

BOGUSŁAW BAGIŃSKI, RAY MACDONALD

*Instytut Geochemii, Mineralogii i Petrologii
Uniwersytet Warszawski
Żwirki i Wigury 93, 02-089 Warszawa
E-mail: B.Baginski1@uw.edu.pl,
r.macdonald@lancaster.ac.uk*

INTRODUCTION

About 9% of the world's population live within 100 km of a volcano which has been historically active; they are potentially at risk of damage to health and property, or even loss of life. The substantial disruption to air traffic, and ensuing financial losses of more than \$1 billion, resulting from the eruption of Eyjafjallökull volcano (Iceland) in 2010 was a forceful reminder that volcanic eruptions can also have global consequences. Even quite modest-scale eruptions, such as that of Mt Pinatubo (Philippines) in 1991, can affect global temperatures. At the extreme end of the size spectrum, eruptions from the so-called supervolcanoes, such as Toba (Sumatra) and Yellowstone (USA) have potentially devastating effects on our social infrastructure and may have longer-term climatic effects that result from loading the stratosphere with sulphur-rich gases.

It has become increasingly appreciated that we need to be able to predict the eruptive behaviour of volcanoes. Since the eruption of Mt St Helens (USA) in May 1980, volcanology has evolved from an essentially observational discipline to a multi-disciplinary science, integrating the core subjects (physics, chemistry, biology and geology) with such diverse specialists as medical practitioners, health experts, engineers and modellers. The modern volcanologist is as likely to wield a field spectrometer as a geological hammer. There have been major strides forward in our understanding of volcano dynamics although many aspects remain frustratingly unclear. For example, Somma-Vesu-

vius in Italy is arguably the most intensively studied volcano in the world but there is still no consensus as to the nature of its sub-surface structure ("plumbing system").

This issue gathers together a series of papers which explore aspects of modern volcanology, from why volcanoes are found where they are, through their landforms and eruptive products, to case examples of important volcanic fields. We also examine the interactions between eruptions and human and plant life and describe the ways in which volcanoes are monitored for eruptive activity. Such an issue cannot cover all aspects of the discipline but aims to raise awareness of some of the critical topics among fellow scientists. For Polish readers, we describe the rich and varied, and almost certainly underappreciated, record of history of volcanic activity in Poland.

B. Bagiński

Ray Macdonald