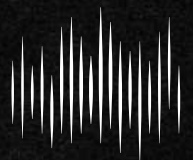




LumoScan

China's types of vessels in Mischief Reef

December 2024



DEEP DIVE

The Institute for Digital Investigations

Tugboats deployed within Mischief Reef may be used to remove the Philippine warship “Sierra Madre,” which is stranded on Second Thomas Shoal, and PLAN combatant ships include destroyers, frigates, corvettes and missile boats, may be involved in the operation.

In Report 001, I attempted to identify a pattern in the number of maritime militia vessels anchored at Mischief Reef, and used the pattern to predict Chinese maritime militia operations in the South China Sea. However, various vessels belonging to organizations other than maritime militias are also anchored within Mischief Reef.

The primary organizations other than the maritime militia to which the vessels anchored at Mischief Reef belong are PLAN and the China Coast Guard (Imagery 1). The vessels of these organizations have their own roles.

For example, in May 2013, when Chinese navy and law enforcement vessels and fishing vessels (maritime militia vessels) disrupted Philippine replenishment operations for the “Sierra Madre” stranded on Second Thomas Shoal, National Defense University Professor Rear Admiral Zhang Zhaozhong insisted that China should keep that the “cabbage strategy,” in which a number of “fishing boats” occupied the water, with law enforcement vessels surrounding the perimeter to maintain the safety of the “fishing boats,” and naval vessels waiting outside the perimeter.

December 1, 2024
OHARA Bonji, DEEP DIVE

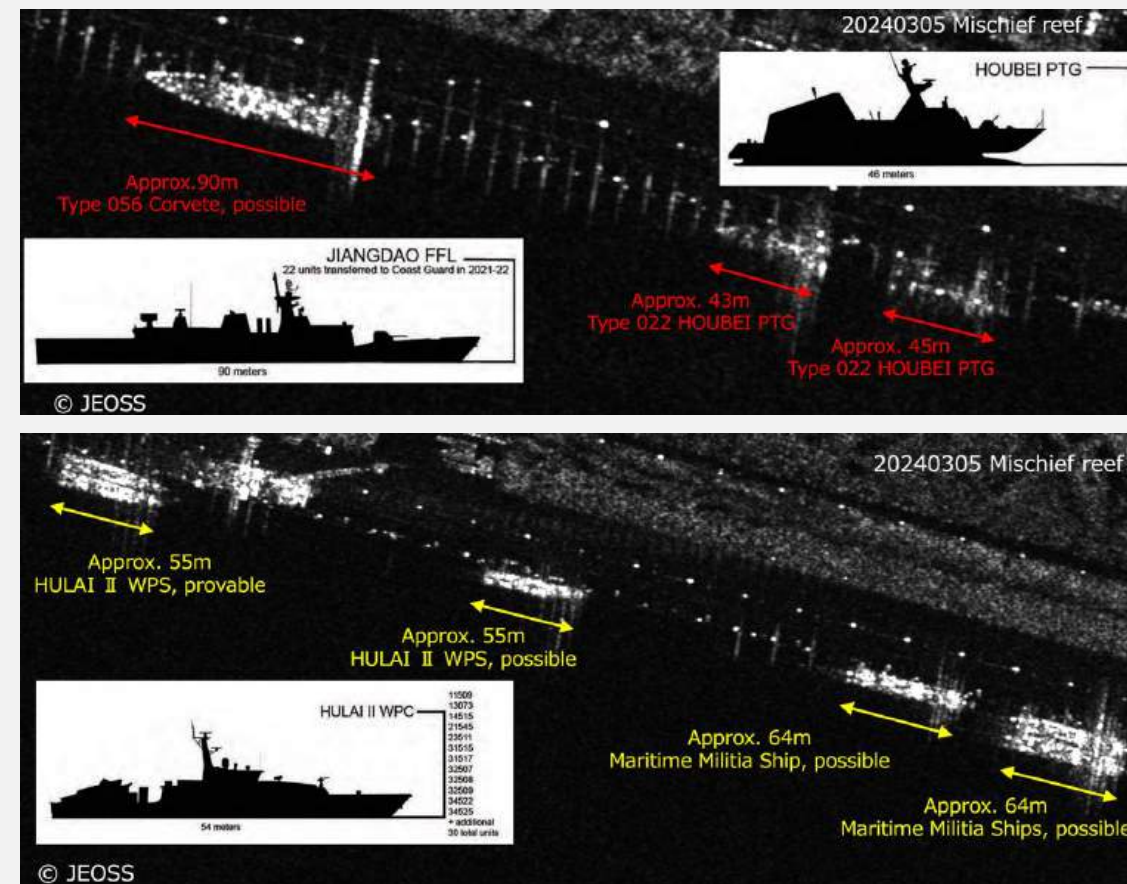
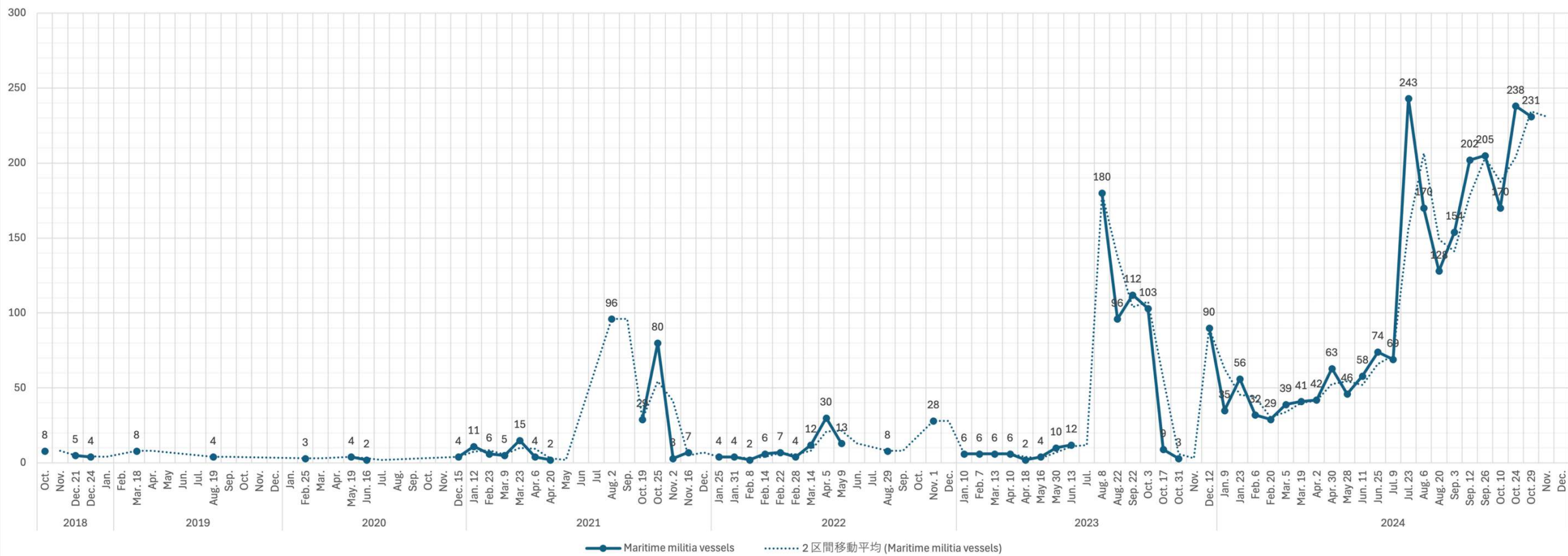


