Student Research.

General philosophy: I try to work with students to craft a project that best suits the student's goals and what they like to do, within the limitations of my expertise and funding. My main areas of interests are active plate margin tectonics, both ancient and modern, and I apply a number of different geologic threads to address tectonic problems including structural geology, metamorphic petrology, geochronology, sedimentary petrology and stratigraphy,and geomorphology. All of my masters projects and many of my senior projects have a field mapping component because I believe that such mapping is fundamental to good geologic research and (perhaps most importantly) because I believe students do not get enough field mapping experience today. Accordingly, I believe that giving students additional advanced field mapping experience will serve them well, regardless of whether they go directly into the professional ranks (where field experience is the no.1 most valued skill along with writing skills) or whether they go on to do PhD studies in another department. I also try to design masters projects so that my students have a good chance to publish at least one first-authored peer-reviewed paper from their thesis research. Senior projects are designed with the potential for a student to present their findings at a GSA and AGU meeting.

My general interest areas in "basement geology" include the relationship between metamorphic P-T-t paths and tectonic process, processes of subduction and accretion (including mélange generation), the rock record of subduction initiation and what it tells us, ophiolite generation and emplacement, and orogenic belt assembly. Specific areas of interest are the Franciscan Complex of coastal California and various metamorphic units of the central and northern Sierra Nevada. In the neotectonics and tectonic-geomorphology realm, I have a general interest in strike-slip fault system evolution on all scales, with particular interest in step-over evolution as well as a specific interest in the landscape evolution of the Sierra Nevada and California Coast Ranges. Specific areas of research in strike-slip fault system evolution are the northern San Andreas fault system and the Walker Lane-Eastern California shear zone.

List of present and past masters students and projects.

Chris Smart (M.S. 2008). Structural and metamorphic evolution of a metamorphic sole, western border Feather River ultramafic belt, North Fork Feather River Canyon, CA. Winner of Best Thesis Award, California State Fresno for academic year 2008-2009.

Chris Kemp. (Graduation expected Fall 2010) Temporal variation of rock uplift rates and landscape evolution in the northern Sierra Nevada, CA.

Emily Davis. (M.S. 2010) Evolution of migrating releasing bends at two scales: pull-apart basin (Fish Lake Valley, CA) and sag pond (Tule Pond, Fremont, CA)

Andy Shriver. Landscape evolution, related tectonics, and comparative efficacy of glacial versus fluvial erosion, American and Yuba River drainages, Sierra Nevada, CA.

Brian Hitz. Franciscan versus cover deformation, Sonoma County, CA.

Nobuaki Masutsubo. Metamorphic contrasts and structure of the Feather River ultramafic belt, Yuba Rivers area, CA.

Past and Ongoing Senior Projects

Jerrod Lessel (2007). Geology of high-grade metamorphic rocks, Terra Linda area, Marin County, CA

Donna Parkansky (2007). Volcanic(?) rocks of Little Table Mountain, Madera County, CA

Evalin Herleman (2007). Character and provenance of gravels, Little Table Mountain, Madera County, CA

Nick Smaira (2007). High-grade metamorphic blocks in shear zone cutting blueschist facies rocks, Panoche Pass area, CA

Barbara "Bo" Jessup (2009). Geology and metamorphism of part of the Franciscan core of Mt. Diablo, CA

Chad Carlson (2009). Field relations and age of late Cenozoic volcanic unit, mid-upper San Joaquin River drainage, CA

Jared Long (2009). High-grade Franciscan rocks west of the Salinian block, CA

Wayne Nick (2009). Quaternary landscape evolution compared to post-Miocene folding and faulting in a part of the southern Coast Ranges

Joey Luce (2009): Eclogites of the Sierra Nevada?

Brian Hitz (2009) Mélanges involving Franciscan, Great Valley Group, and Coast Range ophiolite, Hayward Hills, CA.

Gary Smith (2010). Movement directions and shear sense in a major shear zone, El Cerrito quarry, CA

Rachel Prohoroff (ongoing). Structural relationships of mélanges and intra-Franciscan serpentinite, western Marin County, CA.

Yvan Mendoza (ongoing). PT conditions of metamorphism, Shoo Fly Complex, northern Mokelumne River area, CA.

Student Publications and Abstracts

Publications and Abstracts of student advisees (one asterisk denotes masters student as Fresno State, two asterisks denoted undergraduate at Fresno State at time of research, three asterisks denotes PhD student at UC Berkeley).

