

Departmental Colloquium

Earth
Atmospheric
Planetary
Sciences 

Imaging the Yellowstone Magmatic and Hydrothermal System Using Seismic Tomography

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The Yellowstone magmatic system is one of the largest active global volcanoes and has been commonly designated as a supervolcano. The interaction between the deep magmatic system and shallow hydrologic system also makes Yellowstone the most concentrated hydrothermal area on earth. The surface manifestation of the hydrothermal activities, including geysers, fumaroles, mud pots, and thermal springs has been attracting millions of visitors per year to visit Yellowstone National Park. The recent deployment of seismic networks such as the Yellowstone seismic network and EarthScope USArray has now allowed the magmatic plumbing system to be studied in detail. In this presentation, I will review recent seismic imaging studies on the magmatic system and discuss the interaction between the deep mantle plume and crustal magmatic reservoirs. To better understand the shallow hydrothermal system, in November 2015, leading by the seismology group at University of Utah, a temporary dense geophone array was deployed around the famous Old Faithful geyser located within the Upper Geyser Basin. The array was composed of 133 three-component geophones and recorded passive seismic data continuously for two weeks. Both periodic and episodic seismic tremors likely related to the nearby hydrothermal activities were observed. I will discuss how these tremor signals and the implementation of novel seismic imaging techniques can allow us to better understand the hydrothermal system.

Thursday, October 20, 2016

3:30 p.m.

Room 1252 HAMP

Refreshments at 3:00 pm
Room 2201/HAMP

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