Figure 1

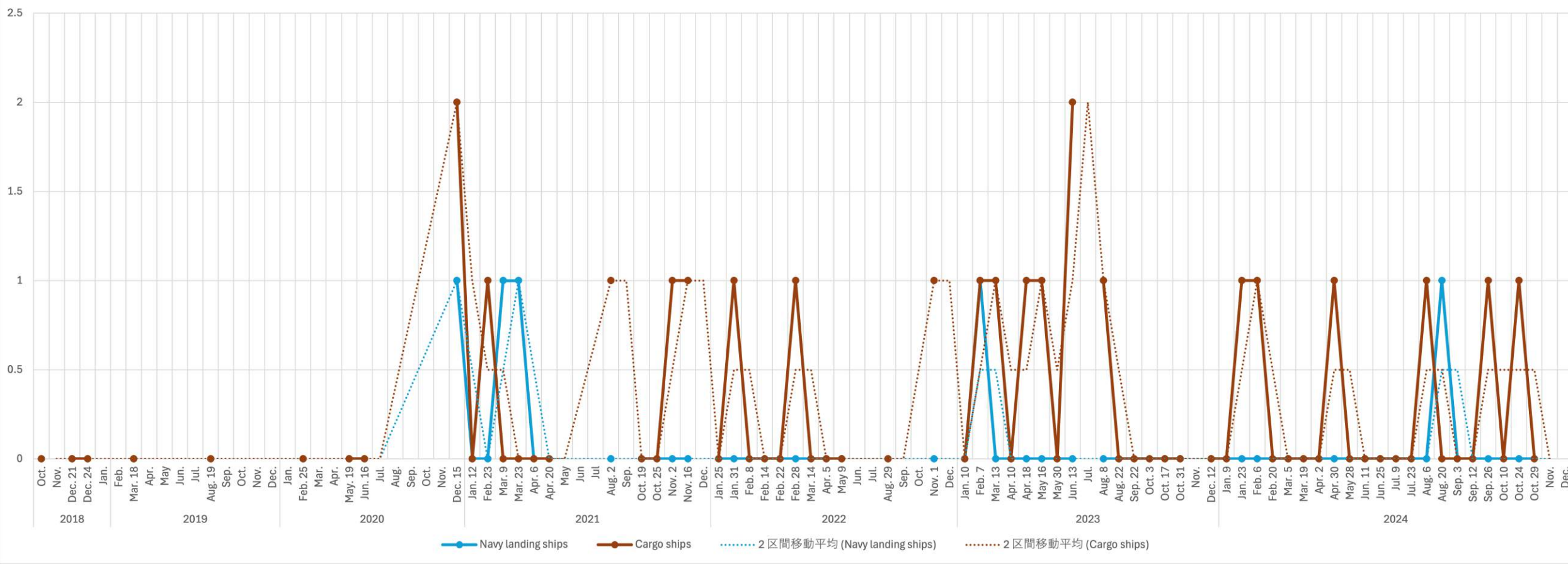
According to CSIS “Asia maritime transparency initiative,” in 2013, Mischief Reef had only a small man-made structure and had not completed construction of an artificial island. Maritime militia vessels could not have a replenishment service in the reef. Even at that time, we could see anchored Chinese maritime militia vessels in the reef, but a long-term large-scale deployment would have been difficult. China's aggressive construction of artificial islands in the Spratly Islands after 2014 can be considered to have been not only for the deployment of naval and air forces, but also for the supply of maritime militias.

Graph 1 - Maritime militia ships



I started constantly detecting cargo ships at Mischief Reef from the end of 2020 (Graph 2). The number of maritime militia vessels at Mischief Reef increased in mid-2021 (Graph 1), suggesting a correlation between the delivery of goods by cargo ships and the activity of marine militia vessels. In addition, naval landing ships can be seen at the reef, which may be used to transport military vehicles and supplies. Vessels engaged in transport often stay at the berth of the reef for less than 24 hours, and appear to be used exclusively for replenishment from the mainland.

Graph 2 - Navy landing ships/Cargo ships



In the December 15, 2020 imagery, two cargo ships and a naval landing ship can be seen (Figure 2). The cargo ship in the upper right is wearing its bow on the slip, not by the gantry crane, and a passageway leading to the cargo/vehicle deck can be seen in the bow. The cargo ship in the middle right is considered to be a container ship or bulk carrier based on the location of its bridge and structures on its upper deck. The landing ship in the lower right may have been moved after being worn on the slip and unloading its cargo.

