

Research Highlights

Storm No. 12 in 2017: Lessons from the Khanh Hoa Province, Vietnam

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Khanh Hoa is a coastal province which is located in South Central Vietnam, with some of its territory extending far into the South China Sea. The province is adjacent to Phu Yen province in the north, Dak Lak and Lam Dong provinces in the west, and Ninh Thuan province in the south. Its geographical coordinates are 108040'33" to 109027'35"E and 11042'50" to 12052'15"N. Khanh Hoa province has an area of 5,197km² (including islands, archipelago). The total length of coastline is 385km featuring numerous creek mouths, lagoons, river mouths and hundreds of islands and islets. Khanh Hoa Sea is considered to be the deepest sea in the country with a coastline spanning over a length of 200km. Khanh Hoa Province is also located close to the Truong Son mountain range, with very narrow deltas, representing less than one-tenth of the total area of the province. Plains are divided into small pieces, separated by mountains stretching to the sea. The majority of Khanh Hoa's mountain has an elevation of less than a thousand meters, but is part of the Truong Son mountain range, giving diversity to the terrain. The climate of Khanh Hoa is highly tropical with an average temperature of 26.5°C. The weather is warm all the time in the plain regions. There are two distinct seasons: the rainy season lasts from April to December, with the other months being the dry season, except in Nha Trang where the rainy season lasts for just two months. The average relative humidity is 80.5%. The province is likely to be less stormy; the frequency of typhoons entering Khanh Hoa is only about 0.82 typhoon per year compared with 3.47 typhoons per year in Vietnam.

Normally, in the South China Sea, there are only about 10 to 11 storms each year. In 2017, the area recorded 16 tropical cyclones and six tropical depressions. Floods and storms not only affect the provinces of North Central Vietnam but are now spreading to the Southern Central provinces and leaving heavy shocks. In November of the year 2017, Storm No. 12 or Typhoon Damrey hit the South Central region, specifically the Khanh Hoa Province, where there was no occurrence of powerful storms in the past two decades. Typhoon Damrey (known in The Philippines as Severe Tropical Storm Ramil) rapidly intensified and made landfall over Khanh Hoa Vietnam on Saturday morning, November 4th, and rapidly weakened, dissipating on November 5th. Typhoon Damrey is believed to be the most powerful storm recorded in the area over the past 30 years and has inflicted severe damage in the Khanh Hoa Province with winds gusting at up to 135 kilometres per hour, which was the equivalent strength of a Category 2 hurricane in the eastern Pacific or Atlantic oceans. Weather experts say it is the most destructive storm in decades to hit the southern coastal region - which usually escapes typhoons that in most years strike further north. The typhoon left serious consequences. It blew the roofs off thousands of houses, felled trees and electricity poles across the southern coastline and caused the destruction of hundreds of homes.

According to the final statistics impact report of Storm No. 12 in 2017 from the National Steering Committee for Natural Disaster Prevention and Control (NCDPC), the death toll was 107 people, 16 people missing, 315 individuals injured.

The typhoon also had a profoundly adverse impact on infrastructure. More than 141,467 houses collapsed, became roofless or was damaged; up to 1,294 transport and fishing boats were damaged and sunk; and 94,299 hectares of paddy and crops including rice, vegetables and fruit were severely destroyed. A further 70,066 marine cages, used for fishing, were destroyed. The area of aquatic products damaged was an estimated 135,483 hectares. This typhoon brought strong winds, heavy rainfall and severe flooding to Central Vietnam, and caused damages of at least 22,000 billion VND. It was apparent that storm No.12 left serious damage on not only to the Khanh Hoa Province but also all of Binh Dinh, Phu Yen Provinces and parts of Dak Lak, Quang Ngai, Kon Tum, Dak Nong. There are a number of questions that have been asked, mainly, why a place such as the Khanh Hoa Province that very rarely saw the occurrence of strong storms suffered from such a powerful storm like Typhoon Damrey.

As a province with large seas and long coastlines, Khanh Hoa has definitely experienced storms from the South China Sea. However, the frequency of typhoons into the Province as recorded so far was very low and did not have much impact. During Storm No. 12 in 2017, despite the meteorological forecasting centre predicting a powerful and dangerous storm, there were other reasons at play that led to serious consequences. Specifically, the communication of danger warnings and the possible impacts caused by the storm had not been effective. People did not grasp clearly the path of the storm, the areas that would be affected, and therefore, they did not prepare well. Moreover, since there had been no storms for such a long time in the area, both the local government and citizens had very little experience in emergency management during a disaster.

Local level forecasting and early warning equipment is still limited. In some localities of Vietnam, the capacity of the forecasting was inadequate with regards to equipment, prediction capability and manpower. These factors had a tremendous impact on both people and property. Learning from the experience of the Khanh Hoa Province is important to avoid repeating the same mistakes. Communities in other coastal provinces in Vietnam can learn and make plans for prevention and reduction of damage from similar events in the future. In hydro-meteorology, forecasting of storm paths, levels and potential effects are indispensable tasks when the storm season comes every year. To achieve high effectiveness in the prevention of natural disasters, it is necessary to utilise early warning systems and develop plans to prevent and mitigate the negative impacts of floods and storms. In addition, the media also plays a very essential role. In some very remote villages, people have very poor level of awareness and communication is limited and not really effective. Therefore, the government should channel adequate resources for labour and equipment for meteorological forecasting agencies and local communication systems. In addition, there should be close coordination between the media and the forecasting agency to provide timely information to the public, and to plan effective disaster prevention and emergency measures.