



Abyssal water transformation in the Panama Basin

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As a toy model for global ocean, diabatic upwelling of abyssal waters was investigated in the Panama Basin employing the water transformation framework of Walin1982. We find that, in large areas of the basin, the bottom boundary layer is very weakly stratified and extends hundreds of meters above the sea floor. Such weakly stratified boundary layer (wsBBL) is associated with isopycnals intercepting the bottom of the basin. The area of these isopycnal incrops increases gradually as the abyssal waters become lighter. Large incrop areas are associated with strong diabatic upwelling of abyssal water, geothermal heating being the largest buoyancy source. We show that, contrary to recent theoretical understanding, most of the diabatic upwelling seems to occur in the basin interior, away from the sloping boundaries.