



Influence of internal tides on Antarctic Bottom Water propagation through abyssal channels

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Antarctic Bottom Water (AABW) propagates in the Atlantic Ocean from the Weddell Sea to the north through narrow passages in submarine ridges. Submarine ridges are regions of strong internal tide generation in the ocean that causes mixing and eventually AABW loses its distinguishing properties such as low temperature and salinity. The Vema Fracture Zone (11 [U+F0B0] N) and Romanche Fracture Zone (equator) in the Mid-Atlantic Ridge (MAR) are pathways for AABW to the Northeast Atlantic. The deep basin of the Northeast Atlantic (Canary Basin and Gambia Abyssal Plain) are filled with the bottom water propagating through the Vema FZ rather than through the equatorial fracture zones because strong internal tides and mixing over the slopes of the MAR near the equator cause warming of AABW and decrease of its density. Further propagation of AABW through the Kane Gap is low. Recent field measurements in the fracture zones confirm this concept based on modeling results. Results of recent cruises are presented.