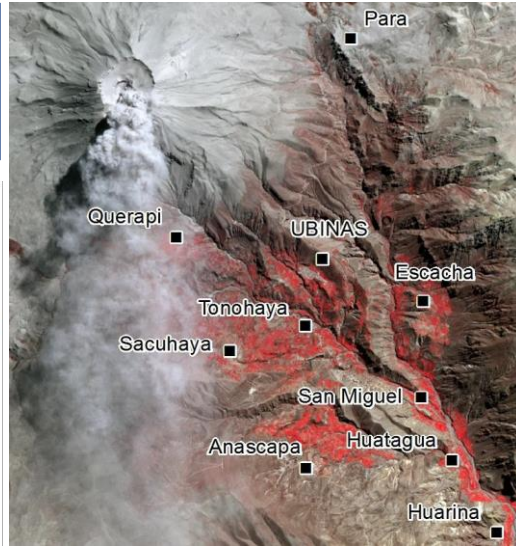


The July 2019 explosive activity of Ubinas Volcano, Peru

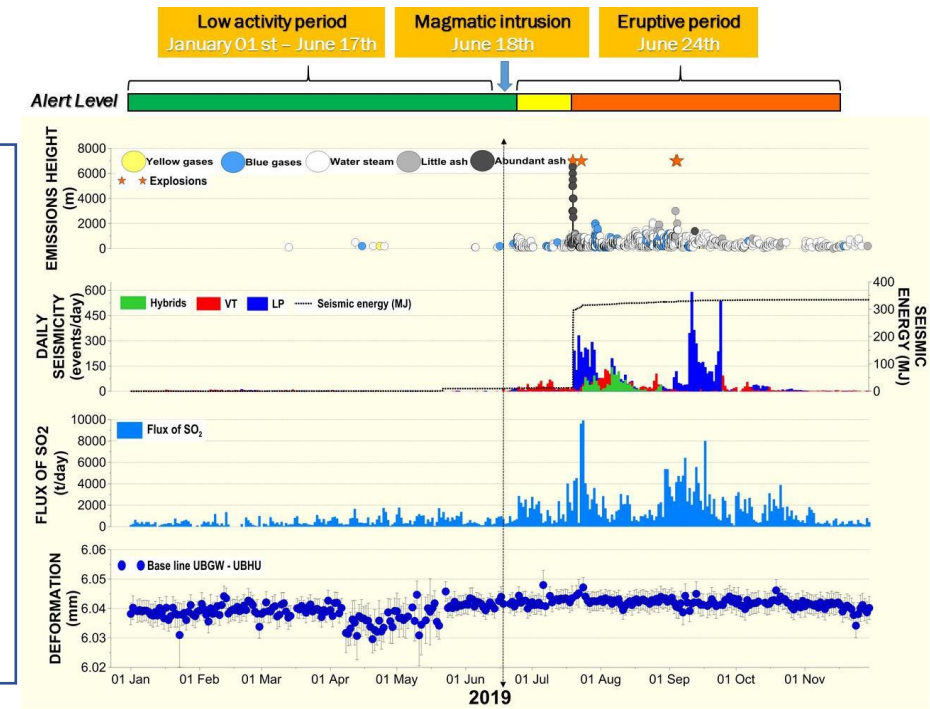
F.Apaza¹, C. Kern², M. Ortega¹, R. Miranda¹

(1) Instituto Geológico Minero y Metalúrgico, Arequipa, Peru; (2) United States Geological Survey, Vancouver, WA, USA

Ubinas is a stratovolcano located in the Central Volcanic Zone of the Andes. It is one of the most active volcanoes in Peru, with more than 26 eruptive episodes recorded in the last 500 years (VEI 1-3)



Its latest eruption began in early 2019, with the occurrence of some distal VT seismicity accompanied by low levels of LP seismicity and in sometimes high frequency seismic signals associated with rockfalls. Concurrently, SO₂ emissions increased from a few hundred to over 1,000 t/d between January and June while no significant ground deformation could be detected. Throughout the month of June, SO₂ emissions climbed further to over 4,000 t/d, proximal VT swarms began to occur beneath the volcanic edifice, and deformation measurements indicated a pressurization of the system. This ramp-up in activity culminated with an explosive eruption on 19 July 2019 (07:28:49 UTC)



The eruption released a cumulative energy of 336 MJ and vented an estimated 4.6x10⁶ m³ of volcanic ash, making this one of the most energetic eruptive events of the last decade. Filled with hot gas and ash, the eruptive column reached 6,500 meters above the volcanic vent, with blocks and ballistic projectiles that reached 3.5 km from the crater and fragments up to 2.5 cm in diameter reported in the Ubinas town, 6.5 km to the southeast

By the time the eruption ended, up to 4 kg/m² of tephra had fallen at this distance. Most of the plume was dispersed in east to southeast directions, crossing the regions of Moquegua, Puno. Ashfall was observed as far as Oruro, Bolivia, some 180 km from the volcano. Subsequent analyses of monitoring data and eruptive products allow classification of this event as a VEI 2 eruption caused by a rapid magmatic intrusion to shallow depths below the volcanic edifice

