

Analysis of tidal components of earth-potential measured using telegraphic facilities

Noriko Takagi[1], Hideki Murakami[2]

[1] Geology Sci., Kochi Univ, [2] Natural Environmental Sci., Kochi Univ

This study was aimed at investigating a spatial distribution of tidal components of earth-potential data and examining the generating mechanism of tidal components. We analyzed the earth-potential data mechanism at 21 places of Chugoku district and at 28 places of Shikoku district using NTT telegraphic facilities to extract the tidal components from the original data using program, BAYTAP-G. The results demonstrated that the tidal components (S1, S2, O1, M2, M3) of the earth-potential data widely existed in the survey area. There were the following four features: 1) the tidal in the components (O1, M2) at the observation points near the Seto Inland Sea were larger than those near Japan Sea and Pacific Sea, 2) the M2 component at almost observation points was larger than the O1 component, 3) the waveform of M2 component of the earth-potential was similar to that of ocean tide, 4) the direction of diurnal electric current flow of the earth-potential was almost perpendicular to the shore line, and was changing the direction 4 times per day. These features at observation points near the sea were explained by ocean tide. However, the tidal components at a few inland observation points were not explained by ocean tide. At that of the Chugoku district, the similarity of both waveforms was high in M2 components. These tidal components may related not to ocean tide but to solid earth tide. This mechanism is the subject for future study.