

SO228 – Rare earth elements (REEs) in the Bismarck Sea and input from the Sepik river

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The REEs form a coherent group of elements whose speciation in seawater changes progressively with atomic number. As such they have great potential to track trace metal input and cycling processes in the oceans. Here we present REE data collected from the Bismarck Sea in the western equatorial Pacific near the mouth of the river Sepik. Surface samples obtained by bucket are enriched in REEs and have a distinct middle REE bulge when normalised to Pacific deep water. Directly below this (15m and deeper) waters have some of the lowest REE concentrations found in seawater and are typical of the western Pacific. Water column profiles show a nutrient like increase with depth and typical shale normalised REE patterns reflecting the relative affinity for particles. The middle REE bulge found in the fresh water discharge lens is also found in filtered water from directly above the sediment water interface, demonstrating the continued release of REE from river derived sediments. This suggests the influence of the Sepik river is restricted to the uppermost and bottommost seawater.