MarineTraffic
Global Ship Tracking Intelligence

Resources

Understanding AIS: Terrestrial vs Satellite AIS Tracking

An introduction to the Automatic Identification System, an overview of the differences between Terrestrial and Satellite AIS and how the combination of the two enables professionals to track vessels as they transit oceans and remote waterways.

Introduction to AIS

What is AIS?

The Automatic Identification System (AIS) is an automated, autonomous tracking system which is extensively used in the maritime world for the exchange of navigational information between AIS-equipped terminals. It allows for static and dynamic vessel information to be electronically exchanged between AIS-receiving stations (onboard, ashore or satellite).

Since December 2004, the International Maritime Organisation (IMO) requires all passenger vessels, as well as, all commercial vessels over 299 Gross Tonnage (GT) that travel internationally, to carry a Class A AIS transponder aboard in order to transmit and receive AIS data. Smaller vessels can also be equipped with a Class B AIS transponder.

How does AIS work?

The AIS-transmitted information that vessels periodically send is being picked up by AIS-receiving stations. AIS transponders (on vessels) also include a GPS receiver which collects the current position and movement details of the vessel. Such dynamic details along with other static information provided by the vessel's crew are automatically broadcasted at regular intervals.

Periodic AIS-data information can also be received by other in-range vessels or base stations. Then, with the use of special software, it can be processed and depicted on chart plotters or on computers (for example, on **MarineTraffic Live Map**).

Important to know!

The information contained in each AIS-data packet can be divided into two main categories:

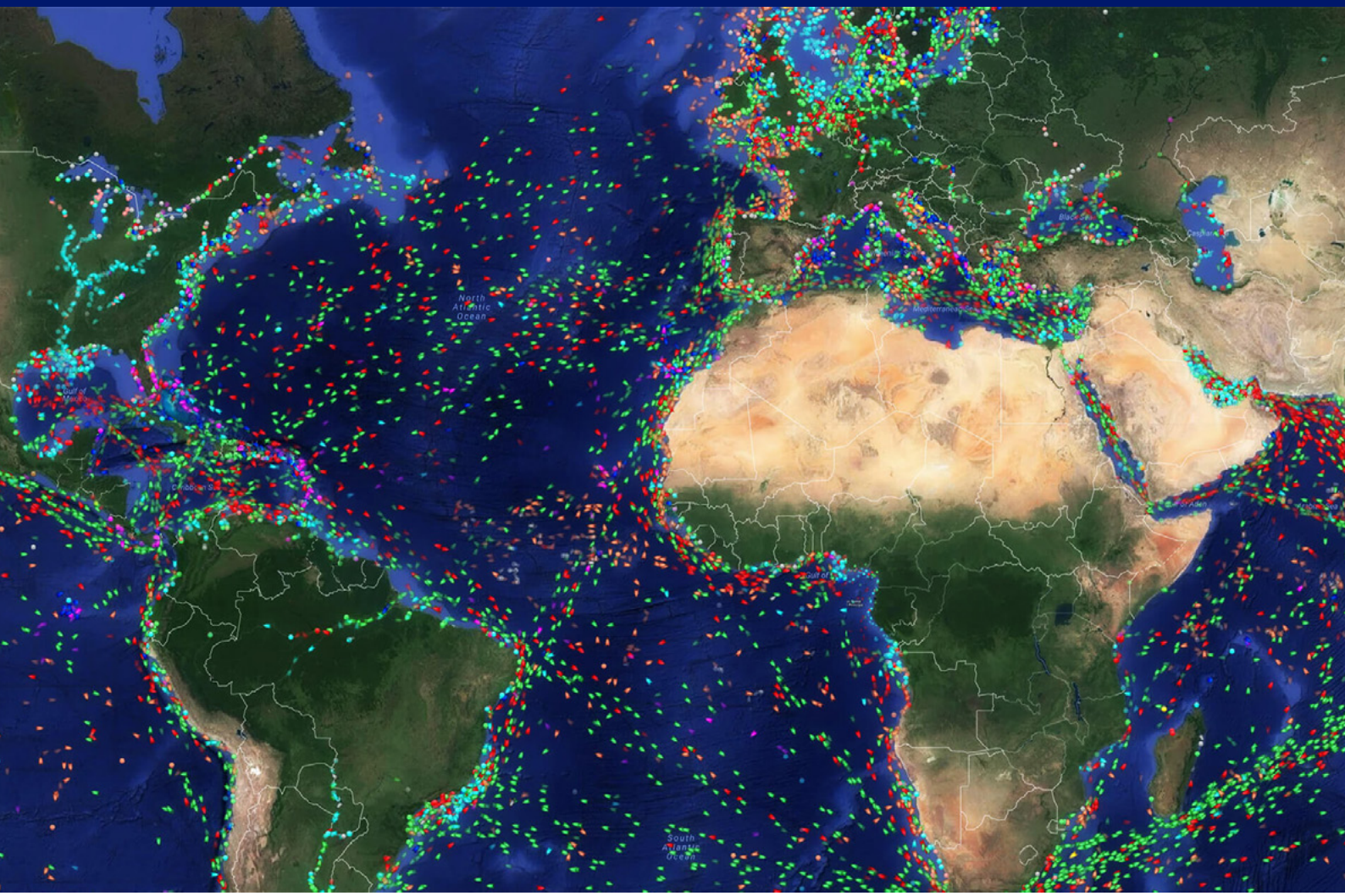
- *Dynamic information, which is automatically transmitted (eg vessel position, heading, course, speed etc)*
- *Static- and voyage-related information, which is provided by the subject vessel's crew (eg IMO number, Type, Draught, Destination, ETA etc)*

Static- and voyage-related information integrity is subject to the vessel's crew input and update frequency.

How does AIS help?

The AIS arrival to the maritime industry brought a great impact on shipping, as it helped to increase:

