

# MESOSCALE EDDIES AND COLD WATER DYNAMICS OBTAINED FROM PROFILING FLOATS

Anil Akpınar<sup>1</sup>, Bettina Fach<sup>1</sup>, Temel Oguz<sup>1</sup>, Baris Salihoglu<sup>1</sup>

<sup>1</sup>*Institute of Marine Sciences, Middle East Technical University, Erdemli, Turkey*

*anil@ims.metu.edu.tr<sup>1</sup>*

**Keywords:** *Black Sea, Cold Intermediate Layer, profiling floats, cyclone, anticyclone*

Data from seven profiling floats operating in the Black Sea between 2002-2009 have been used in this study to investigate the temporal and spatial distribution Cold Intermediate layer (CIL) as an indicator for the ventilation of upper 200m water column. Relatively thick CIL is observed in March; otherwise mesoscale flow structure controls predominantly its spatial and temporal structures, including its formation. The observations confirm the earlier findings about thicker and deeper CIL in anticyclones and vice versa for cyclones. Simultaneous observations in cyclonic and anticyclonic patterns reveal an 80m difference in the lower boundary of CIL and a 60m difference in CIL thickness. It's typical average thickness is about 30 m in the cyclonic eddies and 100m in anticyclonic eddies. The extent of ventilation of the subsurface waters during the CIL formation and afterwards is particularly pronounced within the coastal anticyclonic eddies such as Kizilirmak, Batumi, Kerch, Sinop and Caucasian eddies. Geostrophic velocities as high as 6 cm/s are observed at 1550m depth whereas the corresponding current intensity reaches at 60 cm/s at the surface, particularly in December-February.