

Eruptive activity at Galeras Volcano from June, 2004 up to February, 2008

GOMEZ M., Diego Mauricio ⁽²⁾, TORRES C., Roberto A. ⁽²⁾, SILVA P., Betty ⁽²⁾, PONCE V., Patricia ⁽²⁾, NARVAEZ M., Lourdes ⁽²⁾, ORTEGA E., Adriana ⁽²⁾, CALVACHE V., Marta Lucía ⁽¹⁾, ORTIZ G. Natalie ⁽³⁾,

⁽¹⁾ INGEOMINAS, Geohazard Subdirection - Bogotá

⁽²⁾ INGEOMINAS, Volcanological Observatory of Pasto

⁽³⁾ Bristol University, Department of Earth Sciences

Oral Presentation by Natalie Ortiz G. (natalie.ortiz@bristol.ac.uk)

mobile 44 07835843368

Sesion: Case Studies of Natural Disasters

Galeras, located SW of Colombia, is considered one of the most active volcanoes in this country. The most recent period of activity was detected at the end of June, 2004 which remains in evolution. Around this volcano lives a total population of around 500.000 inhabitants, from which, near 8.000 are established in the most high risk zone, were Galeras had produced pyroclastic flows among other phenomena. In this time interval, it has been presented different episodes like conduit cleaning revealed by a period of ash emissions from July to August, with a deposited volume of around $4,8 \times 10^5 \text{ m}^3$ and three Vulcanian eruptions on August 11, 12 and November 21, 2004 which produced shock waves, gas and ash emissions, eruptive columns (9 to 11 Km height) and ballistic rocks (founding blocks of 40 to 60 cm in diameter up to 2 Km from the vent). This process has been associated with changes in seismicity, deformation, temperature variations, etc. Other important process was from August 19 to 22, 2005 with the record of a swarm of around 40 Volcano-Tectonic events, epicentrally located between 3 and 4 Km NW from the active cone and depths between 6 and 8 Km; 9 of them had local magnitudes from 3 to 4.7 (felt in the region) in addition, deformation process were observed. A swarm of around 700 Long Period events was recorded in 5 hours on February 12, 2007 and another significant activity of Volcano-Tectonic events on February 26, 2007 with around 50 events, one of them with 4.8 in local magnitude. This activity was related with the extrusion and emplacement of an andesitic lava dome observed in the crater on January 13, 2006, with a total volume of $3 \times 10^6 \text{ m}^3$. Afterwords an explosive eruptive episode took place on July 12, 2006 affecting a minor part of the dome. Since November, 2006 up to March, 2007 the volcano registered Tornillos which showed a special patterns in its characteristics similar to those observed before some of the Galeras explosive eruptions. After a period of activity associated

with degassing process, it gradually decrease at the first days of January 2008, and with the record of six Tornillo events from January 16 to 17, 2008, the Galeras produced a new explosive eruption at 08:06 p.m.(local time) on January 17. This eruption was accompanied by shock waves, ballistic blocks and ash emission. The total deposited volume was estimated on $8,7 \times 10^6$ m³. The current activity is similar to that observed at the end of the 2007, characterized by gas emissions correlated with the record of tremor episodes.