E.Morfiadakis, G. Glinou, M.Koulouvari, *"The Suitability of the Von Karman Spectrum to the Structure of Turbulence in a Complex Terrain Wind Farm"*, Journal of Wind Engineering and Industrial Aerodynamics ,62, pp237-257, (1996).

Abstract

Turbulence measurements in the vicinity of a wind farm on the island of Andros (Greece), combining strong winds and ground complexity, are presented. The computed mean turbulence parameters are shown to be influenced by both topography and wake effects. Power spectra are derived and compared with the von Karman formulation during free stream and wake conditions and the corresponding turbulence length scales are determined. The analysis reveals that the von Karman spectrum is suitable for the structure of the turbulence measured at some locations in free stream conditions. However, intense topography effects like flow separation and wake effects are not adequately modeled by this formulation. The turbulent length scales exhibit a considerable variation with direction. During wake conditions and at around 1.8*D* separation distance, length scales are higher compared to those of free stream, whereas at separation distances greater than 6.7*D* topography effects have a stronger influence on the spectra and the length scale values than the wake effects.

Keywords

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