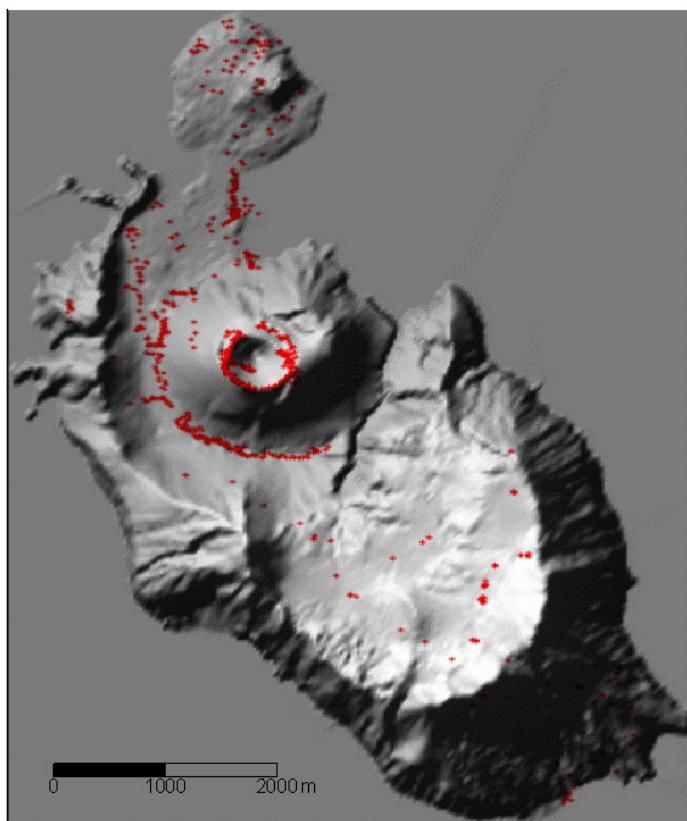


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Abstract title Preliminary estimate of CO₂ budget discharged from Vulcano island
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Abstract text

Total CO₂ output from fumaroles, soil gases, bubbling and water dissolved gases were estimated at Vulcano Island, Italy. The fumaroles output has been estimated from SO₂ plume flux, while soil flux emission has been carried out through 730 CO₂ fluxes measured on the island surface, performed by means of accumulation chamber method. Vulcano Island, located in the Aeolian Archipelago, is an active volcano that has been in state of solphataric activity, since the last eruption (1888-1890). At present, the main exhalative activity is in the northern part of the island, it is revealed by a wide fumaroles field, on the active edifice of "La Fossa" crater, (100°C <450°C); by low temperature fumaroles (T<100°C) and sea-bubbling gases in the Baia Levante area; moreover, strong soil degassing occurs in the Vulcano Porto area and around the volcanic edifice, where the active tectonic discontinuities drive CO₂ to the surface. Finally, numerous carbon-rich thermal wells (up to 80°C) in the Vulcano Porto Area, testify the presence of a geothermal system with equilibrium temperature around 200°C. The preliminary results indicate an overall output of 470 T/day of CO₂ from the island. The main contribution to the total output is from the summit area of the active cone (450 T/day), where 360 T/day and 90 T/day are from crater fumaroles and crater soil degassing, respectively. Peripheral areas release 8 T/day by soil degassing (Palizzi and Istmo areas mainly), a measure comparable to the contribution of water dissolved CO₂ (estimated as 6 T/day) and higher than sea-bubbling CO₂ (1 T/day measured in the Istmo area). The presented data (September 2007) refer to a period of moderate solphataric activity, when the highest temperature and gas/water ratio of fumaroles were 457°C and 0.17 respectively. These preliminary data allow the estimation of the background mass release and related thermal energy from the volcanic system. They represent the first complete data set, collected during moderate volcanic activity which can be compared to the new one acquired during subsequent (the next or future) evolution of the activity.



Location of the CO₂ soil flux measuring points

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