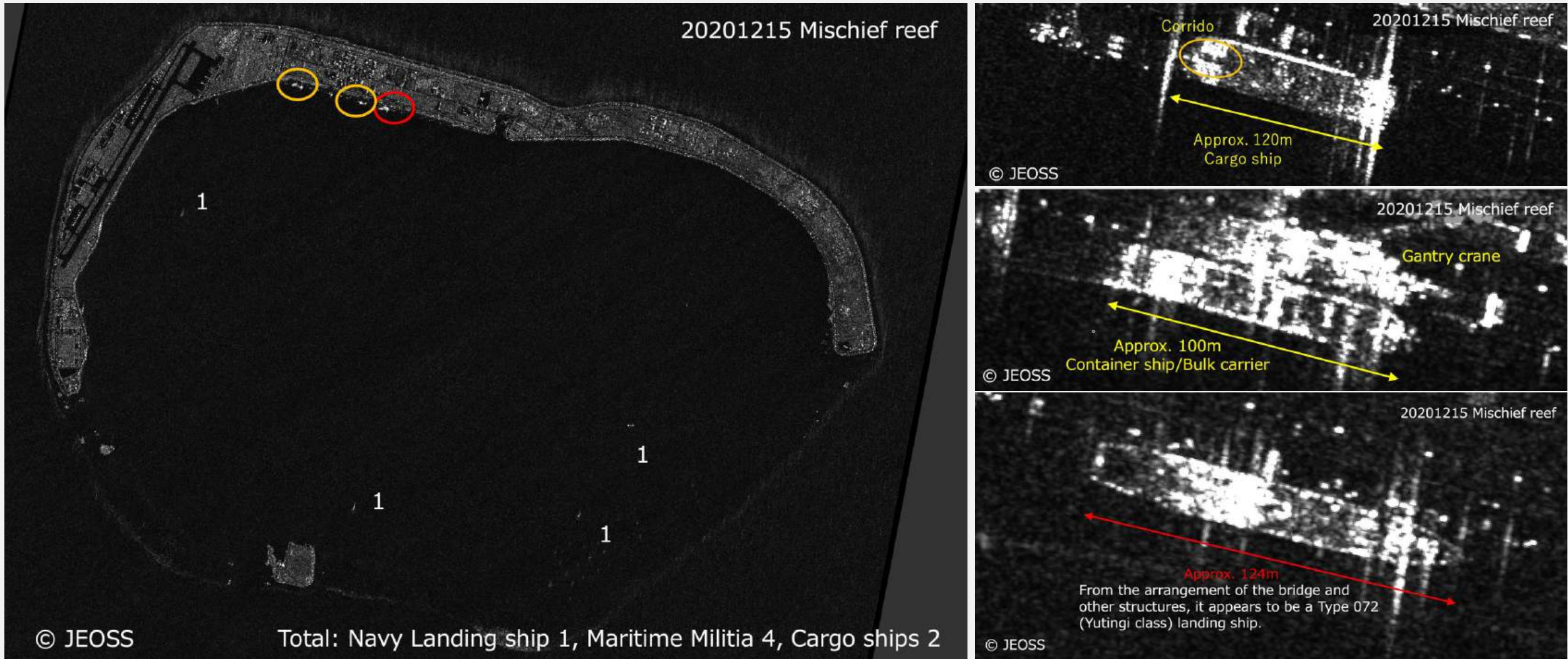


Figure 2

Large landing ships are also moored at Mischief Reef; an August 20, 2024 imagery shows a Type 071 amphibious transport dock ship moored there (Figure 3). Optical satellite imagery confirms that the ship is “989 Changbaishan.” The vessel is wearing a slip on its stern and may be landing vehicles and other equipment. The Mischief Reef quay is approximately 1,800 meters long and can accommodate several large vessels at same time.

