

## IAVCEI Subcommittee for Crisis Protocols

## Reply

We thank Geist and Garcia for their comment on our committee report, “Professional Conduct of Scientists during Volcanic Crises (v. 60, p. 323–334). The matters addressed in our report are obviously sensitive and we agree that discussion is healthy. Early comments came to the committee in response to our invitation on Volcano Listserv in late 1996 and in a lively public forum at the 1997 IAVCEI meeting in Puerto Vallarta. Further comments are welcome. Because Geist and Garcia’s comment and our reply refer frequently to what was said – or not said – in our committee report, we encourage readers to re-read that report and then read the comment and reply.

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**General concerns**

Geist and Garcia voice general concerns that our suggestions:

1. understate the importance of scientific research during eruptions;
2. would become an unduly restrictive code, inimical to freedoms that most scientists prize;
3. are perhaps unnecessary, because the basic need for civility needs no reminder; and
4. do not document specific examples.

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*1. Understating value of science*

We share Geist and Garcia’s concern that special efforts be made to capture scientific lessons of eruptions. Clearly, eruptions are unique laboratories for understanding volcanic behavior, for intrinsic interest and for application to hazard mitigation.

Unlike Geist and Garcia, though, we do not distinguish a “hazards team” with “short-term goals,” from research scientists with long-term goals. Usually, scientists on a crisis team must assess hazards AND do research. Our concept of a volcanic crisis, which we should have spelled out more explicitly, is a time of significantly increased volcanic activity that requires around-the-clock response for both scientific purposes and for public safety. The greater the urgency for accurate and precise public forecasts, the greater the crisis. Our concept of a crisis team is the group of all scientists who are prepared to work together toward the dual goals of science and public safety. That team will usually have as its core those who are responsible for monitoring the volcano in question, and it will be led by someone with formal responsibility for issuing forecasts and advising public officials. Other team members should be drawn from all that are willing and able to help. Examples include teams during recent crises at Long Valley, Pinatubo, Unzen, Popocatepetl, and Montserrat. Some teams have strong government roots; others are led by university scientists. Individuals on the team may have roles that emphasize basic science, monitoring, or hazard mitigation, but those who are responsible for forecasting eruptions are keenly aware that ample monitoring data and a good and growing understanding of volcanic processes are the foundations of good forecasts. It is precisely because of this need for ample data and basic science that we urge all scientists to work together on one team, and that we urge team leaders to welcome, indeed, solicit contributions from “outside” scientists.

## 2. *An unduly restrictive code*

Despite Geist and Garcia's concerns about a Code and de facto constitution, our section on Approach (p. 324) says quite clearly "Because IAVCEI is neither policeman nor judge, compliance with these suggestions is by individual or observatory choice. We trust that most readers who are alerted to potential problems will try to avert those problems. The subcommittee recognizes ... different individuals and cultures will choose different paths. Our suggestions are not the only possible solutions; they are simply solutions that have been found helpful during previous crises."

## 3. *Need for suggested protocols is not obvious*

Our committee has substantial experience in volcanic crises and we have seen problems repeatedly, first-hand. We also judge that many of these problems can be addressed easily if they are anticipated, hence our suggestions.

We should also ask the rhetorical question, "Are codes of conduct ever necessary?" In our list of references cited, readers can find quite a number of codes of conduct. Our scientific world functions best when we trust each other, and are trusted by those around us. It seems to us, as well as to many scientific academies and professional societies of the world, that written standards or goals help to build and maintain that trust.

Most scientists do behave responsibly during volcanic crises and are sensitive to the problems addressed in our committee report. To them, we say simply, thank you. They do not need further advice. Regrettably, however, the tally of problems indicates that not all are as sensitive. In the interest of this broader trust, both within and of the volcanological community, we have chosen to highlight problems to increase that sensitivity. It is a tribute to our profession that most of the problems of professional interaction that arise during crises are problems of inadvertent insensitivity, not of ill will, and that most can be addressed by the committee's gentle reminder.

## 4. *Problems are not documented by specific examples*

We respectfully disagree with the suggestion that we should have cited specific cases ("evidence"). This may be the only instance in which a committee of scientists will ever decline to give "evidence," but we felt and still feel that the important points would be lost in endless arguments and the document would be truly divisive were we to cite specific examples. Please accept our assurances that each of the cited problems has arisen at least twice and in most cases many times. Were some of our concerns based on personality differences? We can say clearly that (a) many of the con-

flicts were indeed based on institutional and personality conflicts, but that (b) only a few of those conflicts involved committee members directly, and no such problems were included in our report unless they also occurred elsewhere with different protagonists.

