

First results from a marine controlled-source electromagnetic and magnetotelluric survey in the study of the structure of the ocean-continent transition zone

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SUMMARY

The continental break-up of the South China Sea is different from mantle exhumation break-up, and the evolution mechanism is not yet clear. Large scale ocean bottom magnetotelluric (MT) and controlled-source electromagnetic (CSEM) exploration provide important observational constraints for verifying the unique continental break-up in the South China Sea. In May 2024, we used the self-developed ocean bottom electromagnetic equipment to carry out CSEM and MT joint exploration in the continental slope of the Pearl River Mouth Basin, the ocean-continent connection Zone and the northern ocean basin in the northern South China Sea. The total length of the survey line is about 55 km, the distance between stations is about 5 km, and the survey line includes 12 stations. The CSEM towed survey line is about 70 km, the water depth is 1400 m~3600 m, and the maximum transmission current is 500 A. We obtained high-quality CSEM and MT data from 11 stations, as well as complete transmission current data, towed and receiver underwater positioning data, and ocean bottom azimuth and attitude data. The above work is the first results for revealing the formation and evolution mechanism of the South China Sea.

Keywords: Ocean-Continent Transition Zones, marine controlled-source electromagnetic, marine magnetotelluric
