Indian National Centre for Ocean Information Services (INCOIS)
Ministry of Earth Sciences (MoES), Govt. of India, Hyderabad

Press Release

INCOIS advisory Bulletin (No.3) on drift of Containers, Debris, Nurdles due to wreckage of MSC ELSA-III Ship off Kerala coast on 24 May 2025

Indian National Centre for Ocean Information Services (INCOIS), under the Ministry of Earth Sciences, Government of India, delivers critical ocean state forecasts and advisory services aimed at safeguarding the lives and livelihoods of maritime communities. These services are especially vital during extreme weather events such as tropical cyclones, high wave episodes, swell surges, search and rescue, oil spill, etc. INCOIS employs a state-of-the-art, multi-model operational ocean forecasting system that assimilates real-time observational data from a network of coastal and deep-ocean buoys.

On 24 May 2025, the Indian Coast Guard and the Kerala State Disaster Management Authority (KSDMA) reported a maritime incident involving the Liberian-flagged container vessel *MSC ELSA 3*. The vessel, which was en route from Vizhinjam to Kochi Port, reportedly capsized at approximately 13:25 hours in the Arabian Sea.

INCOIS promptly activated its Search and Rescue Aid Tool (SARAT). This tool is designed to assist maritime authorities in identifying probable drift paths of containers, or other floating objects at sea based on real-time and forecast oceanographic and meteorological data. The SARAT simulation provided vital insights to support ongoing search and rescue operations being carried out by the Indian Coast Guard and other response agencies.

In addition, recognizing the potential risk of environmental contamination, INCOIS deployed its Oil/Nurdles Spill Trajectory System. This system forecasts the movement and dispersion of Nurdles in the marine environment using advanced ocean circulation models. The simulation outputs help decision-makers assess the possible spread of Nurdles, identify vulnerable coastal areas, and coordinate timely and efficient containment and clean-up strategies to minimize ecological damage.

This coordinated response underscores the critical role of operational oceanographic services in maritime safety and environmental protection. INCOIS continues to monitor the situation and remains in close coordination with the Coast Guard, KSDMA, and other stakeholders to provide updated advisories as needed.

The updated information of Search and Rescue Aid Tool and Nurdle Spill Trajectory advisories given as Annexure-1 and Annexure-2 respectively.

Annexure-1

Search and Rescue Aid Tool (SARAT) output for drifting/missing objects

Based on the simulation outputs generated by INCOIS using its Search and Rescue Aid Tool (SARAT), there is an estimated 80% probability that the containers/debris which went overboard from the capsized vessel MSC ELSA 3 may drift toward the southeastern coastal region of Kerala, as shown in figure 1. This region encompasses the entire coastal stretches of Alappuzha, Kollam, and Thiruvananthapuram districts. According to the model projections, these containers or floating debris are likely to approach the coastline within the next 96 hours, depending on prevailing ocean currents, wind patterns, and sea state conditions. This forecast provides a critical window for local authorities to enhance coastal surveillance, issue precautionary advisories to coastal communities, and prepare for potential marine hazards such as navigational obstructions or shoreline contamination.

