
Oral | Symbol S (Solid Earth Sciences) | S-TT Technology & Techniques

[S-TT58_30PM2] Airborne surveys and monitoring of the Earth

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Wed. Apr 30, 2014 4:15 PM - 6:00 PM 313 (3F)

Airborne surveys are useful to better understand the whole and/or the detailed structures of the Earth and their variations. They can be implemented from a traditional manned and newly-developed unmanned aircraft to efficiently map very large or remote areas with difficult access. We invite studies on theory, instrumentation, processing, modeling or inversion and applications of airborne surveys.

5:45 PM - 6:00 PM

[STT58-P02_PG] Magnetic structure of the north part of Deception Island based on the aeromagnetic survey by a small unmanned airplane

3-min talk in an oral session

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Aerial magnetic survey was carried out in the part of the flight project of the autonomous unmanned aerial vehicles (UAV). The project was incorporated with National Institute of Polar Research (Japan), Korea Polar Research Institute, Chile Antarctic Institute, Bulgarian Antarctic research and Spanish Antarctic team. Magnetic anomaly data were acquired over the northern part of Deception Island (within South Shetland islands) in Bransfield Strait. It was the first time to succeed to get the geophysical data by a long-flight unmanned aerial vehicle (UAV) in the area of Antarctica as already reported by our team. Due to the severe weather the flight was canceled over the southern half of the Deception Island and its surrounding sea area. The flight altitude is about 780m averaged. The main survey lines are directed east-west and the intervals of the lines are about 1000m. Longest length of the main survey line is about 18km. Probably due to the unstable attitude of the UAV body by strong wind, some east-west lines are shortcutted regardless of pre-programmed 18km length courses. The flight courses were overlapped on the survey lines along the latitude of 62 degree 53 minute and the longitude of -60 degree 28 minute. On these lines each direction of the flight is opposite. Some unnatural unduration was seen around overlapped lines. These kinds of unduration are occurred due to the difference of the observed magnetic field on each line. These differences have to be corrected, now we have the tolerable data for estimate the structure of the Deception Island. Outstanding high magnetic anomaly is recognized over the eastern peak of the island. Preparing topographic digital data of the Deception Island and bathymetric data on surrounding sea area, we estimated the distribution and the intensity of magnetization.