

## Changes in Temperature and Precipitation Extremes in Northern Thailand

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**Abstract :** This study was analyzed changes in temperature and precipitation extremes in northern Thailand for the period 1981-2011. The study includes an analysis of the average and trends of changes in temperature and precipitation using 22 climate indices, related to the intensity, frequency and duration of extreme climate events. The results showed that the averaged trend of maximum, minimum and mean temperature is likely to increase over the study area in rate of 0.5, 0.9 and 0.7 °C in last 30 years. Changes in temperature at nighttime, then rising at a rate higher daytime is resulting to decline of diurnal temperature range throughout the area. Trend of changes in average precipitation during the year 1981-2011 is expected to increase at an average rate of 21%. The intensity of extreme temperature events is increasing almost all station. In particular, the changes of the night were unusually hot has intensified throughout the region. In some provinces such as Chiang Mai and Lampang are likely be faced with the severity of hot days and hot nights in increasing rate. Frequency of extreme temperature events are likely to increase each station, especially hot days, and hot nights are increasing at a rate of 2.38 and 3.58 days per decade. Changes in the cold days and cold nights are declining at a rate of 0.82 and 3.03 days per decade. The duration of extreme temperature events is expected to increase the events hot in every station. An average of 17.8 days per decade for the number of consecutive cold winter nights likely shortens the rate of 2.90 days per decade. The analysis of the precipitation indices reveals the intensity of extreme precipitation is increasing almost across the region. The intensify expressed the heavy rain in one day (Rx1day) and very heavy rain accumulated in 5 days (RX5day) which is likely to increase, and very heavy rainfall is likely to increase in intensity. Frequency of extreme precipitation events is likely to increase over the station. The average frequency of heavy precipitation events increased xxx days per decade. The duration of extreme precipitation events, such as the consecutive dry days are likely to reduce the numbers almost all station while the consecutive wet days tends to increase and decrease at different numbers in different areas.

**Keywords :** climate extreme, temperature extreme, precipitation extreme, Northern Thailand

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