Geological Society of Nevada

SOUTHERN NEVADA CHAPTER

GSN Newsletter **April, 2003**

China's Three Gorges Dam

DATE: **Thursday, April 24, 2003**

SPEAKERS: **Michell Williams, Christine Henkelman, Eric Fossett**

LOCATION: **Room 105**
Lilly Fong Geoscience building

TIME: **5:30 p.m. Social hour**

Depositional history of the Black Mountain Conglomerate, Mohave County, Arizona: Sedimentary response to Miocene extension.

Michelle Williams

Abstract

This study documents the Miocene depositional and extensional history for the basin west of Wilson Ridge in the Black Mountains, northwestern Arizona. The field area, part of the Basin and Range province, lies within an area that experienced northward migration of intense volcanism several million years prior to significant regional extension. Documentation of the basin fill was conducted with the aim of determining whether sedimentary clasts can be tied to lithologies that are exposed along Wilson Ridge, and therefore be linked to the regional tectonic development.

Stratigraphic sections from four locations were measured and correlated to capture the vertical and lateral variability within the basin. Data collected from these sections, which included changes in bedding orientation, clast compositions, paleocurrent directions, determine that the sediments were derived from the Wilson Ridge. The lower member of the Black Mountain Conglomerate was deposited while deformation was occurring, and is folded into an open, gently southward plunging syncline. The upper member of the Black Mountain Conglomerate is post-tectonic and bedding is undeformed. Age and provenance relationships indicate the Wilson Ridge pluton was unroofed at a rate of ~4 mm/yr.

Michelle Williams

Department of Geoscience, UNLV

Michelle Williams graduated with a B.S. from the University of Notre Dame, and completed a M.S. in Geoscience this spring. In the spring of 2001 she was selected as an American Geological Institute government affairs intern and spent the summer working in Washington DC documenting and tracking science policy issues in congress. Currently Michelle has accepted a geology internship position with Pioneer Natural Resources, a large independent petroleum company in Dallas, TX.

Variations in Pyrite Chemistry as Clues to Gold Deposition at the Goldstrike System, Carlin Trend, Nevada USA

Christine Henkelman

Abstract

Pyrite and quartz in the Goldstrike system were examined to better understand the depositional history of submicron gold associated with trace element-rich pyrite. Petrography and chemistry were used to identify discrete populations of pyrite and marcasite that precipitated prior to gold deposition, throughout the gold ore event, and following gold deposition. Petrography, fluid inclusions, and cathodoluminescence studies were used to identify various stages of quartz precipitation. Pre-ore pyrites contain major elements Fe and S, but few trace elements in low concentrations. Alternatively, ore-stage, gold-bearing pyrites contain elevated concentrations of Au, As, Sb, Hg, and Cu. Late-ore pyrites and marcasites also contain elevated concentrations of some or all of these trace elements but contain nil to low gold. As, Sb and Cu are present in late-ore fluids in abundances such that minerals, in which these elements are major elements, precipitated. These minerals include realgar, orpiment, stibnite, miargyrite, bismuthinite-stibnite solid solution, and chalcopyrite-disease bearing sphalerite.

Christine Henkelman

Department of Geoscience, UNLV

Chris received her Bachelor of Science in Geology and her Bachelor of Arts in Foreign Languages and Literature-French at Virginia Polytechnic Institute and State University (Virginia Tech) in 2000. She is currently pursuing her Master of Science in Geology at the University of Nevada, Las Vegas under the supervision of Jean Cline.

New insights into the Quaternary Black Hills fault, southern Nevada

Fossett, E., Taylor, W.J., Snelson, C.M, Tecle, M.G., and Luke,B.A.

Abstract

The Black Hills fault (BHF) is a Holocene fault along the western edge of Eldorado Valley, Nevada that cuts Quaternary alluvial fan deposits. The purpose of this study is to assess the seismic hazards associated with the BHF and to determine its role in the regional neotectonic deformation. Previous work has mapped the fault as a single continuous fault with a surface rupture length of ~ 14 km. This study has documented ≥ 14 strands with a maximum ~ 4.5 km surface rupture length on an individual strand. Scarp degradation models suggest an age of 6.3 – 3.5 ka (with $\kappa = 1.1$ m^2/ka) for the last surface rupture event, while a previous study provided an age of 8.4 – 5.5 ka. The kinematics of the BHF have not been documented in any previous studies. Digital orthophoto quadrangle (DOQ) mapping of drainage offset and deflections provide evidence to suggest normal offset along the fault. In addition to drainage analysis, shallow seismic refraction profiles show a moderate dip of the fault (45°- 60°), which further suggests that the BHF is a normal fault. It has been previously suggested that the BHF may be a continuation of the left-lateral Lake Mead fault system (LMFS). In light of new kinematic data and differences in strike between the BHF and LMFS, this study suggests the possibility that the BHF may be kinematically linked to LMFS, but not a continuation of it. Currently, permits are being acquired for trenching. A paleoseismic trench will provide the best opportunity to resolve issues regarding the type of fault and the age of the last surface breaking event.

