

GMPV Seminar:

Monday 28 October 2024 at 4.30 pm, room U1-07 Marchetti

Crystals records: From chronometers before eruptions to climatic impacts

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Volcanic eruptions are among the most devastating events on Earth. Estimating the time between changes in magma storage conditions within a magma reservoir and the onset of an eruption is one of the major challenges in volcanology. Direct observation of the magma storage system under the volcanoes is impossible, but this timescale can be accessible through the study of crystals brought to the surface by past volcanic eruptions. Indeed, zonations in crystals can be created by various magmatic processes, allowing diffusion timescales to be estimated. These crystals also preserve records of volatile contents (CO_2 , H_2O , F, Cl and S) from the magma at depth, which can be studied through melt inclusions trapped inside them. These melt inclusions are droplets of melt captured during the crystals' growth. Volatile budgets, such as the CO_2 volatile budget, can be calculated based on these volatile contents to study the links between magmatic volatile emissions and the climate.

This presentation will focus on pre-eruptive timescales from Kamchatka volcanoes (Russia) and the estimation of the pre-eruptive CO_2 volatile budget of magmas from a past magmatic province in Iran, and its possible effects on the lower Cenozoic climate.



From the field in volcanic areas to the study of zoned crystals and melt inclusions to decipher pre-eruptive timescales and volatile budgets. First picture: Bezymianny volcano (Kamchatka, Russia) © Lea Ostorero, August 2019.

The seminars are open to students, PhD students, Postdocs, and all the interested colleagues.