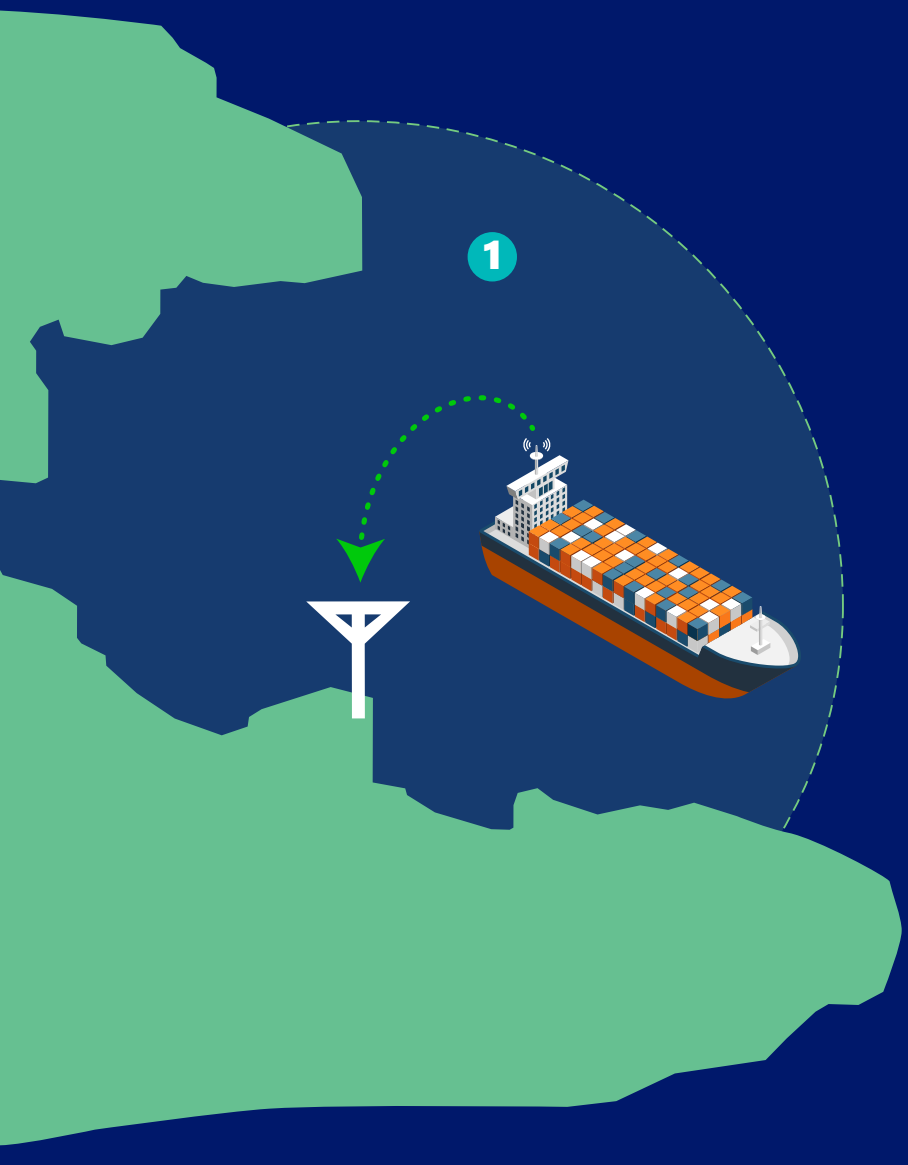
- **safety** at sea, with collision avoidance and Search And Rescue operations globally.
- **transparency**, allowing everyone to operate more safely and efficiently.
- **accountability**, as all actions from crew to shipping executives are under greater scrutiny providing more accurate information.
- **data-driven decisions**, as gathering of positional data from all commercial vessels creates an unbiased picture of global maritime activity, which raises awareness and enables more sectors of the maritime domain to make decisions based on near real-time data.



Introduction to Terrestrial AIS

How does Terrestrial AIS work?

The AIS-transmitted information that vessels periodically send is being picked up by terrestrial-receiving stations, provided of course that the vessel is within their range*. This makes terrestrial-based AIS networks able to provide extensive, real-time coverage of vessels' positions at several thousands of ports and coastal shipping routes worldwide.



Terrestrial AIS-Receiving Station 1 *Terrestrial AIS-Receiving Station*

Normally, an AIS-receiving station, which uses an external antenna placed 15 metres above sea level, will receive AIS information from vessels that sail within a **range of 15-20 nautical miles (NM) around it.*

*Base stations located at a higher altitude may extend the **range up to 40-60 NM** depending on factors such as: elevation, antenna type, obstacles around the antenna and weather conditions.*

Benefits vs Limitations

High updates frequency and detection rate near coast:

Terrestrial AIS provides you with an updated vessel position every few minutes and is the best solution for vessel visibility and situational awareness in areas near coasts.

Low coverage range:

It does not cover vessel positions in regions beyond coasts, such as oceans and remote waterways (except RemoteStations). This happens because terrestrial antennas receive AIS information within a specific range.

Terrestrial AIS-Receiving Station 1 *Terrestrial AIS-Receiving Station*

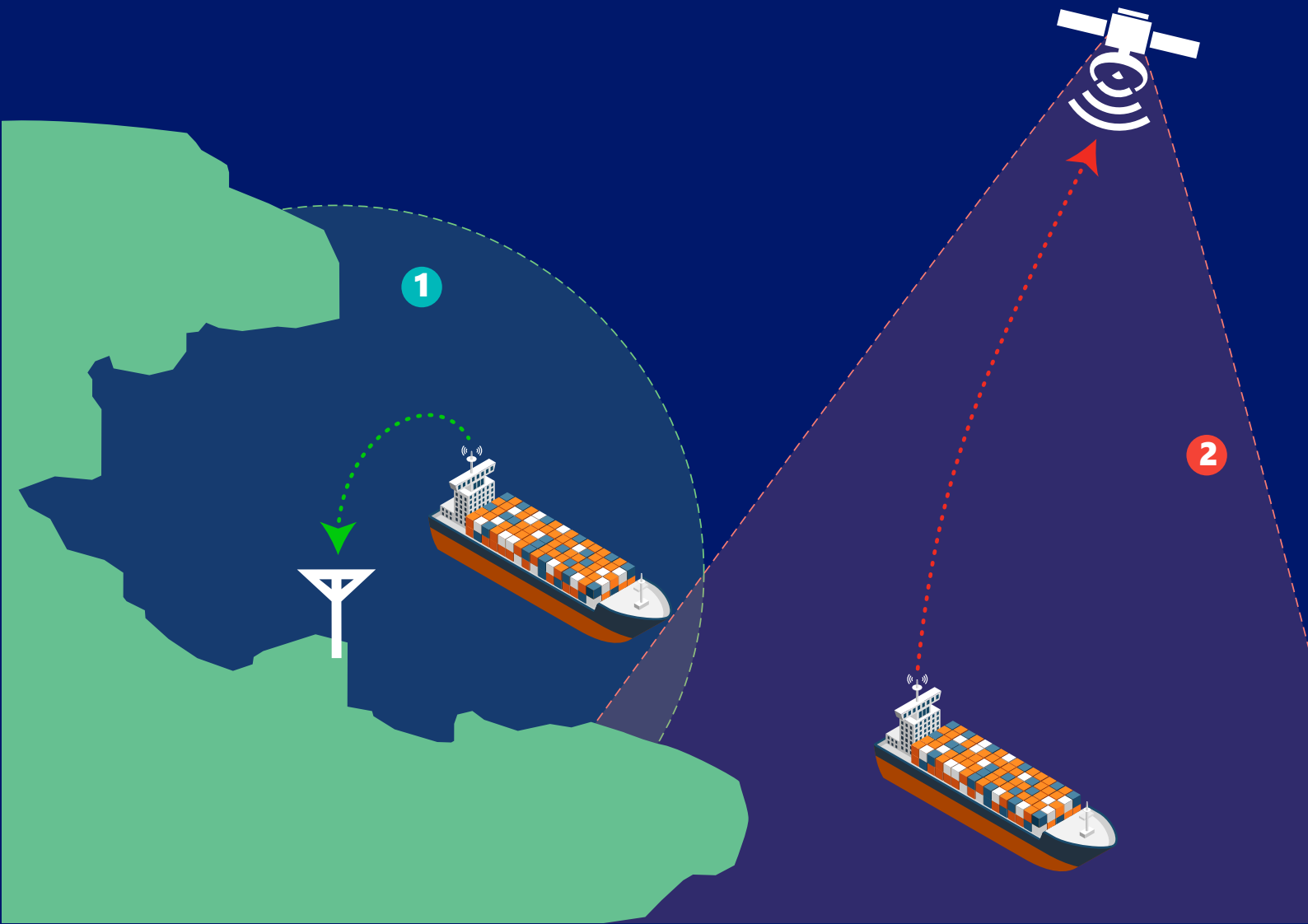
Introduction to Satellite AIS

How does Satellite AIS work?

Satellite AIS data works complementary to terrestrial AIS, as it enables the monitoring of vessels' tracks well beyond coastal regions.

