



Monitoring the Explosive Activity of Turrialba Volcano, Costa Rica, using Doppler Radar and Webcam Observations

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Eruptions at Turrialba volcano, whose activity has increased significantly since 2014, tend to emit significant amounts of ash that is transported by prevailing winds towards San Jose, Costa Rica's capital, affecting the living conditions of people in this area as well as air traffic at Costa Rica's international airport. Since Costa Rica currently does not operate any weather radar systems that could be used to detect volcanic ash, we installed a low power modified Micro Rain Radar system MRR Pro at a distance of 1.8 km from the Crater of Turrialba volcano. The Doppler Radar system operates at 24.23 GHz (@50 mW) allowing the detection of volcanic ash of at least 1 mm in size. The system continuously monitors the same spot slightly above the volcanic vent taking measurements at 1Hz. Data are transmitted via a LTE modem directly to OVSICORI-UNA, where the data are analyzed in real time using specifically developed software. During the first 6 month of operation quite a number of small and medium eruptions have been observed. Some of the eruptions were simultaneously monitored by web cams but during several eruptions the top of the volcano was in clouds making the Doppler Radar the only means of detecting ash emissions. The poster will discuss the possibilities as well as limitations of this low cost system and we will present data from larger eruptions that were verified by WebCam observations. We will also show some statistics of all potential events that occurred since the installation of the instrument in July 2017.