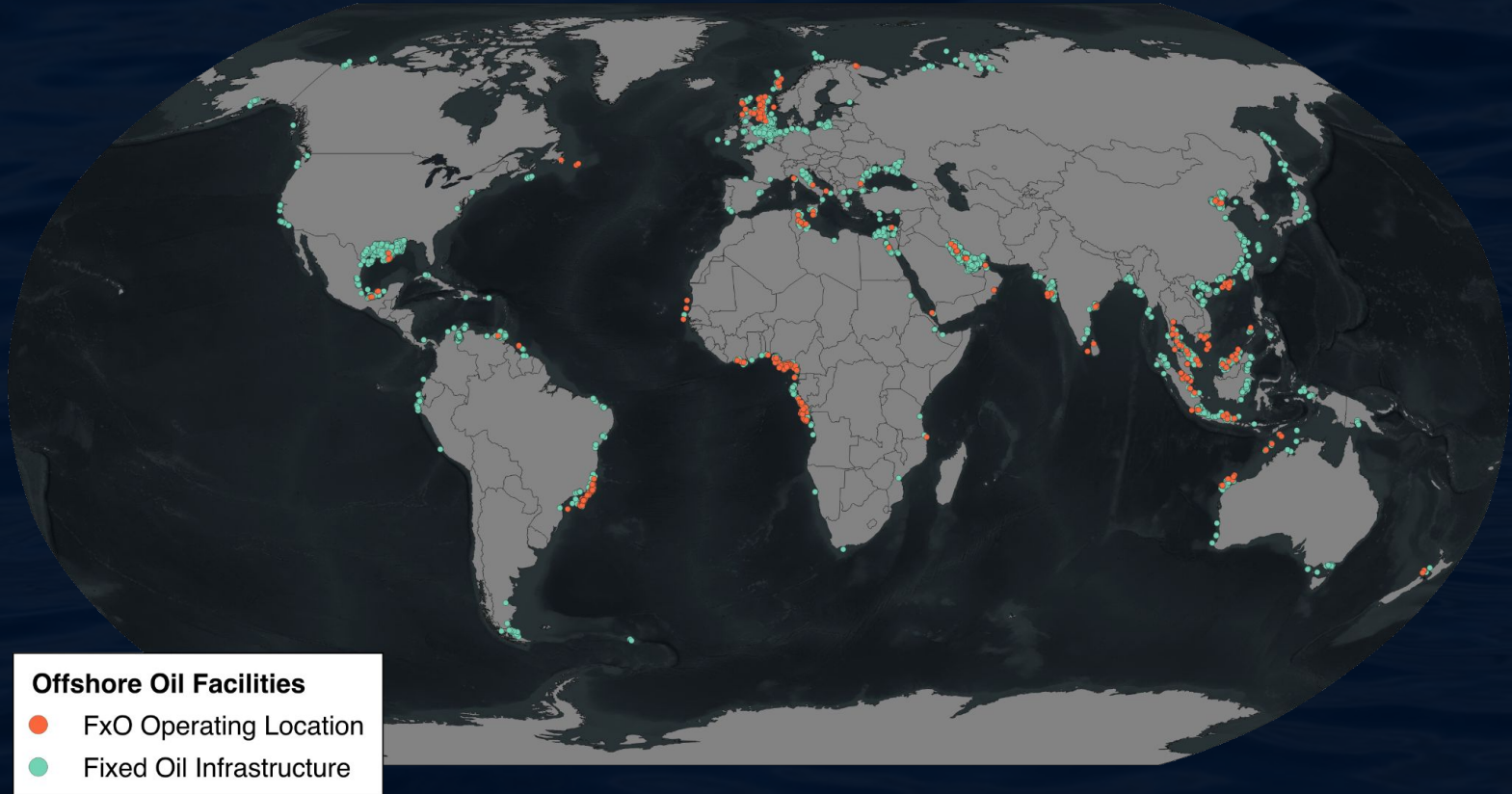
April 23, 2025

Abstract

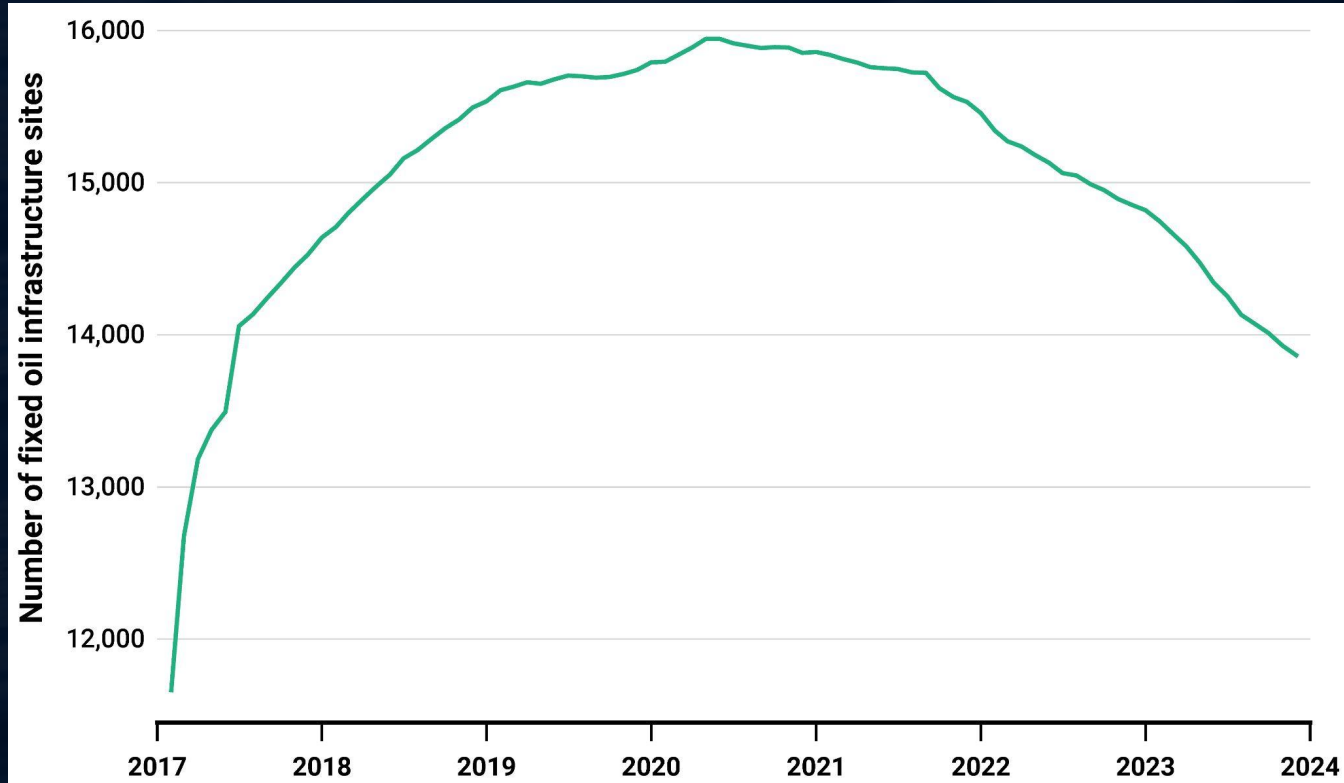
Despite the need to reduce greenhouse gas (GHG) emissions to mitigate climate change, the global offshore oil and gas (O&G) industry continues to develop around the world. While the number of offshore structures is relatively stable, the industry is poised for rapid growth and is increasing its use of Floating Storage and Offloading, Floating Production Storage and Offloading, Floating Liquefied Natural Gas, and Floating Storage Regasification Unit vessels (collectively FxOs) to extract, produce, and store oil and gas. These FxOs and traditional O&G fixed infrastructure pose significant risks to both immediate and long-term climate and conservation goals, through a combination of oil pollution, methane release, and natural gas flaring, as well as the net GHG footprint required to operate and maintain these structures and vessels. In this report, we assess the offshore O&G industry's environmental footprint. We highlight 20 offshore oil facilities that stood out in satellite imagery for the frequency and extent of oil pollution events. These structures were responsible for 228 oil slicks, amounting to at least 295,000 gallons over a 16 month interval from June 2023 to October 2024, with individual structures likely producing as many as 175 slicks during that period. Additionally, this paper begins to uncover the carbon footprint of the offshore oil industry, including CO₂ emissions associated with the transport of O&G at sea and quantifying frequency of methane flaring. We found that offshore oil facilities were visited at least 40K times by vessels, and these vessel visits were responsible for at least 9 million tons of CO₂ emissions in 2023. That same year, 23.1 BCM of methane were flared by offshore oil facilities, resulting in 58.7 million metric tons of CO₂e (CO₂ equivalent) emissions. The results of this analysis can be used by resource managers and environmental advocates to enforce marine protections and monitor progress towards meeting climate goals.

