

Ecosystem complexity on the Kerguelen Axis: the need for integrated ecosystem studies and sustained coordinated monitoring

Andrew Constable^{1,2}, So Kawaguchi^{1,2}, Jess Melbourne-Thomas^{1,2}

¹Australian Antarctic Division, Australia

²Antarctic Climate and Ecosystems Cooperative Research Centre, Australia

The Kerguelen Axis encompasses the Kerguelen Plateau from the subantarctic across Princess Elizabeth Trough to the Antarctic Continental Shelf in the south (Figure 1). The northern part of the axis is influenced greatly by the west to east flow of the Antarctic Circumpolar Current and the Polar Front and the Subantarctic Front. In contrast, the southern part is influenced by the shelf and the confluence of the east-west flow of the shelf front, the Prydz Bay gyre and the southern components of the ACC, including the Southern ACC Front. The southern part of the axis is also influenced by the annual advance and retreat of sea ice. This talk will discuss hypotheses on the factors driving the spatial differentiation of the food web from one dominated in the south by crystal krill and Antarctic silverfish, through that dominated by the ubiquitous Antarctic krill off the continental shelf to the one dominated by copepods and fish in the north. The talk will summarise the marine science being undertaken this coming year to test these hypotheses. It will also present summary outcomes from joint discussions between Australia and Japan on research for determining the role of sea ice in the spatial differentiation of the food webs. Lastly, the talk will elaborate recent progress in the Southern Ocean Sentinel and Southern Ocean Observing Systems (<http://www.soos.aq/>) for multinational sustained observing in the Indian Sector to detect change in the region.

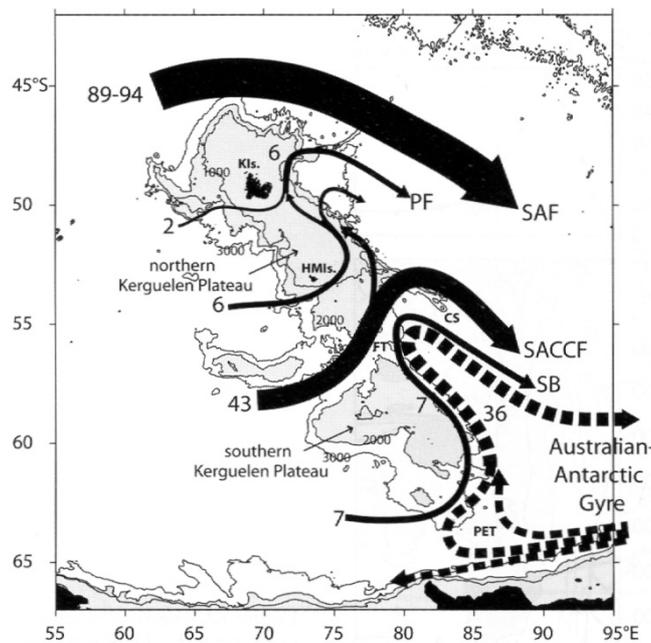


Figure 1. Schematic of major pathways and transports (in Sv) of the Antarctic Circumpolar Current system (bold continuous lines) and Deep Western Boundary Current of the Australian-Antarctic Gyre (bold discontinuous lines). (Figure 13 from Park & Vivier, 2011).

References

Park Y-H, Vivier F (2011) Circulation and hydrography over the Kerguelen Plateau. In: *The Kerguelen Plateau: marine ecosystem and fisheries*. (eds Duhamel G, Welsford DC) pp 43-55. Paris, France, Société Française d'Ichthyologie.