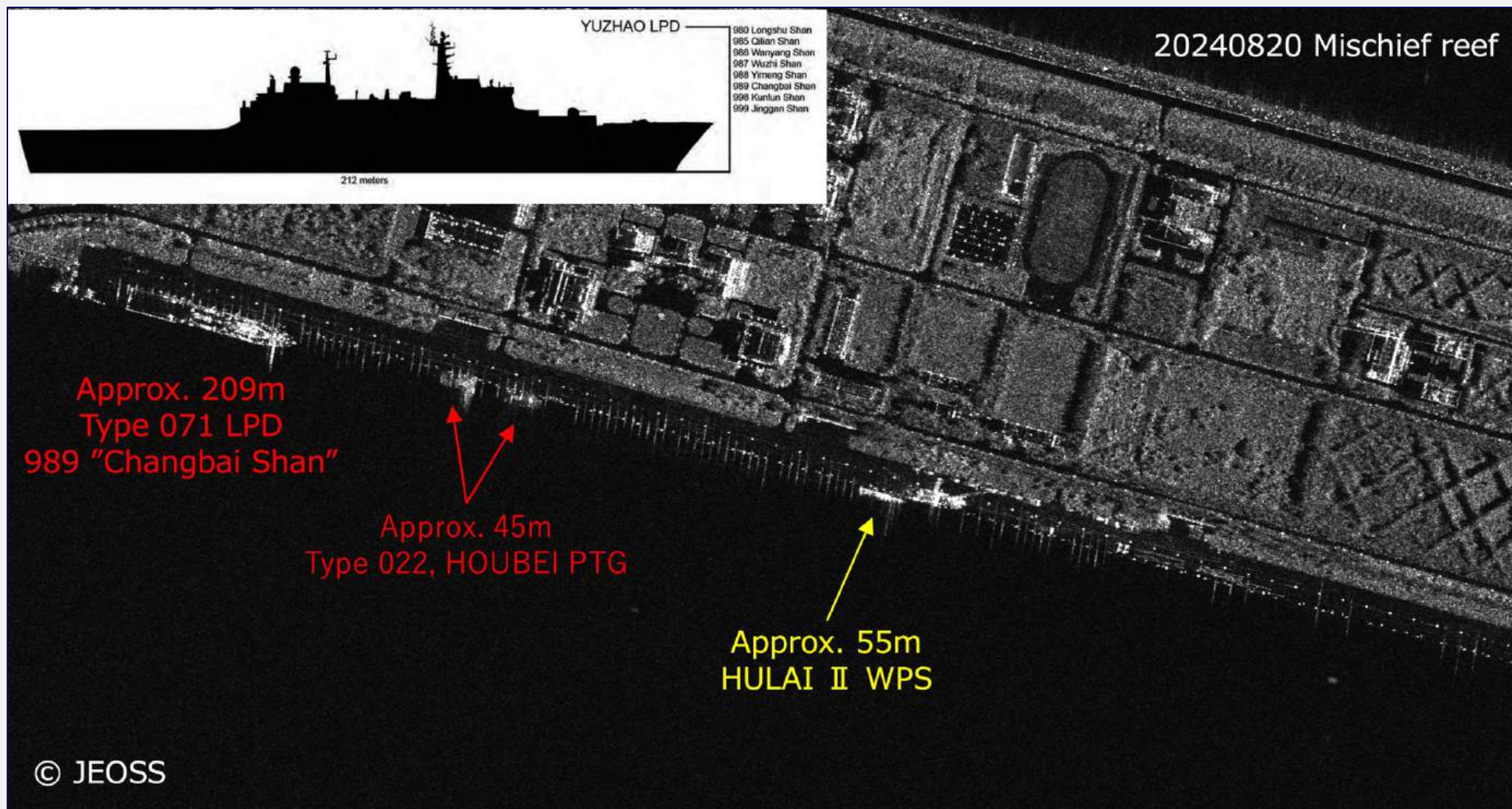
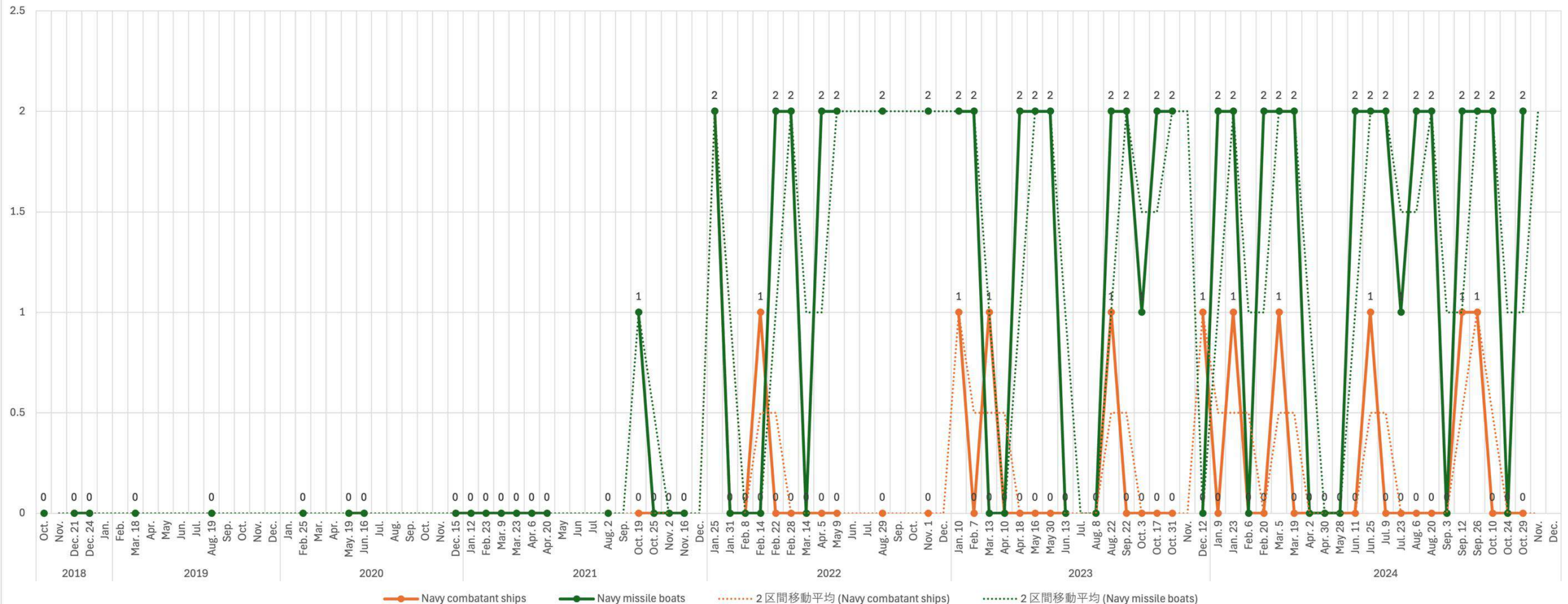


Figure 3 5

In addition to landing ships, large combatant ships such as destroyers, frigates and corvettes, smaller vessels such as missile boats, and other auxiliary vessels are berthed. A Type 022 missile boat was confirmed in October 2021. Since January 2022, two have been stationed there. The most frequently identified among the large combatant ships is the Type 056 corvette. 72 ships of the same type have been built, including those used by China coast guard.

Graph 3 - Navy combatant ships/missile boats



Considering its navigation capabilities, Type 022 missile boat is expected to operate in the vicinity of Mischief Reef. 2 type 022 are frequently off the quay, but are moored in approximately the same location (Figure 4). Type 022 is small (220 tons) and is considered to require frequent replenishment, and has been stationed there since cargo ships began entering the reef.

On October 1, 2024, for the first time, 2 type 022 interfered with Philippine supply activities at Second Thomas Shoal. It is believed that type 022 were ordered to operate at Second Thomas Shoal, which is about 40 kilometers away from Mischief Reef.

