

Life on Montserrat has been dominated by an active volcano for over ten years. **Gill Norton** asks whether it is time to start exploiting the volcano's tourist potential for the benefit of the population, or are the risks still too great?

# Living with an active volcano

The eruption of Soufrière Hills Volcano on the Caribbean island of Montserrat has entered its eleventh year. Since activity started in July 1995, the people of Montserrat have learned to live with a variety of challenges associated with the changing moods of an active volcano. While lava is erupting at the surface, the main hazards are pyroclastic flows — superheated rock avalanches that can travel down the flanks of the volcano at over 70 miles per hour. Soufrière Hills Volcano has also had several phases of explosive activity, which have resulted in light falls of volcanic ash across the eastern Caribbean and the ejection of small fragments of pumice rock over Montserrat.

The most recent major volcanic event on Montserrat occurred in July 2003, when a huge dome collapsed and resulted in heavy ashfall on Montserrat. Up to 15 centimetres of ash was deposited on the island, and wider distribution of ash disrupted air traffic across the Caribbean region. The pyroclastic flows from this event affected a wide area to the north-east of the volcano, but the area had been evacuated since 1997, so there was no loss of life.

Since the middle of 2003, the volcano has been relatively quiet. However, the scientific team at the Montserrat Volcano Observatory (MVO), managed by the BGS, continues to provide regular advice to the governments of Montserrat and the UK, and to the public on Montserrat. Although the low level of activity removes many of the pressures associated with direct hazard mitigation, a new set of issues arises, which highlight some of the difficulties of living with a volcano in repose.

Some of the areas around the volcano have been designated an exclusion zone for over seven years. Understandably,

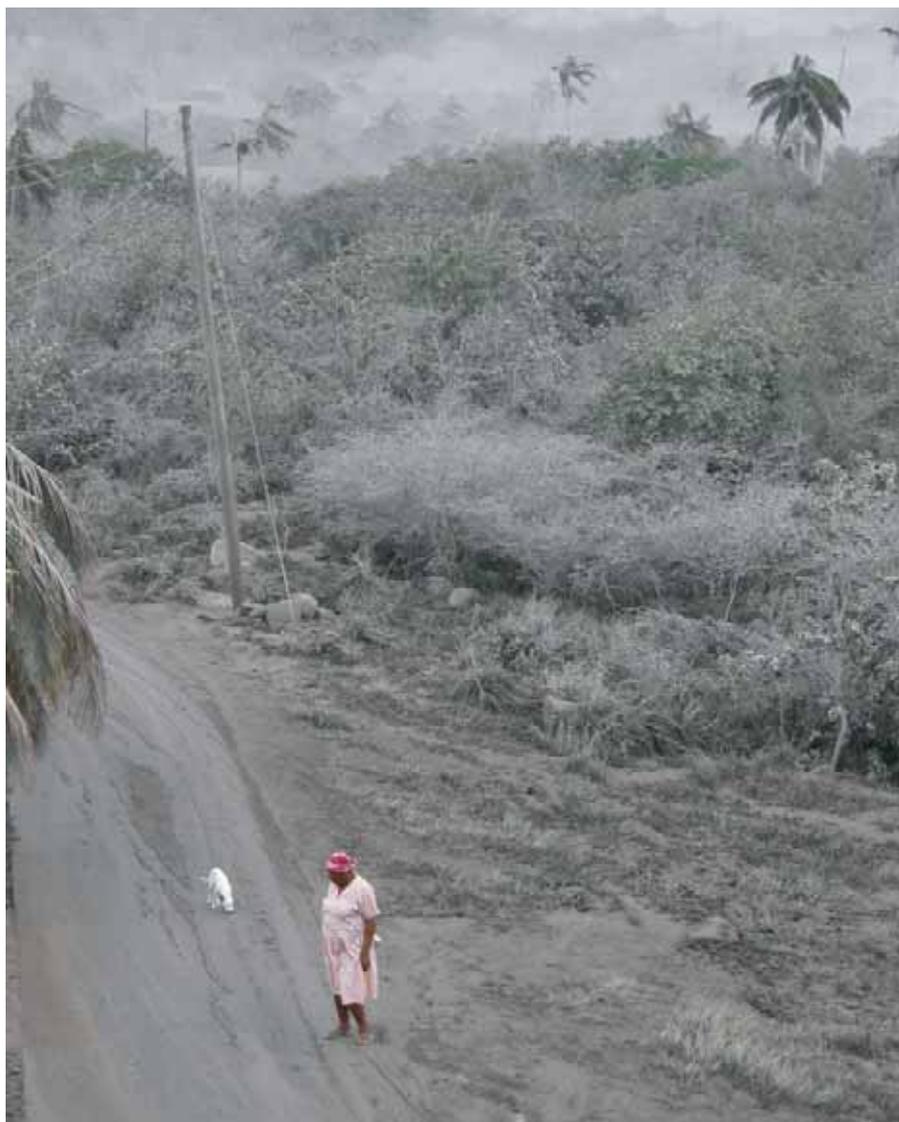
people that have been unable to visit their homes are interested in the state of their property, and many would like to return to those areas to live. The volcanic activity has destroyed several villages and large areas of

