ABSTRACT

Ansorge, I.J., Lutjeharms, J.R.E., Roberts, M.J., Cooper, J. and M. Roualt (1996)

Variability of the eastern Agulhas Bank upwelling cell

Abstracts of the Benguela Dynamics Symposium, Cape Town, November 1996: p. 23

Upwelling at the shelf break of the Agulhas Bank has been surmised to play an important role in the water budget of the Agulhas Bank as well as in the maintenance of the vertical stratification for this shelf region. At the eastern extremity of the Agulhas Bank, in the general vicinity of Port Alfred, a particularly intense upwelling cell has been identified (Lutjeharms et al,1996). An analysis of the variability of the upwelling expression in this cell has been carried out using historical hydrographic data, as well as data collected during a dedicated cruise (ACASEX).

Temperature fields that represent the cold water delimiting the upwelling cell, show small, but insignificant, seasonal and interannual variations. This means that at the shelf break, the upwelling process is most probably continuous and persistent. In contrast, an analysis of sea surface temperatures, near Port Alfred using satellite imagery, shows extreme variability on a time scale of weeks to days. Observations taken at sea across the upwelling cell, for the first time during a number a different synoptic wind conditions, give a strong indication of the mechanism responsible for this anomalous behaviour. Warm water from offshore rapidly caps the cold water under southwesterly winds. North-easterly winds have the opposite effect, Surface readings in this region are therefore not a good measure of the continuous process of shelf edge upwelling.