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Circulation in the Ona Basin, southern Drake Passage

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The Ona Basin (52-62˚W, 57-61˚S; mean depth 3500 m), Southern Drake Passage, is quite well documented during 2002-2006. Indeed, five ARGO floats remained trapped in the Ona Basin documenting water masses in the upper 2000m, fronts, eddy field and circulation at all seasons from 2002 to 2006. In addition, 226 surface velocity program drifters (SVP drifters) crossed the Ona Basin documenting near surface velocities from 2003 to 2006 mainly in summer and autumn. A few clear high resolution images (SST and color) provide a synoptic picture of the three fronts (PF, SACCF and SBdy), the branching of the SACCF and the wealth of mesoscale and submesoscale structures.

Floats are trapped in the Ona Basin to the west by the Shackleton ridge (57˚W-60˚S; 2000m from sea surface) to the east by i) an eddy located over a sea floor depression deeper than 4000m, ii) the westward flowing SBdy which loops to the north of the Shackleton Bank. A 13-year long time series of SLA shows that the eddy has been an intermittent feature until the end of 2002 when it became permanent for the next 3 years. The time evolution of the loop of the SBdy to the north of the Shackleton Bank remains uncertain.