ASSOCIATION OF ENVIRONMENTAL AND ENGINEERING GEOLOGISTS
San Francisco Section

Announcing the March 2009 San Francisco Section Meeting

STUDENT PRESENTATIONS

Nate Levine, Stanford University; Jill Marshall, San Francisco State University; and Chris Pilson, San José State University

A Special Thank You to Professors John Williams, San Jose State University, Leonard Sklar, San Francisco State University, and George Hilley, Stanford University

MEETING DETAILS

Restaurant:
Sinbad's
Pier 2 Embarcadero Street
San Francisco, CA

Date and Time:
Tuesday, March 10th, 2009
6:00 pm—Social Hour and Sign-in
7:00 pm—Dinner
8:00 pm—Presentation

Cost: $35 AEG members, $40 non-members, $15 Students

Meal Choice: Chicken, Beef, Fish, and Vegetarian – you do not need to send in your meal choice.

Reservations*: To RSVP, fax or e-mail Sachiko Tanikawa by **12 PM, Friday February 6th.** (fax # 866-400-4068, email: treasurer@aegsf.org) with the following information:

(1) Name (2) Phone number/e-mail

Driving Directions: From the Bay Bridge, take the Fremont Street Exit and the Folsom Street Ramp. Go left (east) on Folsom Street, then left (north) onto the Embarcadero (Herb Caen Way). The driveway for Sinbad's is on the right, south of the historic Ferry Building. Please watch out for the pedestrians and cyclists when turning into the driveway. Thank you.

BART Directions: Exit the Embarcadero Station; walk up Market Street toward the Ferry Building (less than ½ a mile toward the Bay and to the east). Cross Embarcadero and Sinbad's is located next to the Alameda ferry pier on the south side the historic Ferry Building.

Parking: $3 valet parking is available or you can park at a meter somewhere on a side street off the Embarcadero.

*To assist us with reservations and to help the restaurant with the set-up, please RSVP in advance. Walk-ins are welcome, but not guaranteed. No shows and late cancellations will be charged.

See next page for abstracts and speaker biographies.

STUDENT PRESENTATIONS

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PRESENTERS

NATE LEVINE: Cosmogenically-derived Erosion Rates From the Eastern Tibetan Plateau Between Lhasa, Tibet and the Namche Barwa Massif, Eastern Tibet, Department of Geological and Environmental Sciences, Stanford University

In this study, we examine the processes driving the development of recent relief along the southeastern edge of the Tibetan Plateau within tributaries to the Yarlung Tsangpo. We determined erosion rates by measuring cosmogenic 10-Beryllium in river sands collected at point bars from twenty-seven tributaries situated along two east-west transects across the Nyang and Yarlung Rivers between Lhasa, Tibet, and the Namche Barwa massif. In the north, the highest erosion rates occur along the middle of the transect, with erosion rates decreasing towards the headwaters of the Nyang River and towards its confluence with the Yarlung. These high erosion rates correlate with a transition from low topographic relief in the west to high relief in the east, and lie directly to the east of a zone of E-W extensional deformation. This zone is more pronounced in the south where it intersects the Yarlung River. Channel profiles of the Yarlung reveal a knickpoint associated with this deformation, though the influence of deformation is poorly resolved in Nyang channel profiles. The profiles, in conjunction with the distribution of erosion rates along the Nyang, suggest the northward propagation of the extensional zone. Interestingly, large increases in recent erosion rates are not observed upstream of the Nyang River's confluence with the Yarlung, suggesting that the enhanced exhumation associated with doming of the Namche Barwa syntaxis does not reach significantly beyond the high-relief massif. Future work will involve quantifying rainfall across the region and continued topographic and channel profile analysis to discern the relationship between precipitation, relief, erosion, and the river incision history of this region.

Bio: Nate Levine is a graduate student in the Department of Geological and Environmental Sciences, Stanford University working with Professor George Hilley.

JILL MARSHALL: Predicting the Grain Size Distribution Supplied to Rivers, Department of Geosciences, San Francisco State University

The sediment grain size distribution supplied by hillslopes to channel networks strongly influences landscape dynamics at the time scales of landscape evolution and channel response to land use changes. While the grain size distribution supplied by hillslopes to channel networks is a key factor in sustaining aquatic ecosystems and is a necessary parameter in many river models, sediment budgets and TMDLs, little is known about how lithology, climate, and the processes and rates of sediment production and transport on hillslopes, control the grain size distribution supplied to channels. Here I report results utilizing a range of techniques including: a) data mining soil records in a range of climatic regimes and

lithologies spanning basalts in Hawaii and mixed rock types in the Northeastern Sierras and the Eastern Cascades and b) analyzing relationships between hillslope grain size distributions, soil production, weathering and long-term erosion rates in climatically diverse Sierran granitic settings. Correlations include a relationship between coarse rock fragment size and rock fragment abundance; an exponential relationship between temperature and the nearly ubiquitous bimodal and remaining unimodal distributions; and a climate signal - with distinct relationship differences such as rock fragment abundance and elevation dependant on the climatic regime. Rock fragments constitute a mode distinct from the sand-sized and finer distribution portion, supporting the use of bi-modal distributions in modeling of sediment supply to channels. Rock fragment abundance may increase with long-term erosion rates while modulated by mineral type abundance and topographic position.

Bio: Jill Marshall earned a BS in geology from CSU East Bay and works as an engineering geologist at the San Francisco Bay Regional Water Quality Control Board. She is currently working on a Masters in Geosciences at San Francisco State University under the guidance of Dr. Leonard Sklar and will graduate in June 2009. Her thesis is on lithologic, topographic and climatic controls on grain size distribution of hillslope sediments. She received an NSF student seed grant to support her research, has presented at AGU and received an NSF early stage researcher grant, which funded travel to a joint NSF/EU workshop on the SoilCritZone in Crete during the summer of 2008 where she presented her work to an international interdisciplinary body of researchers.

CHRIS PILSON: Planning and Rehabilitation Adobe Creek Reach 5, Santa Clara County, California, Department of Geology, San José State University

Increased urban development has encroached upon and impacted natural waterways by constricting the volume and constraining the route of flow to predetermined corridors often irrespective of the original creek morphology. Adobe Creek is located in the eastern foothills of the Santa Cruz Mountains in Santa Clara County, California. The headwaters begin approximately one mile east of the San Andreas Fault on the Monte Bello Ridge; the creek then extends northward 12 miles to the San Francisco Bay. Adobe Creek is tectonically influenced by a series of reverse range front faults that run subparallel to the San Andreas Fault. The creek displays a range of flow conditions from perennial in the Franciscan bedrock headwaters to ephemeral in the alluvial flatlands near the bay.

Over the past 150 years, Adobe Creek has been trenched, rerouted, channelized, lined with hardscape, and the base level elevation lowered. The result is a stream in a state of disequilibrium that is prone to flooding and erosion. An 1100-foot section was completely reconstructed, removing failing wood and cinder block retaining walls and removing the paved concrete bed. The replacement, a wider channel with a smoothed slope was built within the urban confines of easements and ownership.

Bio: Chris Pilson earned her B.S. in Earth Systems Science and Policy at Cal State Monterey Bay. She is currently finishing her Masters thesis in engineering geology at San José State under Dr. John Williams. Chris has worked part-time for the past few years, at the Santa Clara Valley Water District and now is currently working there full-time.

Thank you for the RSVP! See you on Tuesday, March 10th.