

Ash shows past eruptions 'underestimated'

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Chaitén volcano, Chile, 2009 continuing a low level eruption.

(PhysOrg.com) -- A study into ash fallout from the biggest volcanic eruption in almost 20 years has shown that the impact of past eruptions is likely to have been significantly underestimated as so much of the evidence quickly disappears, Oxford University scientists report.

The study focuses on the Chaitén volcano in southern Chile that began to erupt explosively on 2 May 2008. For six days afterwards the volcano pumped huge volumes of ash high into the atmosphere before its activity began to decline to a low intensity eruption still going on today.

With emergency funding from the UK's Natural Environment Research Council, a team of scientists from the University of Oxford was quickly dispatched to map out the distribution of ash from the eruption and to study its impacts on the local environment, in collaboration with Argentinian scientists.

A first report of their findings is published in the *Journal of Geophysical Research*.

‘The area around a volcano immediately after an eruption is like a crime scene where the evidence can quickly be destroyed by the elements,’ said Professor David Pyle of Oxford University’s Department of Earth Sciences. ‘Ash deposited on land will rapidly be removed by rain or wind, while ash deposited out to sea is only accessible by collecting core samples of the sea-floor sediment. This makes it extremely difficult for volcanologists to accurately reconstruct a past eruption from the available evidence and say how much fine ash was deposited, and over what area, during an eruption.’

The team’s work on Chaitén has shown that the several millimetres thickness of ash deposited across Argentina have been lost from wide areas - of at least 50,000 square kilometers - in only nine months. A geologist attempting to map the region affected by ash fallout now would significantly underestimate the size of the area affected, and as a result would underestimate the size of the eruption and the amount of ash erupted.

‘By using satellite imagery to guide us, we were able to map the ash fallout across Argentina to a thickness of less than one tenth of a millimetre,’ said Sebastian Watt, a PhD student in Oxford’s Department of Earth Sciences, who led the team. ‘We collected samples from over 220 sites across an area of 100,000 square kilometres and with these field data and samples we were able to make the first scientific assessment of the size and impact of the eruption.’

The Chaitén eruption had immediate social and economic impacts across Patagonia (southern Chile and Argentina), with more than 5,000 people evacuated from settlements up to 75 km from the volcano, and extensive [ash](#) deposition leading to regional disruption of agriculture and aviation.

The volcano was not routinely monitored, and there was no recognised warning before the eruption started.

Sebastian Watt said: ‘Chaitén is still erupting right now, although it is currently in a less explosive phase. Our previous work has shown that eruptions from this [volcano](#) have the potential to be much larger in size making careful monitoring of the present [eruption](#) a priority.’

Provided by Oxford University ([news](#) : [web](#))

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