Having recently added an additional set of satellites to an already extensive coastal network of AIS receivers, **MarineTraffic** offers the most comprehensive coverage of the global shipping fleet.

Especially in remote areas, where vessels sail out of the range of any terrestrial station, the AIS-transmitted information that vessels periodically send can be picked up by major satellite networks.



Terrestrial AIS-Receiving Station 1 *Terrestrial AIS-Receiving Station* 2 *Satellite Coverage Area*

Benefits

Coverage range higher than ever before:

With the combination of Satellite AIS data, you can follow the global fleet, wherever they sail, giving you enhanced visibility of vessels which make ocean crossings or sail beyond the reach of the terrestrial receiver network.

Higher update frequency and enhanced satellite latency:

It used to take a few hours between two passings of an AIS-equipped satellite above any vessel. And when the satellite was far from the range of a receiving base station, it would again take some time to transfer the vessel signals collected.

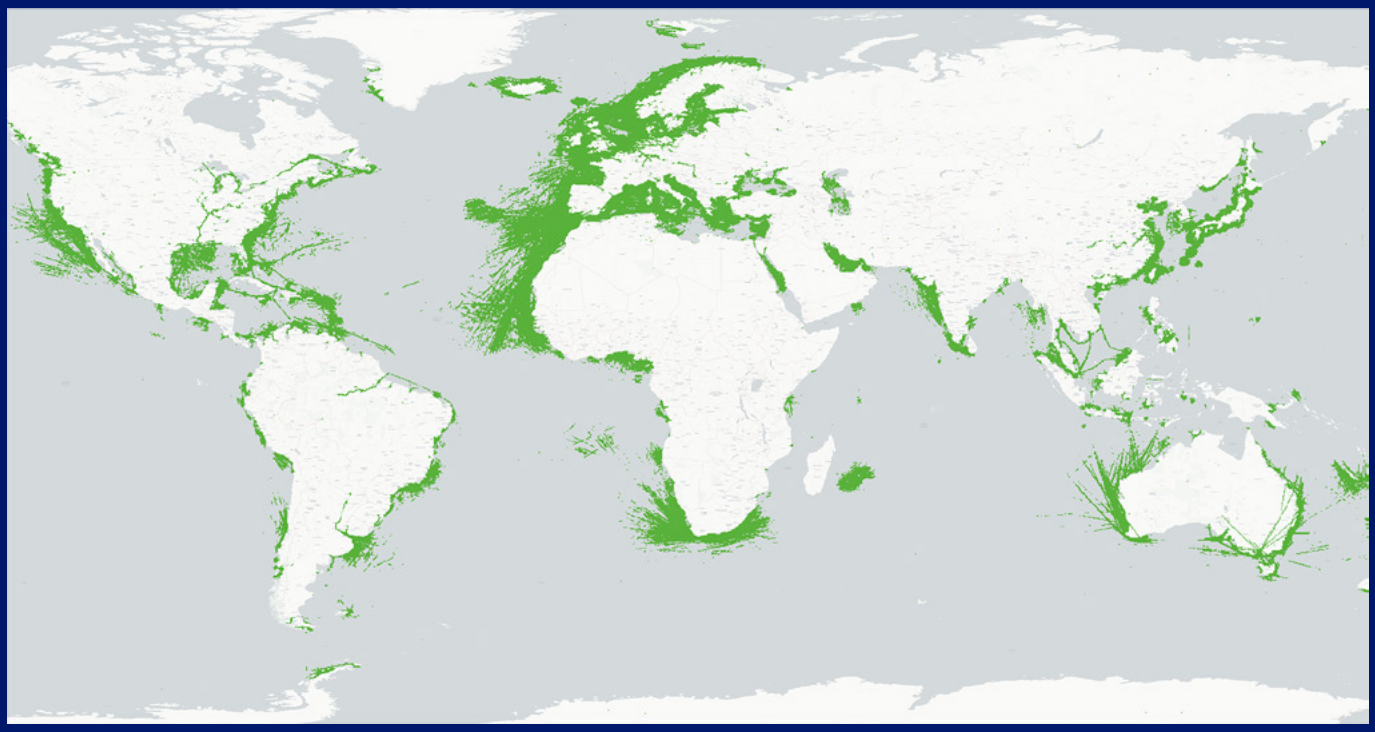
Now, thanks to the existing **MarineTraffic** satellite constellation, the functionality is enhanced as there is higher frequency, coverage and less than one-minute latency delivered.

This satellite dataset enhances vessel visibility even in heavy maritime traffic areas where the high volume of close-proximity vessels presented detection challenges in the past.

AIS Coverage

Terrestrial AIS Coverage

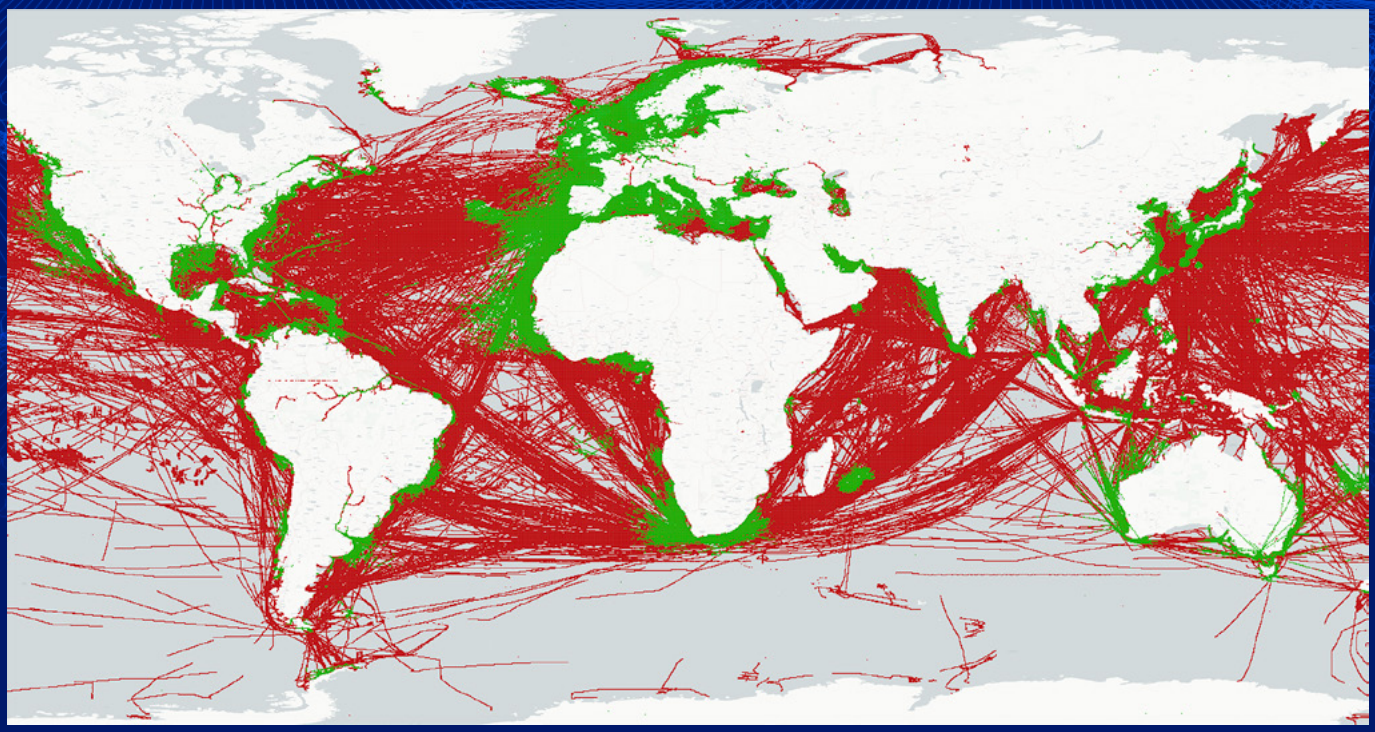
Below is an overview of the MarineTraffic Terrestrial-based AIS network's coverage



