

## SPIDER 2 - REPORT

### **Making Maps to reduce vulnerability: does it really work ?**

#### **Pre-amble**

Hazard maps are a valuable part of the communication process when dealing with natural hazards. They contain a broad range of information and are used in a variety of contexts from summarising important scientific information to be passed from one specialist to another to attempting to relay complex hazard messages to the lay public in the simplest form possible.

This workshop was an attempt to explore the state of the art in the construction of hazard maps in a volcanological context (Richie Robertson, SRU, Trinidad and Rosella Nave, INGV, Italy) and to compare that with current analysis from other fields (flooding, James Porter, Kings College, London; multi-hazard assessment, El Parker and Richard Teeuw). The workshop then moved on to introduce new techniques in the field of map-related communication (participatory GIS, Muki Haklay, UCL, London ; 3D visualisation techniques, Andrew Lovett, UEA and Nick Hall's presentation on the work of Plan International in including children in the mapping process). The number of speakers was kept deliberately low to allow plenty of time for discussion and the themes were meant to provoke debate about the role of maps in the hazard communication process and how volcanologists might learn from other specialists in the field and other techniques.

#### **Discussion**

Much of the discussion focussed around the use of the participatory process in compiling and producing hazard maps. Volcanological hazard maps are constructed via a combination of the identification and quantification of the phenomena associated with previous eruptions (both from the volcano under study and other similar systems) and stochastic and numerical modelling of the likely outcome of a variety of eruptive scenarios (usually developed from the former). Richie Robertson demonstrated this very well in his discussion of recent work by the SRU in producing an up-to-date resource for the entire Lesser Antilles (Volcanic Hazard Atlas). Typically, more than one hazard may operate at any one geographic location and the intensity of each individual hazard can vary through time. Usually, the final hazard map is then a combination of all the hazards and their relative importance, this can be arrived at stochastically (uncommon in volcanology for multi-hazards) or using expert judgement. For volcanologists topographic maps are an extremely useful shorthand for displaying hazard-related information; the location and intensity of many volcanic phenomena have a strong topographic control.

Despite their importance little work has been done to evaluate how end-users (ranging from other scientists to citizens in an affected region) understand and use these maps and how they might be improved. Rosella Nave talked about a study designed to do this, largely focussed on the civil authorities in two locations in Italy. The ultimate outcome of this study is to produce maps designed to meet the needs of the local authorities and convey the information they need in an understandable form. However a lot of the

discussion went even further than this evaluative approach but questioned the use of maps in their current form and focussed strongly on the method of their construction.

Questions discussed included:

- (1) Is hazard-related information only the responsibility of 'physical scientists' or is there a role for other end-users in the construction of hazard maps?
- (2) How does one actually map or represent information relating to vulnerability (What are indicators of vulnerability?)
- (3) In a related vein should we be mapping and representing individual hazards or always considering the whole gamut of hazards likely to affect local citizens?
- (4) What form of 'map' works best for differing end users and how do we determine this?

Underpinning all of these questions is the belief that if the maps are more effective in conveying risk messages then they are more likely to be used in planning (both reactively during an emergency and in identifying and reducing risk before a crisis occurs). Any or one of these questions could be addressed by future research programs and it worth noting here that several new SPIDER-related PhD researchers have started research projects that will go some way to answering these questions.