Granites in the Franciscan Complex at Cazadero, California

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The Franciscan Complex underlies most of the Coast Range of California. Since the onset of the plate tectonic model in the 1960's, it has been regarded as a subduction complex of offscraped marine components, especially various basalts and gabbros, cherts, and marine sediments, developed along an east-dipping subduction fault which also produced the Sierras as a continental magmatic arc. The characteristic sediment in many areas is *melange*, composed of blocks (*exotic* blocks) in a matrix. Melanges may have tectonic or sedimentary (olistostrome) origins.

The King Ridge Road melange at Cazadero, California, is an olistostrome melange with hundreds of variably metamorphosed exotic blocks in a sandstone matrix. Although most of the blocks are, indeed, metabasalts and cherts of marine origin, some are of granitoid rocks, a type not heretofore reported. I will discuss two of these blocks and make some other broader comments about granitic components in the Franciscan.

One 50 m block is a hornblende-biotite quartz diorite. Extensive isotopic and geochemical data make it clear that the block is part of an epizonal pluton from an M- type oceanic island arc, akin to the modern Mariana Islands, which lay offshore to the West for part of the Jurassic. This is a second arc for the west Coast subduction complex, and requires existence of a previously unknown arc, subduction zone and plate out in the open sea.

The second ~10 m block is a leucocratic (light-colored) biotite dacite, a felsic lava, which is granitic in composition although dominantly aphanitic. It developed a distinctive micro-augen gneiss texture and has had a very different metamorphic history than the first block. I speculate that its premetamorphic history will be surprising.

Both the above blocks and hundreds of other are enclosed in a massive sandstone matrix, The sandstone is composed of quartz, plagioclase, Kspar, biotite, and muscovite, together with a variable lithic clast population; the sandstone is a disaggregated granite, and of continental origin!

Maps and articles by me on the Cazadero area are available as pdf files in the faculty digital archive at the Sonoma State University library. The website is: **http://scholarworks.calstate.edu/swmanakin/handle/10211.1/95.** A 1995 California Geology article by me also provides a good overview of Cazadero geology.

Biography: Rolfe Erickson grew up in northern Wisconsin. He earned his Bachelor's degree at Michigan Technological University, and his Masters and PhD degrees at the University of Arizona, graduating in 1970 with a PhD in Geochemistry.

He joined the Geology faculty at Sonoma State College (now University) as one of two founding members in 1966, teaching hardrock petrology and mineralogy, geochemistry, and computer applications, and retired in 2008 after 39 years of service. He now is attempting to finish several research projects in the Franciscan Complex and in the Arizona Precambrian. He is also taking time to live well.