

EGU21-10054

<https://doi.org/10.5194/egusphere-egu21-10054>

EGU General Assembly 2021

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## The transitions from mildly explosive to caldera-forming eruptions at Colli Albani volcano (Italy)

**Mónica Ágreda López**<sup>1</sup>, Luca Caricchi<sup>1</sup>, Corin Jorgenson<sup>1</sup>, Alessandro Musu<sup>1</sup>, and Guido Giordano<sup>2</sup>

<sup>1</sup>University of Geneva, rue des Maraîchers 13, Geneva CH-1205, Switzerland (monica.agreda@etu.unige.ch)

<sup>2</sup>Dipartimento di Scienze Geologiche, Università degli Studi di RomaTre, Largo S. Leonardo Murialdo, 1, 00146, Roma, Italy.

The Colli Albani volcano is an ultrapotassic caldera complex located 30 km to the SE of Rome and has displayed a wide range of eruptive behaviors, ranging from effusive activity to highly explosive and large volume eruptions (up to 63 km<sup>3</sup> dense rock equivalent per eruption) despite its mafic nature.

We combine physical volcanology, petrology, and geochemistry to focus on the mildly explosive to effusive products of two sections (Tuscolo and Artemisio) which are located on opposite sides of the main caldera and stratigraphically between the last large ignimbrite, Villa Senni. The target of this study is to identify the processes responsible for the transition from the smaller explosions to the larger caldera-forming ignimbrite eruptions, and eventually trace how the magmatic system rebuilds in the interim.

Whole rock analyses, mineral chemistry, and petrography of fall deposits from both field localities are compared with an existing dataset for the Villa Senni ignimbrites. We will use unsupervised and supervised machine learning approaches to identify similarities and differences between large caldera-forming eruptions and mild-explosive to effusive activity and identify the processes modulating the transition between these two behaviours.