



San Joaquin Geological Society

Date: Tuesday, January 13th, 2015

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 & Mesozoics
\$25 w/ reservation
\$30 without reservation

Non PSAAPG Members
\$30 w/ reservation

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

*** RSVP ***

By: Friday, Jan. 9th, 2015

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Evolving clay mineral assemblages in the Nankai Trough, Kumano Basin, and Shikoku Basin, offshore Japan: A summary of results from the NanTroSEIZE project

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ABSTRACT

Eight sites were cored along the Kumano transect offshore south-central Japan during Expeditions 315, 316, and 322 of the Integrated Ocean Drilling Program, as part of the Nankai Trough Seismogenic Zone Experiment (NanTroSEIZE). Detrital mineral assemblages in the Kumano Basin (forearc), the Nankai Trough accretionary prism, and the Shikoku Basin (subduction inputs) shifted gradually from a smectite-rich assemblage during the early through late Miocene to a more illite- and chlorite-rich assemblage during the Pliocene and Pleistocene. The detrital smectite was probably eroded from the Izu-Bonin volcanic arc to the east and a region of anomalous near-trench magmatism within the Outer Zone of central Japan. Post-depositional alteration of dispersed volcanic ash also added to the supply of smectite, but values of illite/smectite expandability and %-illite in the mixed-layer clay showed no evidence for smectite-to-illite diagenesis at the depths sampled. Detrital illite and chlorite were eroded from sedimentary and low-grade metasedimentary terranes in the Outer Zone; that supply gradually increased after 5.3 Ma, probably in response to uplift and enhanced erosion of accreted strata. Clay composition in the trench during the Quaternary (< 2.6 Ma) was mixed from multiple sources and transport directions including the Izu-Honshu collision zone. Smectite reaction model indicates a down-dip release of bound water after strata are buried beneath the trench wedge. Variability in thermal structure led to substantial differences in how quickly diagenetic reactions have progressed in the underthrust sediments, both outboard of the subduction front and downdip along the subduction path. The cooler thermal regime along the Kumano transect results in bound water release down-dip of the trench.

BIOGRAPHY

Dr. Junhua Guo is an Assistant Professor in the Department of Geological Sciences at California State University, Bakersfield. Dr. Guo obtained his Ph.D. degree in Geology from the University of Missouri in 2012. Before coming to CSUB, he was a research associate working at the Lincoln University – Missouri. Dr. Guo has a lot of experience in dealing with clay minerals. Currently his research focuses on the clay mineralogy/diagenesis and its application in unconventional oil/gas exploration and sedimentary environments.



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