

PORT ALFRED UPWELLING CELL

Along the eastern extremes of the Agulhas Bank, between East London and Port Elizabeth, the continental shelf starts widening. It has been shown that frequent, substantial shelf edge upwelling occurs here (refer to Fig. 1). Lutjeharms et al. (2000) showed the clear delimitation of a surface upwelling cell (an entirely localised phenomenon). It is thought that this upwelling is caused by the divergence of the Agulhas Current from the coast. The core of the cell is found at Port Alfred. Upwelling in this region contributes a high nutrient load to the far eastern Agulhas Bank (refer to Fig. 2). This cell is fed by water upwelled from Central Water depths. (Lutjeharms et al., 2000)

A recurrent process of surface outcropping of this upwelled water has been shown by the use of thermal infrared imagery. Local wind action is believed to bring this already upwelled at depth water to the sea surface. This upwelling cell is only intermittently detectable at the sea surface when this outcropping occurs. (Lutjeharms et al., 2000)

CLASSIC PAPER

Lutjeharms, J. R. E., Cooper, J. and Roberts, M. (2000). **Upwelling at the inshore edge of the Agulhas Current.** Continental Shelf Research, 20, 737-761.

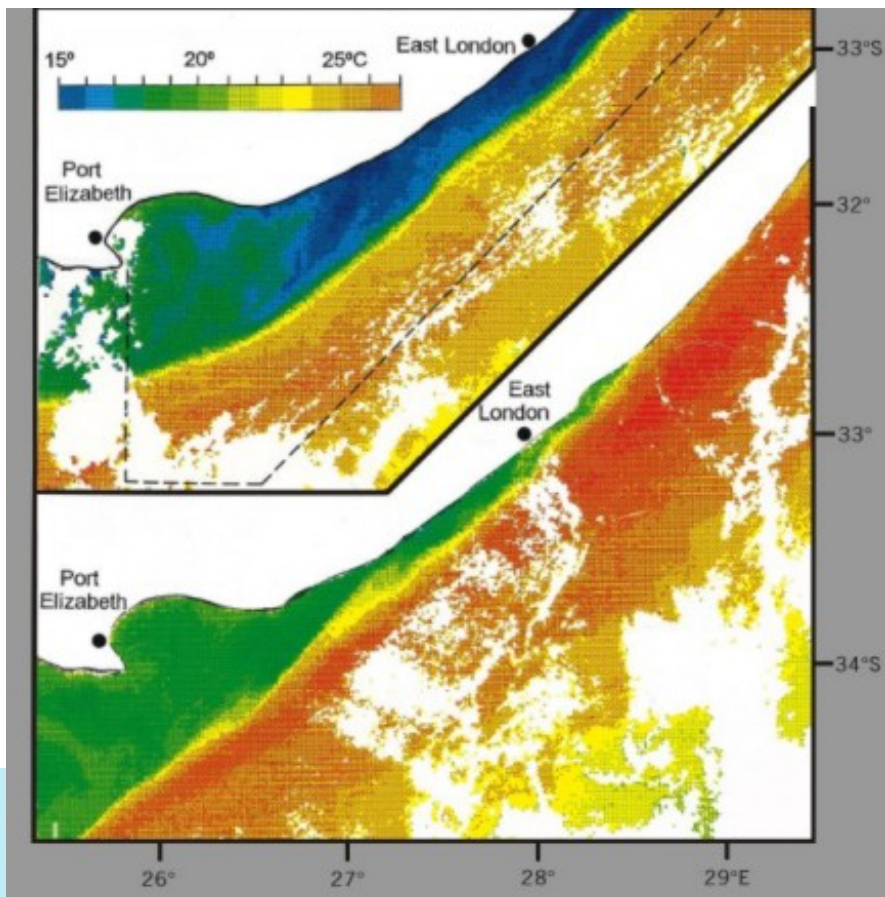


Figure 1 - Sea surface temperatures along the edge of the Agulhas Current. The upper image shows a well-developed upwelling event (30 March 1991). The lower image is from 25 days previously (5 March 1991) and shows no sea surface evidence of upwelling. White areas over the sea are due to cloud coverage. (Diagram reproduced and altered from Lutjeharms et al., 2000).

