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-P01_PG]The 3D magnetic imaging using the L1 regularization and variable selection procedure.

3-min talk in an oral session

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Keywords:potential, geomagnetism, magnetic structure, L-1 norm regularization

Recently some new method to obtain 3D subsurface structure from the gravity or geomagnetic data were proposed. Some of them have a goal to obtain a stable and most simple model which reproduce the observed data in high accuracy. This is because, in generally, most of the traditional way of inversion for the potential data provides distorted or unfocused mages of real gravitational or magnetic structures. In this study, we propose a new method introducing a L-1 penalized least square procedure and tried to obtain a simple, and therefor high- resolution model.Lasso(Tibshirani,1995) is a linear regression and variable selection procedure based on the L1 penalized least square. L1 penalty has a effect of shrinkage the value of regression coefficients which has only weak contributions to be 0. So, the Lasso does both continuous shrinkage and automatic variable selection simultaneously. On the other hand, Lasso has some limitations and restrictions. One of them is, at most Lasso algorithm can select nonzero variables of same number of observed data. So, in the case of p