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Variability in the Frequency of Temperature over Thailand using Wavelet Transform

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Abstract. Temperature is one factor affecting the yields of rice which is the main food crop of Thailand. Therefore in this research we investigate the variability in the frequency of temperature over Thailand from 1901 to 2016 using wavelet transform.In wavelet analysis we calculate the wavelet power spectrum, the global wavelet power spectrum and the scale average wavelet power. We also study the relationship between the temperature over Thailand and the sea surface temperature (SST) anomalies monitoring along the equation at the location the Niño3region.The results show that the main frequency of oscillation of temperature over Thailand is 1 year the same as another natural climate. The oscillation frequency of period 6 month also observed although it does not occur every year.The analysis of temperature anomaly shows that the high wavelet power occurred within the period 24-84 months band and the 120-130 months band. The wavelet power spectrum of the STTNiño3 shows the similar pattern as of the temperature over Thailand. The oscillation frequencies of 1 year and the period of 24-84 months band are also observed. These frequencies are confirmed by the global wavelet power spectrum. As seen from the scale-average time series, not all El-Niño have the same effect on temperature over Thailand. The temperature in Thailand will be high in the years that the El Nino activities are strong. The knowledge of variation in the frequency of temperature over the period of time will help the farmer and the government in better predicting, planning and preparing for the change in temperature beforehand.
Keywords: temperature, frequency, wavelet, power spectrum, oscillation, El Niño

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