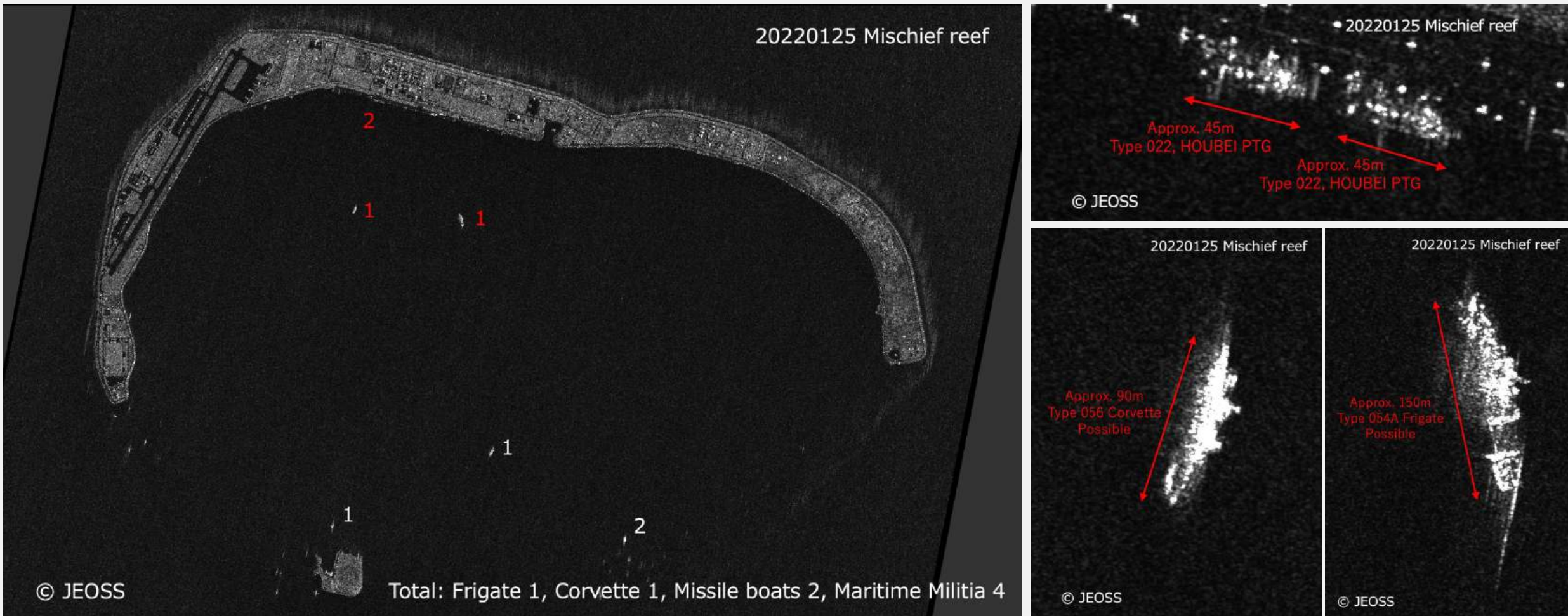


Figure 4

Type 054A frigate also frequently entered Mistchief Reef, and larger Type 052D destroyer also began to appear, with Type 052D appearing at Second Thomas Shoal in December 2023, and the Chinese media reported that Chinese PLA had begun to seriously move to seize the reef. The ship can be confirmed to have entered Mischief Reef the following month, on January 23, 2024 (Figure 5). The ship may be in a long period