

2.3-P09. Growth and Attenuation of Seismic Noise Generated from a 12.0MW Wind Farm

Development of renewable wind-generated energy is being pursued by many signatory States of the Comprehensive Nuclear Test Ban Treaty as an alternative to traditional energy resources. In Canada, wind power capacity has increased by ~400% in the last 20 years. As wind power generation facilities increase in size and number, encroachment upon International Monitoring System (IMS) stations can occur, wherein vibrational and/or infrasonic emissions of the turbines can become an undesirable source of noise within the monitoring band. In an effort to better understand, identify and characterise the noise of modern megawatt wind turbines, a multifaceted study to monitor the seismic and infrasonic noise of a megawatt-class wind facility was conducted between May 2013 and 2014. Four temporary seismo-acoustic monitoring stations were deployed to passively record the noise generated by four Vestas 3.0MW V90 wind turbines of the Summerside Wind Farm on Prince Edward Island, Canada. Analysis of the data identified several vibrational modes within the 1 – 10Hz monitoring band visible up to a 10 km distance. Fitted spectral growth and attenuation curves for the turbines have been computed, providing estimates to the scale of separation required to safeguard a hypothetical monitoring station from observing the facility.

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