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Impact of variability in inter-ocean exchange south of Africa on the Benguela Current system

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The Benguela Current Large Marine Ecosystem (BCLME) is one of a number of large marine ecosystems (LME) identified as of importance to biodiversity and global sustainability. This upwelling system is unique in being bounded by warm water of tropical origin at both its equatorward and poleward margins. To date, little work has considered the impact of variability at its southern boundary, i.e., that emanating from variability developing in the Agulhas Current system. Such variability may occur via internal ocean processes, coupled ocean-atmosphere interaction in the region, or atmospheric forcing. Output from various ocean and atmospheric models are used to assess the impact that Agulhas variability has on the southern Benguela system. It is found that on interannual scales, co-evolving variability over the South Indian and South Atlantic oceans driven by large-scale mid-latitude atmospheric forcing is important. This variability interacts with that evolving on shorter time scales due to internal ocean processes, thereby modulating the mesoscale signals in the region. In addition, ENSO has a significant impact on both the Agulhas and Benguela Current systems which complicates the diagnosis of the variability in the region.