

# **THE IMPACT OF TROPICAL CYCLONES IN THE WESTERN PACIFIC OCEAN AND SOUTH CHINA SEA ON THE RAINFALL IN MALAYSIA**

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## **ABSTRACT**

Tropical cyclones (TCs) are intense synoptic systems that significantly modifies the basic atmospheric state through the entire troposphere. This has a strong influence on the regional rainfall pattern, even to countries that are not directly on the path of these cyclones. The Malaysian region is in close proximity to one of the most active cyclogenesis region in the world, that is the West North Pacific (WNP) and the South China Sea (SCS) region. This region has the highest number of tropical cyclones globally with an average of 27 cyclones per year, with nearly half of them reaching typhoon intensity. September has the highest number of tropical cyclones with an average of 5.4 cyclones occurring in a year, while February records the lowest number of tropical cyclones. In this study 57 years of tropical cyclone data from the Regional Specialized Meteorological Centre (RSMC) - Tokyo and rainfall data for the same period from selected principal meteorological stations in Malaysia is used to study the impact of tropical cyclones on the rainfall in three Malaysian regions; Sabah, Sarawak and northwestern Peninsular Malaysia. The probability of rainfall at different stages of the cyclone and their location in the WNP and SCS reveals that the rainfall has a higher probability of occurrence when the cyclone is in the open sea, whereas over northwest Peninsular Malaysia it is during landfall or close to the Indochina coast the probability is higher. When the TCs are in the SCS, Sarawak has a higher chance of getting rain than when the TCs are in WNP. Though the chance of receiving rain when TCs are located in WNP or SCS is more than 70 percent, but there is less than 40 percent chance of getting heavy rain (>10mm). For Sarawak and northwestern Peninsular Malaysia when the TCs are located in the SCS the chance of rain increases as the TC category increases from depression to typhoon stage. For Sabah when the TCs are located in WNP, the probability of rain is higher when the TCs are at the tropical storm stage as compared to other stages.