Japan Geoscience Union Meeting 2011
(May 22-27 2011 at Makuhari, Chiba, Japan)

SSS030-P09 Room:Convention Hall Time:May 24 10:30-13:00

Development of a Remote GPS Monitoring System (REGMOS-Hybrid) using Next Generation Mobile Satellite Phones

Yoshifumi Hiraoka[1*], Masanori Yokokawa[1], Moriyuki Nemoto[1], Sigeyuki Murayama[2], Minenori Takeyama[2]

[1]GSI of Japan, [2]Techno Vanguard Co., Ltd.

In 1998, we developed a remote GPS monitoring system (REGMOS) utilizing a mobile satellite phone service of a communication common carrier in Japan. REGMOS is a system which is supplied power from a photovoltaic power generator to acquire GPS data, and transfers the data using a mobile satellite phone service. The greatest feature of the REGMOS functions is that the communications control unit (TCU) monitors the power supply, GPS and mobile satellite phone terminal, and resets each device when trouble occurs in the GPS, mobile satellite phone terminal and the TCU.

We have installed this system on active volcanoes where there is no infrastructure, and in areas where the infrastructure has been shut down due to earthquakes, and have been acquiring GPS data. However, since the transmission speed of this system is 4.8 kbps, the communication time was taking too long to transfer data, which often caused trouble where telephones were interrupted during transfer. In recent years, there has been an increase in the demand to acquire image data or data by other sensors, in addition to the GPS data using REGMOS as a platform. For that reason, improvements in the speed of communication have become a large issue, so that a stable transfer of the increased data can be performed.

Under such circumstances, from February 2009, high-speed data transmission by Inmarsat became available around the world except for the polar zones. Therefore, we introduced data communication by a Broadband Global Area Network (BGAN) which is a communication service of Inmarsat, and developed a new remote observation control system (REGMOS-Hybrid) which can acquire and transfer data, such as images, ground temperatures, inclines and etc. including GPS. In September 2010, a new system was installed on Mt. Tarumae and has been monitoring volcanic activity. In this lecture, we would like to introduce the structure of the REGMOS-Hybrid system, and report on the data of the GPS, images and etc. which have been acquired on Mt. Tarumae till now.

Keywords: GPS, Remote Monitoring System, Mobile Satellite Phones, Volcanism