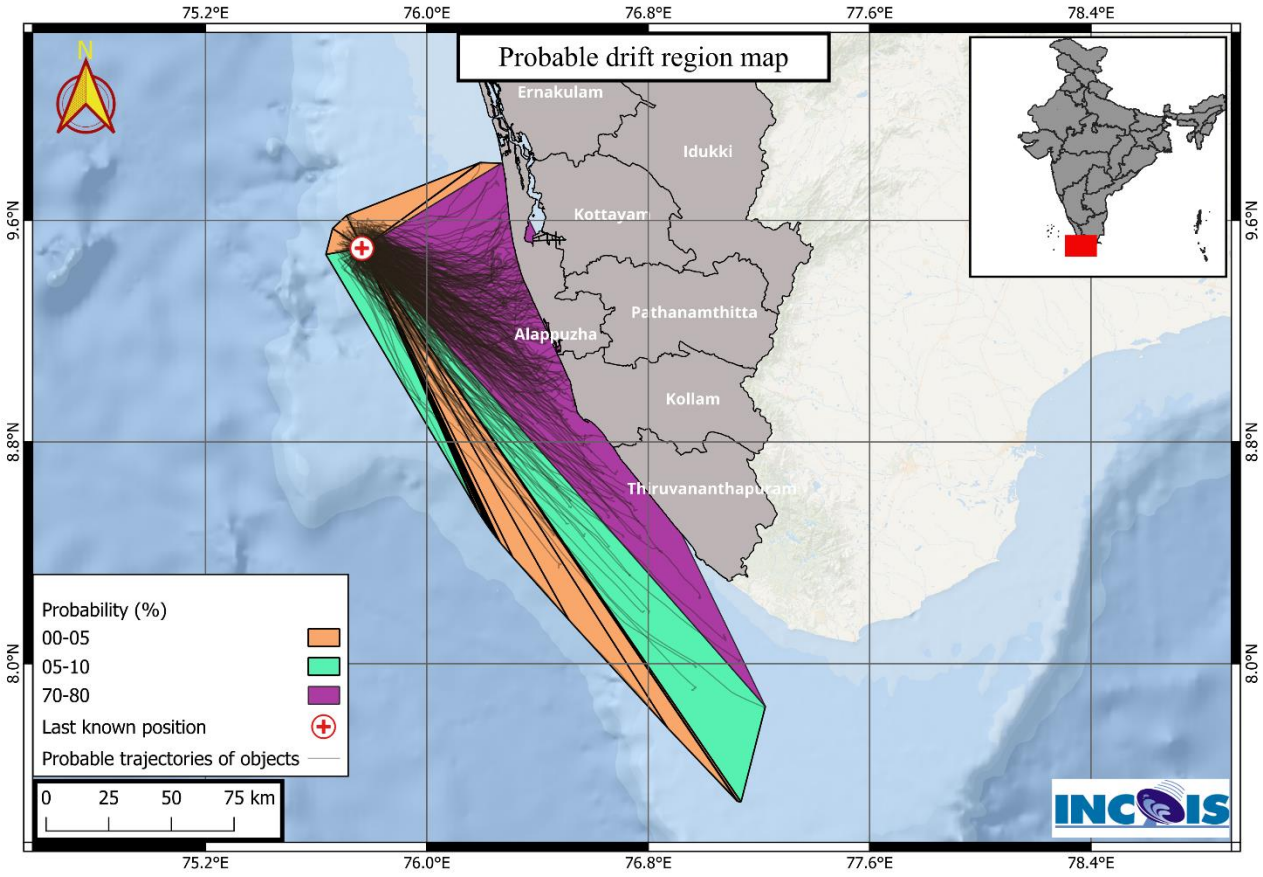

Figure 1**:** Probable drift areas of overboard containers/debris.

Annexure-2

Nurdle Spill Trajectory pattern of (any possible) nurdle leak from the vessel (updated info)

Details of the model run

Spill location: 75.7667 °E, 9.5000 °N; (Considering the wreck location)

Pollutant: Nurdle Particles.

Quantity: 100 Tons is considered for the simulation (as exact quantity not known)

Model Run: 1500hrs hrs of 24.05.2025 till 1500hrs of 29.05.2025 IST.

Advisory:

Based on simulation results, the nurdles are observed to drift southeastward from the reported location towards the quillon coast during the 15 hours of 26 May. By 1500 hours on 27 May, the drift continues moving east-southeast, beaching at Trivandrum. Around 1500 hours of 28 May, the pollutant continues beaching along Trivandrum coast, affecting approximately 83 nautical miles of shoreline. By 1500hrs of 29 May, the impacted coastal stretch (84 nautical miles) expands towards Kovalam.

The nurdle drift patterns are illustrated in the accompanying figures. The black "+" symbol marks the reported spill location, while red crosses and red dots represent beached and floating nurdle particles, respectively. The spill movement is continuously monitored using forecast data. INCOIS will issue periodic advisories to provide timely updates and guidance for mitigation efforts.