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## Specific concerns

Geist and Garcia also list four numbered, specific concerns, namely that the IAVCEI suggestions:

1. will impede gathering of data on eruptions and discourage rather than encourage collaboration between scientists, thereby diminishing the overall scientific result;
2. would require some prior project approval before "outside" scientists would be allowed to work at an eruption, and that the element of serendipity would therefore be lost;
3. will discourage or suppress full discussion of different points of view, and contributions by "outside" scientists to public education;
4. will exclude scientists from potentially hazardous zones.

### 1. *Impeding data collection and collaboration*

We have already stated our general agreement on the importance of data collection, under General Concerns. The concern that our suggestions would discourage collaboration is a misunderstanding of our recommendations. We ENCOURAGE scientists to volunteer their help to the team, and we ENCOURAGE the teams to accept that help. In other words, we encourage scientists who might start outside the team to join the team. What we strongly DISCOURAGE is work that publicly competes with, and distracts, the crisis team. We believe that teamwork almost always produces a greater scientific result than individual efforts, provided that the team is open to new ideas. Again and again, we have seen good scientists who, feeling spurned, have split off to work in angry independence, to everyone's loss.

Geist and Garcia suggest that "To be accepted and appreciated during volcanic crises, 'outside' volcanologists need to take the opportunity during non-crisis times to introduce public officials and the news media to the contributions that science can make to both hazards reduction and to learning more about volcanoes." Contributions to public education are good at all times, but we respectfully submit that the best way for a scientist to be appreciated during a volcanic crisis is simply to offer his or her scientific and/or pedagogic expertise to the team.

## 2. *Prior approval vs. serendipity*

On the matter of serendipity, approvals, and invitations, we made no suggestion that projects be approved in the usual sense of proposal submission and approval, either before or during a crisis, and we agree that such a requirement would be unrealistic and stifling. We reiterate that it is simple courtesy and better for collaboration when a would-be visitor seeks an invitation from the crisis team before traveling to the volcano. This is especially critical if the would-be visitor is from another country. Geist and Garcia argue that “the benefits to volcanic hazards assessment and science will outweigh the burdens that the involvement of outsiders will cause.” Our committee members have seen this to be true only if the team is open and if outsiders are willing to join the team; if they are not, the distraction works to the detriment of both hazard mitigation and science.

Our suggestion that foreign science-funding organizations require evidence of an invitation is, we recognize, especially sensitive. Responses to crises must be swift. Some in our subcommittee would retain the word “require,” while others believe it too strong. All agree, however, that foreign science-funding organizations should be sensitive to the checklist issues for visitors, especially those of fairness and good vs. harm.

## 3. *Suppression of various points of view, and of contributions to public education*

Geist and Garcia acknowledge that “different opinions may indeed confuse ... public officials who may have a limited scientific background....” That is our main reason for urging consensus statements. However, few if any groups of scientists are unanimous in their interpretations, and public officials deserve to know this and the main points of disagreement. Our recommendation that differences be presented in a common forum, ideally by a neutral spokesperson, reflects our experience that public disagreements between scientists quickly degenerate, with help from the news media, to a competition of personalities rather than ideas. We do not think public disagreements during crises aid either the science or the credibility of scien-

tists. Against this general point, we all acknowledge the dangers in censorship of ideas.

Geist and Garcia point out that there can be valuable “outside” contributions to the news media and public education during crises. In some settings this is clearly true, but it is not universally true. One essential factor is scientific literacy of the public, to understand and appreciate different presentations. Another is a news media that places its responsibility for science education above concerns for “scoops.” A third requirement is that scientists respect and value each other’s public contributions. If any of these factors is missing, public statements by visiting (especially foreign) scientists may cause more trouble than good.

## 4. *Prohibitions against access to the volcano*

It is an inescapable fact that land managers (e.g., national park services and civil defense authorities) will sometimes restrict access to minimize the numbers of people at risk. They do so to limit their own liability and to justify evacuations to angry evacuees. Often, they ask scientists to remain outside hazardous areas except when entry is needed for public safety. “Official” scientists are caught between land managers and other scientists who seek access for academic interest. Our IAVCEI committee does not suggest exactly how this dilemma of access should be resolved, but we urge that observatories and other likely crisis team leaders, in consultation with land managers, anticipate and address it in their team plan, before rather than during a crisis. One solution that eventually proved helpful at Mount St. Helens was screening of academic applicants by an academic committee.

In summary, we accept and support Geist and Garcia’s argument that volcano crisis teams should place a high value on capturing the scientific lessons of eruptions. The matter on which we may differ is how to balance independence and teamwork. We believe that most matters of conflict can be resolved by a combination of individuals’ willingness to work as part of a crisis team and the team’s willingness to welcome new contributions.