[Report available here](#)¹

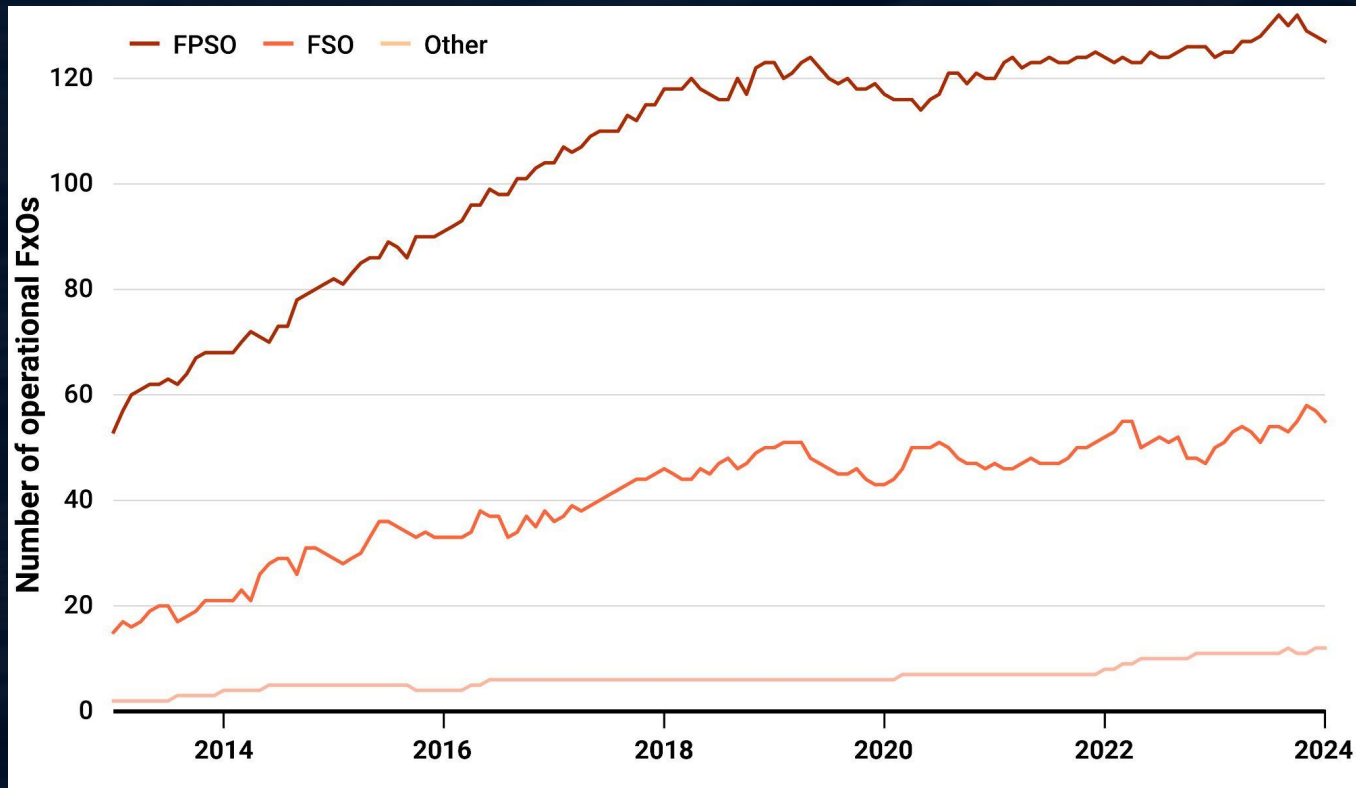
Open Ocean



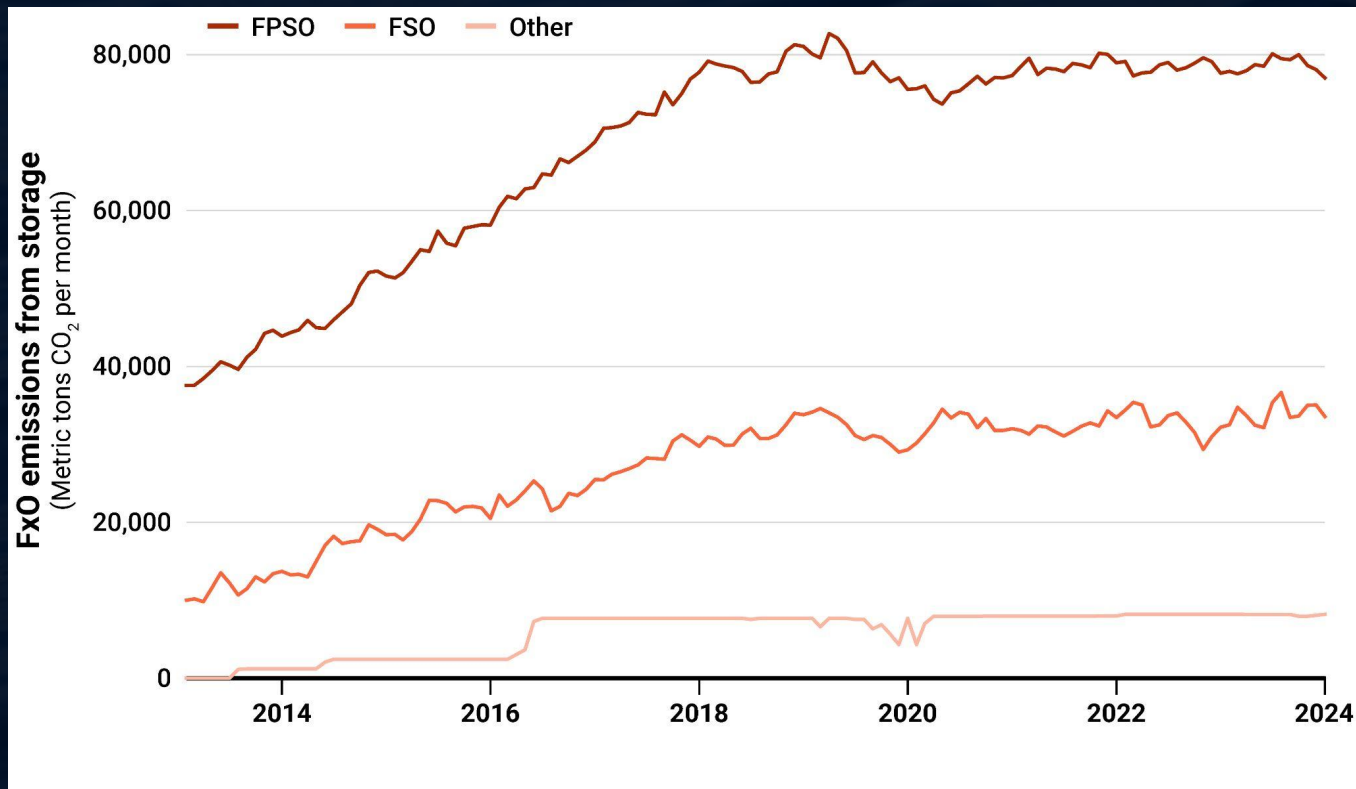
Fixed Oil Infrastructure over time



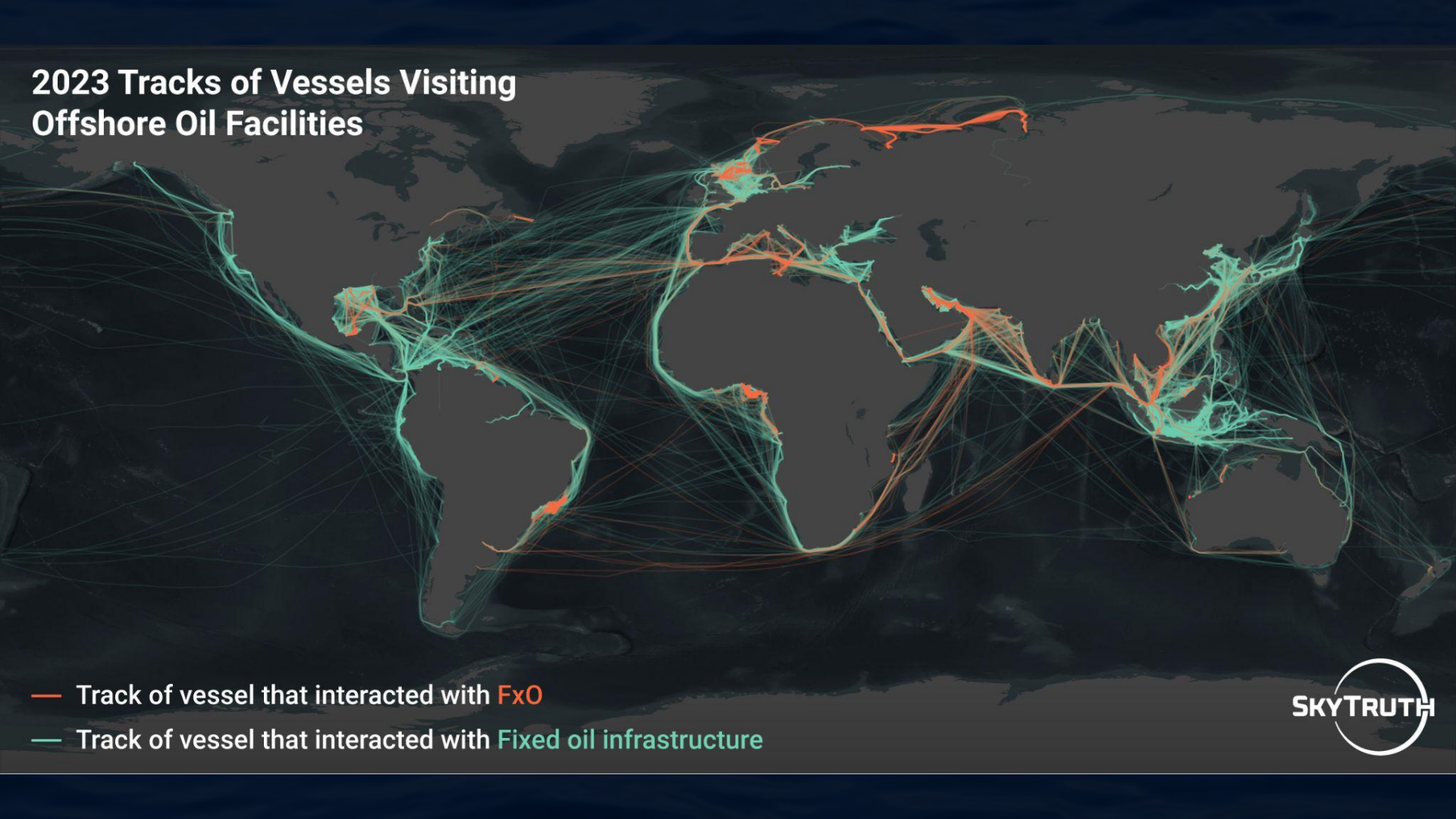
FxOs in Operation over time



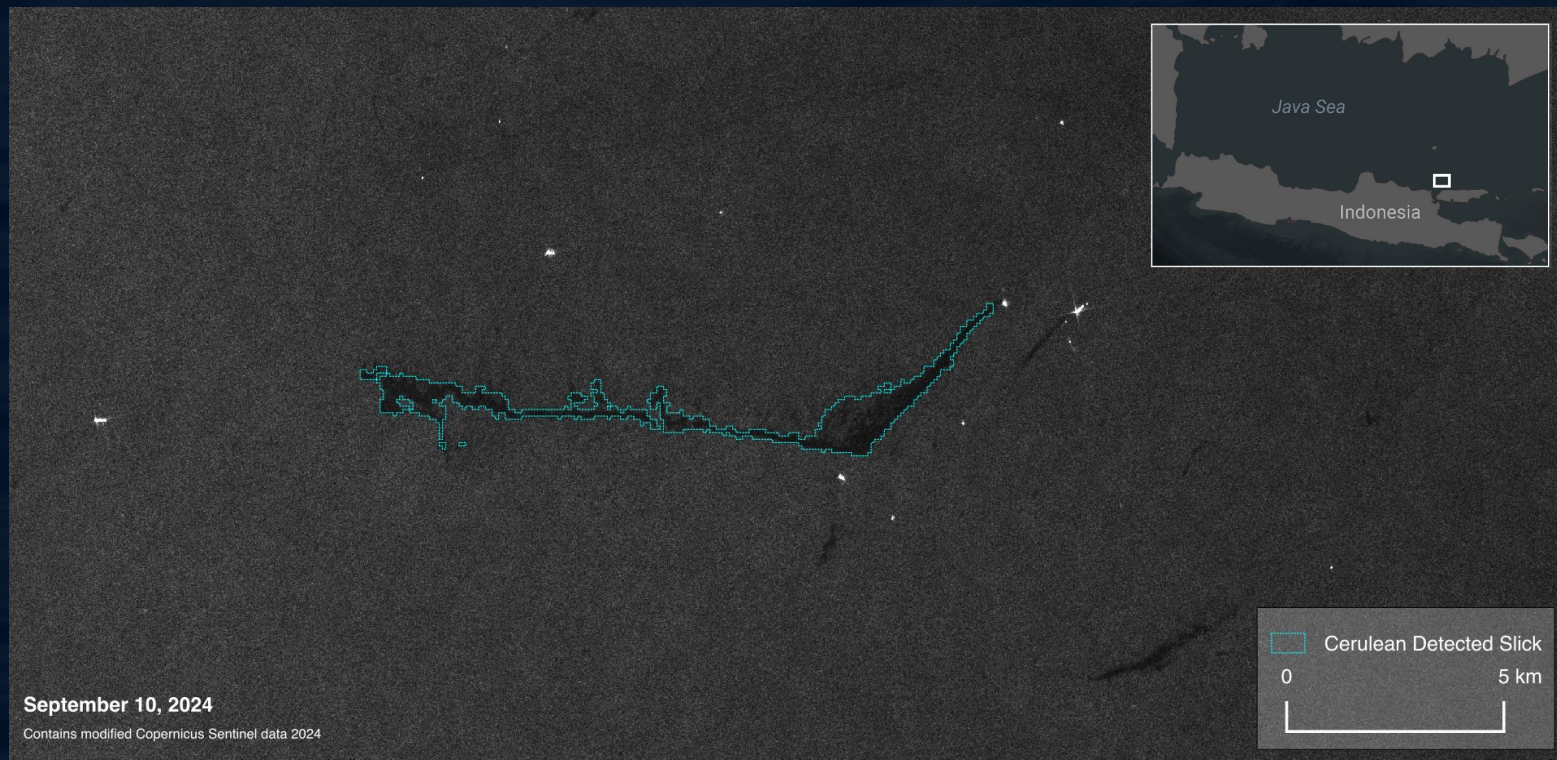
FxO Operating Emissions



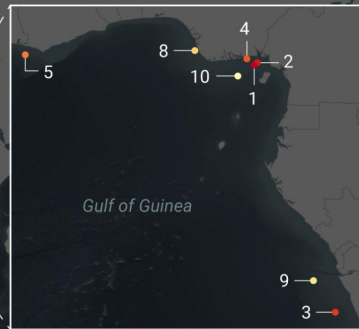
2023 Tracks of Vessels Visiting Offshore Oil Facilities

- 
- A world map visualization showing the movement of vessels in 2023. The map is dark, with landmasses in a lighter shade. Vessel tracks are represented by a dense network of lines in two colors: orange and teal. The orange lines represent vessels that interacted with FxO, and the teal lines represent vessels that interacted with fixed oil infrastructure. The tracks are most concentrated in the North Atlantic, the Mediterranean, the Red Sea, and the Gulf of Persia, with many lines extending across the Atlantic and Indian Oceans.
- Track of vessel that interacted with **FxO**
 - Track of vessel that interacted with **Fixed oil infrastructure**

