

Building global capacity for the observation of volcanic and atmospheric change through Situated Learning

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Nearly one-eighth of the world's population, most of it located in developing countries, live under the direct threat of volcanic eruptions. In the context of risk management with limited resources, volcano observatories should prioritize monitoring activities that could be sustained and that would provide more information about the state of the volcano. The magnitude and composition of volcanic gas emissions provide key information about the geochemical and geophysical conditions of volcanoes, but permanent monitoring of volcanic gas emissions with modern techniques require knowledge that tends to be lacking in volcano observatories.

Over the past 20 years, the global Network for the Observation of Volcanic and Atmospheric Change (NOVAC) has enabled volcano observatories around the world to adopt automated techniques for gas monitoring at nearly 60 active volcanoes. Data analysis from these instruments requires knowledge of spectroscopy, radiative transfer, and meteorology. Within the International Geosciences Program (IGCP) sponsored by UNESCO and the International Union of Geological Sciences (IGCP), we have supported capacity building activities for staff of volcanic observatories in the Global South. These activities mainly take the form of field workshops and online training. The objective is to contribute to the training of personnel in the operation, analysis and interpretation of volcanic gas monitoring data produced by NOVAC remote sensing instruments.

One particular form of training is what we call “side-by-side” data analysis, in which, after an introduction, the instructor and students process the same data independently and then compare their results. This practice can be seen as an example of situated learning (Lave and Wenger 1991); and is characterized by being participatory and legitimate, in the sense that students work on solving problems that are relevant to themselves. In this contribution we present some results of this pedagogical practice that is highly relevant in the context of capacity development, but that could also be extended to formal education in various fields of Earth Sciences.

References

Lave, J., & Wenger, E., 1991: Situated learning: Legitimate peripheral participation.