Shipping by containers has become a huge industry with over 5,200 ships in the global container ship fleet now carrying about 20 million shipping containers around the oceans every year. The size of container ships and the number of containers they can carry has increased with the expansion of our global exports and imports, with about 5-6 million of these steel boxes crossing the sea on ships at any one time.

As ships have become larger and containers have been stacked higher to carry more cargo, the risks of what have become known as stack attacks has increased. This refers to the collapse or failure of a large stack of containers under rough sea conditions. Because the containers are stacked as high as multistory buildings, the pressure on the pile of containers from the ship rolling from side to side in large waves can exceed the stability of the stack and the cabling that is holding them to the ship.

As the world becomes increasingly globalized, demand for shipping will continue to increase. Ocean shipping is still the preferred method of transport and as a result, we are likely to see increasingly larger cargo ships being designed and introduced. Today, the largest cargo ship can transport over 21,000 TEU (20-foot equivalent) shipping containers, and Orient Overseas Container Line Hong Kong – the company that currently owns the largest cargo ship in the world – is looking to build even larger ones.

There is some uncertainty about just how many containers are lost at sea each year. While the World Shipping Council reported that between 2008 and 2019 there were 1,382 containers lost at sea each year or an average of four every day, another source says between 2000 and 10,000 containers fall off each year, a big discrepancy. These can float at or just below the surface for hours, or in one documented case, 15 months as a lost container floated completely across the Atlantic from the Caribbean to Spain.

These lost containers have been labeled, UFOs, or Unidentified Floating Objects, and present significant hazards to smaller vessels, especially sailboats. The 2013 movie, “All is Lost” with Robert Redford, is a film about his sailboat colliding with a partially submerged container in the Indian Ocean.

Maritime insurance executives reported that about 3,000 containers were lost at sea in the period from late November 2020 to early January 2021. A cargo ship operated by A.P. Møller-Maersk A/S lost several hundred containers in the Pacific Ocean while sailing through heavy seas from China to Los Angeles, the latest in a spate of incidents in which boxes carrying millions of dollars worth of goods have gone overboard. The company said the Maersk Essen, which has capacity for more than 13,000 containers, lost an estimated 750 of them on January 16, 2021, about halfway through its trans-Pacific sailing from China’s Port of Xiamen.

The loss of containers from the Maersk Eindhoven bought the number of reported cases of serious stack attacks since just November 30, 2020 to six. In early February 2021, the One Apus
container vessel, operated by Singapore-based Ocean Network Express, lost about 2,000 boxes in November when it hit a storm off Hawaii on its way to Long Beach from Yantian, China. The ship eventually sailed to Kobe, Japan, with hundreds of tipped-over containers sitting precariously onboard and remains there for repairs and an investigation into the cause of the incident.

Earlier this year, 76 containers fell off a vessel operated by Israel’s ZIM Integrated Shipping Services Ltd. en route from South Korea to North America. On Dec. 31, 2020, a containership managed by Taiwan’s Evergreen Marine Corp. Ltd. lost around 40 containers off the coast of Japan while heading across the Pacific. Engineers involved in the probes say they are looking into typical causes such as failures in lashing systems that hold containers together.

The ultimate resting places of the many thousands of metal shipping containers that have fallen overboard in stack attacks is little known. In February 2004, the cargo vessel Med Taipei was heading south along the California coast when severe seas and winds led to 24 containers going overboard, 15 within the Monterey Bay National Marine Sanctuary. Not long afterwards, scientists at the Monterey Bay Aquarium Research Institute (MBARI) came across one of these in a ROV dive and then returned in 2011 to collect extensive video footage.

They were surprised how little the container had corroded in the seven years on the seafloor, likely due to the near freezing temperature and low oxygen content of the water. The container had also acted as a rock outcrop and was now covered with animals such as scallops, tubeworms, snails, and tunicates, animals that were not found in the surrounding mud as they need a hard surface to attach to. Based on MBARI scientist observations it appears that it may take hundreds of years for these containers to fully degrade. Interestingly, from cargo records they discovered that the container was full of automobile tires.