Observations of a California Filament by a Moored Current-Meter Array During the 1988 CTZ Experiment

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Four current meter moorings were deployed near 38°N, 125°W across the axis of a cool filament (jet) extending southwestward from the continental margin in late June 1988. The moorings were recovered in late July. The moorings were at 20 km spacing, about 150 km from the coast in water of 4 km depth. Two moorings had ADCPs at 120 m, one had an ADCP at 450 m, and one had an Aanderaa at 75 m. All had several deeper Aanderaas. The direction of the jet changed from southwestward (100-hr mean of 0.6 m/s at 22 m at the mooring nearest the core) in late June to southward (0.6 m/s) by the end of July. The currents measured from the moored arrays were consistent with the CTD (dynamic height) & ship-borne ADCP surveys and with the evolution seen in those five sequential quasi-synoptic larger scale surveys. Except for the magnitude, the currents were very similar from near the surface to 500 m at any mooring, but showed a jet-like structure horizontally. The maximum observed daily-mean velocity was 0.9 m/s (towards 180°) at 22 m, with a vertical shear of 0(0.005 m/s/m) over the upper 70 m observed with the ADCP; the velocity decreased to 0.04 m/s by 450 m. The lateral shear was of 0(0.005 m/s/km) based on ADCP measurements 40 km apart. The data from the moored ADCPs appear to be of very high quality.