

Demystifying Science: What is the Pacific shadow-zone?

The shadow zone is an area of almost stagnant water sitting between rising currents caused by the rough topography and geothermal heat sources below 2.5 kilometres and shallower wind-driven currents closer to the surface in the North Pacific. This is the oldest water in the ocean in the North Pacific and has remained trapped in a shadow zone around 2 kilometres below the sea surface for over 1,000 years. Until recently, models of deep ocean circulation did not accurately account for the constraint of the ocean floor on bottom waters. Once the international team of researchers precisely factored it they found the bottom water cannot rise above 2.5km below the surface, leaving the region directly above isolated. "Carbon-14 dating had already told us the most ancient water lay in the deep North Pacific. But until now we had struggled to understand why the very oldest waters huddle around the depth of 2 km," said lead author from the University of New South Wales, Dr. Casimir de Lavergne. "What we have found is that at around 2km below the surface of the Indian and Pacific Oceans there is a 'shadow zone' with barely any vertical movement that suspends ocean water in an area for centuries." The article, "Abyssal ocean overturning shaped by seafloor distribution", has been published in the journal, *Nature*.

The Ig Nobel Prizes show that scientists too have a sense of satire, sarcasm, humour and yet appreciation.

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