Geophysical Research Abstracts
Vol. 19, EGU2017-6456, 2017
EGU General Assembly 2017
© Author(s) 2017. CC Attribution 3.0 License.

Satellite monitoring of Mt Etna thermal activity: recent results from RSTvolc and MIROVA systems

Francesco Marchese (1), Diego Coppola (2), Teodosio Lacava (1), Marco Laiolo (3), Nicola Pergola (1), and Valerio Tramutoli (4)

(1) Consiglio Nazionale delle Ricerche - Istituto di Metodologie per l'Analisi Ambientale (Italy), (2) Università di Torino - Dipartimento di Scienze della Terra (Italy), (3) Università di Firenze - Dipartimento di Scienze della Terra (Italy), (4) Università della Basilicata - Scuola di Ingegneria (Italy)

In May 2016, an intense eruptive phase took place at the Mt. Etna (Italy) summit craters emitting lava. After two episodes of strombolian activity which were recorded at the Northeast Crater (NEC) between May 22-23 and at the Voragine (VOR) between May 24-25, the volcano did not show signs of activity until mid-July when weak ash emissions occurred from the New Southeast Crater (NSEC) continuing in a discontinuous way until early August. On 7 August 2016, a high-temperature degassing activity occurred from a small vent ($\sim$ 20 m large) which opened in the E portion of VOR producing weak glows visible at night. In this study, we investigate this minor volcanic activity from space exploiting observations performed by two different satellite-based monitoring systems. The first one was developed jointly by the Institute of Methodologies for Environmental analyses (IMAA) and the University of Basilicata (UNIBAS) and implements the RSTvolc multi-temporal algorithm. The latter runs on infrared Advanced Very High Resolution Radiometer (AVHRR) and Moderate Resolution Imaging Spectroradiometer (MODIS) data directly acquired at IMAA automatically generating hot spots products a few minutes after the sensing time, enabling the near-real monitoring of Italian volcanoes. The second one, named MIROVA (Middle InfraRed Observation of Volcanic Activity) was developed in the framework of a collaborative project between the Universities of Turin and Florence (Italy). MIROVA performs an operational monitoring of several active volcanoes from space using data distributed by the LANCE-MODIS data system providing information about thermal volcanic activity within 1-4 hours from the satellite overpass. In this study, we compare outputs of these monitoring systems (even in terms of temporal fluctuations of volcanic radiative power) to investigate differences/similarities in the identification of subtle thermal anomalies at Mt. Etna, evaluating if a joint usage of their hot spot products may guarantee advantages in the identification of new phases of thermal unrest.