
MULTIFRACTAL BEHAVIOR OF WIND SPEED AND WIND DIRECTION

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Abstract

In this paper, an analysis of temporal variation of wind speed and wind direction recorded at 10 min intervals are presented. The measurements were carried out at Hambanthota, a site located in the southern coastal belt of Sri Lanka which has a high potential for wind power generation. The multifractal detrended fluctuation analysis was used to analyze the temporal scaling properties of wind speeds and wind directions. The analysis was carried out for seasonal variation of wind speed and wind direction. It was observed that the scaling behavior of wind speed in Hambanthota is similar to the scaling behavior observed in previous studies which were carried out in other parts of the world. The seasonal wind and wind direction change exhibits different scaling behavior. No difference in scaling behavior was observed with heights. The degree of multifractality is high for wind direction when compared with wind speed for each season.

Keywords: Wind Speed; Multifractal; Wind Direction; Fractal Behavior.

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