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Tracking Northwestern Pacific typhoon using seismic data

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The ambient seismic data recorded on Korean Seismic array network (KSRS) are investigated to analyze (1) to trace typhoons in the Pacific Ocean and (2) to investigate the seismic phases comprising the seismic noise fields. Super typhoons (equivalent to category 4 hurricane) in Northwestern Pacifics were selected for this study. They were selected on the basis of their strength and wide azimuthal coverage from the seismic array. To trace source area of seismic noise generated by typhoons, CLEAN f-k analysis was applied to the KSRS data to estimate the direction of seismic energy of the 0.2–0.7 Hz noise field (DF microseisms). These estimated back azimuths by the CLEAN technique show good agreement with the known values to the centers of the NW Pacific typhoons. This clearly indicates that these typhoons were responsible source of microseisms during their passing. The seismic phases in our DF microseism band are investigated with the apparent velocities from our method. The estimated velocity range indicates that the ambient seismic noise in the frequency range propagates in mostly fundamental and first few higher modes.