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Seismic Signals and Wind Noise

Understanding of the seismic background noise is an important step in reducing the noise level of the seismic data. Wind noise refers to vibrations generated by the coupling of wind energy into ground motion. The data demonstrated a consistent correlation between recorded noise levels and wind speed. Signals from desirable events may be obscured by earth noise arising from the wind. Only the passive protection methods are available now. The absence of objects that couple wind energy to the ground (such as trees, topographic irregularities and buildings) is an important consideration in selecting of a quiet site. The seismic stations are extended only a few decimeters above ground. Placing a seismometer at depth greatly reduces the wind effects. The greatest effects in high-frequency wind noise reduction appear within the first 50 m. In the last 10-20 years considerable progress has been achieved in the structural analysis of wind excitation. Numerical techniques have been developed to reproduce the complex structure of wind-induced loading with high accuracy. Finally, can we identify the noise associated with the wind, if we know speed and direction of the wind? If so, can we reduce it on the seismic record? What are costs needed for this?

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