東オングル島における地磁気測量

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Geomagnetic survey in East Ongul Island

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Since 1957, absolute geomagnetic observation has been conducted at Syowa Station. We can obtain geomagnetic secular variation at the observation point by continuation of such geomagnetic observation. Secular variation has some information of the variation in Earth's interior. And geomagnetic observation stations are sparse in Antarctic region. Therefore, the maintenance of precise geomagnetic observation at Syowa Station is essential to research on physics of Earth's interior and geoelectro-magnetism.

The 51st Japanese Antarctic Research Expedition (JARE-51) installed a steel container array in East Ongul Island (Figure 1). The geomagnetic observation point at Syowa station and the container array are from 480 to 600 m apart. In addition, construction of an antenna array near the container yard is scheduled by the JARE-52. These antennae are used by MST (Mesosphere-Stratosphere-Troposphere) /IS (Incoherent Scatter) radar project. The distance between the geomagnetic observation point and the antenna array is approximately 450 m.

These facilities (especially iron material) around the observation point can disturb the geomagnetic field. We estimate the amount of artificial magnetic disturbance caused by these facilities at the observation point. As a result, we find that the amount of magnetic disturbance can be a few nT at the point. We carried out geomagnetic survey from December, 2009 to January, 2010 by proton magnetmeter in East Ongul Island, before the container array was installed (Figure 2). If the same survey is conducted after the antenna array is installed and then we compare the result with our one , it can be possible to evaluate the amount of disturbance at the observation point.

Figure 1. Location map of the geomagnetic observation station (solid asterisk), container yard (solid rectangle) and area of antenna array (solid circle).

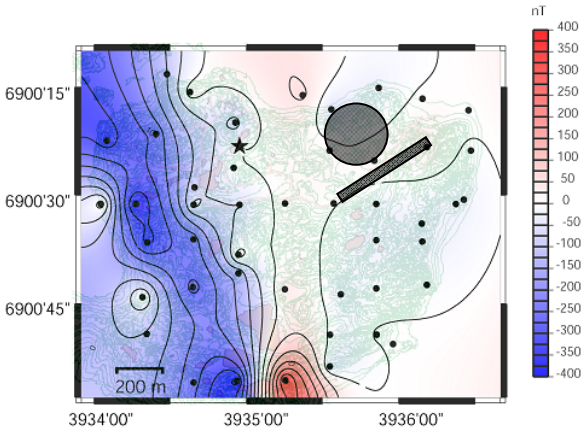

Figure 2. Contour map of magnetic anomaly around the magnetic observation point (solid asterisk). Dots denote the observation points of proton magnetmeter.