2012 SCEC Annual Report

Collaborative research: High resolution seismic profiling (CHIRP) of Holocene folding deformation associated with large uplift events on the Ventura Avenue Anticline at Pitas Point

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CHIRP Marine Survey

We proposed to acquire a nested geophysical data set to reconstruct the Ventura Anticline deformational history. To date, we have performed the shake down cruise on the R/V Sproul for the new SAS CHIRP system. Overall the sea trials of the SAS CHIRP were sucessful. We performed a series of tests ranging from electrical, acoustical, to physically towing the vehicle in a stable configuration. We have identified areas where future work is required to improve the acoustic signal to noise of the vehicle. In addition, new Discovery II software

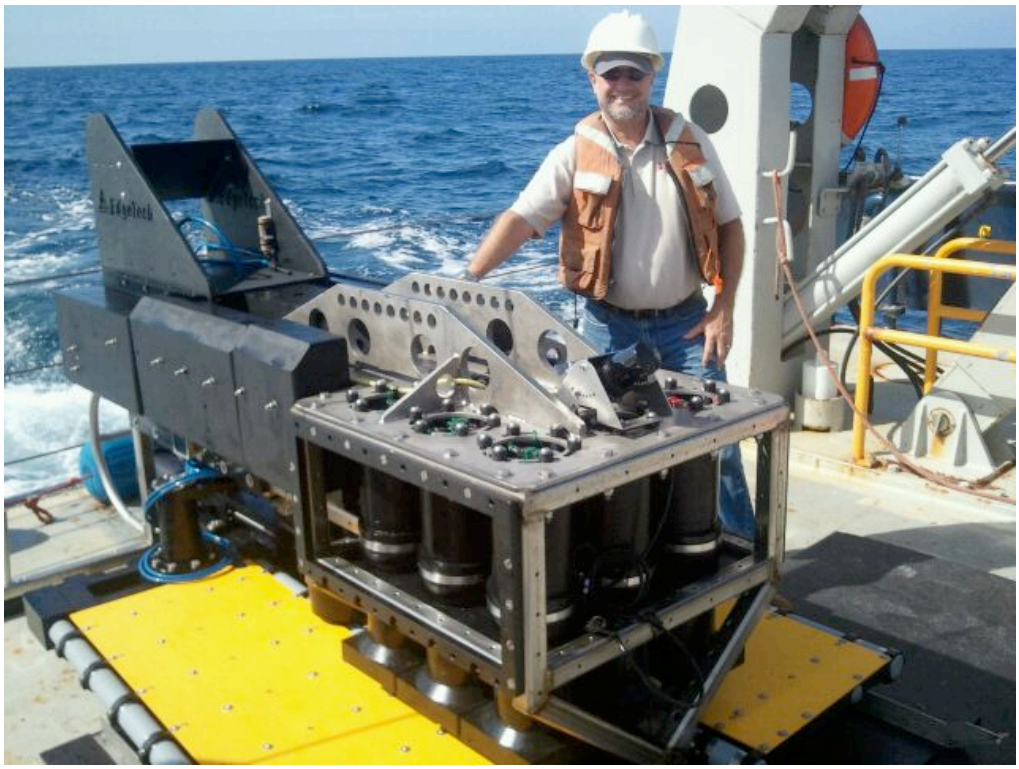

Figure 1. *SAS CHIRP is shown with cowling removed. The nine tonpilz transducers are mounted in the bow of the vehicle. The two retractable yellow wings with the receiving arrays are controlled by the cylindrical motors near the aft of the vehicle.*

improvements were identified and we will be working closely with EdgeTech to implement the required improvements.

We planned to follow-up the sea trials on the R/V Sproul with our initial CHIRP survey of the Ventura Anticline on our vessel the R/V Point Loma. Unfortunately we encountered problems with the top-side computer system. After much effort to fix the computer, it was decided to return the entire system to EdgeTech for an upgrade, which was funded by our NSF grant. We have loaded the CHIRP onto the R/V Point Loma and will start the survey as soon as we resolve some last minute permitting issues with the California State Lands Commission. Finally, we have leveraged the SCEC post-doctoral support for Gulsen Ucarkus into a two-year post-doctoral position for Gulsen to work on the Ventura Anticline data. Gulsen is a co-author on a SCEC supported paper (see below) and also will present the research in an oral presentation at the 2013 GSA Cordilleran Section Meeting.

SCEC Publications

Dong, S., G. Ucarkus, S. Wesnousky, J. Maloney, G. Kent, N. Driscoll (submitted). Strike-slip Faulting along the Wassuk Range of the northern Walker Lane, Nevada, Geosphere.

Ucarkus, G., S. Dong, S. Wesnousky, J. Maloney, G. Kent, N. Driscoll (2013). Strike-slip Faulting along the Wassuk Range of the northern Walker Lane, Nevada, Abstract – 219511, 2013 GSA Cordilleran Section Meeting, Vol. 45: 6.