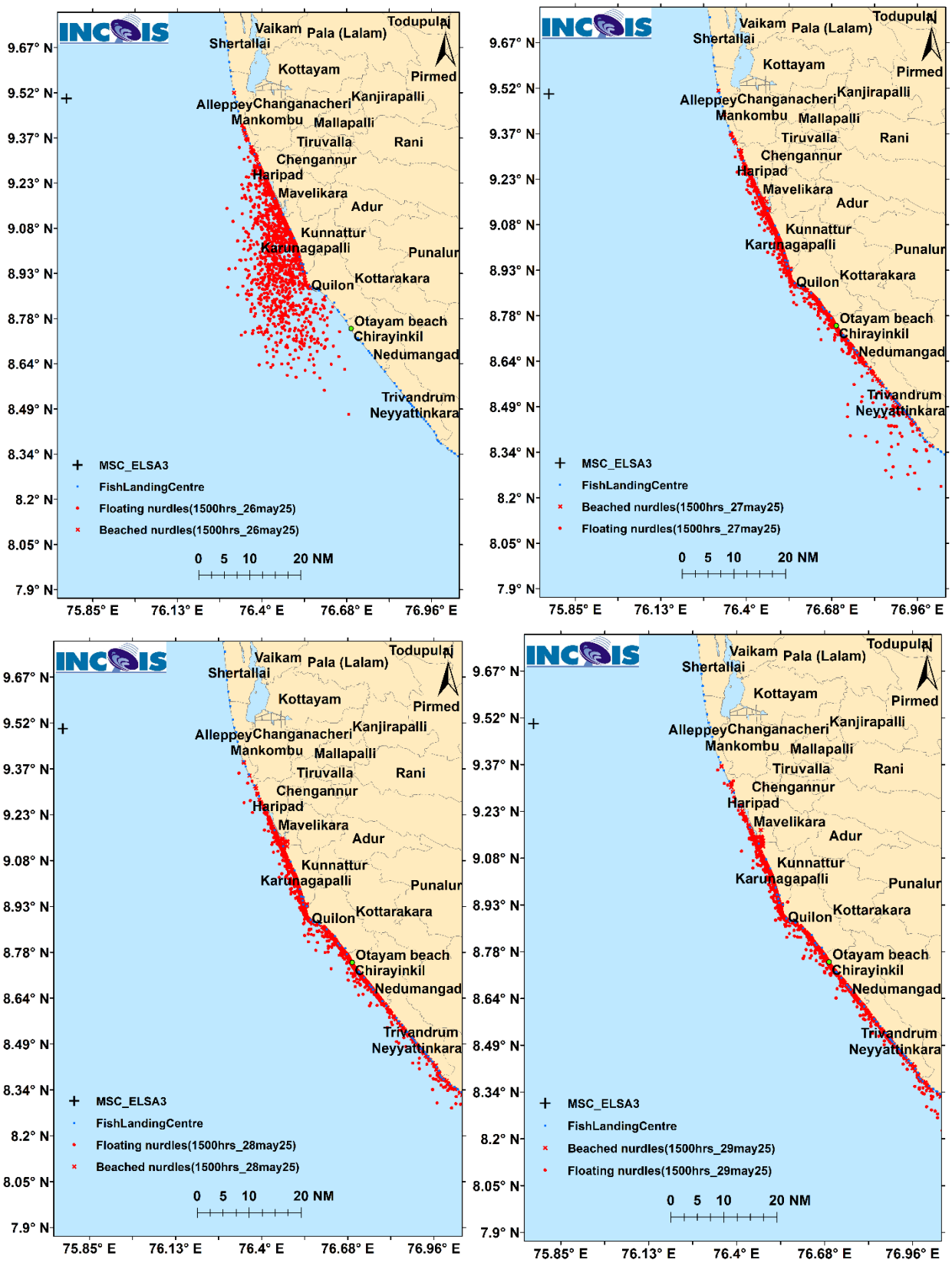

Figure 2**:** Probable Nurdle drift pattern along Kerala coast