



Antarctic volcanoes: A remote but significant hazard

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Ash emitted during explosive volcanic eruptions can be dispersed over massive areas of the globe, posing a threat to both human health and infrastructures, such as the air traffic. Some of the last eruptions occurred during this decade (e.g. 14/04/2010 - Eyjafjallajökull, Iceland; 24/05/2011-Grímsvötn, Iceland; 05/06/2011-Puyehue-Cordón Caulle, Chile) have strongly affected the air traffic in different areas of the world, leading to economic losses of billions of euros. From the tens of volcanoes located in Antarctica, at least nine are known to be active and five of them have reported volcanic activity in historical times. However, until now, no attention has been paid to the possible social, economical and environmental consequences of an eruption that would occur on high southern latitudes, perhaps because it is considered that its impacts would be minor or local, and mainly restricted to the practically inhabited Antarctic continent. We show here, as a case study and using climate models, how volcanic ash emitted during a regular eruption of one of the most active volcanoes in Antarctica, Deception Island (South Shetland Islands), could reach the African continent as well as Australia and South America. The volcanic cloud could strongly affect the air traffic not only in the region and at high southern latitudes, but also the flights connecting Africa, South America and Oceania. Results obtained are crucial to understand the patterns of volcanic ash distribution at high southern latitudes with obvious implications for tephrostratigraphical and chronological studies that provide valuable isochrones with which to synchronize palaeoclimate records. This research was partially funded by the MINECO grants VOLCLIMA (CGL2015-72629-EXP) and POSVOLDEC (CTM2016-79617-P) (AEI/FEDER, UE), the Ramón y Cajal research program (RYC-2012-11024) and the NEMOH European project (REA grant 34 agreement n° 289976).