CASE STUDY

International Charter and Early Detection to Assist in Cyclone 'Fani'

India

The 2019 cyclonic storm 'Fani' was one of the severest cyclones, in the past two decades, to hit the Bay of Bengal, affecting around 100 million people in South Asia. The cyclone travelled from India's Andaman Islands to Mount Everest in Nepal. Among the countries impacted along its way, India and Bangladesh faced the most extreme damages. A similar cyclone, the Odisha cyclone that occurred in 1999, caused more than 10,000 deaths in these two countries. However, in 2019, the death toll was contained to 81 people due to early warning systems, detection, robust disaster preparedness and response systems, and accurate forecasts.

On April 26th, the India Meteorological Department (IMD) was able to pick up signals of 'Fani' as a tropical depression, seven days before its landfall in Odisha. Throughout the lifecycle of the cyclone, meteorologists used imagery from ISRO's SCATSAT-1 satellite to track the location, direction, and intensity of winds close to the ocean surface. Informed by accurate predictions, IMD was able to alert state authorities and district administrations of the cyclone, and provide ground authorities with hourly updates through bulletins, WhatsApp groups, and emails. As a result, India successfully evacuated and sheltered 1,470,197 people. Together with the 1 million population evacuated in Bangladesh, these two South Asian countries accomplished one of the biggest human evacuations in history.

On average, the International Space Charter provides support to approximately 40 major disasters annually and across the world. In May 2019, a severe cyclonic storm, 'Fani', made landfall in the East coast of Odisha, India, and the International Charter was activated by the ISRO. During 'Fani', 162 satellite images from 18 satellites were provided to rescue teams in Odisha. These datasets were used for sharing near real-time information on the cyclone's impact in the affected areas. Maps showing inundated areas were prepared almost on a daily basis during 3 to 10 May 2019, and were widely used by the state and central authorities. Furthermore, very high-resolution satellite data was used to assess the damage to infrastructure, which formed part of post-disaster

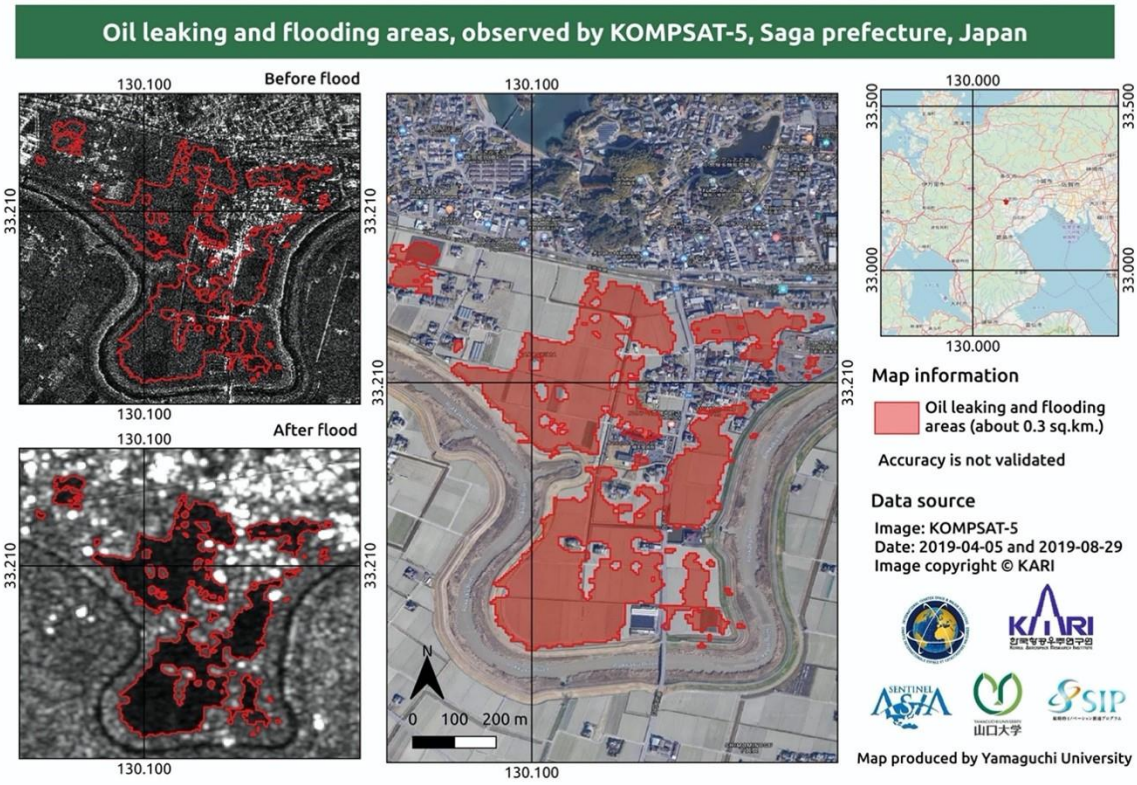
Additional details and more practices like this can be found in *Geospatial Practices for Sustainable Development in Asia and the Pacific 2020: A Compendium*

recovery and construction. India does not only receive remote sensing data from various International Space Agencies during emergencies, but shares its own data as well to support various disaster events across the globe.

During cyclone 'Fani', Bangladesh used the international mechanisms available for support as well. ESCAP activated, on request of SPARRSO, the RESAP that worked with spacefaring member countries to provide real time access to satellite images to support post-cyclone response and early recovery operations. Further, ESCAP, through the collocated UNITAR/UNOSAT office, facilitated the activation of the International Charter for Bangladesh as well.

Many space agencies, from countries within Asia and the Pacific that are members of the International Charter and Sentinel Asia, provide high-resolution satellite images in cases of disasters. The Korea Aerospace Research Institute (KARI) from the Republic of Korea provides over 500 satellite images, annually. In the case of a disaster, the sub-meter resolution of the KOPMSAT satellite imagery provides a detailed detection of damages incurred to small-scaled houses, roads and their surroundings (Figure 1).

Figure 1. Sample imagery from KOPMSAT-5 by KARI for oil leaking and flooding areas



Source: KARI, Map by Yamaguchi University.

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