Terrestrial AIS Coverage

Satellite and Terrestrial AIS Coverage

Below is an overview of the complete MarineTraffic Terrestrial and Satellite AIS network's coverage



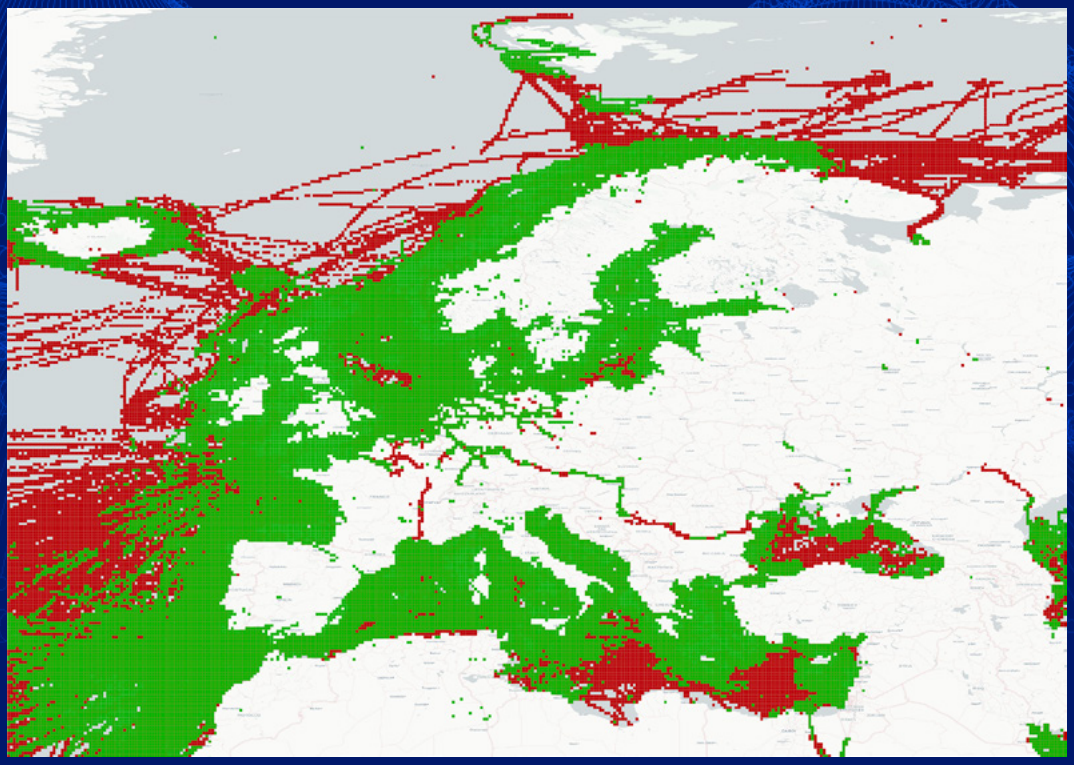
Terrestrial AIS Coverage Satellite and Terrestrial AIS Coverage

