



Cities on Volcanoes 9
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'Understanding volcanoes and society: the key for risk mitigation'



Outcrops of 'post-erosional' volcanism on Juan Fernandez Archipelago as geosites

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The Juan Fernandez Archipelago (33°36'-33°47'S;78°47'-80°47'W) is emplaced on the Nazca plate, ~750km west of the Chilean coast. Robinson Crusoe and Alejandro Selkirk islands are protected lands as part of a National Park in Chile, and since 1977 they have been considered part of the World Network of Biosphere Reserves (UNESCO). This condition is based on the need to protect the islands fragile ecosystem, which has a high percentage of endemism. In addition, the Robinson Crusoe island (the only one with permanent population and tourism services), has been included in the network of Chilean trails called 'Heritage Routes'. However, there are virtually no established sites of geological interest included in the classical touristic routes, and geological information is scarce and rather inaccurate. In general, oceanic islands like Robinson Crusoe are characterized by large basaltic sequences typical of shield volcanism. Occasionally, some oceanic islands have a younger 'post-erosional' or 'rejuvenated' stage of volcanism, which overlies with unconformity shield sequences. But the usually low-volume 'post-erosional' rocks are scarce and difficult to observe. Despite the latter, at the Robinson Crusoe island visitors can see good exposures of both shield (including transitional pillow-lavas) and 'post-erosional' volcanism at a number of places where eroded sequences (dated in ca.3.8Ma) are covered by basanite lavas and pyroclastic deposits (ca.1Ma). In addition, sea cliffs formed in the shield edifice are remarkable sites for watching dense dike swarms, spinel lherzolite/dunite xenoliths and basanitic hypabyssal intrusives. The Holocene history is also outstanding with a record of very fast uplift represented by marine sedimentary sequences now ca. 70 m above sea level. Given these peculiar features of the Juan Fernández islands, we strongly suggest the inclusion of various geosites in the established tourist routes (including 'Heritage Routes'), supported by recently acquired geological information in the frame of FONDECYT Projects 1110966 and 1141303.



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