



Geological Society of Nevada

SOUTHERN NEVADA CHAPTER

Newsletter

March, 2001

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NEWSLETTER

John Van Hoesen
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Mesozoic thrusting in the hinterland of the Sevier orogenic belt: The central Nevada thrust belt .

DATE: Thursday, March 22, 2001

SPEAKER: Dr. Wanda J. Taylor

LOCATION: Room 102 Lilly Fong Geoscience Building

TIME: 5:30 p.m. Social hour
6:30 p.m. Presentation

Mesozoic thrusting in the hinterland of the Sevier orogenic belt: The central Nevada thrust belt.

Dr. Wanda J. Taylor - UNLV Assistant Professor of Geology

Abstract (GSN- Las Vegas meeting on March 22, 2001)

The tectonic relations between foreland and hinterland deformation in noncollisional orogens are critical to understanding the overall development of orogens. The classic central Cordilleran foreland fold-and-thrust belt in the United States (Late Jurassic to early Tertiary Sevier belt) and the more internal zones to the west (central Nevada thrust belt) provide data critical to understanding the development of internal and external parts of orogens. The central Nevada thrust belt (CNTB), crops out within a region generally considered to be the hinterland of the Jurassic to Eocene Sevier thrust belt. Although now fragmented by Cenozoic crustal extension, individual thrusts can be correlated from range to range for tens to hundreds of kilometers along strike. The CNTB consists of two parts: the Eureka area thrust system in White Pine and Eureka Counties and the Garden Valley thrust system, in south-central Nevada.

The Eureka area thrusts system consists of a stack of at least three thrust plates composed of strata that range in age from Precambrian to Permian. Range-scale overturned synclines occur in the footwalls of the higher thrusts. The syntectonic Newark Canyon Formation of Cretaceous age delimits the age of shortening in this region.

The Garden Valley thrust system consists of at least four principal thrust plates composed of strata as young as Pennsylvanian in age that are unconformably overlain by rocks as old as Oligocene, suggesting that contraction occurred between those times. New U/Pb dates on intrusions that postdate contraction, combined with new paleomagnetic data showing significant tilting of one area prior to intrusion, suggest that these thrusts were active before ~85-100 Ma. The thrust faults are characterized by long, relatively steeply dipping ramps and associated folds that are broad and open to close, upright and overturned. We correlate the structurally lowest thrust of the Garden Valley thrust system, the Golden Gate-Mount Irish thrust, southward with the Gass Peak thrust of southern Nevada. This correlation carries the following regional implications. At least some of the slip across Jurassic to mid-Cretaceous foreland thrusts in southern Nevada continues northward along the central Nevada thrust belt rather than northeastward into Utah. This continuation is consistent with age relations, which indicate that thrusts in the type Sevier belt in central Utah are synchronous with or younger than the youngest thrusts in southern Nevada. This in turn implies that geometrically similar Sevier belt thrusts in Utah must die out southward before they reach Nevada, that slip along the southern Nevada thrusts is partitioned between central Nevada and Utah thrusts, or that the Utah thrusts persist into southeastern Nevada but are located east of the longitude of the central Nevada thrust belt. As a result of overall

cratonward migration of thrusting, the central Nevada thrust belt probably formed the Cordilleran foreland fold-thrust belt early in the shortening event but later lay in the hinterland of the Sevier fold-thrust belt of Idaho-Wyoming-Utah.

Wanda Taylor

Dr. Taylor received a B.S. in geology with a minor in chemistry from University of Minnesota, Duluth in 1982. She received a M.S. in structural geology from Syracuse University in 1984 and a Ph.D. in structural geology and tectonics from the University of Utah in 1989. She has been a member of the faculty at the University of Nevada, Las Vegas since 1991 and was awarded an Associate Professorship of Geoscience in 1997.

Her primary research interests are in regional tectonics, both contractional and extensional, and in faulting and faulting processes. In studying faults and tectonics she uses absolute and relative timing of deformation, fault geometries, and fault kinematics to develop models of faulting and regional tectonism.

Announcements

Look! Its a *NEW* GSN web site!
<http://www.gsnv.org>

If you know of anyone that would like to become a member of if you need to renew your membership in the Geological Society of Nevada, a membership application is attached.

Newsletter Update

Do you know someone who has moved and not told us? A few newsletters are returned because of incorrect addresses following each mailing. If you are aware of someone who hasn't received a newsletter, please have them call or email Paul Bowen at (702)247-7765 or p_jbowen@ix.netcom.com. You may also contact Laura Rudd at GSN headquarters to update this information. Thanks!