Europe

Terrestrial AIS Coverage

Terrestrial AIS Coverage

Satellite and Terrestrial AIS Coverage

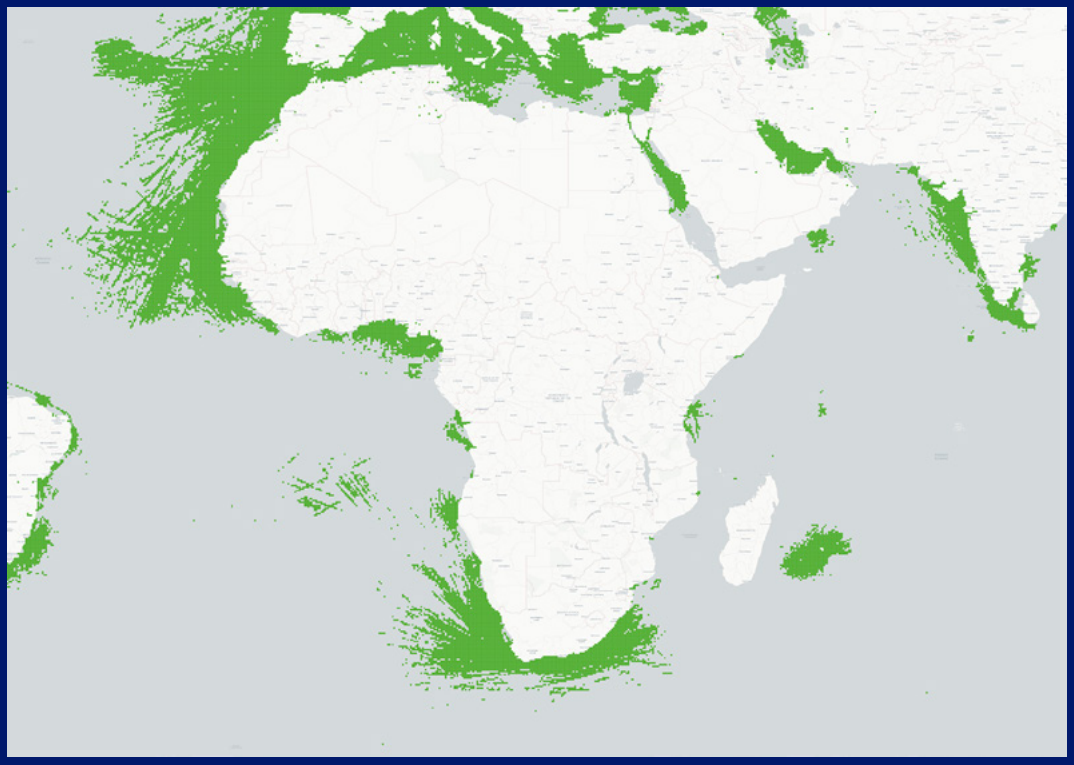


Sample over a 24-hour period

Terrestrial AIS Coverage Satellite and Terrestrial AIS Coverage

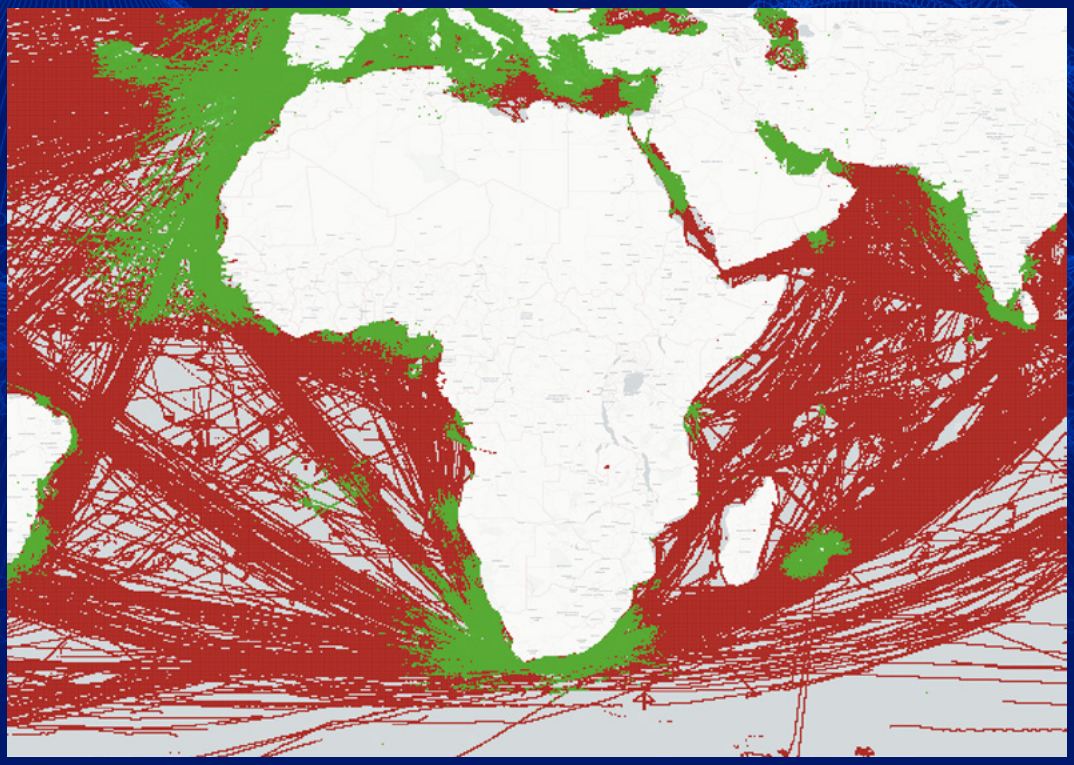
Africa

Terrestrial AIS Coverage



Terrestrial AIS Coverage

Satellite and Terrestrial AIS Coverage

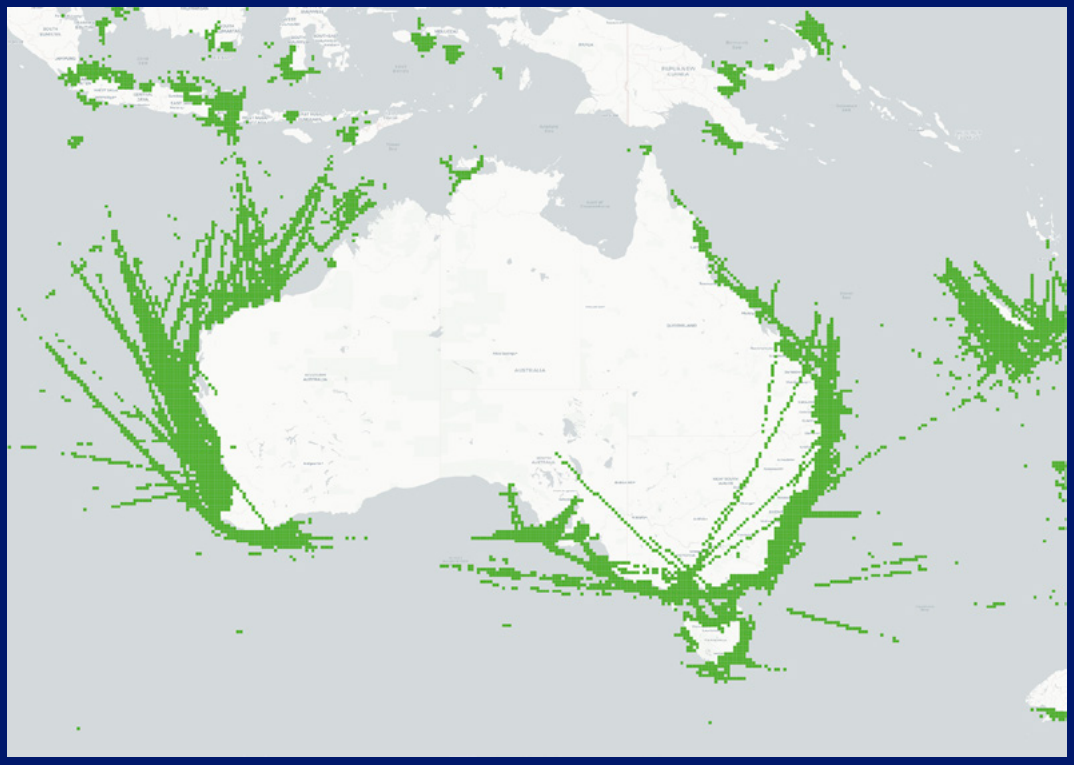


Sample over a 24-hour period

Terrestrial AIS Coverage Satellite and Terrestrial AIS Coverage

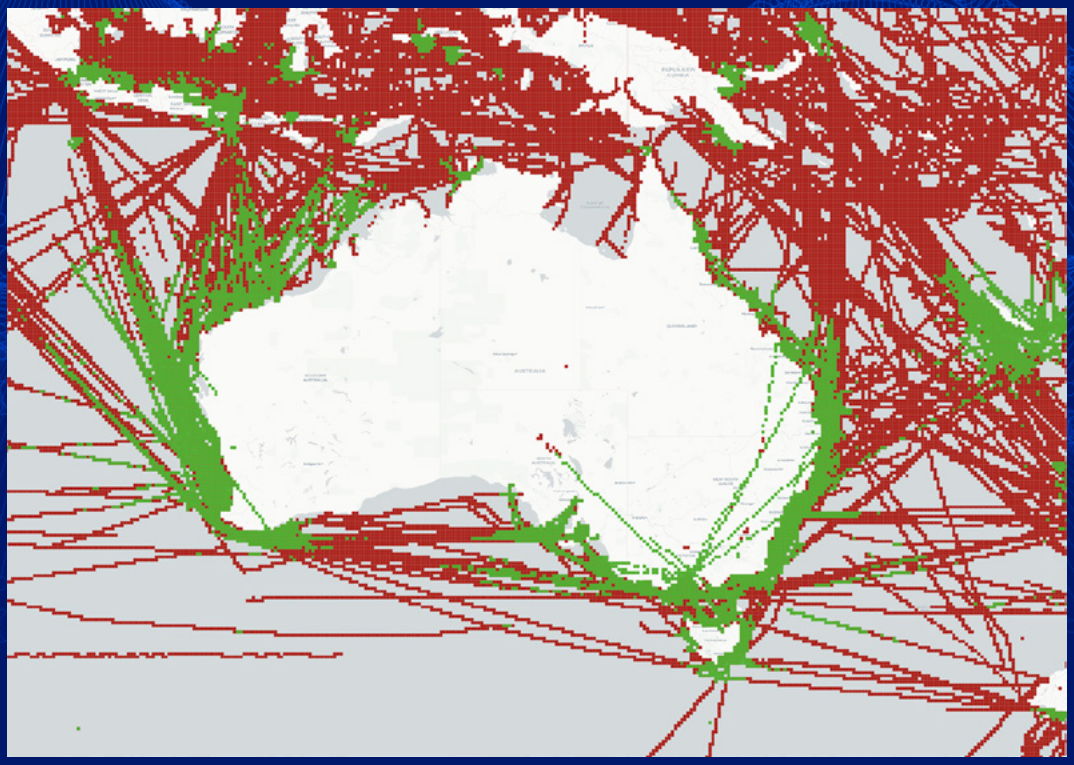
Australia

Terrestrial AIS Coverage



Terrestrial AIS Coverage

Satellite and Terrestrial AIS Coverage

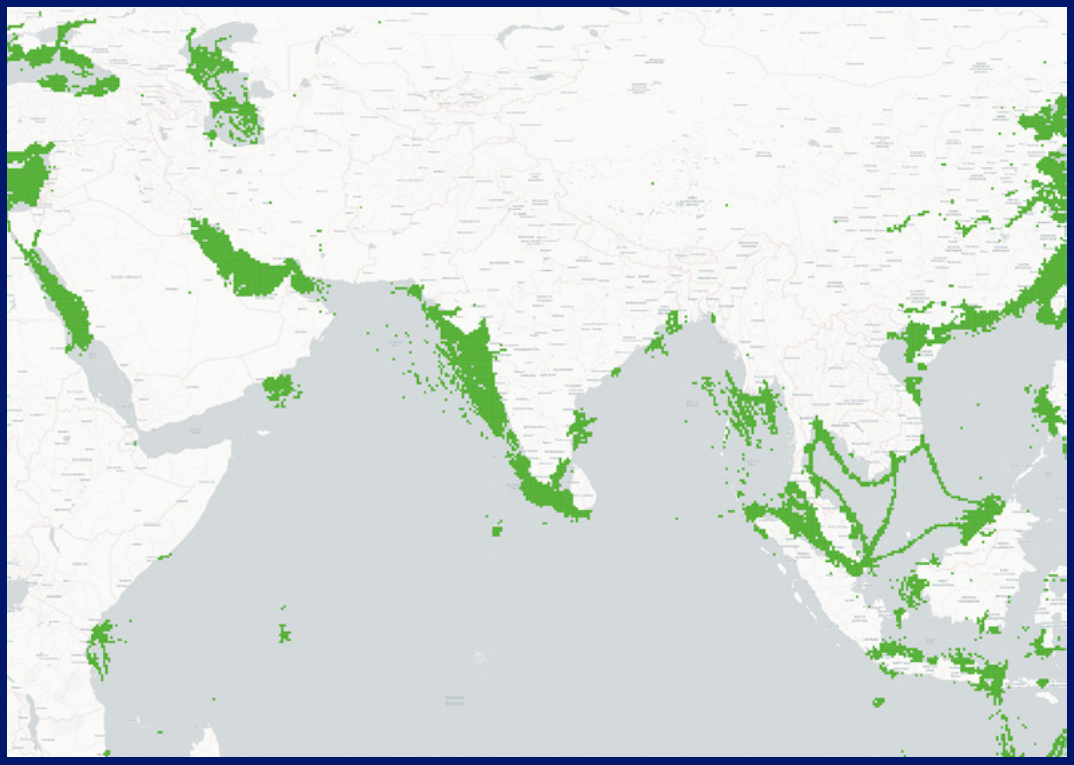


Sample over a 24-hour period

Terrestrial AIS Coverage Satellite and Terrestrial AIS Coverage

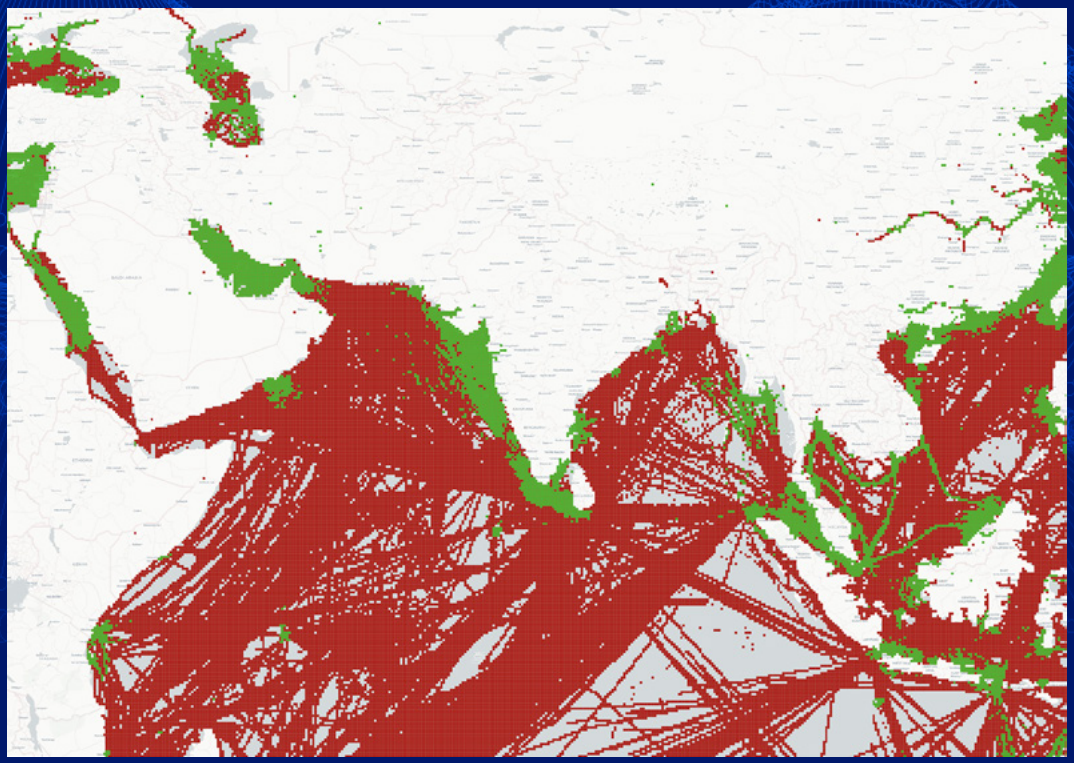
Middle East/India

Terrestrial AIS Coverage



Terrestrial AIS Coverage

Satellite and Terrestrial AIS Coverage

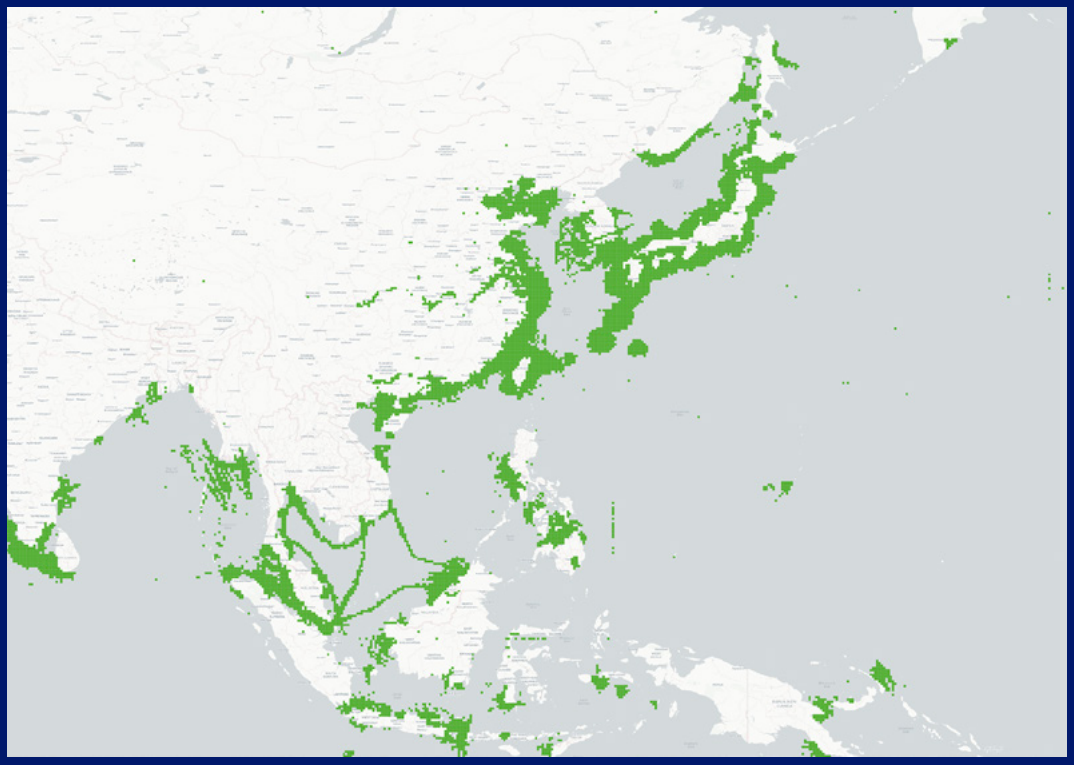


Sample over a 24-hour period

Terrestrial AIS Coverage Satellite and Terrestrial AIS Coverage

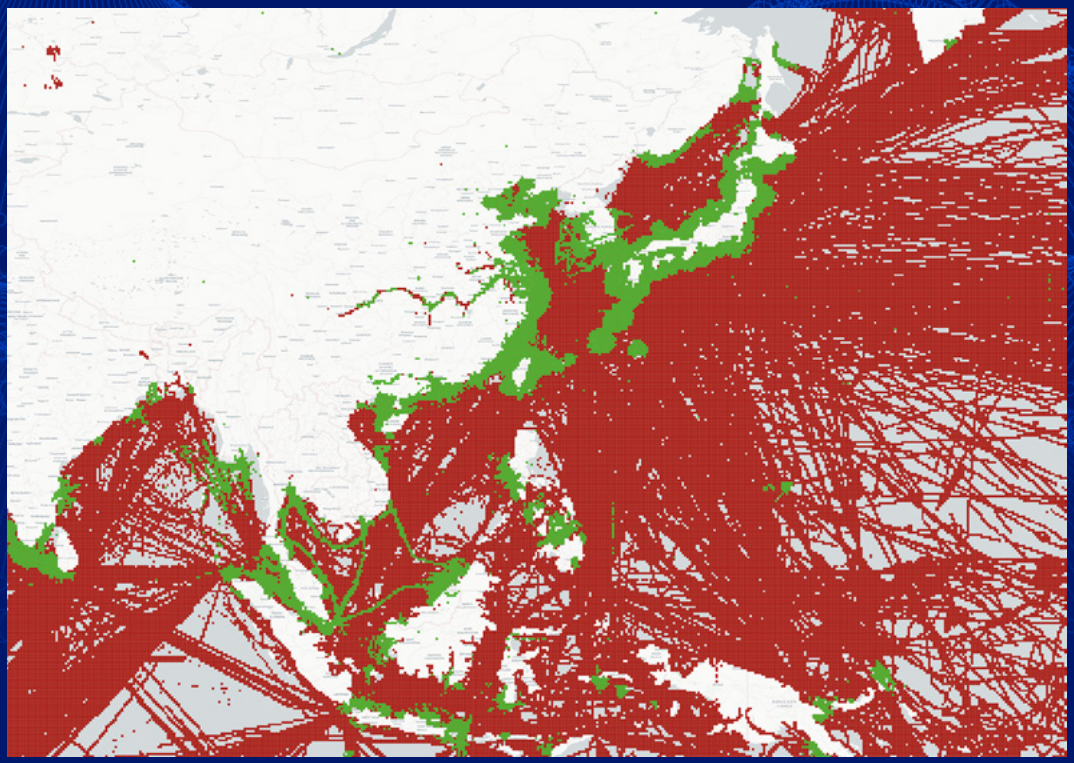
China/Japan/Singapore

Terrestrial AIS Coverage



