Geophysical Research Abstracts
Vol. 18, EGU2016-10812, 2016
EGU General Assembly 2016

Application of spatially weighted Technology for mapping intermediate and felsic igneous rocks in Fujian Province, China

Daojun Zhang
College of Economics and Management, Northwest A&F University, Yangling 712100, China (cugzdj@gmail.com)

Magmatic activity is of great significance to mineralization not only for heat and fluid it provides, but also for parts of material source it brings. Due to the cover of soil and vegetation and its spatial nonuniformity detected singals from the ground's surface may be weak and of spatial variability, and this brings serious challenges to mineral exploration in these areas. Two models based on spatially weighted technology, i.e. local singularity analysis (LSA) and spatially weighted logistic regression (SWLR) are applied in this study to deal with this challenge. Coverage cannot block the migration of geochemical elements, it is possible that the geochemical features of soil above concealed rocks can be different from surrounding environment, although this kind of differences are weak; coverage may also weaken the surface expression of geophysical fields. LSA is sensitive to weak changes in density or energy, which makes it effective to map the distribution of concealed igneous rock based on geochemical and geophysical properties. Data integration can produce better classification results than any single data analysis, but spatial variability of spatial variables caused by non-stationary coverage can greatly affect the results since sometimes it is hard to establish a global model. In this paper, SWLR is used to integrate all spatial layers extracted from both geochemical and geophysical data, and the iron polymetallic metallogenic belt in sours-west of Fujian Province is used as s study case. It is found that LSA technique effectively extracts different sources of geologic anomalies; and the spatial distribution of intermediate and felsic igneous rocks delineated by SWLR shows higher accuracy compared with the result obtained via global model.