



Takesue, R.K., A. Van Green, J.D. Carriquiry, E. Ortiz, **L. Godínez Orta**, I. Grandados, M. Saldivar, L. Ortlieb, N. Guzmán, J.C. Castilla, M. Vara, M. Salamanca & C. Figueroa (2004). Influence of coastal upwelling and El Niño-Southern Oscillation on nearshore water along Baja California and Chile: shore-based monitoring during 1997-2000. *Journal of Geophysical Research*, 109(3): 1-14. DOI: 10.1029/2003JC001856.

Influence of coastal upwelling and El Niño-Southern Oscillation on nearshore water along Baja California and Chile: shore-based monitoring during 1997-2000

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In order to determine the sensitivity of coastal upwelling tracers to seasonal wind forcing and El Niño-Southern Oscillation (ENSO) off Baja California and Chile, nearshore salinity, cadmium (Cd), and nutrients phosphate, silicate, nitrate+nitrite were monitored in surf zone waters at six locations along the North and South American coasts during 1997-2000. The clearest responses to upwelling favorable wind forcing were observed at the southern tip of Baja California (23.3°N) and off central-southern Chile (36.5°S). Upwelling tracers at 23.3°N were also the most sensitive to El Niño: average summer Cd and nutrient enrichments were 60% lower following El Niño than during the previous non - El Niño upwelling season. At two sites on the northern and central Chile coasts, conditions associated with El Niño resulted in salinity anomalies >1. Such large shifts in nearshore water properties suggest it may be possible to reconstruct past ENSO patterns from geochemical paleonutrient/paleosalinity proxy records preserved in nearshore archives such as mollusc or foraminifera shells.

Palabras clave: antibacteriana, Trace elements, Nutrients and nutrient cycling, Eastern boundary currents, Climate and interannual variability

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