Bay Area Geophysical Society Seminar Series

Jonathan Glen

March 18, 2020

4:30pm Rm 265 McCone Hall, UC Berkeley Campus

Application of Unmanned Aerial Systems (UAS) In Geophysical Studies of Geothermal Resources

Abstract : It is widely recognized that natural hydrothermal systems are commonly associated with complex fault zones such as stepovers, terminations, and intersections. Characterizing these favorable structural regions typically involves detailed geophysical studies, such as ground-based gravity and magnetic surveys, that are particularly useful for mapping buried, intra-basin structures. These surveys are, however, labor intensive and their spatial extent can be limited by the presence of water, dense vegetation, or private lands. This can result in data gaps in key areas, particularly around active geothermal springs, where detailed surveys are most critical.

Over the past several years, we have been developing more efficient ways of collecting high-resolution magnetic field data by adapting existing portable magnetometers to function as part of a wide range of mobile ground geophysical systems (including truck-, boat-, ATV-, and snowmachine-mounted platforms). Our most recent activities have focused on developing unmanned aerial systems (UAS) for collecting uniform, high-resolution data over areas inaccessible to ground surveys. UAS offer great advantages over conventional manned airborne surveys, which are costly and relatively inflexible to modifications once the survey has commenced. They can provide uniform, low-altitude, high-resolution coverage of an area without endangering a pilot and crew, and they are more easily adaptable to changes in flight plans as data are collected. In this presentation I will present examples of our application of UAS that illustrate the value of these platforms in geothermal research.

Speaker Bio:

Jonathan Glen is a research geophysicist at the U.S. Geological Survey working in the Geology, Minerals, Energy, and Geophysics Science Center at Moffett Field, CA. He received a Bachelors degree in geophysics from UC Berkeley in 1986, and a PhD in geophysics from UC Santa Cruz in 1994. Jonathan's research at the USGS has focused mostly on applying potential-field, and rock- and paleo-magnetic methods to geologic and tectonic problems in the western U.S. Over the past 5 years he has led the USGS Geothermal Resource Investigations Project focused on advancing understanding of geothermal resources and the impacts of geothermal development.

After the talk: Drinks and discussion at The Snack Shack 1828 Euclid Ave.