

PHYSICAL OCEANOGRAPHY OF SODWANA BAY

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In order to understand the affect physical oceanography has on coral reef systems, especially after the globally devastating 1998 and 2000 coral bleaching events, a collaborative study was initiated in Sodwana Bay on the northern Kwa-Zulu Natal coast from 2001 to 2003. An ADCP and three Underwater Temperature Recorders (UTRs) were deployed in Sodwana Bay, with a fourth UTR having being deployed since 1994. ADCP data showed currents to be fairly substantial (up to 1 m s^{-1}) traveling in a south-westerly direction 73% and north-easterly 27% of the time. Driving these currents were wind patterns and mesoscale eddies originating from the Mozambique Channel. Speculation exists that a cyclonic lee eddy, entrapped within the Delagoa Bight to the north of Sodwana Bay, may be contributing to the north-easterly flows recorded. The temperature recorder results indicated shelf-edge and potentially canyon induced upwelling onto the Sodwana Bay shelf. This cooler water may have contributed sufficiently, protecting the coral reef communities from bleaching, as less than 1% of corals were bleached during 1998. Two mechanisms highlighted in a recent IUCN report on resilience and resistance to coral bleaching shows upwelling and substantial current flow to be important resistance factors. Mechanisms Sodwana Bay clearly has.