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**Phytoplankton sizes fraction biomass and *Prochlorococcus*  
distribution in the southern California Current System  
during winters 2001-2003**

**By**

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**Abstract:**

The measurement of sizes fraction phytoplankton and distribution of *Prochlorococcus sp.* were determined as part of the Januarys 2001-2002 and 2003 IMECOCAL cruises along the southern California Current System. The nano-microphytoplankton ( $>5\mu\text{m}$ ) showed a tendency to decreased the diversity and cellular abundance along the winters 2002-2003 with relation the January 2001. Flow cytometry analysis showed that the picoplankton ( $<5\mu\text{m}$ ) distribution were mainly in off coast stations and consisted in: *Prochlorococcus sp.*, *Synechococcus sp.*, and picoeukaryotes. The spatial and temporal variability of *Prochlorococcus sp.* showed that this community increased in January 2002 with a mean values  $\sim 65000 \times 10^3 \text{ cells L}^{-1}$ . The pigments-phytoplankton by HPLC confirmed the presence of *Prochlorococcus sp.* as measured by divinyl chl a. Along this surveys, the contribution of the picoplankton at to total production biomass ( $\mu\text{g C L}^{-1}$ ) were 16% (2001), 53% (2002) and 98% (2003). In this study, we were concluded that the phytoplankton community structure of the southern California Current was more similar to that found under an El Niño condition than what occurred in the previous year.