

Séminaire

Mercredi 24 Juin 2015, 11h15
salle L. LLiboutry, LGGE

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Dynamics and transport of the Antarctic Circumpolar Current

The Antarctic Circumpolar Current (ACC) in the Southern Ocean is the world's strongest current, linking the Pacific, Indian and Atlantic Oceans. Despite its manifest importance to global climate, the Southern Ocean remains the most poorly constrained of all the ocean basins. Besides being data sparse (both for modern and paleo measurements), our understanding of the Southern Ocean is complicated by rich dynamics that are unparalleled in the global ocean, and add complexity to climate models.

Fine scale eddies and jets in the Southern Ocean act to moderate the response of the ACC to changes in climatological forcing. In this seminar I will review recent advances in theory and modelling which expose the role of eddies, as well as surface wind and buoyancy forcing, in modulating the ACC. I will also show an updated analysis of the Southern Ocean satellite altimetry record which indicates an increase in eddy kinetic energy in recent decades, contemporaneous with a probable decrease in ACC transport. The increasing intensity of the Southern Ocean eddy field is consistent with model predictions and has implications for overturning circulation, carbon cycling and climate.