Geophysical Research Abstracts
Vol. 14, EGU2012-8477, 2012
EGU General Assembly 2012

Human reponses to historical eruptions of Etna (Sicily) from 1600 to present and their implications for present-day disaster planning

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Mount Etna in northeastern Sicily (Italy) rises to over 3000 m, covers an area of ca.1750 km2 and is the most active volcano in Europe. Observations of Etna by literate observers stretch back to the classical era and one of the earliest references to an eruption of Etna was by Pindar in his Pythian Odes, to the event of ca. 474-479 B.C. The history of its activity has been reconstructed by scholars up to the present day and records of eruptions are reasonably complete from the early fifteenth century, reliable from 1669, and document the threats and destruction to human settlements and livelihoods. Effusive and explosive activity has occurred continually throughout the historical period and eruptions of Mount Etna have presented numerous eruption styles, from persistent central crater activity, to periodic flank eruptions. From 1600 to 1669 the activity of Etna was characterised by a high volumetric output of lava with a mean eruption rate of 1.19 m3s-1, this was followed by a pause from flank eruptions and the re-establishment of significant activity from the middle of the eighteenth century. After 1750 the output of lava by flank eruptions was lower than in the previous century, with the mean eruption rate falling to 0.18 m3s-1. This paper summarises: the characteristics of the eruptions that occurred between the period of 1600 to present; the particularities of the societal responses over time and the role of the authorities; and, the important lessons this history holds for the management of present-day civil defence planning in the region. People responded to the eruptions at three levels: as members of a family and extended family; as members of a community and, as citizens of the State. The State, however, was a minor player in responding to these eruptions until the early nineteenth century as the State then became more involved in each successive eruption as the responses moved to a more industrial nature rather than pre-industrial. Today emergencies are closely managed by central government, through the Ministry of Civil Protection (Dipartimento della Protezione Civile – founded in 1992), who can call on the expertise of local authorities (comuni) and scientific bodies, especially the National Institute of Geophysics and Vulcanology in Catania (Istituto Nazionale di Geofisica e Vulcanologica INGV – sezione Catania). The nature of the society living on the flanks of Mount Etna has changed over the past nine decades, especially since the late 1960s, and the increasing exposure to volcanic and volcano-related hazards in the Etna Region is strengthening the need for improved communication amongst social scientists, civil defence authorities, the media and the local communities. Educating local people about how to react when a disaster strikes is viewed as an increasingly important element in Civil Defence planning, with examples of how people coped successfully in the past being used to inform people today. Effective communication both in terms of, raising awareness and ensuring that non-scientists have properly understood the associated hazard implications, and implementing emergency responses, is critical in facilitating more effective hazard prevention plans.