farmland, but it has also resulted in the deposition of a new resource of volcanic materials, such as sand and gravel, that may be used in construction. There have been several expressions of interest in exploiting these resources. This new industry could provide employment and a much-needed boost to the beleaguered economy of the island.

One of the major sources of income to the country is tourism, and the authorities would like to boost visitor numbers by using the volcano as a major tourist attraction. Areas devastated by the



*Small ash cloud from an explosion and pyroclastic flow on 3 March 2004. This and similar events in 2005 occurred with little or no warning, demonstrating that the volcano is still hazardous.*



*Ashfall seven kilometres to the northwest of Soufrière Hills Volcano on 13 July 2003 after the largest historical dome collapse to date.*

volcano are being promoted as the new 'Pompeii', and visitors would like to see the effects of this devastation up close.

There is a need, however, to balance the economic benefits of allowing access to property and resources with the risk to individuals in potentially hazardous areas. The input from the MVO is crucial to reaching this balance.

One of the key influences on government policy on reusing areas within the volcanic exclusion zone is when the volcano will resume its eruption. It is undisputed that Soufrière Hills Volcano will have another eruption in the future, but will it occur in the next year, the next five years or the next five hundred? Scientific studies can

provide some indications of the likelihood of resumption of activity within certain timescales, but there will always be an inherent uncertainty in any forecasts.

If the volcano does erupt again, will it start with relatively benign, slow growth of a new lava dome, or will the onset be marked by a sudden explosive eruption? Studies of the past monitoring data collected by the MVO, coupled with analyses of other similar volcanoes worldwide, can provide probabilistic estimates of the likely eruption scenarios.

Meanwhile, secondary volcanic hazards still persist. Loose debris on the flanks of the volcano is readily washed down valleys during intense rainstorms leading

to dangerous flooding and mudflows. A build-up of pressure within the volcanic edifice may lead to explosive activity with little or no notice. Sulphur dioxide gas is still being emitted at levels of about 200–500 tonnes per day. In downwind areas close to the volcano, this could lead to the exacerbation of respiratory diseases. The MVO has to be vigilant so that the best possible advice on the risk from these hazards can be provided to the authorities.

One of the key roles of BGS scientists and colleagues at the MVO is to maintain a continuing awareness of the volcanic hazards amongst the population on Montserrat in various forms of public education, such as radio broadcasts, newspaper articles, school visits and television shows. One of the lessons learned during the eruption on Montserrat, and during other natural disasters worldwide, is that if a population is aware of the hazards they are better prepared for future events.

*" it is undisputed that Soufrière Hills Volcano will have another eruption in the future, but will it occur in the next year, the next five years or the next five hundred "*

Scientific research and collaboration between MVO and institutions worldwide continues and a major conference, 'Soufrière Hills Volcano — Ten Years On', was held on Montserrat in July 2005, and provided an opportunity to discuss the advances that have been made throughout the eruption.

Monitoring a volcano in repose is not as simple as it may seem; although the stresses associated with high levels of volcanic activity are reduced, there are many other issues which require daily attention from the MVO staff, and which will remain important for the foreseeable future.

*For further information contact:*

**Gill Norton, BGS Keyworth,**  
**Tel: +44(0)115 936 3480**  
**e-mail: gen@bgs.ac.uk**