

2015 Annual Pacific Cell Friends of the Pleistocene Field Trip Mohawk Valley – Feather River - Northern Sierras Fri – Sun Sept. 25-27



The 2015 Annual Pacific Cell Friends of the Pleistocene field trip will be in Mohawk Valley and the North Fork of the Feather River in northeastern California - Friday through Sunday, September 25-27.

Trip Leaders will be Joanna Redwine, John Wakabayashi, Tom Sawyer, Rich Briggs, Ryan Gold, Chris Kemp, Jayne Bormann (?), Ken Adams, and possibly others.

This year's trip will be in Mohawk Valley, which is along the Middle Fork of the Feather River in northeastern California, and across the drainage divide to a couple of sites along the North Fork of the Feather River. We will discuss the Quaternary history of Mohawk Valley (e.g. Mathieson, 1981; Durrell, 1987; Yount et al., 1995; Redwine, 2013), mapping of the Mohawk Valley fault zone (MVFZ) (Sawyer, et al., 2013; Gold et al., 2014), a recent paleoseismic study of the MVFZ (Gold et al., 2014), late Cenozoic uplift and evidence for northward propagation of the Frontal Fault System (e.g. Wakabayashi and Sawyer, 2000, 2001; Wakabayashi, 2013), evidence for temporal variations in uplift-related incision rates over the past ~3 Ma (Kemp, 2012; Wakabayashi, 2013), and may briefly re-visit geodetic models of the MVFZ (e.g. Bormann et al., 2012; Bormann, 2013).

We will probably spend most of our time in Mohawk Valley where there is a great combination of well-preserved geomorphic features and exposed stratigraphy. A thick package of fine-grained deposits on the valley floor and around the basin fringes were named the Mohawk Lake beds in 1891 by H.W. Turner and were presumed to represent a long lived lake in the basin. Since that time there have been varying interpretations of the lake history (e.g. Durrell, 1966, 1987; Mathieson, 1981) and whether the Mohawk Lake beds are even lacustrine at all (Yount et al., 1993; Yount, 1995). We will look at evidence for new interpretations regarding the depositional environment of the Mohawk Lake beds and their history throughout the past 740 ky. A critical part of the Quaternary history includes the glacial deposits (moraines, till, and outwash terraces), which we will see, walk on, and discuss as well. Other topics will include soil development, tephrostratigraphic correlations of the 26 tephras that were deposited within Mohawk Valley over the past 740 ky, thoughts on the basin evolution, and future work that could be done in the area.

The plan:

We will look at the evidence for as much of this as we can fit in and discuss conclusions, working hypotheses, present interpretations, and tentative thoughts. We will point out the known knowns, the known unknowns and know we will hear about the unknown knowns and unknown unknowns on Saturday night.

We will take hikes, touch outcrops, poke at soils, and evaluate stratigraphy and faults. We will take you places where all you can see is trees and use LiDAR imagery to show what landform you are on. We will have some overviews and point to places way over there. We will take you places where we mostly talk about other sites that we can't get to. We will probably argue about depositional environments, the ages of tephras, and much more. We are going to camp in the Lakes Basin area, on the southwestern side of Mohawk Valley, near the towns of Mohawk and Graeagle. The exact camping location will be announced at a later date. We will have some beer and it will be delicious.

More details to follow. Hope to see you there!

Some light reading for those with time on their hands:

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- James, A.L., Harbor, J., Fabel, D., Dahms, D., and Elmore, D., 2002, Late Pleistocene glaciations in the northeastern Sierra Nevada, California: Quaternary research, v. 57, no. 3, p.409-419.
- James, A.L., 2003, Glacial erosion and geomorphology in the northwest Sierra Nevada, CA: Geomorphology, v. 55, no. 1-4, p.283-303.
- Kemp, C.D., 2012, Tectonic and geomorphic evolution of the northern Sierra Nevada, California [M.S. thesis]: Fresno, California State University, 186 p.
- Kreemer, C., Blewitt, G., and Hammond, W.C., 2009, Geodetic constraints on contemporary deformation in the northern Walker lane: 2. Velocity and strain rate tensor analysis, *in* Oldow, J.S., and Cashman, P. H., eds., Late Cenozoic Structure and Evolution of the Great Basin – Sierra Nevada transition: The Geology Society of America Special Paper 447, p. 17-31.
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