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Cabo Pulmo: a comparison between in situ and satellite oceanographic measurements

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The Cabo Pulmo coral reef is a no-take marine reserve located at about 23° 27'N on the west coast of the Gulf of California very close to the tip of the Baja California Peninsula (Mexico). Since its declaration as a National Park in 1995 no fishing has been allowed within the boundaries of the Park. It is one of the few places in the Gulf where a healthy marine community survives and, therefore, it is an area of great interest for studies that aim to understand how to preserve the marine biodiversity of the region. Cabo Pulmo is also unique because the shallow reef is separated from the deep ocean only by a steep continental slope. The oceanic currents and mesoscale eddies of the entrance to the Gulf of California can therefore interact with the shallow environment. In this work we characterize the dynamics of the currents on the reef by means of direct observations of sea level, ocean currents, hydrographic and meteorological variables. The oceanographic observations are compared with the coastal variability observed by using sea surface temperature from satellites, altimetry-derived currents and productivity derived from remotely-sensed ocean color. The emphasis of this work is on the interaction of little-known narrow current jets with the dynamics of the shallow reef. We include a discussion on the advantages and limitations of satellite oceanography for coastal applications.