



MARS Update

After the unfortunate failure of the MARS main power connector on February 26, 2008, the system was repaired and successfully tested November 10. (A report detailing repair activities will be sent separately.) Therefore, the lineup of previously permitted science projects will commence starting in December 2008 and continue throughout 2009–10. A brief summary of the updated plans, including expected deployment and recovery dates, for each project is listed below.

Internally at MBARI, MARS has been officially transferred to the MARS Operations and Maintenance group to conduct science and ocean engineering under the auspices of the National Science Foundation (NSF). NSF has not approved any new MARS user proposals due to the previous power connector problem, but we expect that with MARS becoming operational, we may now begin receiving new applicants for 2010.

2008 Science and Engineering Experiments

FOCE (Free Ocean CO₂ Experiment): A full-scale FOCE system will be deployed and connected to MARS on December 9, 10, and 11, 2008 for a functional engineering test. The FOCE equipment testing will be conducted episodically throughout 2009. The full-scale FOCE experiment will commence in 2010. This project is currently permitted under Sanctuary permit #MBNMS-2007-030 and CCC CDP #E-05-007/ consistency certification CC-076-05 (see Appendix 1).

2009 Science and Engineering Experiments

Eye-in-the-Sea will be connected to MARS January 21, 2009 and will be removed June 1, 2009. This project is currently permitted under Sanctuary permit #MBNMS-2007-030 and CCC CDP #E-05-007/ consistency certification CC-076-05 (see Appendix 1).

Monterey Ocean Bottom Broadband (MOBB) seismometer will be connected to MARS on January 23–27, 2009. MOBB will become a real time seismic resource for the Northern California Seismic Observatory (UC Berkley). This project is currently permitted under the original MARS installation permits, including Sanctuary permit MBNMS-2002-039-A1, CCC CDP #E-05-007/ consistency certification CC-076-05, and CSLC Lease PRC W 25980/R12903.

Benthic Rover will be attached to MARS July 6, 2009 and will undergo engineering testing for 3 months. This project is currently permitted under Sanctuary permit #MBNMS-2007-030 and CCC CDP #E-05-007/ consistency certification CC-076-05 (see Appendix 1).

Deep Environmental Sample Processor (D-ESP) will be attached to MARS November 4, 2009 and recovered May 2010. This project is currently permitted under Sanctuary



permit #MBNMS-2007-030 and CCC CDP #E-05-007/ consistency certification CC-076-05 (see Appendix 1).

Monitoring pelagic biomass fluxes in Monterey Bay: The EK 60 will be attached to MARS on May 15, 2009. It is scheduled for a six-month deployment, but the recovery cruise is yet to be scheduled. This project is currently permitted under Sanctuary permit #MBNMS-2007-030 and CCC CDP #E-05-007/ consistency certification CC-076-05 (see Appendix 1).

2010 Science and Engineering Experiments

As mentioned above, we expect to see requests for additional experiments to be deployed on MARS now that it is operational. Unless directed otherwise, we will submit requests for these experiments in the Fall of 2009. Following are the systems that are already approved and planned for deployment.

Monterey Ocean Bottom Broadband (MOBB) seismometer will still be operating for the Northern California Seismic Observatory (UC Berkley). It is hoped that this experiment will continue uninterrupted for several years. This project is currently permitted under the original MARS installation permits, including Sanctuary permit MBNMS-2002-039-A1, CCC CDP #E-05-007/ consistency certification CC-076-05, and CSLC Lease PRC W 25980/R12903.

FOCE (Free Ocean CO₂ Experiment): The full-scale FOCE experiment will commence in 2010. Recovery will be some time in 2010.

Sedimentation Sensor/Time-Lapse Camera has been delayed but will be deployed sometime in 2010. The exact schedule has not yet been determined. This project is currently permitted under Sanctuary permit #MBNMS-2007-030 and CCC CDP #E-05-007/ consistency certification CC-076-05 (see Appendix 1).

A Smart Sensor Web for Ocean Observatories has been delayed but will be deployed sometime in 2010. The exact schedule has not yet been determined. This project is currently permitted under Sanctuary permit #s MBNMS-2007-030 and MBNMS-2002-039-A1 (vertical profiler mooring), CCC CDP #E-05-007/ consistency certification CC-076-05, and CSLC Lease PRC W 25980/R12903.

MARS Cable Impact Survey

In 2008, MBARI completed the first re-survey of the MARS cable route. A brief summary of the initial findings of this survey were submitted earlier this year. Dr. Jim Barry is completing work on the final report (to be submitted separately) and has offered the following summary of the analyzed results:



“In accordance with the permitting requirements of the MARS cable installation, a study of any environmental changes associated with the cable is in progress. To date, we have completed a survey of the entire length of the cable, as well as a number of comparable sites for comparison. Samples include video transects used to assess changes in the megafauna (large enough to be identified in video recordings) and sediment core samples to measure differences in macrofauna (small worms, crustaceans, etc.) between cable sites and off-cable control sites, as well as sediment characteristics. Preliminary information indicates that the cable has not moved from its deployed location, shows no evidence of strumming, or impact to trawling. Faunal assemblages near the cable are largely similar to those at control locations distant from the cable. A notable exception to the apparent lack of effects of the cable on seafloor biological communities is the striking increase in the number of elasmobranchs (sharks and rays) near the cable at mid-depths. These animals have electroreceptors and have been reported elsewhere to aggregate near subsea cables. Although the cable has not yet been energized from shore¹, it appears to be generating an electric field by induction—water currents flowing across the cable in the magnetic field of the Earth should produce an electric field. This field is apparently detectable by some species of elasmobranchs. Details of this phenomenon and other aspects of the impacts of the cable on the seabed and associated biological communities continue to be of scientific interest.”

¹ Note that the survey was completed prior to the MARS cable repair, which took place in November 2008.