

ABSTRACT

Roberts, M.J., Agenbag, J.J., LeClus, F., Melo, Y., Mitchell-Innes, B.A. and J. Taunton-Clark (1995).

The impact of climate change on the oceanography of the Agulhas Bank and its fisheries.

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The Agulhas Bank is the largest area of shallow sea on the South African coast and is rich in diversity of fauna. It is important economically for the commercial harvest of 16 species of demersal fish which include amongst others horse mackerel, Cape hake, Agulhas sole, panga and kingklip, as well as chokka squid, rocklobster and 23 species of linefish. Its importance however, goes beyond commercial harvesting in that it is the preferred spawning ground for Cape anchovy and South African pilchard. Catch statistics for many of these fisheries show a high degree of variability particularly on an inter-annual basis. For the management of these fisheries to be successful and to improve efficiency in the industry it is important to understand the causes of this variability. Fisheries scientists believe the root cause of this variability is embedded in environmental changes. Consequently the SFRI has recently stepped up its research programme to include a greater emphasis on the oceanography, climatology and biology of the Agulhas Bank in terms of processes and their variability, and ultimately their impact on the fisheries.

The paper presented at this conference provides an overview of the progress made to date with respect to this research programme. First important oceanographic processes on the Agulhas Bank are emphasized along with their distinguishing characteristics given in terms of the physics, chemistry and biology. Fundamental or secondary driving forces for each process are depicted and their inter-annual variability explored using long-term data sets, which directly or indirectly monitor them. An overview of the climatic processes responsible for the local oceanic driving forces i.e. easterly winds, cold fronts and expansion of the westerly belt is given. Long-term data sets which monitor these climatic processes are also explored for inter-annual variability and shown to correlate well with short-term ENSO events. Inter-annual variability with cycles of 23 years and longer are also pointed out. This work is finally put into context with an attempt where possible to link the observed inter-annual climatic and oceanic variability with fluctuations in fisheries catches (and biomass) and/or impact on their life cycles.