

ENDEAVOR 295 L3 Cruise Summary: PRIMER IV

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Hydrography/Tracers/Long-term Moorings in the previous PRIMER cruises, a hydrographic section was re-occupied along the long-term mooring line. During PRIMER IV the moored array still existed in its original configuration, i.e. two bottom-mounted ADCPs situated in the shelfbreak current, and three tall VACM moorings located across the outer slope.

Although the original plan was to maintain both components of this array for two years, it was decided to recover the shelfbreak ADCPs at the end of PRIMER IV. The reason for this was the continued difficulty (and significant expense) of keeping these instruments on location. Over the 15 months that they were in the water, three different "emergency" cruises were needed to re-set the guard-buoys and/or the ADCPs themselves. We thus thought it was prudent to recover them in February in light of the fact that the next (and final) PRIMER cruise wasn't for another 10 months. The three VACM moorings remain in the water and will be recovered in December (making a two year deployment).

The PRIMER IV hydrographic section consisted of the usual shelf portion (3.5 km spacing) and slope extension (25--30 km spacing). The sequence of the work was determined largely by the weather, which was quite unpredictable at this time of year. Twenty-three stations using a cage-mounted MARK-III were taken in succession to make up the shelf portion. No bottle samples were collected during these stations. Upon completion of this portion of the line we steamed back to retrieve the ADCP moorings (in favorable weather conditions), then proceeded to occupy the slope section. For this work a MARK-III unit was used on a 12-bottle frame. While in the previous PRIMER cruises a 24-position frame was used for the slope survey, the threat of bad weather prompted us to use the smaller package (which is significantly easier to handle). In actuality, 11 bottles were used as one of the slots was needed to fit the lowered ADCP onto the frame. It should be noted that we were fortunate to obtain LADCP measurements on this cruise (our normal instrument was being used for another experiment). Martin Visbeck of LDEO brought his new Double-Workhorse system, and used this opportunity to perform additional tests. We ended up with a solid LADCP data set, which is particularly important because the rough weather prohibited most of the planned POGO float deployments.

Four deep stations were completed before weather conditions required that we temporarily halt operations (for roughly 8 hours). Upon resuming work, we were only able to complete one additional station before an unfavorable forecast prompted us to return to the shelf in order to retrieve the acoustic equipment. All slopewater stations included measurements of CFCs by W. Smethie's group at LDEO. Thus, each of the four PRIMER slopewater sections to date includes tracer measurements. While it was planned to drop a POGO float at each deep station site, bad weather prevented all but one

deployment (at the final station). Finally, three additional CTD stations, with the lowered ADCP, were taken in the shelfbreak current along the western-most acoustic mooring line.