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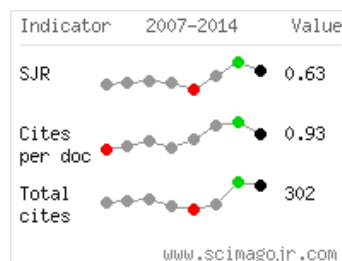
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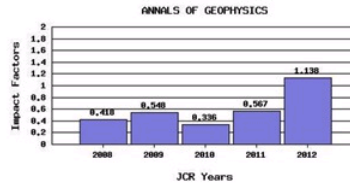
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Geomagnetism, Paleomagnetism and Solar Terrestrial Physics

Processing of noisy

magnetotelluric time series from Koyna-Warna seismic region, India: a systematic approach

Ujjal K. Borah, Prasanta K. Patro, Vaddeboina Suresh

Abstract

Rolling array pattern broad band magnetotelluric (MT) data was acquired in the Koyna-Warna (Maharashtra, India) seismic zone during 2012-14 field campaigns. The main objective of this study is to identify the thickness of the Deccan trap in and around the Koyna-Warna seismic zone and to delineate the electrical nature of the sub-basalt. The MT data at many places got contaminated with high tension power line noise due to Koyna hydroelectric power project. So, in the present study an attempt has been made to tackle this problem due to 50 Hz noise and their harmonics and other cultural noise using commercially available processing software MAPROS. Remote site was running during the entire field period to stand against the cultural noise problem. This study is based on Fast Fourier Transform (FFT) and mainly focuses on the behaviour of different processing parameters, their interrelations and the influences of different processing methods concerning improvement of the S/N ratio of noisy data. Our study suggests that no single processing approach can give desirable transfer functions, however combination of different processing approaches may be adopted while processing culturally affected noisy data.

Keywords

Magnetotellurics; Koyna; Time series processing; Cultural noise; Remote reference

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