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UC **SANTA BARBARA**
Department of Earth Science

Earth Science Colloquium

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How to build a Supereruption

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Supereruptions are gigantic volcanic eruptions (≥450 km^3 of magma) the likes of which we have never witnessed. Yet, this does not mean that we will never experience one, and such enormous eruptions have the potential to wreak havoc on life, infrastructure, travel, and the environment. In this talk, I will address several questions regardingsupereruptive systems: Where do these magmas reside in the crust? What shape do they take? How long do they persist before erupting? When, why, and over what timescales does the eruptive process occur? How are the giant volumes of crystal-poor high-silica rhyolite magma involved in supereruptions generated? Answering these questions is important both for practical reasons (e.g., hazards preparation and mitigation) and intellectual ones (e.g., understanding crustal processes).

To address these questions, I combine information from multiple scales and perspectives (field studies, geochemistry, textural relations of crystals in rocks and melt inclusions in crystals, geochronology, geobarometry, phase-equilibria modeling, and diffusion modeling). Results from this work suggest that we can make some broad generalizations about supereruptive systems, but these systems have notable variability as well.