

Inland Geological Society

Nov. 2008

Newsletter of the Inland Geological Society

Volume 24 No. 11

This Meeting:
Thursday,
November 6th

Time:
Social: 6:00pm
Dinner: 6:30pm
Lecture: 7:00pm

Location:
LSA Associates
1500 Iowa Ave
Suite 200
Riverside, CA
92507
(Map on Pg.4)

Coming to
Dinner?
Please RSVP:
By Monday 11/3
(951) 782-3295
dlass@
waterboards.ca.gov

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November Speaker:

Dr. David Jessey

California State Polytechnic University, Pomona



Tectonic Implications of Neogene Volcanism within the Southern and Central Owens Valley, CA

Abstract

Basaltic volcanism has occurred at four locations in the central and southern Owens Valley. In the southern Owens Valley, basalts of the Dove Spring Formation of the Ricardo volcanic field were emplaced between 12 and 8 Ma and are comprised of dominantly quartz-normative, tholeiitic basalt with interbedded rhyolitic tuff. Olivine has undergone partial to complete alteration to iddingsite and calcium-siderite. The Coso field, 25 miles to the north-northeast, is bimodal consisting of both basalt and felsic tuff in equal amounts. The basalts (<4 Ma) are generally alkali basalt containing abundant, large phenocrysts of unaltered olivine. In the central Owens Valley, the Big Pine field is situated south of Independence, CA and the Darwin field 45 miles to the southeast on the Darwin Plateau. Big Pine basalts were extruded between 1.2 Ma and 25 Ka. They range in composition from alkali basalt to tholeiitic basalt with a distinct clustering at either end of the compositional spectrum. In contrast to the southern Owens Valley, olivine and its alteration product iddingsite are less common. Volcanism on the Darwin Plateau occurred from 8 to 4 Ma. Basalts span a similar range in composition to those of the Big Pine field, but are characterized by a broader population of olivine tholeiites and no evidence of the clustering seen at Big Pine. Olivine is a common modal mineral, as is iddingsite.

Tectonic setting appears to have a significant influence on basalt composition. Basalts extruded in regions of transtension or oblique slip associated with the Owens Valley fault system, such as the Coso field, are dominantly alkali basalts. However, the older basalts



of the Ricardo Formation, emplaced during earlier Basin and Range extension, are tholeiitic. The clustered basalt populations of the Big Pine field most likely result from a change in the pattern of stress from dip-slip (tholeiites) to strike-slip (alkali basalts) suggesting episodic or cyclic partitioning of stress across the central Owens Valley. The absence of olivine and iddingsite in many Big Pine flows may indicate that some fractionation of magmas occurred, perhaps in response to a thickened continental crust. Darwin basalts do not fit the established model. The preponderance of olivine tholeiites is difficult to rationalize. Geochemical and petrographic trends observed in other fields cannot be documented at Darwin due to paucity of geochronology and detailed field mapping.

Biography:

David Jessey is a Professor of Geology and Geochemistry at California Polytechnic University - Pomona. He received his Ph. D. in Ore Deposit Geochemistry from the Missouri School of Mines in 1981. He began his career in mineral exploration as a geologist at St. Joe Minerals and Dresser Minerals becoming a regional exploration manager with WGM Inc. He also served as stint as a commodities evaluator for the U.S. Bureau of Mines. He has been employed at Cal Poly since 1984. His research and consulting interests involve metallic and non-metallic ore deposits throughout southern California. More recently his active research has centered on geochemistry, petrology and tectonic setting of Cenozoic volcanism in the Mojave, Owens Valley and Long Valley caldera.



Elections are around the corner!!

Have you been thinking about becoming more active with IGS? Now is your time! IGS is looking for volunteers who are interested in running for the 2009 Board.

The elected positions are:

President
Vice President
Secretary
Treasurer

The appointed positions are:

Membership
Newsletter Editor
Webmaster

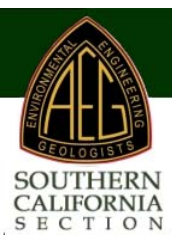
If you are interested, please contact Greg Johnson by Nov. 15th, so that we can send out the election ballots with the December newsletter.

Upcoming Meetings/Events

Rock & Gem Shows—Various locaitons

Various rock and mineral shows will be throughout southern California. To find one nearest you, visit www.rockngem.com/showdates.asp

AEG—Inland Empire Chapter Meeting



Wes Danskin, U.S. Geological Survey-San Diego, will be giving a new talk regarding the Bunker Hill Basin at the November meeting. The meeting will be in Murrietta, CA, **Wed., Nov. 19, 2008.**

For more information, please visit www.aegsc.org/chapters/inlandempire/

Friends of the Pleistocene—2008 Pacific Cell Field Trip (Western Salton Trough)

This years trip will focus on “cross-correlation of Quaternary dating techniques, slip rates and tectonic models for the western Salton Trough”.

The field trip will be **Nov. 14-16, 2008.** To register, visit www-rohan.sdsu.edu/~fop/

AGU Fall Meeting—San Francisco, CA



The 2008 AGU Fall Meeting will be **Dec. 15-19, 2008** in San Francisco, CA. For more information, please visit

www.agu.org/meetings/fm08/

SME—Southern California Section Meeting

Dr. Gregg Wilkerson, BLM, Bakersfield office, will be giving a talk in *The Bodie Bowl 2-million oz. Gold Reserve*. The meeting will be **Tues., Nov. 18, 2008** at Pomona Valley Mining Co. in Pomona, CA. for more information, visit

www.mine-engineer.com/socalmining/meet.htm#NOV

Happy Halloween



IGS Meeting Schedule

December 3, 2008 (Wednesday)

Venessa Fava

Paleoecological and paleoenvironmental reconstruction of the Sycamore Canyon member of the mio-pliocene Puente formation, Chino Hills, San Bernardino County, California

January 8, 2009 (Thursday)

Jeff Fitzsimmons, John R. Bylerly, Inc.

Lower San Bernardino Valley Seismic Trend

February 4, 2009 (Wednesday)

Dr. Matthew Kirby, CSU, Fullerton

Paleoclimate of Southern California

March 5, 2009 (Thursday)

Kent McMillan, Geo-Logic Associates

Faulting in the Imperial Valley (tentative)

April 1, 2009 (Wednesday)

Dr. Kim Bishop, CSU, Los Angeles

1872 Owens Valley earthquake and fault rupture

May 7, 2009 (Thursday)

Bob Reynolds, LSA Associates, Inc.

Stratigraphic Relationships in the Lower Barstow Formation

June 3, 2009 (Wednesday)

TBA



IGS MEETING LOCATION:

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