Terrestrial AIS Coverage

Satellite and Terrestrial AIS Coverage

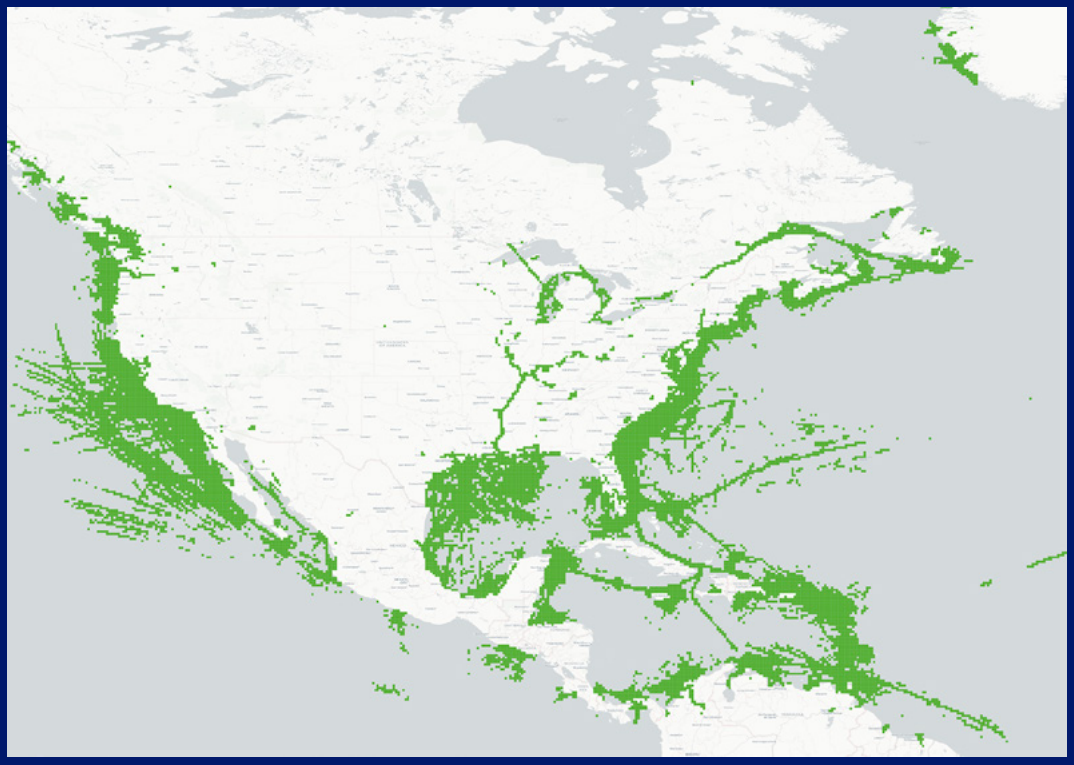


Sample over a 24-hour period

Terrestrial AIS Coverage Satellite and Terrestrial AIS Coverage

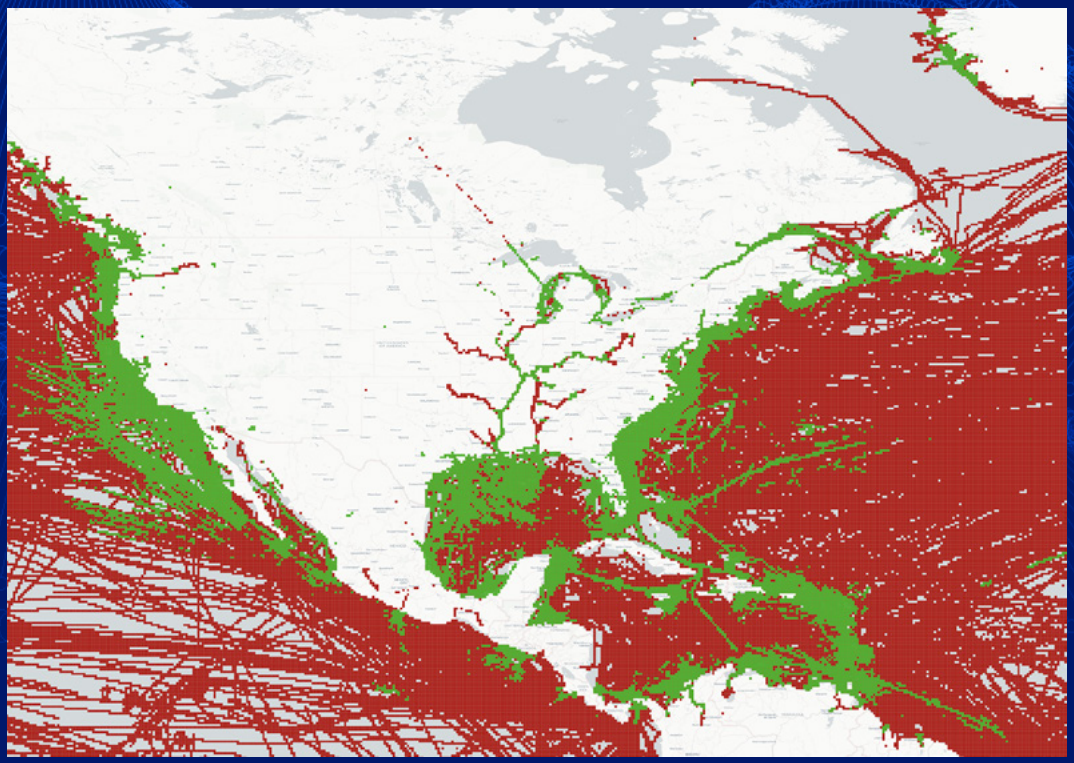
North America

Terrestrial AIS Coverage



Terrestrial AIS Coverage

Satellite and Terrestrial AIS Coverage



Sample over a 24-hour period

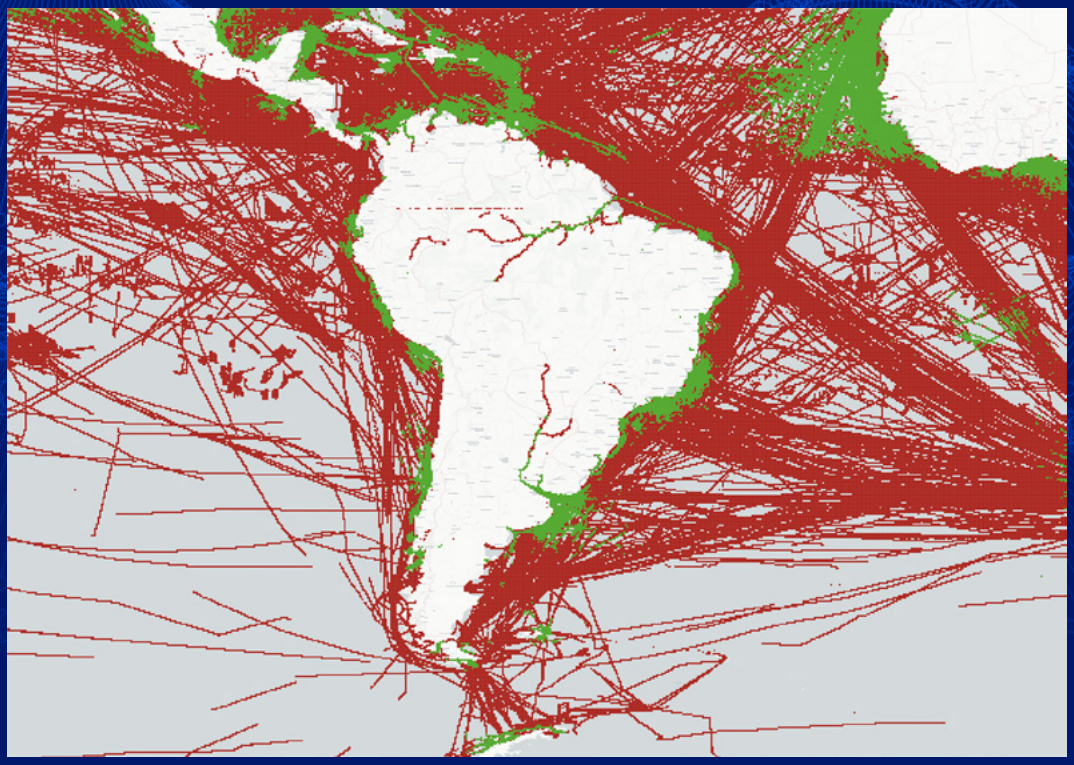
Terrestrial AIS Coverage Satellite and Terrestrial AIS Coverage

South America

Terrestrial AIS Coverage

Terrestrial AIS Coverage

Satellite and Terrestrial AIS Coverage



Sample over a 24-hour period

Terrestrial AIS Coverage Satellite and Terrestrial AIS Coverage

Who Uses Satellite AIS?

Ship Owners and Operators

Satellite AIS helps...

commercial departments from ship management companies to get visibility over the market and the trends, and to relocate accordingly in order to trade in different areas.

ship owners/managers to have complete visibility by getting more updated vessel positions as they are sailing in remote areas.

operators to increase situational awareness and operational efficiency.

Charterers

Satellite AIS helps...

