An Anticyclonic Eddy in the Coastal Transition Zone off Northern California

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A combination of CTD sections, drifter tracks, moored current observations, and ship board acoustic current sections reveal the presence of an anticyclonic eddy inshore of a strong coastal jet off Northern California. Observations were made as part of the Coastal Transition Zone Experiment during the summer of 1988. The eddy is roughly elliptical in shape with axes of 90 and 50 km, has a persistence time of weeks, and a velocity field which penetrates to at least 500 in deep water. Maximum observed surface velocities were about 0.6 m/s. During the shipboard sampling, the eddy is centered on the inner shelf, offshore of the shelf break, with the eastern (southward flowing) portion of the eddy extending up into water depths of 90 m. The eddy contains subducted water masses which likely originate near the surface to the south in the vicinity of Pt. Reyes. Thermohaline and bio-optical distributions suggest active isopycnal mixing in the high vorticity region between the eddy and the coastal jet. Deep turbidity layers are observed near the sea floor on the shelf and some of these are apparently advected offshore by the eddy.