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Tracking effusive eruptions in near real-time: 2014 Fogo (Cape Verde) eruption

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The Fogo volcano (Cape Verde), after almost 20 years of inactivity, entered in a new effusive phase on November 23, 2014. The eruption occurred on the Fogo's Pico cone inside the Cha Caldera where the lava flow caused the evacuation of the Bangaeira and Portela inhabitants. To track the thermal evolution of this eruption, we extended the near-real time processing of the MIROVA (Middle InfraRed Observation of Volcanic Activity) algorithm to Fogo island. MIROVA is a hot-spot detection system based on the analysis of the Moderate Resolution Imaging Spectroradiometer (MODIS) data that provide thermal maps (1 km resolution) and radiant flux estimates, in near real time (1-4 hours from satellite overpass). Thermal output retrieved by MIROVA can be converted into time-average lava discharge rates allowing the identification of ongoing effusive trends. During the first 45 days of activity the eruption shows a waxing-waning trend typical of pressurized closed systems. Preliminary results indicate that MIROVA is particularly efficient to provide near real-time data that are critical for better assessing volcanic risk, and to help the decision-makers during volcanic crisis. Data requested by the UNDAC (United Nations Disaster Assessment and Coordination) team operating in Cape Verde, through the Emergency Response Coordination Center (ERCC) of the European Mechanism of Civil Protection, were provided in near real-time via web to the National Institute of Meteorology and Geophysics and to National Civil Protection. Once compared to seismological data, information provided by MIROVA have been successfully used during the volcanic crisis.