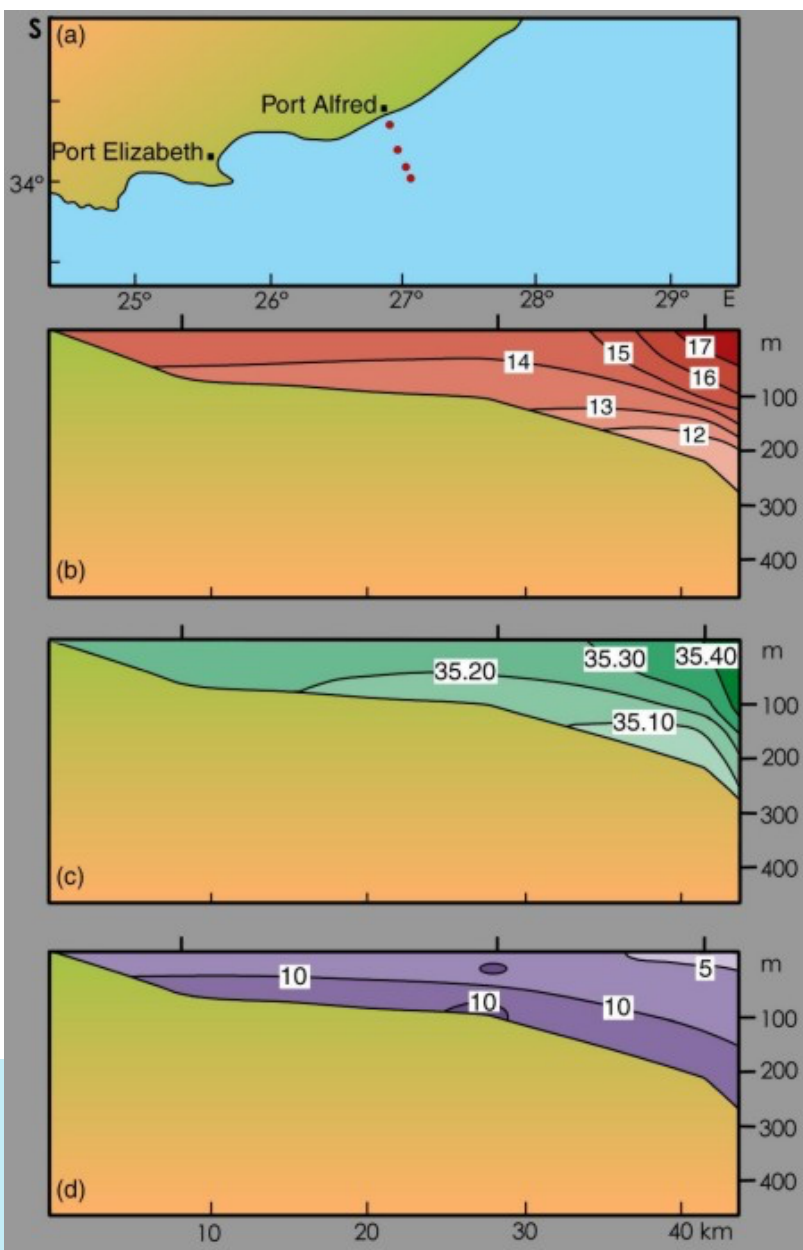


Figure 2 - A line of hydrographic stations measured during the outcropping of upwelling in October 1992. The positions of the stations are shown in (a), while (b) shows temperatures, (c) shows salinities and (d) shows nitrates. (Diagram reproduced and altered from Lutjeharms et al., 2000).