C. Troise, G. De Natale and C.R.J. Kilburn (eds): Mechanisms of activity and unrest at large calderas

Geological Society, London, 2006. Special Publications 269. Hardcover, 198 pages, ISBN 10 1-86239-211-0

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Accepted: 17 May 2011 / Published online: 4 June 2011
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The environmental balance of the planet is threatened by many natural hazards, but volcanic activity of large calderas represents one of the most catastrophic types of natural events known from Earth's history, second only to large bolide impacts. Such dangerous events have not, however, been witnessed by human beings during historical time. This is one of the reasons that in many cases old caldera edifices are presently densely populated, even though caldera–volcanic activity is still ongoing during sustained periods of unrest represented by earthquakes, tumescence and/or high rates of carbon dioxide emissions inside or outside the caldera area.

The management of this type of hazard implies mitigation of vulnerability and risk by societal planning, continuous terrestrial monitoring and study of phenomena related to such complex large calderas. Together these may provide a real-time system for efficient emergency management. Even in the case of moderate eruptions, the risk is tremendous.

Several key features of caldera activity are not yet fully understood: the conditions required to generate and to discharge large volumes of magma; how magmatic feeding systems operate before and after a caldera is formed; the types and behaviour of precursors, both before and after initial eruptive activity that may warn of impending major

eruptions; the optimum procedures for designing hazard maps and mitigation strategies, knowing that post-collapse eruptions may occur across a wide area. These urgent questions are fully addressed in this volume published in the book series *The Geological Society of London Special Publications*, in which are offered a combination of case studies and theoretical modelling from some of the most dangerous calderas on Earth: Long Valley Caldera, Campi Flegrei Caldera, and calderas from Central Andes and Canary Islands.

Does this book succeed in providing a deep and satisfactory explanation of the mechanism and activity at restless calderas? The book offers a profound insight into the concepts, and as I turned the final page, I was convinced that the essential question—What is the significance of the large caldera-forming mechanism?—had been very well addressed, even though not all answers are given. As the editors recognized, this kind of work is never ending and requires a lot of future energy from the specialists and authorities to unravel one of the most challenging problems of modern volcanology, as well to ensure efficient emergency planning.

The book is a captivating read for volcanologists, other natural science specialists and the large audience who want to learn more about calderas. It will help also students by undoubtedly improving their perception of the concept of caldera type volcanic activities and associated hazards. In summary, I highly recommend this book to anyone who wants to learn, using outstanding and well-selected examples from the geological records, how to envision the ways in which such potentially catastrophic caldera eruptions will occur in the future.

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