



An evaluation of Iceberg meltwater injection in the Southern Ocean

T.A.M. Silva (1), G.R. Bigg (1) and K.W. Nicholls (2)

(1) Department of Geography, University of Sheffield, UK (2) British Antarctic Survey, Natural Environment Research Council, UK

Antarctic icebergs melt in the Southern Ocean typically over one or more years. The meltwater is released at depths from 0 to 300 m and mixes with the ambient water freshening and cooling it. Due to the sheer number of icebergs it is difficult to learn where and how quickly these melt. This study uses observed tracks of giant icebergs and modelled tracks of smaller bergs, from published results, to model iceberg melting; from those we estimated the iceberg meltwater distribution for the Southern Ocean. Iceberg meltwater has often been overlooked in studies of the Southern Ocean. Our estimates show iceberg meltwater to be comparable in magnitude with other sources and sinks of freshwater for both the Weddell Sea and for the Southern Ocean as a whole: precipitation minus evaporation, ice shelf basal melting, currents and sea ice formation and transport. Ocean modellers generally assume iceberg meltwater to spread evenly over most of the Southern Ocean. The meltwater map here presented can be used to produce more realistic conditions on OGCMs for the present day.