operation, as large naval vessels do not need to replenish frequently.

The length of the quay, approximately 1,800 meters, may have been considered necessary not only for simultaneous replenishment of a large number of maritime militia vessels, but also to allow several large naval vessels to stand by and replenish at the same time.

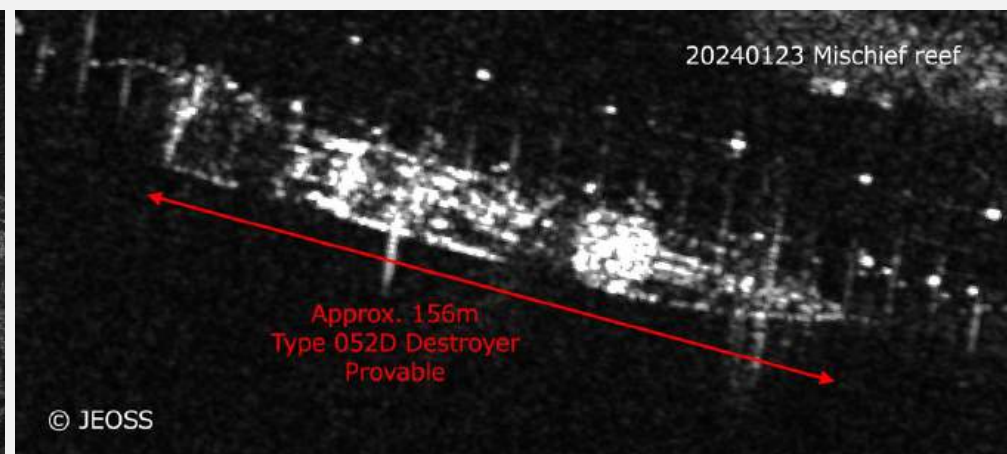
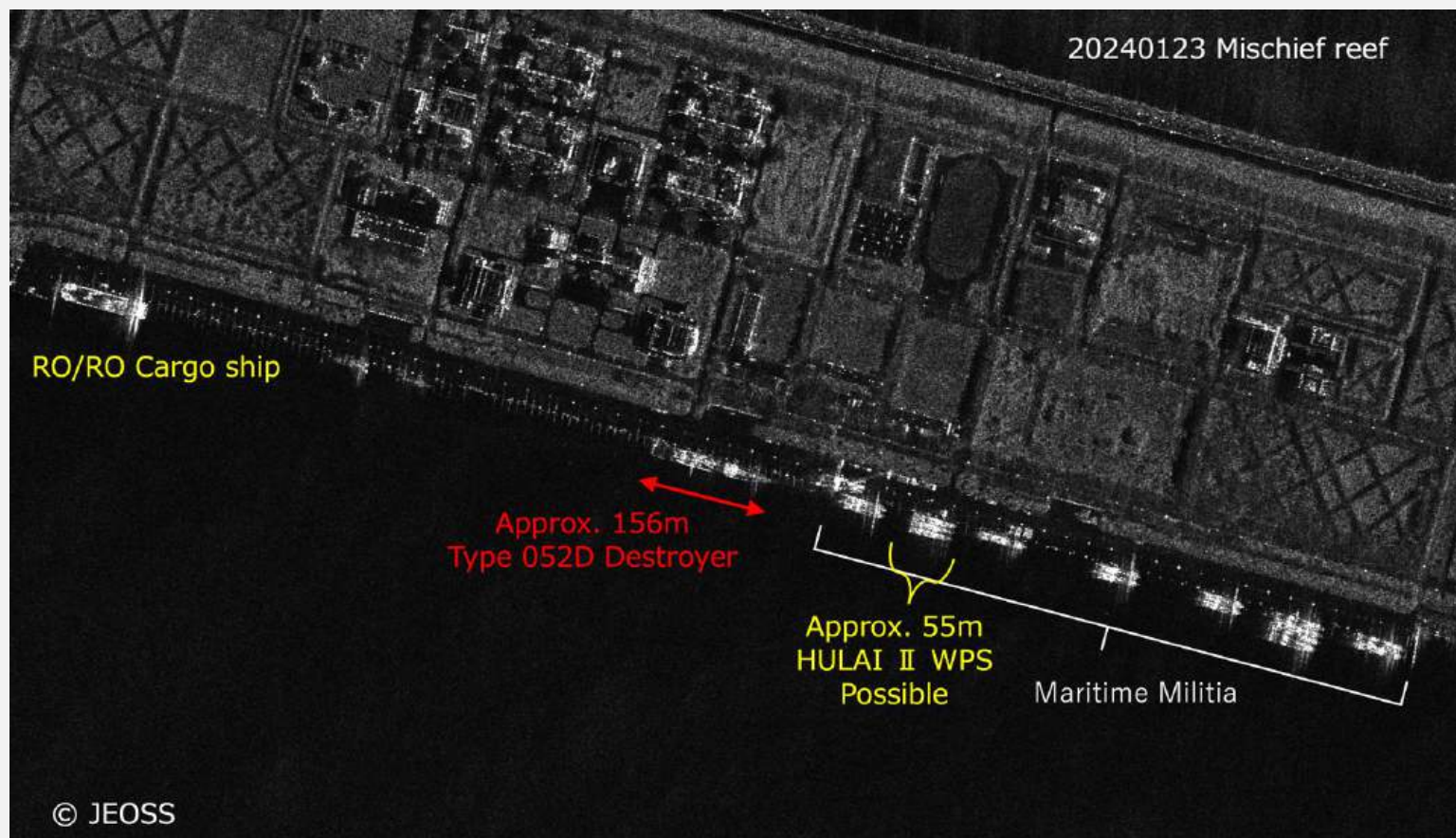
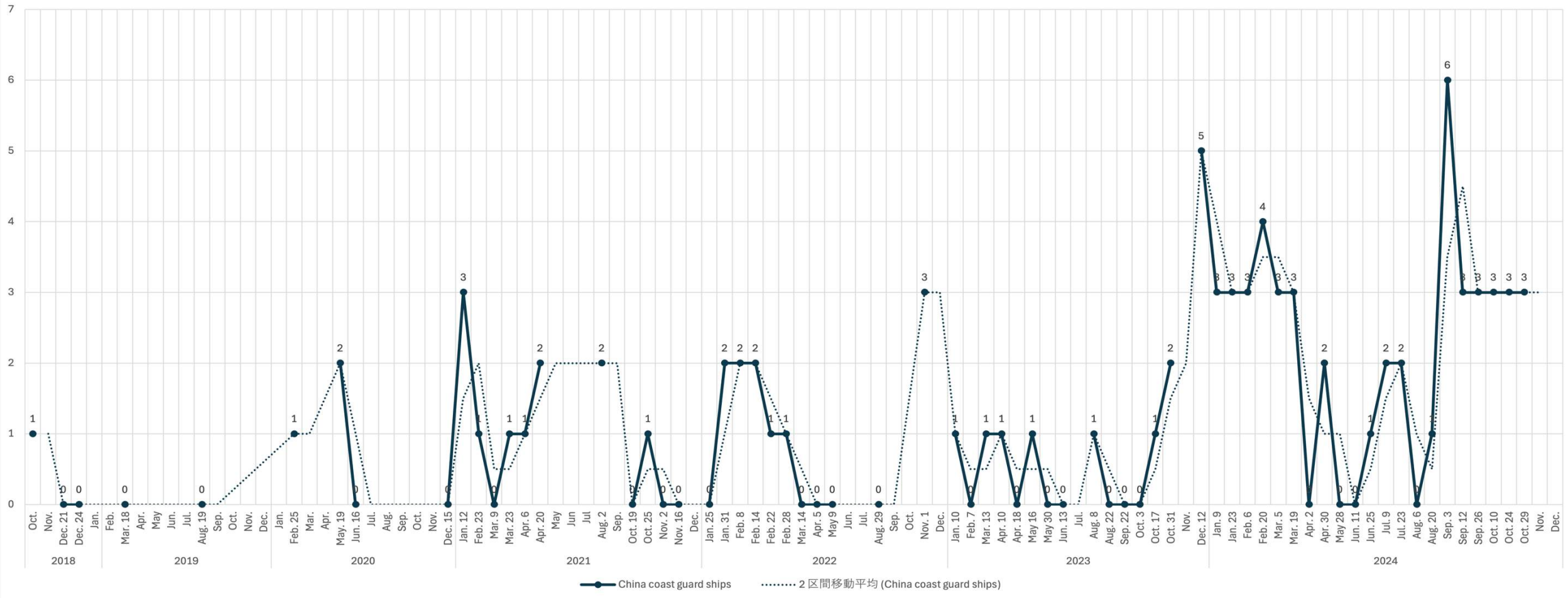


