Preliminary results of ocean bottom electromagnetometer (OBEM) observation across the Philippine Sea

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The Philippine Sea is one of the major marginal seas in the western Pacific and consists of three major basins; that is West Philippine Basin, Shikoku-Parece Vela Basin, and Mariana Trough. Previous studies indicate that these basins have been formed by successive episodes of west to east opening. As a part of the Ocean Hemisphere Project in Japan, we developed six Ocean Bottom ElectroMagnetometers (OBEMs) across the Philippine Sea during Dai-5 Kaikou-maru cruise in November, 1999; two OBEMs were in the northern West Philippine basin, two OBEMs in the northern Parece Vela Basin, and two OBEMs in the central Marina Trough. The OBEMs measured two horizontal components of electric field and three components of geomagnetic field every one-minute for about eight months. All the OBEMs were recovered during Shintatu-Maru cruise in July 2000 and fairly high-quality data were obtained except one OBEM, which recorded the data only for one month. Five seafloor magnetotelluric impedances with jackknife error bars are obtained from original time series data using the robust remote reference method (Chave and Thomson, 1989). All the data show relatively small error bar between 500 second and a few ten thousand seconds in period, even though the electric field data are contaminated by noise spikes; Careful editing time series data should lead to estimate more precise magnetotelluric impedances. We will present preliminary results of these data analysis and one-dimensional conductivity structure estimate: Final conductivity model is expected to show vestiges of the tectonic evolution of the Philippine Sea with related to the age difference in the lithosphere, and would be a key to understand mechanism of the evolution.