How to Monitor the Strait of Hormuz Using OSINT

Maria Cattini | 14/03/2026 | OSINT

The world’s most watched maritime corridor

What happens when a narrow strip of water carries a fifth of the world’s oil supply?

The Strait of Hormuz answers that question every day. Tankers move through a corridor barely fifty kilometers wide, linking the Persian Gulf to the Gulf of Oman and the Arabian Sea. Roughly **21 million barrels of oil per day** passed through this route in 2022 — around **one fifth of global petroleum liquids consumption**.

In moments of geopolitical tension, traffic through Hormuz becomes a strategic indicator. A drop in tanker movements can ripple through energy markets within hours.

For OSINT analysts and investigative journalists, the Strait functions like a live laboratory. Ship tracking signals, radar satellites, and energy databases together reveal patterns that once required classified intelligence.

This guide explains how to **monitor the Strait of Hormuz using open-source intelligence**, combining maritime tracking, satellite imagery, and energy data.

Why the Strait of Hormuz matters

The world’s main oil chokepoint

The Strait of Hormuz forms the only maritime outlet for oil exports from several major producers:

- Saudi Arabia
- Iraq
- Kuwait
- Qatar
- Iran
- United Arab Emirates

According to the U.S. Energy Information Administration (EIA), average flows reached **21 million barrels per day in 2022**.

Few alternatives exist.

Saudi Arabia and the UAE operate pipelines that bypass the strait, but combined capacity reaches **around 6.5–7 million barrels per day** — far below the volume normally crossing Hormuz.

When disruptions occur, global markets feel it quickly.

Shipping dashboards and maritime analytics platforms sometimes show tanker traffic falling from **about 60 vessels per day to near zero** during crisis periods. Clusters of ships waiting outside the

corridor often reveal bottlenecks or security fears.

For OSINT practitioners, these patterns can be tracked independently.

The OSINT data sources used to track Hormuz

Monitoring maritime chokepoints requires combining several datasets. Each reveals a different piece of the picture.

Data category	What it reveals	Example sources
AIS vessel signals	Ship position, speed, identity	MarineTraffic, MyShipTracking
Satellite imagery	Physical presence of ships	Sentinel-1, Sentinel-2
Energy databases	Oil flow volumes and infrastructure	EIA, energy research centers
Commercial maritime analysis	Cargo movements and shadow fleets	Kpler, TankerTrackers

Individually, each source carries blind spots. Combined, they create a near-operational view of maritime activity.

AIS tracking: following ships in near real time

What AIS signals show

AIS (Automatic Identification System) transponders broadcast information from vessels:

- position coordinates
- speed
- heading
- vessel identity
- destination port

Coastal receivers and satellites capture these signals and publish them on online maps.

Most large commercial vessels must transmit AIS signals under maritime safety regulations.

That makes AIS one of the most powerful tools in maritime OSINT.

Free AIS platforms useful for Hormuz monitoring

Several public platforms allow analysts to observe traffic around the strait.

Platform	Access type	Key advantage
MarineTraffic	Freemium	Vessel filters and basic historical data
MyShipTracking	Free	Global real-time vessel map
Tradlinx Vessel Tracking	Free with premium options	Search by vessel name, MMSI or IMO

With these services, analysts can:

- zoom into the Strait of Hormuz
- filter vessels by oil tanker or gas carrier
- observe anchorage clusters near both sides of the strait
- compare snapshots across days or weeks

Some APIs such as **VesselFinder** or **Datalastic** export vessel tracks in JSON or CSV format. Analysts can then build their own dashboards.

Reading maritime patterns in the Strait of Hormuz

The traffic separation scheme

Hormuz shipping lanes operate under a **Traffic Separation Scheme (TSS)**.

Two parallel corridors guide vessels:

• inbound tankers entering the Persian Gulf
• outbound tankers heading toward the Arabian Sea

When conditions remain stable, AIS maps show a continuous chain of vessels moving through these lanes.

During crises, patterns change quickly.

Signals that analysts watch closely

Several indicators reveal disruptions.

Vessel counts

Counting tankers crossing the TSS within 24 hours provides a simple baseline.

Changes may indicate:

• military escalation
• shipping insurance restrictions
• temporary port shutdowns

Speed anomalies

Sharp drops in speed often appear when ships approach uncertain waters.

Sudden turns or course reversals may signal perceived threats.

Anchored ship clusters

Large groups of vessels waiting near the entrance of the strait often indicate congestion or security concerns.

AIS heatmaps show these clusters clearly.

AIS blind spots: dark ships and signal manipulation

AIS data alone never tells the full story.

Several techniques complicate maritime tracking.

Dark activity

Ships sometimes switch off their transponders.

This behavior appears frequently in sanctioned oil trades.

Identity spoofing

A vessel may transmit a false identity.

Occasionally the signal belongs to a ship that has already been scrapped.

GNSS interference

Navigation interference in the Persian Gulf has produced distorted positions.

Maps occasionally show impossible clusters of ships sitting on land or in identical coordinates.

Such anomalies require cross-checking with satellite imagery.

Satellite imagery: confirming what AIS cannot show

Satellites reveal the physical presence of vessels regardless of AIS signals.

Two main types of imagery are used.

Optical satellites

Optical sensors capture images similar to aerial photographs.

Common sources include:

• Sentinel-2 (Copernicus program)
• Landsat missions
• commercial satellite imagery

These images reveal:

• tanker shapes
• smoke or fires
• oil spills
• port activity

Clear skies remain necessary.

Radar satellites (SAR)

Synthetic Aperture Radar satellites transmit microwave signals toward the ocean surface.

Ships appear as bright reflections against darker water.

Key advantage: radar works at night and through clouds.