ship charterers to have visibility on the trends and seasonality of the market and also to check the availability of vessels all around the world.

Logisticians

Satellite AIS helps...

professionals in the logistics industry to get a better idea of when their cargo will arrive at the destination port and to organise their processes better.

Where to find Satellite AIS

What you get with
MarineTraffic Basic

What you get with
MarineTraffic SAT Global

Get the most complete coverage and the fullest vessel visibility. [Learn more]

FAQ

Is Satellite AIS for me?

Millions of users rely on maritime tracking intelligence providers, like **MarineTraffic**, to provide them with the most complete picture of the global fleet.

For example, vessel operators who monitor and manage their fleets, as well as suppliers and service providers who try to find new business, use both Terrestrial and Satellite AIS to have the most complete coverage.

If you are a professional who wants to track vessels that make cross-ocean voyages or sail in remote waterways across the globe, Satellite AIS is ideal for you.

Inmarsat-C for ship owners/managers/ operators

Inmarsat-C tracking ensures regular updates during ocean crossings, combined with high resolution AIS accuracy when near port or transiting waterways.
It provides you with **guaranteed positions of vessels**, no matter where they sail in the world, at any time you wish.

Click here to learn more about Inmarsat-C.

Conclusion

AIS is an incredibly useful resource for tracking the global fleet. Adding to the world's most extensive terrestrial coverage in the world, **MarineTraffic** now collaborates with leading providers of Satellite AIS data offering high resolution and real-time AIS data received even from the most challenging areas around the globe.

This provides its users with the most enhanced vessel visibility possible, making it the most comprehensive, global ship tracking intelligence provider of AIS data in the shipping industry.

Get the most complete coverage and the fullest vessel visibility with our **SAT Global service**

Start a 7-day free trial

MarineTraffic

Global Ship Tracking Intelligence

If you would like to see how maritime professionals get the most up-to-date locations of the vessels they're interested in, no matter where they sail, **book a demo** with our Sales team.