

# **EarthScope National Meeting – Post-meeting field trip May 15-19: “Plume Tales”**

(Update: April 8, 2009)

**This prospectus describes a field trip that is planned to follow the EarthScope National Meeting.**

## **Plume Tails: Chasing the Yellowstone Hotspot through Space and Time**

This trip examines the volcanic, tectonic and sedimentary response of continental lithosphere to passage of the Snake River-Yellowstone Hotspot. The trip begins in the western Snake River Plain (SRP) graben – a deep volcano-sedimentary basin that formed during the transition from plume head to plume tail volcanism some 10-12 Ma, and continues through the central and eastern SRP to examine a classic sequence of plume tail volcanism. We will combine observed surface exposures with records of deep drill holes and geophysical results to reveal the deeper structure of the crust and lithosphere. Trip will end on the western margin of the Yellowstone uplift.

### **Trip Leader:**

John Shervais (Utah State) & contributors

## **Plume Heads: Shake and Bake at the Yellowstone Hotspot in Yellowstone National Park**

This 3-day trip will focus on the volcanic and tectonic history of the Yellowstone hotspot, evidence of its topographic swell, its three Late Quaternary giant calderas and post-caldera flows. We will visit exposures of Yellowstone’s youthful volcanic rocks, see active normal faults, including that of the deadly 1959 M7.5 Hebgen Lake earthquake area, see the expanse of the youngest, 0.64Ma, caldera and evaluate the effects of caldera-wide crustal deformation on topography. And of course we’ll see the final product of hotspot volcanism, the world’s largest display of geyser and hotsprings. Stops will include visits to modern seismographs, GPS receivers, and borehole strain meters. The new EarthScope Yellowstone LiDAR images will be used to demonstrate active geologic features. A visit will be made to the new Canyon Visitor and Education Center that is focused on the geology and geophysics of Yellowstone.

### **Trip Leaders:**

Bob Smith (University of Utah) and Henry Heasler (Yellowstone National Park)

Recommended background reading: Smith, R. B., and Siegel, L., 2000, "Windows into the Earth: The Geologic Story of Yellowstone and Grand Teton National Parks." New York, Oxford University Press, pp. 242.

## **Schedule:**

- May 15: Leave Boise at 12:45 pm with box lunches. Stops in Mountain Home area (basalts, rhyolites, Lake Idaho sediments, and the western SRP graben). Dinner and accommodations in Twin Falls.
- May 16: Full day from Twin Falls to West Yellowstone via Craters of the Moon. Stops in Twin Falls area (older basalt volcanoes and flows, rhyolite-basalt stratigraphy in Twin Falls Canyon) and at Craters of the Moon (young basalt flows and vents). Potential sites for Project Hotspot deep scientific drill holes discussed in context of plume tail migration, along with results from prior deep drilling and geophysical profiles across the plume track. Dinner and accommodations in West Yellowstone.
- (possible option: end of "Plume Tails" part and return to Boise from Craters of the Moon, if there is enough demand)*
- May 17: Geysers and hotsprings. Dinner and accommodations at Old Faithful Inn.
- May 18: Calderas, hotspots, magma chambers and faults. Dinner and accommodations in West Yellowstone.
- May 19: Depart West Yellowstone early, arriving in Boise late afternoon.
- (possible option - for some: return to Salt Lake City rather than Boise)*

## **Cost:**

**Part 1 (2-day trip) Plume Tails field trip only:** \$75 for transportation and \$30 for lunches (a total of \$105) payable to Oregon State University plus ~\$110-220 for lodging paid directly to the hotels.  
Departure by van from Boise Centre: Friday, May 15, 12:45 pm.  
Return to Boise Centre: Saturday, May 16, ~9:00pm

**Parts 1&2 (5-day trip) Complete Plume Tales field trip:** \$200 for transportation and \$140 for some meals (Fri, Sat, Mon dinners not included) (a total of \$340) payable to Oregon State University plus ~\$200-450 for lodging paid directly to the hotels.  
Departure by van from Boise Centre: Friday, May 15, 12:45 pm.  
Return to Boise Centre: Tuesday, May 19, 6:00 pm (approx)

## **Accommodations:**

**You must make a reservation at all three hotels individually. ALL RESERVATIONS MUST BE MADE BY March 13, 2009. Our group rate code is EarthScope.**

**If you are interested in sharing a room, please let the EarthScope National Office know asap at [earthscope@coas.oregonstate.edu](mailto:earthscope@coas.oregonstate.edu), and we will circulate names of people seeking roommates.**

May 15: Comfort Inn and Suites, 1554 Fillmore Street North, Twin Falls, ID; tel. 208-734-

7494. EarthScope rate: \$109.08/night, breakfast included.

May 16 and 18: Yellowstone Lodge, 251 South Electric Street, West Yellowstone, MT; tel. 406-646-0020; <http://www.yellowstonelodge.com/>. EarthScope rate: \$79/night, breakfast included.

May 17: Old Faithful Inn (<http://www.travelyellowstone.com/old-faithful-inn-96.html>), Old Faithful Lodge ([http://www.yellowstoneparknet.com/old\\_faithful/old\\_faithful\\_lodge.php](http://www.yellowstoneparknet.com/old_faithful/old_faithful_lodge.php)) and the Old Faithful Snow Lodge (<http://www.travelyellowstone.com/old-faithful-snow-lodge-cabins-131.html>). Call 307-344-5437 or email [YNPSA@xanterra.com](mailto:YNPSA@xanterra.com) to make your room reservation; be sure to tell that you are part of the EarthScope group reservation (code FREAR09). EarthScope rate: \$118-177/night.

**Meals:** Registration includes 5 boxed lunches and dinner and breakfast at Old Faithful, and snacks. Breakfasts in Twin Falls and West Yellowstone are included with the hotel. Note: dinners in Twin Falls (Friday) and West Yellowstone (Saturday and Monday) are not included in the field trip package and you are on your own.

**The deadline for registration has passed. If you are interested in participating in the field trip but have not signed up, please contact us at [earthscope@coas.oregonstate.edu](mailto:earthscope@coas.oregonstate.edu). We may be able to take more participants depending on the the available space.**