Eric Fossett

Department of Geoscience, UNLV

Eric Fossett is currently working on a Master of Science Degree under the supervision of Wanda J. Taylor at the University of Nevada, Las Vegas, Department of Geoscience. The seismic hazards and the structural development of the BHF are the focus of his thesis research. Eric earned a Bachelor of Science in Geology from Humboldt State University in 2001.

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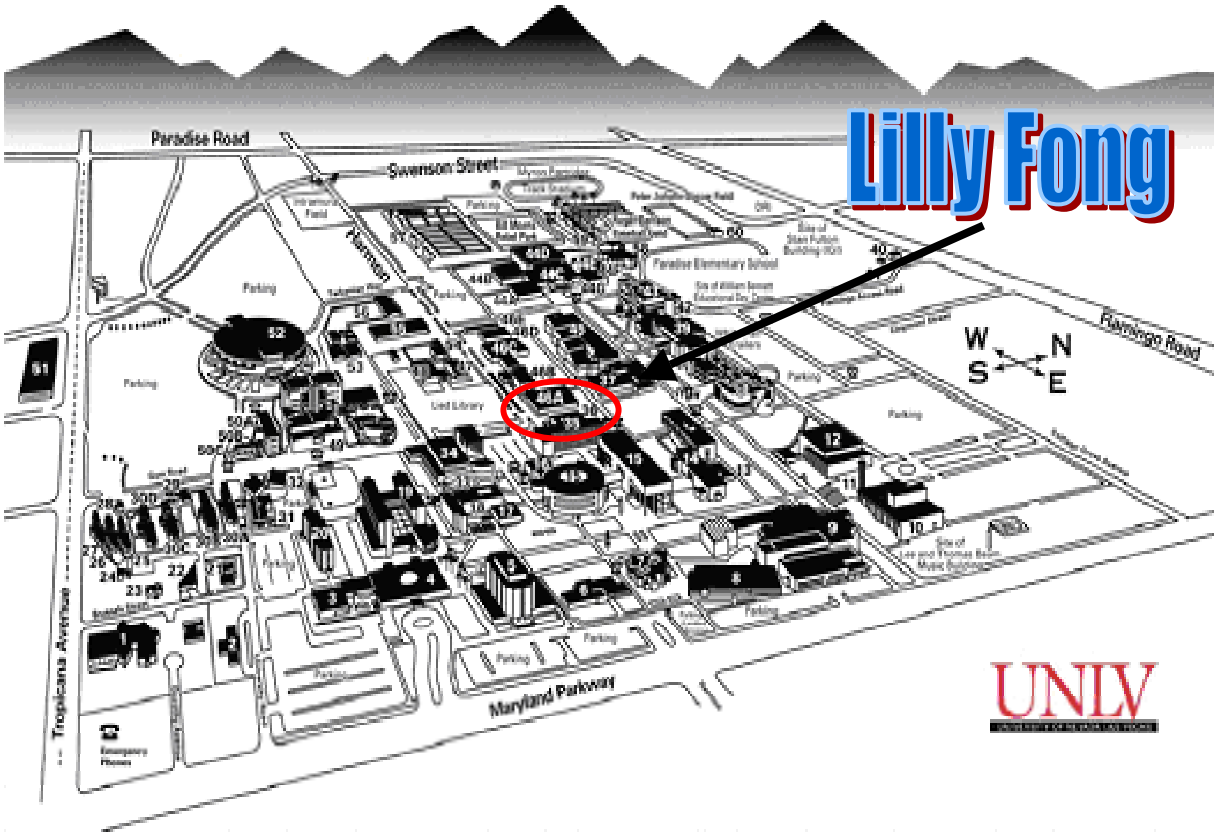

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