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Invited abstract for session OS075: Role of Eddies in the Upper Ocean

Subantarctic Mode Water and Antarctic Intermediate Water formation near the Subantarctic Front in the southeast Pacific in winter 2005

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Hydrographic and ADCP observations in the southeast Pacific in late austral winter (August to October) 2005 reveal a large region of thick (300 – 500 m) surface mixed layers north of the Subantarctic Front (SAF) and south of the climatological zero of the wind stress curl. The thick layers are identified as Subantarctic Mode Water and immediate precursors of Antarctic Intermediate Water. The thickest mixed layers (greater than 400 m) were found at 9 stations of the total of 135. Thick mixed layers were associated with either (1) the northern edge of the SAF or (2) a region of cold surface water of about 500 km extent, based on satellite microwave SST, coinciding with a broad meridional maximum in salinity. Twice weekly altimetry showed an association of the SAF thick mixed layers (1) with anticyclonic eddies (100-150 km scale) that progressed slowly eastward. Large-scale patchiness in the SST, which might be impacting the formation of thick layers (2), was associated loosely with meandering of the SAF. Sparse ARGO float observations from prior years showed thickest mixed layers close to the SAF; the floats were strongly steered by the mesoscale eddy field.

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