

北海道北部の蛇紋岩地域における三次元比抵抗モデリングおよび磁気異常解析

市原 寛 [1]; 茂木 透 [2]; 内田 利弘 [3]; 藤井 昌和 [4]; 山谷 祐介 [5]; 山崎 秀策 [6]; 岡崎 健治 [7]; 多田 訓子 [8]

[1] 名古屋大学地震火山研究センター; [2] 北大・工; [3] 産総研; [4] 極地研; [5] 産総研; [6] 寒地土木研; [7] 寒地土研; [8] 海洋研究開発機構・D-EARTH

3-D resistivity modeling and magnetic anomaly analysis around a serpentine area in the northern Hokkaido

Hiroshi Ichihara[1]; Toru Mogi[2]; Toshihiro Uchida[3]; Masakazu Fujii[4]; Yusuke Yamaya[5]; Shusaku Yamazaki[6]; Kenji Okazaki[7]; Noriko Tada[8]

[1] Nagoya University; [2] Fac. Eng., Hokkaido Univ.; [3] GSJ, AIST; [4] NIPR; [5] FREA, AIST; [6] CERi; [7] CERi; [8] D-EARTH, JAMSTEC

A large serpentinite body in northern Hokkaido, Japan (Pinneshiri serpentinite mass; Niida and Kato, 1978), for which aeromagnetic surveys showed a high magnetic anomaly of over 1,000 nT (GSJ, 2005), may be a key to understand fault ruptures and crustal development of island arcs as the following reasons. (1) Serpentinite contributes to the transportation of aqueous fluid in a subduction zone. (2) Serpentinites largely affect frictional behaviors of a fault. Actually, the serpentinite body is located on a clear boundary between high and low seismicity areas in northern Hokkaido (Takahashi and Kasahara, 2005), and on the fault of inland slow earthquake (Mw 5.4, Ohzono et al., 2015). In order to discuss the distribution of the serpentinite body especially for its deep extension and the distribution of crustal fluid, we conducted a MT survey at three sites on the serpentinite body. Using the MT data by this survey and existing MT dataset at 45 sites around the study area, we modeled a resistivity distribution based on 3-D inversion procedure (Tada et al., 2012). A preliminary inversion result shows a conductive zone beneath the serpentinite body, which implies fractured or clayed serpentinites. In addition, we performed a land magnetic survey across the centre of the serpentine area using a portable overhauser magnetometer. The magnetic anomaly is about 2,000 nT in maximum and seems to reflect local distribution of serpentinites (magnetite). Result of the analyses of magnetic anomaly with past aeromagnetic survey data (GSJ, 2005) will be discussed in the presentation.