

Exploration of the crustal electrical structures in the Pearl River Delta using Magnetotelluric method

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The Pearl River Delta, characterized by its economic vitality and home to major cities like Shenzhen, Guangzhou, Hong Kong, and Macau, also hosts a dense population, which amplifies its vulnerability to natural hazards such as earthquakes and tsunamis. Notably, the region has experienced significant seismic events, including a 5.7 magnitude earthquake in Dangan Island in June 1874, a 7.2 magnitude earthquake in Shantou in February 1918, and an uptick in earthquake activity over the past two years. Due to the tectonic history of the South China Sea spreading, weak zones are believed to exist in the Delta that could potentially trigger earthquakes.

To gain insights into the geological and crustal structures of the region, we conducted a magnetotelluric survey near the area of interest. Our survey spanned a 100km line with 20 stations spaced 5km apart. We utilized Phoenix V5 MT devices for data collection, employing continuous sampling at 15 Hz, supplemented by 240 Hz and 2400 Hz sampling every 10 seconds. Our findings revealed a low-resistivity anomaly beneath the Xinhui district in Jiangmen. Given its elastic properties, this anomaly may contribute to crustal movement and potential earthquake activity, highlighting the need for further investigation into its seismic implications.

Collaboration (if any)

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