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'Understanding volcanoes and society: the key for risk mitigation'



InSAR ground deformation monitoring for the Ecuadorian volcano Supersite

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The Ecuadorian volcanoes have been selected as a volcano Supersite as part of the Group on Earth Observation's (GEO) Geohazard Supersite and Natural Laboratory initiative (GSNL). Several national space agencies provide SAR data for routine monitoring of the volcanoes to assist in disaster mitigation. Here we present the infrastructure put in place for the Supersite and results obtained for the 2015 crises of Cotopaxi volcano. The crises started in April with increasing seismicity, degassing, and deformation. Cotopaxi has very good ground-based monitoring with broad band seismic instruments and 8 cGPS stations. The unrest led to a new eruptive phase in August 2015, which was the first eruption after nearly 73 years of quiescence. We present deformation data obtained using the COSMO-SkyMed satellite system of the Italian Space Agency and using TerraSAR-X of the German Aerospace Agency using the Small Baseline (SB) method. Preliminary findings show that seismic unrest and outward horizontal displacements were nearly synchronous. By combining the INSAR with the GPS we can get a better handle on depths and volumes of magma accumulation than with GPS data alone.