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Monitoring Italian volcanoes by NOAA–AVHRR satellite data

C. Spinetti, M.F. Buongiorno, S. Amici, M. Silvestri, V. Lombardo, M. Musacchio, F. Doumaz, and C. Corradini
Istituto Nazionale di Geofisica e Vulcanologia, Earthquake National Center, Rome, Italy (spinetti@ingv.it)

The INGV Remote Sensing unit is equipped with a NOAA-AVHRR receiving station that provides 4 to 10 images per day of the central Mediterranean area in the visible to thermal infrared bands. These data were acquired and processed in real time using automatic and semi-automatic procedures which outputs information collated in daily and weekly observation reports and outputs overview images in the DPC dedicated web page. Satellite information included the presence of hot spots as well as their temporal evolution in terms of temperature. An automatic procedure that calculate lava flow effusion rate has been developed. The procedure automatically sent alert via e-mail when an hot spot is present in the AVHRR data. Volcanic ash information AVHRR-derived has been also included in a separate system. These information concerned the presence of volcanic ash in air, an assessment of the area affected, as well as the plume dispersal direction, the ash plume altitude and the concentration of ash in air.
The eruptions occurred both at Etna and Stromboli volcanoes in Sicily (Italy) has been surveyed by satellite. The different eruptions were characterized both by lava flow emissions and eruption of ash plumes with different impact to the surrounding villages and cities, causing problems to local communications and air traffic. Information provided by satellite sensors are communicate in observation reports integrating ground-based surveillance operated by INGV Catania Volcanology Observatory in agreement with the Italian Department of Civil Protection (DPC) responsible for volcanic risk and airports closure during the explosive phases.