



Seminario

Volcanic clouds dEtection and monitoring for Studying the erUption impact on climate and aVlatiOn (VESUVIO)

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Aula Arduino

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Abstract:

The objective of this project is to detect and monitor volcanic eruptive clouds with high spatial and temporal resolution from the first stage of their development until the dissipation, for determining their structure and their impact on the climate variability. The idea behind this project is to take advantage of the capabilities of several instruments merging the best information they can provide. All the goals of this project will be reached by using the Global Navigation Satellite System (GNSS) Radio Occultation (RO) measurements and estimations, in combination with other satellite and ground based measurements. Three main objectives can be highlighted:

- Volcanic Cloud top height detection
- Volcanic Cloud characterization in terms of water vapor content, possible overshooting and cloud geometrical thickness
- Impact of volcanic eruptions on the atmospheric thermo-dynamical structure

The volcanic explosive eruptions are known to emit large amounts of aerosols and gases into the troposphere, and occasionally into the stratosphere having severe implications for the atmosphere, life on Earth, human society and economy. Many challenges given by volcanic explosive eruptions are still discussed and several issues are far from being solved. Several studies advocate the use of new techniques alongside the established ones to improve the ash cloud detection and monitoring, weather independent, with urgent need to gather information on the vertical structure, highlighting the difficulty to monitor such kind of events. VESUVIO will contribute to answer all these uncertainties providing the highest accuracy in the Volcanic Cloud top altitude and structure, evaluating the connection of Volcanic Cloud to the climate variability. The results will be of fundamental impact for the aviation safety and the early warning systems.

Proponente: Commissione seminari