

Aerogeophysical survey over the Aeolian Islands, Italy

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Under an international cooperation, we have conducted various geophysical surveys to better understand the dynamics of volcanic activities of the Aeolian Islands, which are located between the southern tip of the Italian Peninsula and Sicily Island.

Supper et al. (2001) conducted an aerogeophysical survey such as magnetics, VLF and gamma ray in 1999, which were supplemented by detailed ground geophysical measurements such as geoelectric and magnetic surveys to investigate the physical structure of Vulcano and Lipari Islands. They compiled a high-resolution aeromagnetic map and conducted a temporal magnetic modeling, suggesting subsurface intrusions beneath the older volcanic outcrops on the west coast of Vulcano. They also compared the data with the older regional data by AGIP (Barberi, 1994) and showed a difference during the 15 years period.

We have had an additional aerogeophysical survey, mainly magnetics this time, in early November 2002 in spite of an eruption of Mt. Etna on Sicily. The survey was flown with a real-time differential GPS over the same line of the 1999 survey for the Vulcano-Lipari area and also extended the survey northeastward up to Stromboli Island, which is continuing periodical eruptions. The comparison between the magnetic anomalies of 1999 and 2002 surveys can be conducted on the common surface, which the anomalies are reduced onto by a mathematical calculation.

The geophysical signature on the subsurface structure of the Aeolian Islands and the results of a magnetic comparison by our method will be discussed.