Publications

Smart*, C.M., and Wakabayashi, J., 2009, Hot and deep: Rock record of subduction initiation and exhumation of high-temperature, high-pressure metamorphic rocks, Feather River ultramafic belt, California: Lithos, doi:10.1016/j.lithos.2009.06.012

(In prep):

Wakabayashi, J., Ghatak, A., Basu, A.R., and Smart, C. M.*, Supra subduction zone ophiolite generation and emplacement: Insight from the geochemistry of metamorphic soles and regional geologic relations. in preparation

Hitz**, B., and Wakabayashi, J., Strata-parallel and strata-cutting serpentinite and shale matrix mélanges: Forearc mud volcano deposits and feeders? in prep. for Tectonophysics special volume on mélanges

Prohoroff**, R.E., and Wakabayashi, J., Sandstone-matrix olistostrome deposited on intra-subduction complex serpentinite, Franciscan Complex, western Marin County, California: in prep. for Tectonophysics special volume on mélange

Abstracts and Presentations (oral or poster presentation noted)

Masutsubo, N.*, and Wakabayashi, J. 2010 (oral), Amphibolite and blueschist facies metamorphism, Feather River ultramafic belt, Yuba River drainage: A record of subduction initiation, ridge subduction, and continued subduction? Geological Society of America Abstracts with Programs,v. 42

Mendoza, Y.**, and Wakabayashi, J., 2010 (poster), Collisional metamorphic signature in the Sierra Nevada, California? High-grade metamorphism of the Shoo Fly Complex: Geological Society of America Abstracts with Programs,v. 42

Shimabukuro, D.H.***, Wakabayashi, J., Alvarez, W., and Chang, S.-c., 2010 (oral), Possible cold subduction initiation beneath a continental margin in Calabria, southern Italy: Geological Society of America Abstracts with Programs,v. 42

Prohoroff, R.E.**, and Wakabayashi, J., 2010 (oral), Order within the chaotic: Franciscan Complex field relations show km-scale overturnede folds, an olistostrom deposited on intra-Franciscan serpentinite, and more: Geological Society of America Abstracts with Programs,v. 42

Kemp, C.*, and Wakabayashi, J., 2009 (oral), Late Cenozoic uplift and associated landscape evolution of the Sierra Nevada, California: Geological Society of America Abstracts with Programs, v. 41, no.7 p. 180

Carlson, C.**, Wakabayashi, J., and Pluhar, C., 2009 (poster), Field relations and age of late Cenozoic volcanic units inset within the mid-upper San Joaquin River drainage, CA: Geological Society of America Abstracts with Programs,v. 41, no.7, p . 293

Shriver, A.*, and Wakabayashi, J., 2009 (poster), Landscape evolution of the northern Sierra Nevada, USA: Insights from the American River drainage: Geological Society of America Abstracts with Programs, v. 41, no.7, p .293

Shriver, A.*, 2009 (poster), A river runs through it: Modeling and mapping flood inundation in Yosemite Valley, Yosemite National Park (USA): Geological Society of America Abstracts with Programs,v. 41, no.7, p.289

Luce, J.**, and Wakabayashi, J., 2009 (oral), Revisiting the lone Sierra Nevada eclogite locality: What IS it?: Geological Society of America Abstracts with Programs,v. 41, no. 7, p.404

Long. J.**, and Wakabayashi, J., 2009 (oral), High-P amphibolite blocks from mélange, Nacimiento belt, coastal California: A first report: Geological Society of America Abstracts with Programs,v. 41, no.7, p. 403

Masutsubo, N.*, and Wakabayashi, J., 2009 (oral), Beyond simple models of orogenic metamorphism: HP/HT, LP/HT, and HP/LT metamorphism, Feather River ultramafic belt, North Yuba River canyon, California: Geological Society of America Abstracts with Programs,v. 41, no.7, p .519

Annis, D.*, and Wakabayashi, J., 2009 (oral), HP/HT metamorphism of the Devil's Gate ophiolite, Sierra Nevada, California: Where is the upper plate?: Geological Society of America Abstracts with Programs,v. 41, no.7, p. 404

Hitz, B.**, and Wakabayashi, J., 2009, Franciscan shear zones between Coast Range ophiolite and Great Valley Group rocks: Evidence of mélange diapirism? Geological Society of America Abstracts with Programs,v. 41, no.7, p.404

Shimabukuro, D***, Wakabayashi, J., Libera, F., Piluso, E., and Alvarez, W., 2009, Applying the Franciscan model to a non-collisional Alpine segment in the Calabrian orogen of southern Italy: Geological Society of America Abstracts with Programs,v. 41, no.7, p. 403

Kemp, C.*, and Wakabayashi, J., 2009, Sierra Nevada frontal fault system: Kinematics and associated landscape evolution: Geological Society of America Abstracts with Programs, v. 41, no.5, p.31.

Kemp*, C., and Wakabayashi, J., 2008, Temporal slip variation of the Sierra Nevada frontal fault system and effects on landscape evolution: EOS (2008 AGU Fall Meeting abstracts)

Smart*, C., and Wakabayashi, J., 2008, Hot and deep: Rock record of subduction initiation, Feather River ultramafic belt, California: Geological Society of America Abstracts with programs, v. 40, no.6, p. 514-515

Wakabayashi, J., and Smart*, C., 2008, The rate of SW Pacific Cenozoic tectonic transitions compared to models of North American Cordilleran tectonics: Are the latter too simplistic? Geological Society of America Abstracts with programs, v. 40, no.6, p.514.