

DURBAN CYCLONIC GYRE

North of Cape St Lucia and south of Durban, the continental shelf is very narrow. Between these two locations it widens to approximately 45 km. The Agulhas Current flows swiftly along the continental margin, and influences the shelf waters. On the broader shelf between Durban and Richards Bay, the shelf currents are dominantly north-easterly. The shelf ecosystems rely on two eddies for nutrients, one, which is found in the lee of Cape St Lucia and the other, which is formed south of Durban where the shelf narrows (referred to as the Durban cyclonic gyre). Little is known about this eddy, except that it lifts nutrients to shallower depths. Aliwal Shoal, a major reef system, is positioned adjacent to this eddy.

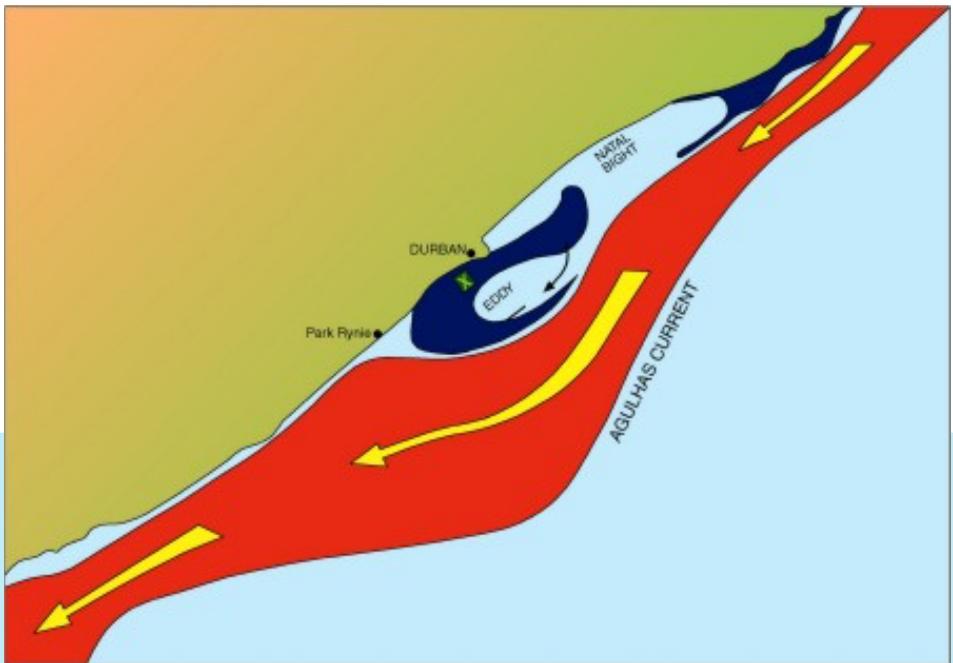


Figure 1 - The Durban cyclonic gyre depicted in dark blue off Durban, with the Agulhas Current flowing past. The position of the current meters mentioned below are each shown as a green "X".

Current meters deployed off Durban show mainly northward flowing currents (refer to Figure 2), which corroborates with Figure 3 (Schumann, 1988). By contrast, the southern region is strongly influenced by the Agulhas Current due to the very narrow shelf (refer to Fig. 3). The current at Port Edward is constantly southward.

