GUEST EDITORIAL

A Lesson From The 1985 Ruíz Volcanic Disaster

During the night of November 13, 1985, mudflows generated by a modest-size magmatic eruption swept down several of the steep, narrow valleys flanking the glacier-capped, 5,389m high Volcán Nevado del Ruíz, Colombia, killing over 25,000 people. The Ruíz catastrophe was the world's worst volcanic disaster since the 1902 eruption of Mont Pelée, Martinique.

The Ruíz eruption was not exactly a surprise. Felt earthquakes occurred in late November 1984; phreatic activity apparently began the next month and then recurred intermittently in 1985. The largest of the phreatic eruptions, on September 11, dusted the city of Manizales, the capital of Caldas Province, with a thin film of fine ash. In early October 1985, with guidance from several international specialists (representing Costa Rica, Ecuador, Switzerland, United States, and Office of the United Nations Disaster Relief Coordinator), Colombian scientists completed and presented to local officials a preliminary volcanic risk map for Ruíz. By mid-October, a monitoring network of five smoke-drum seismometers and four tilt-measurement sites was in operation. However, before arrangements to set-up a telemetered seismometer to permit real-time seismic monitoring could be completed, the November 13th tragedy struck.

Although the response to the Ruíz crisis was ad hoc and could have begun sooner, the scientific team performed remarkably well and provided timely warnings of the anticipated hazards from eruption-induced mudflows. But despite their efforts, time ran out before effective evacuation plans could be implemented by the emergency-response authorities.

The Ruíz disaster once again dramatizes the urgent need to establish an effective program that emphasizes **pre-disaster preparedness** in coping with volcanic and other natural hazards. Current programs of mutual assistance and rapid response during a volcanic crisis are unsatisfactory because they are limited, poorly focused and mostly after the fact. The needed program must be **international** in scope, because about two-thirds of the world's active and potentially dangerous volcanoes are located in developing countries that have insufficient scientific and economic resources to carry out the necessary studies. Ideally, essential components of such a program would include the evaluation of volcanic hazards, the acquisition of rudimentary baseline monitoring data, and the preparation and testing of contingency plans **well before** a crisis develops at any volcano.

In recent years, volcanologists have paid increasing attention to the global problem of too many dangerous volcanoes, too few trained personnel, and non-existent or inadequate baseline data. In 1981, the World Organization of Volcano Observatories (WOVO) was founded in an attempt to improve communication between existing institutions and to promote improved international mechanisms to cope with crises (see *Episodes*, 1981/4). International workshops were convened in 1983 and 1984 to address the related problems of volcano monitoring, eruption forecasting, training, and international scientific coordination and cooperation. There was a unanimous recommendation that a long-term, stably-funded international program be initiated to improve mutual assistance and rapid response **before and during** volcanic crises (Souther et al., *Episodes*, v.7, no. 4, 1984).

J.V. Smith has suggested recently that an international program of "protective measures" against volcanic hazards could be "... funded by perhaps 1% of expenditures on nuclear weapons systems" (*Geology*, October 1985), but far less support could go a long way. For example, the annual budget of the proposed, but as yet unfunded, Unesco program designed by the 1983 workshops is a tiny fraction of the daily cost to operate the helicopters used in the disaster-relief efforts at Ruíz!

The Ruíz story is still unfolding, but it is already abundantly clear that the tragedy might have been minimized had certain pre-disaster measures been taken. It is also equally clear that the interpretation of the monitoring data currently being obtained by scientists from the newly installed networks at Ruíz is severely hampered by the lack of pre-1985 baseline data. We must redouble our efforts to cope better with future volcanic crises before they turn into disasters. An obvious first step is the establishment of a long-term international program keyed to pre-disaster preparedness, from a scientific as well as an emergency-response standpoint. Tragedies such as the 1985 Ruíz disaster need not, and must not, recur.

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