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RTView 1.0: a new software for High Rate GNSS data analysis and visualization in Real Time

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Volcano ground deformations needs hardware and software tools of high complexity related to the processing of raw GNSS data, filtering of outliers and spikes and clear visualization of displacements occurring in real time. In this project we developed a web application for high rate real time signals visualization from permanent GNSS remote stations managed by INGV OE (Istituto Nazionale di Geofisica e Vulcanologia, Osservatorio Etneo). Currently the new software tool is able to import GNSS data processed by some of the most important high rate real time software like GeoRTD® (owned by Geodetics), GNSS Spider® (Owned by Leica Geosystems) and RTKlib. The tool is based on the Grafana open source platform and InfluxDB open source database. Various dashboards have been configured to display time series of the North-East-Up coordinates to monitor single stations, to compare signals coming from different data sources and to display the displacement vectors on the map. We also applied a simple alghoritm for the detection of abnormal variations due to impending volcanic activity.This web interface is applied to different active Italian volcanoes as Etna (Sicily), Stromboli (Aeolian Islands) and Phlegrean Fields (Naples). We tested the performance of this software using as a case study the 24th December 2018 dike intrusion on the Etna volcano.