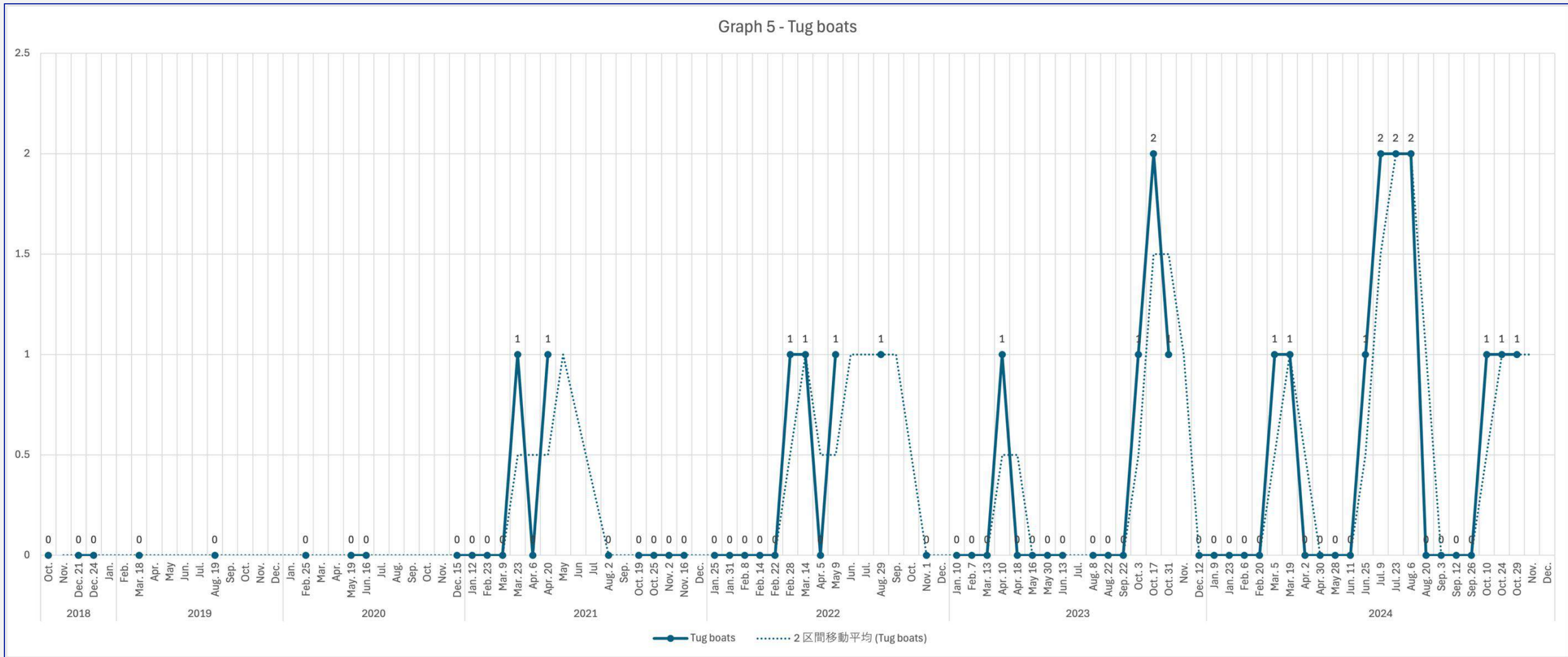
Figure 5

Although only 1 or 2 vessels, China Coast Guard ships have been anchored within Mischief Reef since before the cargo ships were identified on a regular basis (Graph 4). It can be understood that Coast Guard ships and Maritime Militia vessels used Mischief Reef as a waiting area before and after operations at Second Thomas Reef, etc., from the time when enough replenishment was not possible.

Graph 4 - China coast guard ships



On March 23, 2021, one tugboat was identified within Mischief Reef (Graph 5). However, the deployment of the tugboat does not necessarily coincide with the deployment of cargo ship, large Navy vessels, and Coast Guard ships. In addition, tugboats do not always remain inside of Mischief Reef. These circumstances suggest that tugboats may be assigned missions other than supporting the arrival and departure of large vessels at the reef.



In May 2023, the large Chinese tugboat 19016 reportedly traveled between Mischief Reef and Second Thomas Shoal, staying on Second Thomas Shoal for more than 72 hours. Tugboats deployed on Mischief Reef may be used to remove the Philippine warship “Sierra Madre”, which is stranded on Second Thomas Shoal. It is also understood that the smaller tugboats are loaded onto naval auxiliary vessels and are moving between their home ports and Mischief Reef and other reefs (Figure 6).

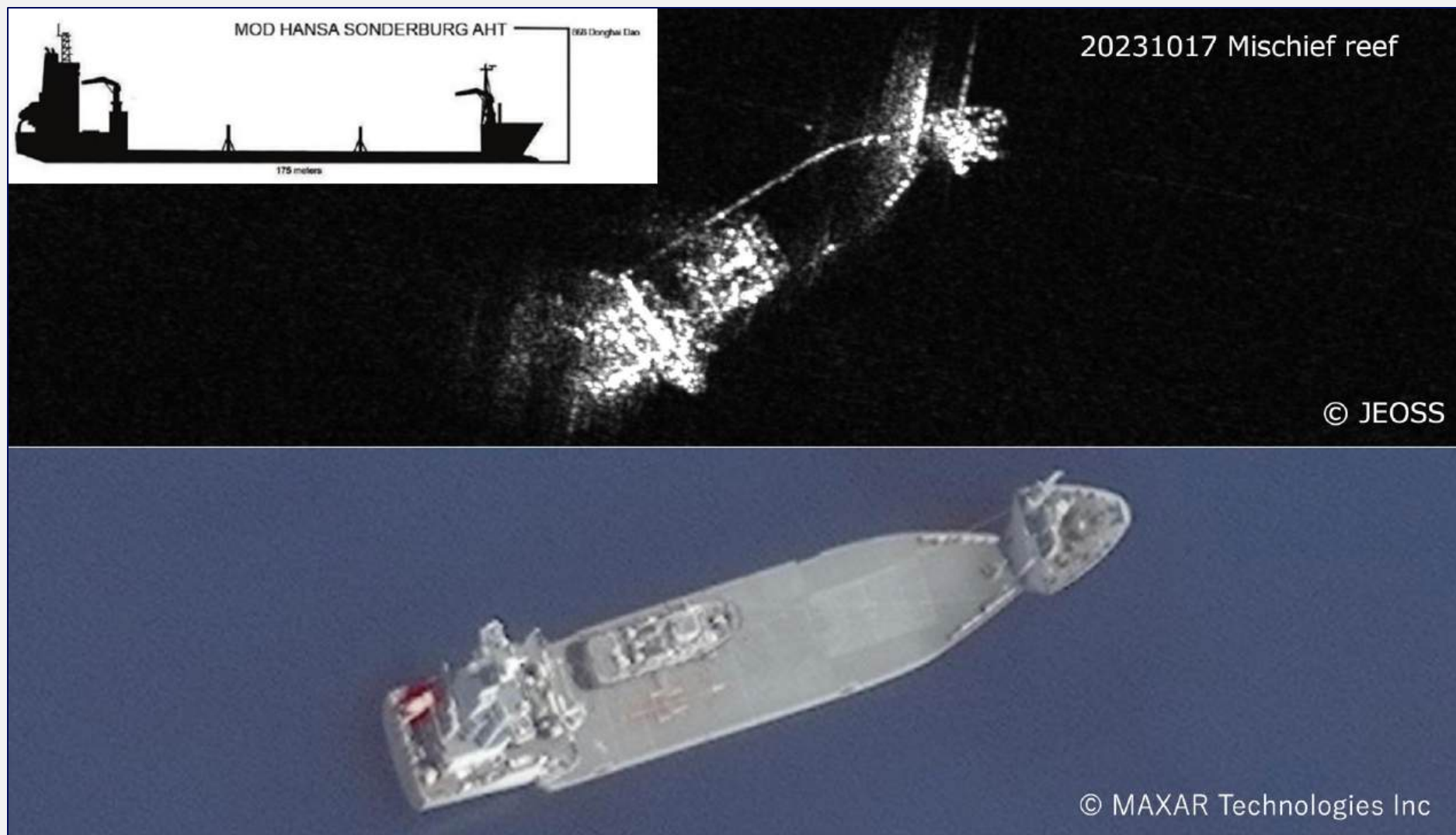


Figure 6

Other distinctive vessels include oil tankers. The SAR imagery also shows pipes on the foredeck and other features characteristic of oil tankers (Figure 7). On the quay where the vessel is moored, echoes can be seen that is different from the rest of the area, suggesting that is equipment to receive fuel etc. from the oil tanker. Items transported by oil tankers are thought to include both shipboard fuel and aircraft fuel. Therefore, it is difficult to analyze the amount of fuel, etc. supplied to ships on the reef based solely on the frequency of oil tanker arrivals.