Documenting Behaviors of Interest – Oil Slicks



Top 10 Polluting FxO Operating Locations



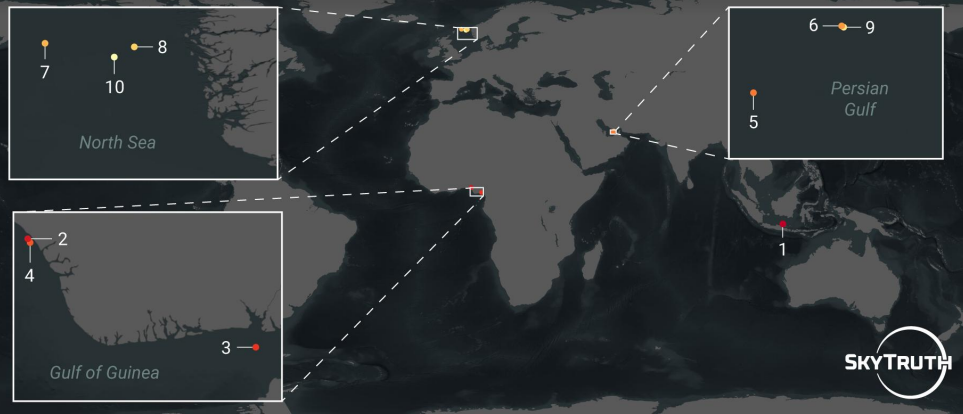
Top 10 Polluting FxOs

- 64 detected slicks
- > 79,000 gallons

Rank	MMSI	Owner	Slick count	Percent of S1 scenes with slicks	Cumulative slick volume (gallons)	Country (EEZ)
1	636014671 657246500*	Nigserv Energy Services Ltd. Koral Energy International*	14	18.4%	15,690	Nigeria
2	563030000	Adoon Pte. Ltd. Asharam Logistics Pte. Ltd.*	14	18.4%	3,990	Nigeria
3	310480000	Sonangol	5	13.2%	10,940	Angola
4	355338000 657270100*	Cenroc FPSO Solutions Ltd.	9	11.7%	22,420	Nigeria
5	356055000	Jubilee Ghana MV 21 Jubilee Ghana MV 21 BV*	2	5.0%	760	Ghana
6	311000563	Dana Petroleum/Neo Energy Zex Dana Petroleum Cosco HK Cieco*	12	4.9%	8,820	United Kingdom
7	311050200	OOG-TKP FPSO GmbH & Co KG OOG-TKP FPSO KG*	2	4.8%	950	Brazil
8	657126100	Shell Petroleum Nigeria	3	3.8%	1,010	Nigeria
9	603500186	Esso Exploration Angola	1	2.6%	11,640	Angola
10	657830000	Esso Exploration Nigeria	2	2.6%	2,810	Nigeria

* Multiple MMSI may be recorded for single vessels as a result of changes in ownership, flag state, or other factors. In these cases, we provide MMSI we found to be associated with the FxO.

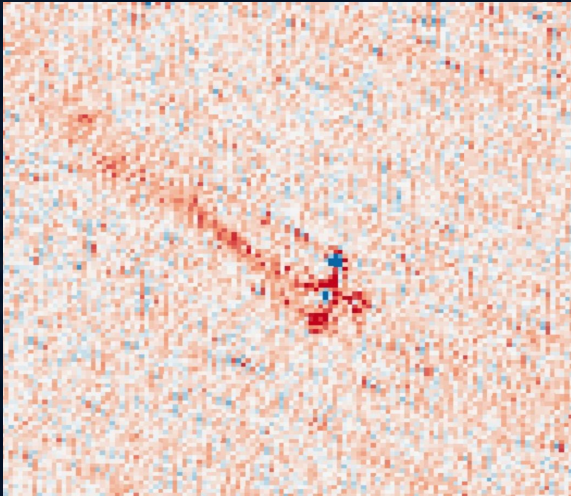
Top 10 Polluting Fixed Oil Infrastructure Sites



Top 10 Polluting Fixed Oil Infrastructure

- 164 detected slicks
- > 215,000 gallons

Rank	Structure ID	Owner	Slick count	Percent of S1 scenes with slicks	Cumulative slick volume (gallons)	Country (EEZ)
1	453607	PT Pertamina (Persero)	17	34.0%	15,280	Indonesia
2	322153	Chevron Petroleum Nigeria Ltd.	23	28.8%	44,240	Nigeria
3	200525	Addax Petroleum	15	19.5%	21,180	Cameroon
4	426464	Chevron Petroleum Nigeria Ltd.	15	18.8%	14,280	Nigeria
5	1053749	Abu Dhabi National Oil Company	19	16.5%	34,000	UAE
6	475522	Dubai Petroleum	18	15.5%	34,400	UAE
7	376771	CNR International	17	10.4%	21,710	United Kingdom
8	193470	Equinor Energy AS	15	9.1%	4,530	Norway
9	495356	Dubai Petroleum	10	8.6%	17,050	UAE
10	1052516	OKEA ASA	15	7.4%	9,020	Norway



Future Work

- Flare Frequency Analysis
- Monitoring fugitive methane emissions
- Emissions analysis of offshore oil facilities

Cerulean in action



Eric Teller, Impact Program Manager

Data in action at global convenings



Maritime domain awareness: Skylight integration



SKYLIGHT
A product of Ai2

SKYLIGHT
A product of Ai2

Information

AIS

BOCHEM MUMBAI
Hong Kong

MMSI 477932400
IMO 9565637
Call Sign # D8
Vessel Type Tanker
Length (m) 170
Width (m) 26
Last POC BALBOA, Panama (PSMA)

Of Note Associated with a potential oil slick [SkyTruth Cerulean](#)

