



San Joaquin Geological Society

Date: Tuesday, November 13th, 2012

Time: 6:00 PM Social Hour
7:00 PM Dinner
8:00 PM Lecture

Place: American Legion
2020 H St. Bakersfield, CA 93301

PSAAPG Members & Mesozoic's
\$25 w/reservation
\$30 without reservation

Non PSAAPG Members
\$30 w/reservation

Full-time Students with ID:
Free, Courtesy of Chevron & Occidental

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<http://www.SanJoaquinGeologicalSociety.org/>

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Crustal Block Rotations in Transtensional Basins and Transpressional Zones - Inhomogeneity and Evolution with Time

Christopher J. Pluhar¹

¹California State University, Fresno

The Western Transverse Ranges have rotated in map view up to 90° in some places since the Miocene. Understanding this process for the related oil resources is important, but is this a local anomaly or a widespread process? Deformation is composed of translation, rotation, and change in shape and/or volume. The only type of rotation that is regularly measured is rotation about horizontal axes - tilting - which can easily be measured by a Brunton compass. Rotations about vertical axes are also common, but are much more time consuming to measure, usually requiring paleomagnetic techniques. Vertical axis rotation is significant because it can occur in the transtensional and transpressional settings where hydrocarbon resources may be found. Rotation can produce a bewildering array of faults across which formation thickness changes may only make sense where considered in 3 dimensions. This is because rotation is often accommodated on numerous small fault blocks and rotation magnitude can be highly variable in space. Furthermore, rotation of any significant magnitude rotates fault blocks out of ideal alignment to accommodate the imposed stress. As a result, new faults can form, cross-cutting the previous structural grain. These ideas will be demonstrated with case studies from the presenter's work in the Walker Lane/Eastern California Shear Zone and Trans-Mexican Volcanic Belt, as well as examples from the literature, such as the Western Transverse Ranges, Israel, and Cascadia.

Christopher J. Pluhar –BIO

Christopher J. Pluhar Chris holds a B.S. in geology from Caltech and a Ph.D. in Earth science from UC Santa Cruz. He also spent 4 years as an environmental geology consultant with the Parsons Corp. family of companies, working on hydrocarbon contamination characterization and remediation projects for soil and groundwater. Chris' current position is assistant professor at California State University Fresno. One aspect of his research focuses on incorporating fault block rotation into deformation models of portions of western North America, as well as applying magnetostratigraphy and other geochronologic techniques to dating significant tectonic events of this region.

*** RSVP ***

By: Friday November 9th, 2012

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