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The Green's function between the stations of the German Regional Seismic Network from ambient noise

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We study ambient seismic noise recorded at the German Regional Seismic Network (GRSN) to retrieve the local propagation properties of the subsurface and to understand the origin of the noise itself in the different frequency bands. We use the correlations of ambient noise to construct the impulse response between two passive receivers. We find that Rayleigh waves appear for frequencies from 0.03125 to 0.25 [Hz], that is at periods from 4 to 32 [s]. We present the method of "Windows selection" to delete earthquakes from the continuous seismic signal. In this method the median value of Root Mean Square (RMS) of ambient noise is used to select time windows without earthquakes. The correlograms calculated from ambient noise for different frequencies and different inter-stations distances are presented and discussed. Additionally, the RMS data of each station using histograms and time dependency graphs are analyzed to present their annual changes. We show that distinct RMS peaks are connected to seismological events. We also observe that for a certain set of parameters, such as: "Time window" = 900s, "Time length" = 1 year, "RMS threshold" = RMS's median, we can get good signal-to-noise (S/N) ratios. Here S/N ratio means the ratio of the amplitude of the constructed coherent Rayleigh wave to the amplitude of the remaining noise in the correlogram. We observe that in summer time the RMS data are lower. And there more fluctuations and more peaks are occurring relative to the data collected in winter time. Furthermore, the changes of wave velocities for different frequencies are discussed.