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2000 years of marine primary productivity in the Eastern Tropical North Pacific

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Changes in marine primary productivity (MPP) over the 21st century are expected to occur under the prevailing climate change scenario. For better understanding of past climate variability, we reconstructed MPP at high resolution (~1-2 years) for the past 2000 years analyzing biogenic silica and total organic carbon (TOC %) on a sediment core collected from Soledad Basin (25°N, 112°W), Baja California, Mexico. Located in the Eastern Tropical North Pacific, this suboxic basin is ideal for palaeoceanographic reconstructions due to its high sedimentation rate (2 mm/year), which allow us to reconstruct past changes in the ocean and climate at high resolution. Our results show an increasing trend in the variability of MPP for the past 2000 years: biogenic silica content does not show a well-defined trend, but rather it is dominated by strong multidecadal and prominent centennial-scale cycles while TOC (%) shows a slight increasing trend towards the present, starting at least 2000 years ago. Spectral analysis confirms the presence of multidecadal to centennial cycles. These results will be discussed in the context of the Anthropocene and natural climate variability.