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Gas emissions from Nyiragongo volcano D. R. of Congo, measured by UV mini-DOAS spectroscopy

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Nyiragongo is an active volcano located in the Virunga mountains in the north east of Democratic Republic of Congo. Following its eruption in 2002 a strong degassing from the volcano has been observed and monitored using satellite data. In March 2004 two mini-DOAS instruments was brought to Goma, to strengthen the gas monitoring capacity of GVO.

The mini-DOAS instruments use UV absorption spectroscopy based on scattered Sunlight to derive total columns of SO2 in the plume from the volcano. One system was a mobile system by which traverses of the plume from car, helicopter or by foot could be conducted, and combined with meteorological data the emission rates could be determined. The second system was a scanning mini-DOAS system. In this system the telescope is attached to a mechanical scanning device consisting of a mirror attached to a computer-controlled stepper-motor, providing a means to scan the field-of-view of the instrument over 180^o. In a typical measurement the instrument is located under the plume, and scans are made, from horizon to horizon, in a plane perpendicular to the wind-direction. Thus automatic, time resolved emission data can be obtained from a fixed location. The system was installed at a seismic station, Rusayo, located about 10 km from the volcano. The system is powered by Solar panels and data are transmitted by radio-link to the observatory where data are presented in real time.

This paper presents results obtained during the first year of operation. Despite severe problems due to hazy conditions, lack of meteorological data and political unrest,

these measurements represents so far the best available estimates of the gas emission from this important volcano.