

# Abstract

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**Short Title of Project:** Ocean dynamics that influence sea temperature structures in the Algoa Bay region.

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Bay-scale currents, thermohaline circulation, upwelling, fronts and mixing in Algoa Bay and St Francis Bay occur over short and long time periods. They play a major role in the primary and secondary production of the region by driving nutrients to the surface or concentrating the nutrients in certain areas. These thermal and salinity gradients are driven by the wind and open ocean influences, such as the Agulhas Current, daily and seasonal variations in solar radiation, long and short period waves, air-sea fluxes and fresh water inflow from the land. Internal waves also play an important role in the marine ecosystem of the bays by uplifting nutrient, phytoplankton, copepods and larvae towards the surface at the crests of the waves. The phenomena are poorly understood in the Algoa Bay region, but now with the implementation of SAEON's continuous monitoring platform (CMP) an opportunity has arisen to study them in detail. The project focuses on the physical ocean dynamics that lie behind the temporal and spatial distribution of nutrients in the bays and adjacent coastal regions, in order to gain a deeper understanding of the physical functioning of the systems and at the same time supplement the work of the biologists. Although *in situ* observational data are available on an on-going basis through SAEON's CMP, supplementary measurements will be made during research boat field trips and, should the opportunity arise, on research cruises off the Eastern Cape coast.