

Disasters Avoided

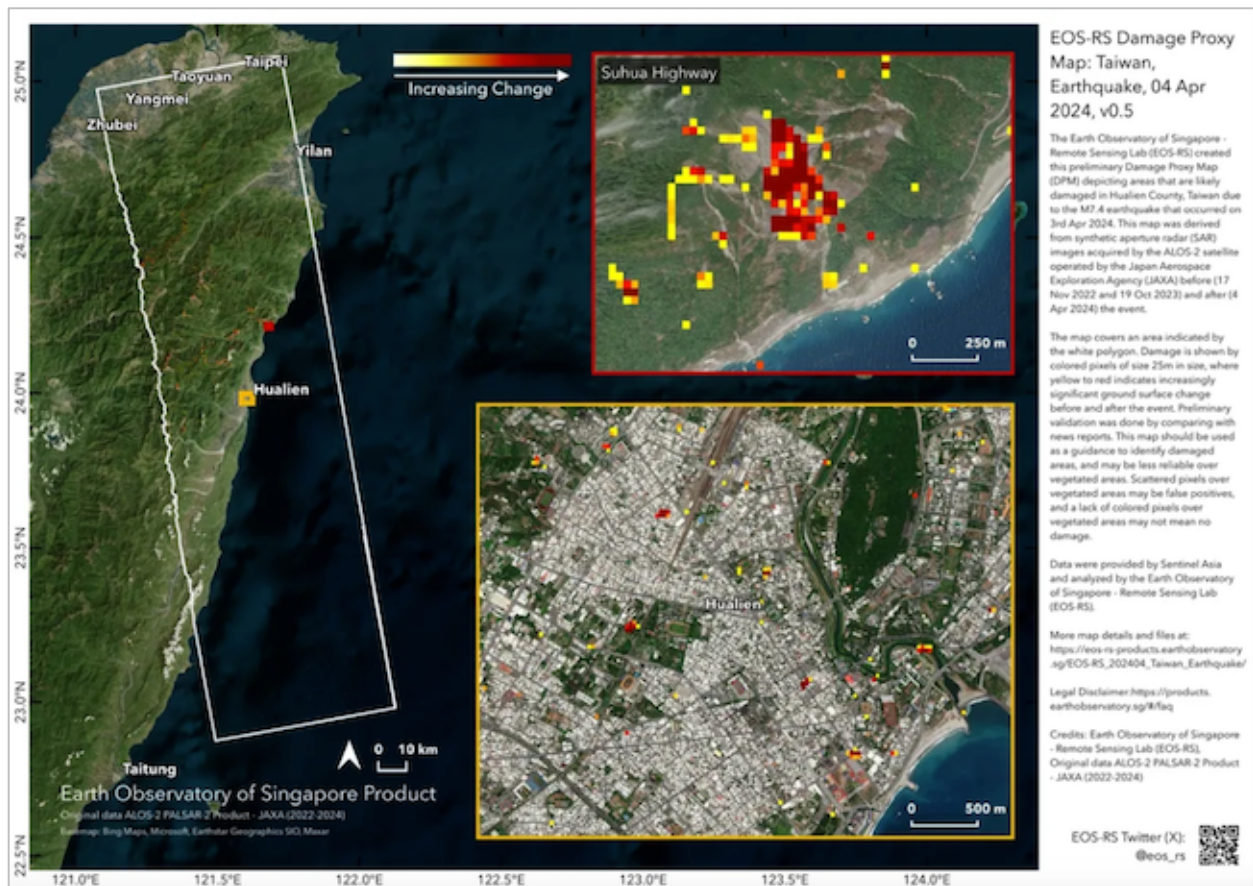
The April 2024 Hualien earthquake: preparedness matters

- A 7.4 magnitude earthquake occurred close to Hualien City on the eastern side of Taiwan on April 3, 2024.
- Lives were lost and damage was caused by the event, but it could have been much worse if good measures to reduce vulnerability had not been pursued for many years.

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Satellite imagery of Hualien after the April 2024 earthquake. (Image credit: Taiwan Space Agency, TASA, <https://www.tasa.org.tw/en-US/announcements/detail/b6336034-9bce-4de1-840b-cb94e163afa2>).

Note: TASA worked with international agencies to coordinate images of affected areas along Taiwan's east coast soon after the event to allow experts assess the extent of damage.



