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Development of analysis strategy for continuous total geomagnetic field data around Mt. Fuji

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Geospatial Information Authority of Japan (GSI) has conducted continuous total geomagnetic field observation at Fuji Yoshida observation station (FUJ), which is located the northeast mountainside of Mt. Fuji, and Fuji-City observation station (FJI), which is located at the southern bottom of Mt. Fuji, since 2000. These stations were established in order to enhance observation infrastructure to monitor low-frequency earthquakes underneath Mt. Fuji which had rapidly increased since October 2000. Additional continuous observation in the northwest mountainside of Mt. Fuji had also been started by utilizing electrical power and communication line of Remote GNSS Monitoring System (REGMOS) at Fuji Oniwa. Furthermore, Earthquake Research Institute, the University of Tokyo has conducted continuous total geomagnetic field observation at Fuji Yoshida (FJ1) and continuous geomagnetic observation at Yatsugatake (YAT). These data are also available and useful to monitor and understand geomagnetic variation around the Mt. Fuji.

Although GSI has been monitoring total geomagnetic field difference between the station at the bottom, FJI, and the stations at the mountainside, FUJ and REGMOS, it is almost impossible to identify variation truly caused by volcanic activities because total geomagnetic field around volcanoes can be fluctuated by both volcanic activities and locally unique geomagnetic variation as well as earth's main magnetic field and external magnetic field variation. Therefore, GSI tries to extract volcano-induced total geomagnetic field variation from the observation data around Mt. Fuji by principal component analysis, and develop monitoring strategy by principal component analysis of total geomagnetic fields around Mt. Fuji.

Keywords: Total geomagnetic filed, Mt.Fuji, principal component analysis