

# OCEAN OPTICS XXIV

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<https://oceanopticsconference.org>

Monday, October 8

Poster Session 1

16:00–18:00

## Poster 165

### **CHLOROPHYLL CONCENTRATIONS IN LARGE MARINE ECOSYSTEMS AROUND SOUTH AND WESTERN CENTRAL AMERICA: VARIABILITY, 20-YEAR TRENDS, AND IMPLICATIONS FOR FISHERIES**

The Patagonia (PLME), South Brazil (SBLME), Humboldt (HLME), and Pacific Coastal Central America (PCACLME) Large Marine Ecosystems (LMEs) around South and Western Central America support high primary productivity and fisheries catch. The goal of this study is to examine the variability and longer-term trends in chlorophyll concentrations in the PLME, SBLME, HLME, and PCACLME, and to discuss implications for higher trophic levels. We use a combination of high-resolution satellite-derived chlorophyll concentration data from SeaWiFS (1997-2006) and MODIS Aqua (2002-2017) to examine spatio-temporal variability and analyze the record-length linear trends. We use monthly composites (2 km pixel-1) for the period of overlap between sensors (2002-2006) to compare retrievals and develop corrections using linear regressions. We then combine SeaWiFS (1997-2006) and corrected MODIS (2007-2017) data to generate the longest time series to date in the above-mentioned ecosystems. Results revealed significant increases in chlorophyll concentrations in large areas of PLME (78.23%) and HLME (43.03%) during the past 20 years, with important potential implications for trophic interactions. For SBLME (26.35%) and PCACLME (13.35%), increasing trends were detected only in small regions. We discuss the environmental factors controlling these trends and the effects of changes in chlorophyll dynamics on the reproductive success of two ecologically and commercially important fish species, the Argentine hake *Merluccius hubbsi* and the anchovy *Engraulis anchoita*. In the current context of climate change, these results contribute to a better understanding of the effects of environmental change on ecosystem dynamics and present new tools to assess longer-term trends in satellite-derived chlorophyll concentrations.

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