Sentinel-1 radar data plays a major role in maritime OSINT.

Accessing open satellite data

European Copernicus satellites provide free imagery.

Several tools allow analysts to explore these datasets.

Platform	Type	Use case

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Sentinel Hub EO Browser	Web interface	Quick satellite visualization
ESA SNAP software	Desktop processing	Radar ship detection
Copernicus Open Access Hub	Data download	Raw imagery access

These platforms support rapid verification of maritime activity.

Detecting ships with SAR imagery

Radar imagery highlights ships as strong reflectors.

Analysts often follow a simple workflow:

1. Download Sentinel-1 radar imagery
2. Apply calibration and noise reduction
3. Run ship detection algorithms
4. Export detected vessels into GIS formats

The result becomes a map of vessel positions independent from AIS.

Comparing SAR detections with AIS tracks exposes dark traffic.

Combining AIS and satellite observations

The strongest maritime OSINT work emerges when datasets converge.

Two common investigative scenarios illustrate this.

AIS signal without satellite confirmation

Possible explanations:

• AIS spoofing
• positioning errors
• outdated ship information

Satellite detections without AIS signals

Likely causes:

• ships operating without transponders
• small vessels not required to broadcast AIS

Commercial analysts studying Iranian oil exports often rely on this combination of data sources.

Energy databases: connecting ships to oil flows

Ship movements alone reveal only part of the story.

To estimate economic impact, analysts connect maritime activity with energy statistics.

Structural energy data

Energy research agencies publish regular reports on global chokepoints.

Data type	Source	Relevance
Oil flow volumes	U.S. Energy Information Administration	Global supply context
Pipeline capacity	Energy infrastructure studies	Alternative export routes
Regional export statistics	Energy research institutes	Market exposure

Hormuz traffic reflects these structural dynamics.

If tanker counts drop sharply, analysts compare them with pipeline capacity data.

Monitoring sanctioned oil exports

Energy intelligence firms such as:

• Kpler
• TankerTrackers
• Vortexa

track crude oil shipments from sanctioned producers.

Their research highlights techniques used by the so-called **shadow fleet**:

• ship-to-ship transfers at sea
• prolonged floating storage
• identity changes during voyages

Even without paid subscriptions, many insights appear in public reports and media investigations.

A practical OSINT routine for monitoring Hormuz

Analysts often adopt a structured monitoring workflow.

Step 1 – Daily AIS snapshot

Record tanker counts crossing the TSS at the same time each day.

Basic metrics include:

• number of oil tankers
• number of LNG carriers
• anchored vessels near the strait

Over weeks, this creates a baseline dataset.

Step 2 – Satellite verification

Download Sentinel imagery during notable events.

Radar imagery helps detect ships operating without AIS signals.

Mapping these detections reveals hidden activity.

Step 3 – Energy market context

Compare tanker activity with energy reports and market data.

Indicators worth tracking include:

• Brent oil prices
• shipping insurance premiums
• export statistics from Gulf states

Together these signals reveal whether disruptions remain localized or global.

Step 4 – Event-based investigation

When incidents occur — seizures, attacks, or accidents — analysts build a timeline.

Typical investigation elements include:

• AIS track reconstruction
• satellite confirmation
• official statements and shipping alerts

The 2019 seizure of the **Stena Impero** tanker illustrated this approach.

AIS data revealed the vessel’s deviation from shipping lanes, while satellite imagery confirmed its presence near Bandar Abbas.

Key OSINT tools for monitoring Hormuz

Category	Tools	Strength	Limitation
AIS maps	MarineTraffic, MyShipTracking	Real-time vessel overview	Limited historical depth
AIS APIs	VesselFinder, Datalastic	Structured tracking data	Premium access required
Optical satellites	Sentinel-2	Visual confirmation	Weather dependent
Radar satellites	Sentinel-1	Works at night and through clouds	Requires processing skills
Energy databases	EIA reports	Reliable macro data	Low temporal resolution
Commercial intelligence	Kpler, TankerTrackers	Detailed cargo analysis	Mostly subscription based

No single dataset tells the entire story. Cross-checking remains essential.

Risks, biases and ethical considerations

Maritime OSINT carries several challenges.

Data reliability

AIS spoofing and GNSS interference occasionally distort vessel positions.

Selection bias

Focusing only on supertankers may hide changes in smaller cargo flows.

Narrative amplification

Maps showing dense ship clusters often circulate widely online.

Without context, these visuals can trigger misleading conclusions.

Responsible analysis requires transparency about data limits.

Most AIS and satellite imagery platforms allow legitimate research usage when analysts follow their licensing terms.

Publishing sensitive operational details that could endanger crews or interfere with rescue operations should always be avoided.

Why Hormuz remains a perfect OSINT training ground

Few places illustrate the power of open-source intelligence better than the Strait of Hormuz.

A single maritime corridor connects:

• global energy markets
• military tensions
• commercial shipping networks

Open datasets now allow independent analysts to track these dynamics almost in real time.

AIS feeds reveal vessel movements. Radar satellites confirm what signals hide. Energy databases translate ship counts into global market consequences.

For journalists, researchers, and OSINT investigators, Hormuz provides a reusable blueprint.

The same workflow works for other chokepoints:

• Suez Canal
• Bab el-Mandeb
• Strait of Malacca

Each corridor tells a story about trade, risk, and geopolitics.

Want to explore maritime OSINT yourself?

Start simple.

Open an AIS map. Zoom into the Strait of Hormuz. Count the tankers crossing the shipping lanes today.

Then pull a Sentinel radar image from Copernicus.

You may discover that the world’s most strategic oil corridor is visible — almost in real time — through nothing more than open data and patience.

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