Geophysical Research Abstracts,
Vol. 10, EGU2008-A-05741, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-05741
EGU General Assembly 2008

Evacuation management GIS tools volcanic crisis: application to the north side of Tenerife

J. M. Marrero (1), J. A. Rodríguez (1), R. Ortiz (2)

(1) Dep. de Edafología y Geolgía de la Universidad de la Laguna., (2) Dep. de Volcanología del Museo Nacional de Ciencias Nauturales. CSIC.

The volcanic risk increases when return periods are higher than the historical memory, factor that has become worst if we consider the increase of population in volcanic areas. The island of Tenerife, situated in the Canary archipelago, is a clear example; the last historical eruption in the island took place in 1909; In 1990, 137.302 persons were living on the island instead of the 865.070 at present. The lack of historical memory and changes in the way of living -basically because of an increasingly urbanized life- makes population not to pay attention to the natural environment in which they live. In addition to that, politicians do not think that a certain magnitude volcanic event could happen during their term of office. As a consequence, volcanic risk educational programs do not exist, there are neither emergency plans nor technical professionals qualified to handle a crisis of these characteristics and volcanic explosive dynamics located in the Teide-Pico Viejo system (placed in the central zone of the island) is totally ignored.

In 2004, reactivation of the volcanic central system of the island of Tenerife, has demanded the adjustment of numerous tools orientated to the management of an emergency: Ţ Susceptibility Ţ Event Tree Ţ Sceneries Ţ Vulnerability Ţ Evacuations These elements, developed throughout last years by CSIC volcanology groups (Barcelona and Madrid) in collaboration with other institutions, are integrated in a Geographical Information System in which they could interact with the available information of the population and infrastructures exposed in the island of Tenerife.

If an eruption in the central volcanic system of the island happens, the valley of Icod

de los Vinos is one of the most exposed areas. It's situated in the north flank of Tenerife with 30.000 inhabitants. It has a very complex road network, with irregular ways and roads, steep slopes and just with one divided highway situated in coastal zone. Road network is very vulnerable to the fall ashes and to the collapse of walls in poor condition and old buildings. Road network vulnerability is included within the infrastructures database.

In methodology, the initial phases of process is important but also the preparation of the cartography and the databases associated. The model allows to evaluate the clearance time necessary for an evacuation, to analyze the bottlenecks of road network, etc. The aim is to allow the planning of a possible evacuation, from successive tests by means of the computer.

In this application there have developed tools that allow the preparation of the spatial information, necessary for the model, reducing the computer requirements and allowing its application in any other volcanic area.