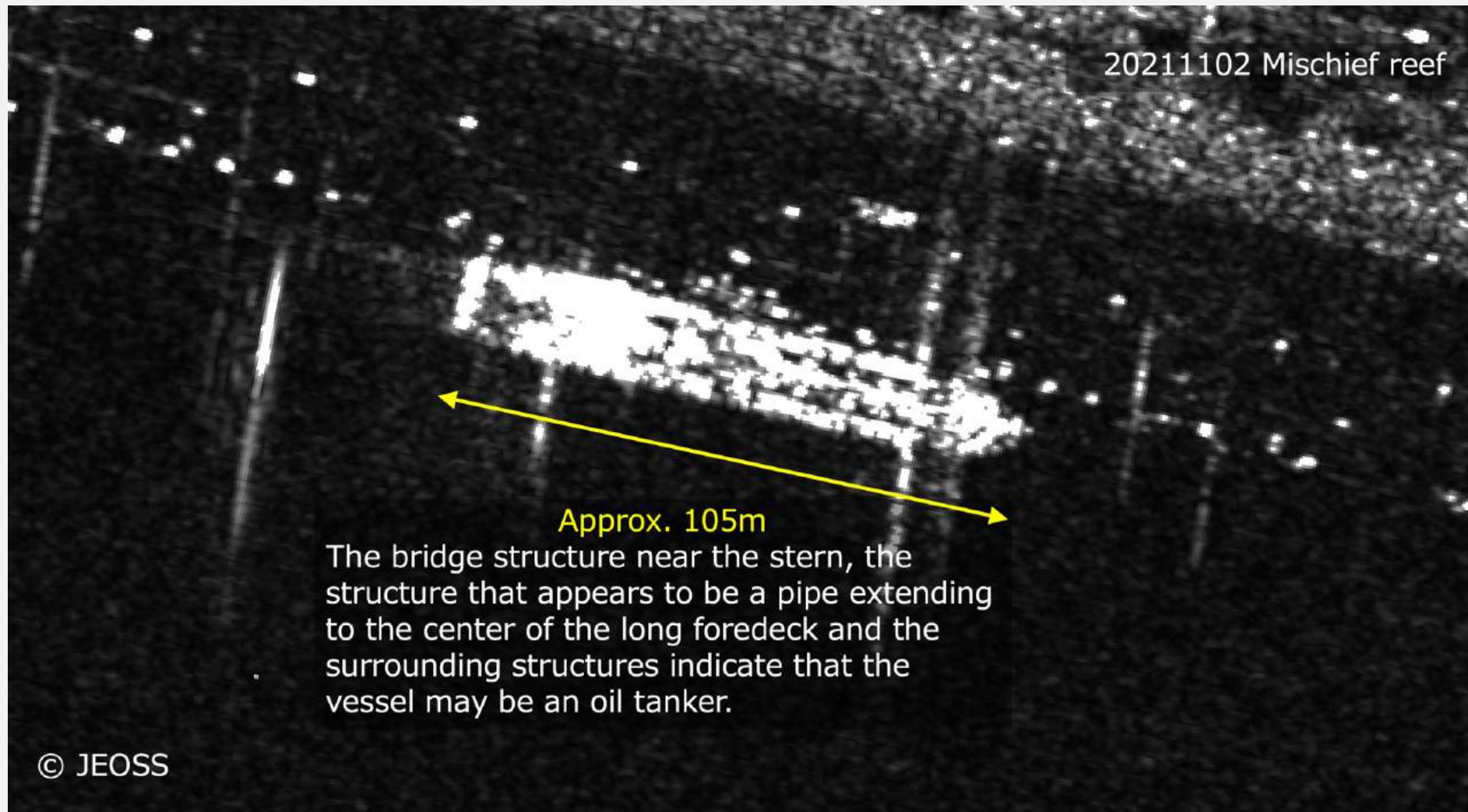


Figure 7

Analysis of the deployment of various types of vessels using SAR imagery reveals that since December 2020, cargo ships have been regularly entering Mischief Reef. Two types of transport vessels are used: those in the form of vehicles that are self-propelled and can embark and land on their own, and container ships and bulk carriers. Navy landing ships are also used to transport military supplies and vehicles.

Since the arrival of the cargo and landing ships, the number of maritime militia vessels has increased, as analyzed in Report 001, and the presence of Type 022 missile boats and large combatant ships has also increased. Because of the limited ability to navigate the open sea and the need for frequent replenishment, Type 022 is primarily tasked with defending Mischief Reef. I found that Type 022 boats spend a large amount of time at the quay. However, in October 2024, for the first time, Type 022 missile boats participated in an operation on Second Thomas Shoal to disrupt Philippine supply operations. It is possible that Type 022 have been assigned a new mission.

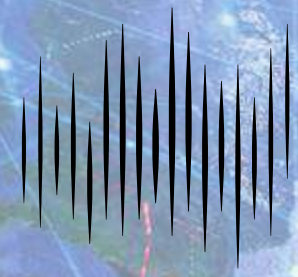
Although there has not been a significant increase in the number of large combatant ships moored at the quay, the size of ships become larger. The most common type of combatant ship seen on the reef is Type 056 corvette, but Type 054A frigates have been observed, and after a Type 052D destroyer was spotted on Second Thomas Reef in December 2023, satellite images confirmed that the ship had entered Mischief Reef. The larger size of the combatant ships staying on the reef, along with the situation of a large number of maritime militia vessels standing by, could be a sign of large-scale Chinese operation on Second Thomas Shoal and other reefs.

Tugboats are also deployed on Mischief Reef. However, the timing of tugboat deployment does not necessarily coincide with the entry of cargo ships, landing ships, and large combatant ships. Therefore, it is believed that those tugboats are assigned missions in addition to supporting the entry of large vessels into port. For example, they are tasked with removing the Philippine “Sierra Madre,” which is stranded on Second Thomas Shoal. In fact, in May 2023, a large Chinese tugboat was observed plying between Mischief Reef and Second Thomas Shoal. These situations suggest coming large-scale Chinese operations.



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