Tuesday, January 15, 2008

Black Lab Pub, Churchill Room • 4100 Montrose Blvd.

Social 5:30 p.m., Dinner 6:30 p.m.

Cost: $25 Preregistered members; $30 non-members & walk-ups

The HGS prefers that you make your reservations on-line through the HGS website at www.hgs.org. If you have no Internet access, you can e-mail reservations@hgs.org, or call the office at 713-463-9476 (include your name, e-mail address, meeting you are attending, phone number and membership ID#).

by ***Michael Murphy***
University of Houston

Outward Radial Growth and Landscape Evolution of the Himalayan Orogen

Convergent orogens worldwide share some common characteristics in their evolution: all result in crustal shortening, leading to thickened crust and isostatically-driven surface uplift. As higher elevations are reached (4–5 km), mountain ranges often undergo crustal extension, even as crustal shortening continues on the flanks of the mountain range (e.g., Dewey, 1988; Molnar and Lyon-Caen, 1988). The transition from shortening to extension is important to understand because it is a record of how forces are evolving within and outside the orogen.

This study investigates a region in the western Himalaya that provides a rare opportunity to investigate this transition from shortening to extension, as well as the magnitude of these processes, the depths at which they operate and their duration. In this talk Dr. Murphy will first review existing tectonic models and then describe several lines of evidence that point to an event in the late Miocene during which there was a dramatic inversion of the topography in southwestern Tibet. This inversion was most likely driven by outward radial expansion and coeval arc-parallel extension of the orogen. These observations were used to derive an internally consistent kinematic model for the Himalayan orogen since the Early Miocene. Dr. Murphy will share his experiences while conducting the field research and discuss the efforts required to obtain funding. ■

Zada basin in western Tibet near the China-India border (Latitude 31 degrees North, Longitude 79 degrees East)

Biographical Sketch

Michael Murphy obtained his doctorial degree in geology from the University of California, Los Angeles. He is currently an Assistant Professor at the University of Houston, Geosciences Department. Dr. Murphy conducts research on the origin, development and structural evolution of the continental crust. He is currently working on two processes that have and continue to shape the history of the Earth, intercontinental collision and continental break-up. These events generate first-order changes in the distribution, size and connectivity of continents and ocean basins and are therefore essential to our understanding of how the Earth works. With core specialties in tectonics, structural geology and tectonic geomorphology, his current work is firmly rooted in field-based studies and seeks to establish the spatial and temporal distribution of deformation at regional and local scales in some of the most complexly deformed regions.

References

Dewey, J.F., "Extensional Collapse of Orogens," *Tectonics*, vol. 7 (1988) 1123–1139.

Molnar, P., and Lyon-Caen, H., "Some Simple Physical Aspects of the Support, Structure, and Evolution of Mountain Belts," in *Processes in Continental Lithospheric Deformation*, Clark, S.P., Burchfiel, B.C., Suppe, J., eds., Geol. Soc. Amer. Special Paper 218 (1988) 179–207.