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The Relationships Between Wind Speed and Temperature Time Series in Bangkok, Thailand.

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In this research we investigate the relationships between wind speed and temperature time series data in Bangkok, Thailand, from the time interval of January 2009 to December 2011 using wavelet transform (WT), cross wavelet transform (XWT) and wavelet coherence (WTC). The results from all three wavelet analysis show the strong periodicity around period 1 day (hourly data) and period band 256-450 days (daily data) variations that are exhibited in both wind speed and temperature data across the entire power spectrum from 2009 to 2011. These two oscillations are connected with the natural day time effects and the annual natural season cycle. Although the daily periodic for the temperature is appeared nearly uniform all year but it is not the case for wind speed. In 2009 this wind speed oscillations appear only from mid February to mid April in summer and from the fourth week of May to the third week of August in rainy season. XWT also detects strong high common power between the wind speed and temperature at a period band of 14-25 days in summer 2009, a period band of 4-8 days in summer 2009, July 2009, summer 2010 and summer 2011. WTC shows the coherence period band around 10-30 days appeared in summer and rainy season and 32-50 days in summer 2009 and rainy season in 2010. From these three wavelet analysis, the wind speed and temperature time series data show the strong correlation especially at 1 day and 256-450 days period band and also at several different scales. This studied will be helpful in predicting the wind speed and temperature for the future used.

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