



NOVAC – Network for Observation of Volcanic and Atmospheric Change, an early warning network for volcanic gas emission

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The NOVAC project, funded by European Union, was started in October 2005 with the aim to establish a global network of stations for the quantitative measurement of volcanic gas emissions. The network is based on a novel type of instrument, the Scanning Dual-beam mini-DOAS. Primarily the instruments will be used to provide new parameters in the toolbox of observatories for gas emission estimates, geophysical research and hazard assessment. In addition, data are exploited for other scientific purposes, e.g. global estimates of volcanic gas emissions, regional to global statistical analysis, and studies of atmospheric chemistry. In particular large scale validation of satellite measurements of volcanic gas emissions will be possible, bringing space-borne observation of volcanoes a significant step forward.

The Scanning Dual-beam Mini-DOAS instrument is capable of real-time automatic, unattended measurement of the total emission fluxes of SO₂ and BrO from a volcano with better than 5 minutes time resolution during daylight. The high time-resolution of the data enables correlations with other geophysical data, e.g. seismicity, thus significantly extending the information available for real-time hazard assessment and research. By comparing high time resolution gas emission data with emissions from neighboring volcanoes on different geographical scales, or with other geophysical events (earthquakes, tidal waves) mechanisms of volcanic forcing may be revealed.

The network today encompasses 56 instruments installed on 23 volcanoes, including some of the most active and strongest degassing volcanoes in the world.

In addition a mobile version of the instrument has been developed intended for rapid deployment at a volcano in relation to a volcanic crisis.

The project and its present status will be presented and its potential contribution to IMEWS will be discussed.