

## **The tropospheric/stratospheric temperature and the ionospheric electron density observed during volcanic eruptions**

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Using FORMOSAT-3/COSMIC (F3/C) data, this study examines the temperature profiles in the troposphere and stratosphere during the eruptions of the Chaitén volcano on 2 May 2008 and Puyehue-Cordón Caulle volcano on 4 June 2011. It is found that when the warm air (due to warm effect) is transported from low-latitudes to mid-latitudes, the air becomes warm below 10km altitudes but cold at higher altitudes during the Chaitén volcano eruption. By contrast, we observe the troposphere cooling and the stratosphere warming during the Puyehue eruption. Meanwhile, measurements of ground-based receivers of the Global Positioning System (GPS) near the two volcanoes are used to detect disturbances in the ionospheric total electron content (TEC) during eruptions.