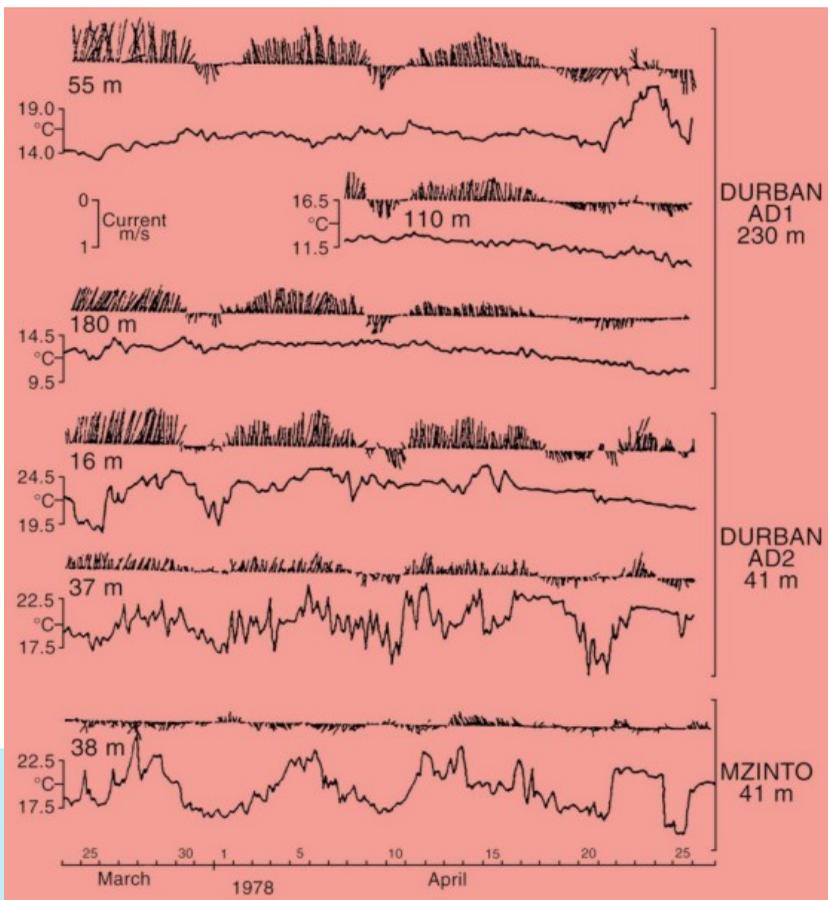


Figure 2 - Current and temperature time series from moorings off Durban and Mzinto (near Park Rynie) during 1978. The total depth at each mooring is shown on the right, while the depth of the individual meters is shown on the left. The orientation of the coastline is perpendicular to the x-axis showing the time variable. (Diagram adapted from Schumann, 1988).

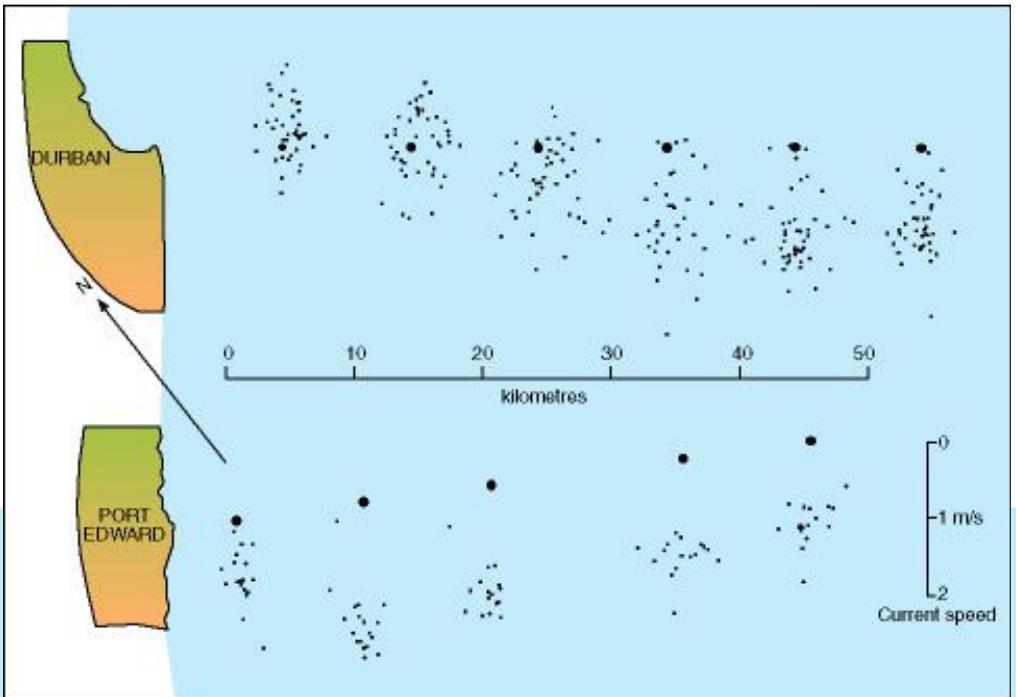


Figure 3 - Current measurements taken off the coasts of Durban and Port Edward. Stations are represented by the large black dots. Each of the smaller dots represents the head of a current vector averaged over the upper 100m. (Diagram adapted from Schumann, 1988).

CLASSIC PAPER

Schumann, E. H. (1988). **Physical oceanography off Natal.** In: E.H. Schumann, (Ed.), *Lecture Notes on Coastal and Estuarine Studies*. Springer-Verlag, New York, pp. 101-130

Bibliography

- Lutjeharms, J. R. E. and Connell, A. D. (1989). The Natal Pulse and inshore counter-currents off the South African east coast. *South African Journal of Science*, 85, 533-535.
- Lutjeharms, J. R. E., Valentine, H. R. and Van Ballegooyen, R. C. (2000). The hydrography and water masses of the Natal Bight, South Africa. *Continental Shelf Research*, 20, 1907-1939.