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During July 1981 and 1982, shipboard surveys were conducted to measure the structure and circulation in the prominent tongues of cold water which have been observed in satellite IR imagery of the California coastal zone. Current jets, up to 80 cm/s strong, 20-40 km wide, and hundreds of kilometers in length were found to be associated with these cold tongues. The jets were most intense near the surface, and strongly vertically sheared, dropping to half strength over a vertical distance of 50m. Horizontal current gradients in excess of 0.3f were observed. Return flow, directed back toward the coast at velocities of up to 50 cm/s, was also seen in 1981.

The seaward jets occurred near the strong salinity front which marks the boundary between rather shallow water masses. Correlation shows that the near-surface structure in the hydrographic fields penetrated to at least 100 m. Correspondence between geostrophic and directly measured currents and current shears was very good (correlations of 0.8-0.9).
Estimated mass transport by the jets, in excess of 1.5 Sv over the upper 125m, is too large to be provided by alongcoast concentration of the surface Ekman drift. A principal axis analysis of shipboard current measurements from the full CODE experiment period confirms the casual impression that such jets are recurrent features off Pt. Arena.