



S44B-01 - Covariance Matrix Analysis and Classification of Low-Frequency Tectonic Seismic Activity in Shikoku, Japan

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| 📅 | Thursday, 16 December 2021 |
| 🕒 | 21:33 - 21:38 |
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Abstract

Low-frequency seismic tremors and earthquakes play an important role in the understanding of the seismic processes occurring in seismogenic fault zones and volcanic systems. The covariance matrix, a method that analyses the spatial coherence of continuous seismic noise records on the surface, has proven to be an efficient tool to detect and localize seismovolcanic processes, allowing the classification between local earthquakes, tremors, and low-frequency earthquakes. We use this method in the analysis of tectonic seismic activity in the region of Shikoku, Japan, where a high rate of tremors and low-frequency earthquakes have been previously reported. The classification of the seismic activity over coherence and localization parameters, as the spectral width and the network response function, show distinct characteristic distributions from studies done in volcanic systems, pointing to possible fundamental differences between the underlying phenomena in the origin of volcanic and tectonic tremors and low-frequency earthquakes. We explore the causes of these differences by performing synthetic tests where several source configurations are simulated, aiming to reproduce the set of classification patterns observed in volcanic and tectonic systems.

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