A magnitude 7.4 earthquake, the largest recorded in Taiwan since 1999, occurred at 7:58 a.m. local time on Wednesday, April 3, 2024, just off Hualien County, and close to the County's main city of Hualien (population approx. 144,000). The earthquake's impact was felt to varying degrees locally, including in the popular tourism area of Taroko national park (seismology maps show how mountain areas surrounding the city bore the brunt, impacting local infrastructure) and to a certain extent across much of Taiwan. Japan and the Philippines issued tsunami warnings immediately after the event was recorded, which were downgraded and then lifted after no significant wave heights were detected.

Aftershocks occurred in the days after the main earthquake. Landslides outside the city and bad weather made conditions challenging for rescue services. An analysis found the earthquake caused 18 fatalities and more than 1,000 people injured ([Chang et al., 2024](#)). Estimates of the extent of damage to buildings and infrastructure vary (some reports estimate approx. 100 buildings, others a higher number). Whilst photos of collapsed and perilously tilted buildings featured in the news, and some degree of building damage was reported further afield, including in Taipei (160km away), the vast majority of buildings remained intact, and the people of Hualien city and county demonstrated economic resilience.

Despite the impact of the earthquake on people and on the physical environment of the local area, it could have been a lot worse were it not for the policies and measures that have been pursued in Taiwan over many years to reduce vulnerability to earthquakes. An emphasis on and a mindset of lessons applied, not just identified, has been key.

Between 1900 and 2025 Taiwan recorded 27 earthquakes greater than Mw7.0 magnitude. An important tipping point to take meaningful action to reduce vulnerability to earthquakes occurred on September 21 1999, when a 7.3 magnitude earthquake in Taiwan's Nantou County resulted in more than 2,300 fatalities and many more people injured ([Taiwan CDC](#)). As part of the post-event response, the Taiwanese government revised building codes and strengthened disaster management laws. It took time to embed new practices and deal with structural vulnerabilities (buildings built pre-1999 often being higher risk), and additional learnings resulted from a magnitude 6.4 earthquake close to Hualien on February 6, 2018.

In an example of good governance, integration between local and national government departments played an important part in the response to the April 2024 Hualien earthquake. Lessons had been applied from the 2018 earthquake and others before it to improve coordination across government and non-governmental organisations.

Whilst rebuilding and restoration following the 2024 Hualien earthquake is a multi-year effort (estimates put the funding for relief and recovery activities by the Taiwanese Cabinet at approx. US\$875 million), the economy responded quickly to support recovery.

International cooperation in 2024 was already strong between Taiwan and other countries, and some offers of support were accepted by the Taiwanese authorities from some countries after the 2024 earthquake (most financial relief was handled in country). A Turkish team supported people on the ground in Hualien. This assistance was provided 14 months after a Taiwanese team had supported authorities in Türkiye after the major February 2023 earthquake occurred in that country.

The impact of the 2024 earthquake to vital parts to Taiwan's national economy were limited. The preparedness, resilience and business continuity management of Taiwan's semiconductor industry, which is a core part of the world economy, is an example. Chipmakers in Taiwan, many of which are on the island's western side, have reduced their vulnerability to earthquakes for decades. Many have automatic shutdown systems that minimise damage to production and tools. The impact of the 2024 earthquake was minimal. Shortly after the event, the island's biggest chipmaker, Taiwan Semiconductor Manufacturing Corporation (TSMC) reported that more than 70% of its chipmaking tools were back online, and that no vital machines had been affected.

Today, Hualien (and Taiwan overall) maintains readiness to earthquakes and tsunamis. Whereas earthquakes in recent years in some parts of the world have killed tens of thousands, Taiwan shows how the right mindset, the right investment and good governance can avoid disasters occurring when an earthquake strikes.

Each year on September 21 (the date of the 1999, or '921' earthquake) practice drills are held across Taiwan and test alerts are sent to people's mobile phones to test the response to events such as earthquakes and tsunamis. Schools stage emergency evacuation drills.

From a broader regional perspective across Asia Pacific, early warnings are provided by the Pacific Tsunami Warning System (PTWS) which save many lives (refer to the example of [the Disasters Avoided case study on the 2025 Kamchatka earthquake & tsunami](#)). Coordinated by the Intergovernmental Oceanographic Commission of UNESCO (UNESCO-IOC), the PTWS is a network of 46 member States across the Pacific, supported by [the Pacific Tsunami Warning Center in Honolulu](#), which was established in 1965 following the 9.5 earthquake and tsunami in Chile which caused fatalities as far as Japan.

Sources:

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