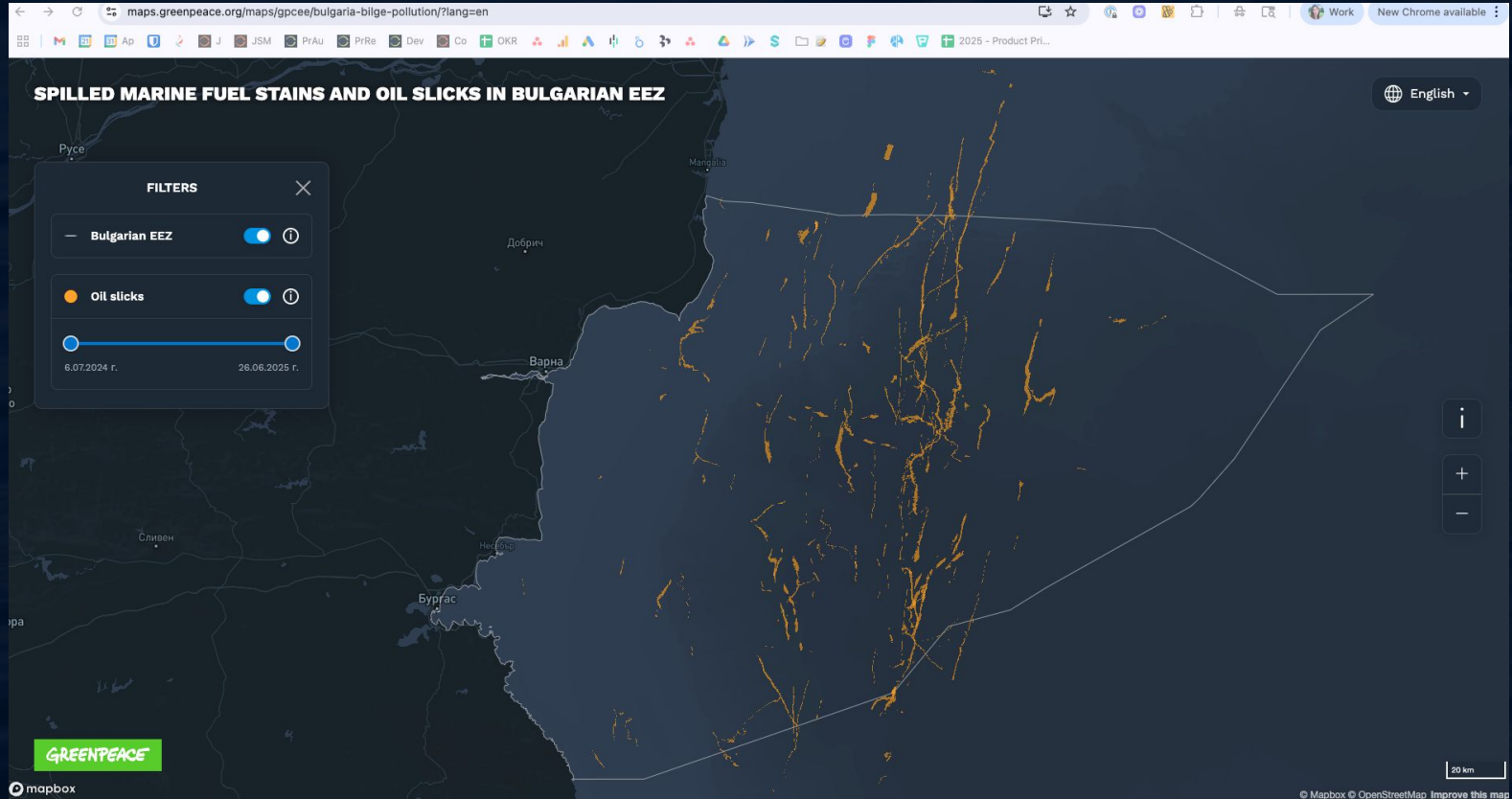
Other Sources [GFW & TMT Vessel Viewer](#)
[C4ADS Triton](#)
[MarineTraffic](#)

Tracks and Event History

Events (6)

Event	Start/Arrival
Vessel Detections	2025-06-27 T
Vessel Detections	2025-06-19 T
Vessel Detections	2025-06-14 T

Breaking investigations



Conclusions

- Satellite imagery and AI are unlocking new insights into the true cost of offshore oil and gas production.
- Oil pollution by offshore operators is underreported, and the greenhouse gas emissions of the sector are significant.
- These revelations unlock new pathways to change the conversation and hold industry accountable.



Download the report:



skytruth.org/environmental-costs-offshore-oil

Contact: eric@skytruth.org