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ENSO related export productivity interannual variations during the last century in the Southern California Current

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El Niño-southern oscillation (ENSO) is one of the most outstanding patterns of interannual climate change and its climatic effects are felt around the globe. This coupled ocean-atmosphere phenomenon, ENSO, is characterized in the oceans for introducing an interannual variability on nutrients distribution and biological production. In the present study we have attempted to assess the impact of the ENSO on the biogeochemical cycles of the northern Pacific ocean over the last century. In order to obtain an interannual resolution timescale, we have chosen a well preserved high-resolution laminated sediments on the San Lázaro Basin (25ºN, 112ºW), located beneath the dynamic boundary between the northern California Current and the southern tropical waters, in the southern Baja California margin.

In this study, export productivity (EP) has been estimated from chlorophyll pigments, collective named as chlorins. Their abundances have been compared to total organic carbon (TOC), and to a 9-year filtered Southern Oscillation Index (SOI). On interannual scales we observe a very close correlation between the Southern Oscillation Index and the chlorins and organic carbon record, where minima in the SOI correlate with maxima in chlorins and organic carbon contents. We speculate that during la Niña events, the easterly Trade winds intensified giving rise to enhanced equatorial and coastal upwelling; the thermocline became anomalously shallow and the

injection of nutrients into the photic zone increased, stimulating biological productivity as recorded by the chlorin record. Although chlorins are able to capture la Niña events during the major part of the century, their response is not lineal with respect to the SOI. Since the preservation of organic matter in this setting is extremely high, changes in chlorin accumulation are most probably related to changes in EP. These changes observed in EP are probably not just a consequence of the changing physical environment; other forcings are involved in the complex, non-linear interaction within the ecosystem.