Bits and Pieces: New Scientific Results and Developing Science and Engineering Programs at CSUB

Rob Negrini and Dan McCuan

The first part of the presentation will provide an update of the NSF-sponsored magnetic field reversal and high-resolution stratigraphy work first presented at a Fall 2010 SEG meeting. A full vector record of the Mono Lake magnetic excursion (i.e., aborted reversal) was eventually recovered from the Summer Lake, OR sediment cores. The unprecedented resolution of this record revealed that as the main magnetic field died down during this event, the north magnetic pole migrated quickly to patches of high magnetic flux associated with lower mantle regions of low temperature that, in turn, are associated with downwelling in the Earth's outer core. Based on correlations of this record with a similar magnetic signal from western North Atlantic Ocean cores, we also identified an unconformity in the Summer Lake record that is likely associated with a major, two-thousand year long drought in the Great Basin starting at ~38 ka. This latter exercise demonstrates the potential of this method for time correlations of unprecedented resolution that, theoretically could be used on sediments of any age.

The second part of the presentation will summarize the remarkable level of progress made recently in the CSUB School of Natural Sciences, Mathematics, and Engineering. We'll focus on the large grant recently awarded by the National Science Foundation to the Department of Geological Sciences to establish an NSF Center of Research Excellence in Science and Technology, but we'll also present ongoing program development in Engineering at the university funded primarily by the US Department of Education.

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Daniel McCuan graduated in 2009 with a B.S. in Geology and in 2011 with an M.S. in Geology both from CSUB. He is currently employed as a Geophysicists for Occidental Petroleum. Dan is a Kern County native and a Wasco High alumnus.

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Robert Negrini graduated in 1979 with a B.A. cum laude in Geology from Amherst College and in 1986 received a Ph.D. in Geology from UC Davis. He has worked as a Professor at CSU Bakersfield since the Fall of 1985 and was selected as the CSUB Outstanding Professor in 1997. Negrini has published 20 papers in peer-reviewed journals including Geology, Journal of Geophysical Research, Earth and Planetary Science Letters, Geophysical Journal International, etc. His research has been funded with more than $6M of grants from the National Science Foundation, the US Department of Agriculture, the California Department of Water Resources, and the Petroleum Research Fund of the American Chemical Society. Negrini has served as both President and Vice-President of the San Joaquin Geological Society and was selected as the 2008 Educator of the Year by the Pacific Section of the AAPG.