

3. CNR—Institute of Geosciences and Georesources, Florence/Italy
  4. INGV, Palermo, Italy, Palermo/Italy
  5. Laboratory for Earthquake Chemistry, University of Tokyo, Tokyo/Japan
- gladys@iter.es

Tenerife is a volcanic island of the Canaries and host at its center Teide, a 3720 m.a.s.l. stratovolcano. Weak fumarolic activity currently occurs at the volcano summit. In April 2004, an increase of seismic activity within Tenerife Island and its surroundings was recorded by IGN (Spain's National Geographic Institute). Regional earthquakes changed from moderate-to-low seismic events, whose epicenters were located in an offshore area between Gran Canaria and Tenerife islands, to a mixture of volcano-tectonic events occurring in the northwestern sector of Tenerife island and close to Teide volcano. The chemical and isotopic compositions of the Teide fumarolic discharges have been periodically collected since July 2004. Gas samples collected in 1994, 1997 and 2003, and diffuse CO<sub>2</sub> efflux measurements from the soil carried out at the Teide summit between 1999 and 2009 are also considered in this study. Fumarolic gases, which in the 90's were characterized by chemical features typical of hydrothermal fluids, have shown significant compositional changes, mainly consisting of the appearance, in April 2004, of HF, HCl and SO<sub>2</sub>, whose concentrations followed a decreasing trend up to date. Hydrogen and CO concentrations have displayed temporal patterns similar to those of the highly acidic gas species, whereas CH<sub>4</sub> has shown an opposite behavior. The chemical evolution of the Teide fumarolic fluids, coupled with the observed increase of CO<sub>2</sub> soil fluxes, suggests that the seismic-volcanic crisis recorded in spring 2004 have triggered an increase of convective heat flux from magmatic system of this volcano. After this event, the pre-crisis conditions, i.e. typical of a stable hydrothermal system, seem to have, at least partially, restored.

### 1.3-O-29

#### The Recent Seismicity of Campi Flegrei Caldera (Italy)

D'AURIA, Luca<sup>1</sup>; RICCIOLINO, Patrizia<sup>1</sup>; BORRIELLO, Giuseppe<sup>1</sup>; ESPOSITO, Antonietta<sup>1</sup>; GIUDICEPIETRO, Flora<sup>1</sup>; LO BASCIO, Domenico<sup>1</sup>; MARTINI, Marcello<sup>1</sup>; DE CESARE, Walter<sup>1</sup>; ORAZI, Massimo<sup>1</sup>; PELUSO, Rosario<sup>1</sup>; SCARPATO, Giovanni<sup>1</sup>

1. Istituto Nazionale di Geofisica e Vulcanologia (INGV), Sezione di Napoli, "Osservatorio Vesuviano" /Italy  
luca.dauria@ov.ingv.it

Campi Flegrei caldera is located in a very densely populated area. Half of the city of Naples lies within the caldera rims with about 350000 people living on this active volcano. For this reason the surveillance of this volcano requires advanced monitoring techniques in order to forecast even minor eruptions. The area was interested in the period 1982-84 by an unrest crisis with more than 16000 earthquakes and about 2m of ground uplift. Most of the quakes were felt by people and two with M=4 caused damages to the buildings. After this episode the seismicity rapidly waned and the ground started a downlift phase. In 1989, 1994, 2000 and 2006 this trend has been interrupted by minor episodes of ground uplift accompanied by small magnitude seismic swarms.

In all these occasions swarms of Long-Period events were also recorded. We present an analysis of the seismicity linked to these episodes comparing it with other geophysical and geochemical data. The results shows that these minor episodes are related to rapid fluid flow from a geothermal reservoir, whose pressurization is the cause of the ground uplift. The Long-Period events shows a remarkable similarity over a range of about 20 years (1989-2008) suggesting a stability in their source. Furthermore statistical analysis on the time-space-magnitude distribution of the volcano-tectonic events shows that their hypocenters are located in the area where most of the geothermal activity occurs suggesting a strong connection between fluid pressurization and rock fracturing processes.

### 1.3-O-30

#### Cape Verde Volcano Observatory (OVCV): A New Challenge for Reducing Volcanic Risk at Cape Verde

GONÇALVES, António A.<sup>1</sup>; QUERIDO, António<sup>2</sup>; FERNANDES, Alberto C. B.<sup>3</sup>

1. Laboratorio de Engenharia Civil (LEC), Praia/Cape Verde
2. Universidade de Cabo Verde (UNICV), Praia/Cape Verde
3. Serviço Nacional de Protecção Civil (SNPC), Praia/Cape Verde  
aagoncalves2003@yahoo.com.br

The Cape Verde Volcano Observatory (OVCV) is becoming a reality and a new challenge of our society for improving its effort on volcanic risk mitigation at Cape Verde. The Laboratorio de Engenharia Civil (LEC) is the actual organization in-charge of volcano monitoring in Cape Verde, but the recommended actions for reducing volcanic risk not only imply volcanic surveillance work but also mapping volcanic hazards and volcanic emergency plans. Therefore this new joint effort from the Laboratorio de Engenharia Civil (LEC), the Universidade de Cabo Verde (UNICV) and the Serviço Nacional de Protecção Civil (SNPC) to establish the OVCV is a great and marvellous national challenge for reducing volcanic risk in Cape Verde. This OVCV has already received the congratulations from several geoscientists as well as becoming a member of the World Organization of Volcano Observatories (WOVO). This joint effort is open to other national institutions which are willing to be part of this national challenge for reducing volcanic risk in Cape Verde. The OVCV's volcanic surveillance program includes a permanent instrumental network (VIGIL project) for monitoring seismicity which was donated by the Portuguese AID Agency due to increased awareness of volcanic hazard in Fogo Island following the 1995 eruption. Discrete volcano monitoring observations has been recently established thanks to the Spanish AID Agency (AECID) to provide a multidisciplinary approach for the volcanic surveillance in Cape Verde. These regular observations imply geophysical, geochemical, and geodetic measurements. The SNPC is in-charge for the communication of the volcanic alerts in Cape Verde after being provided by the OVCV. The volcanic alert system consists of a three colour alert levels: Green, Yellow and Red. Recently a volcanic alert system panel for the population donated by the AECID has been installed at Cha das Caldeiras. Several projects and proposals will enhance the OVCV future work.