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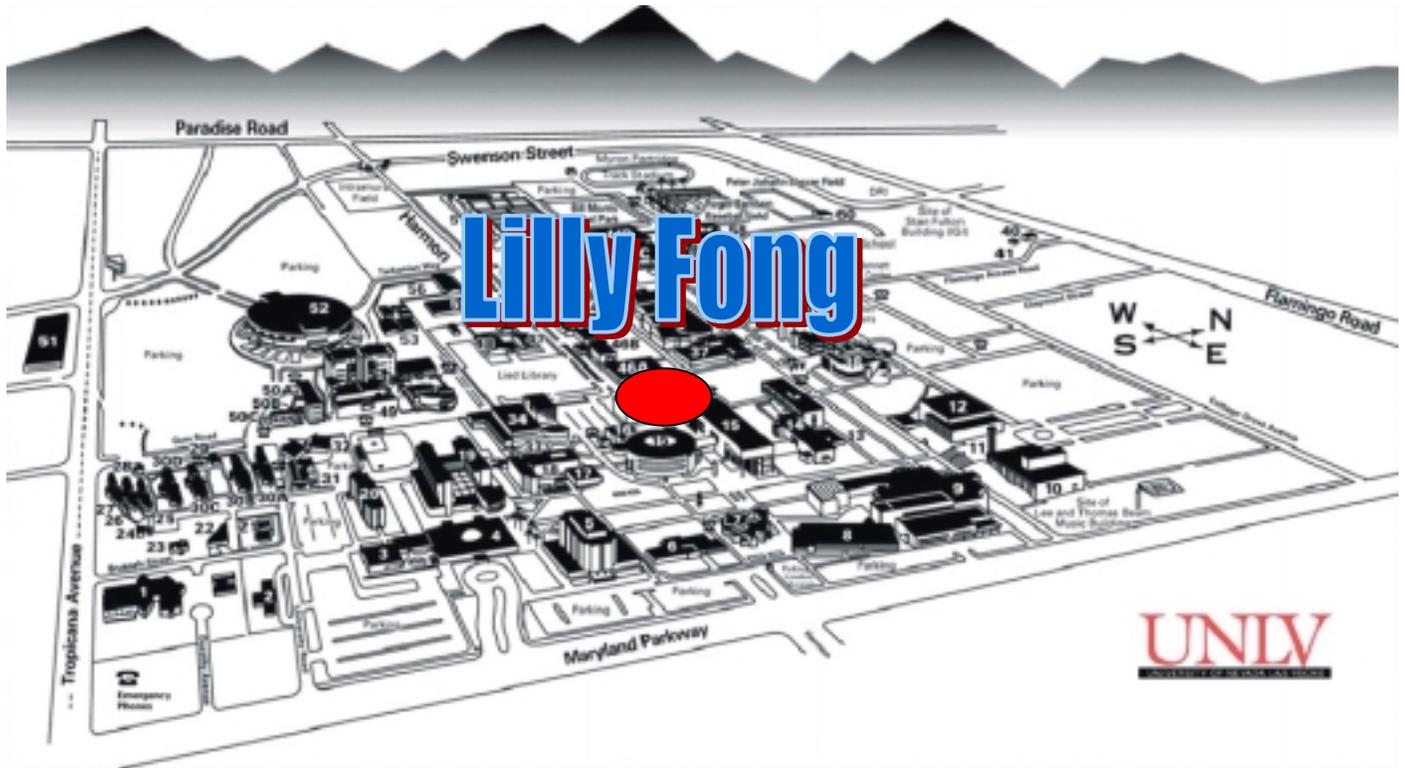
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 Fax to 775/323-3599, e-mail gsn@mines.unr.edu

PROPOSED DATES FOR TALKS

- 30 November 2000** **Jim O'Donnell**
- 25 January 2001** **Dr. Andrew Hanson**
- 22 February 2001** **Dr. Stephen Rowland**
- 22 March 2001** **Dr. Wanda Taylor**
- 26 April 2001** **Student Presentations**
- 24 May 2001**

As you can see we need to fill in the gaps. Also if anyone would like to volunteer to give a talk or host a discussion in December we would be open for suggestions. Some of us aren't going anywhere.



Publication and mailing of this newsletter has been contributed by The UNLV Department of Geoscience.

Come visit us online at http://www.unlv.edu/Colleges/Sciences/Geoscience/1st_page.html



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