

Re-evaluation of B and $\delta^{11}\text{B}$ budgets in the ocean based on mud volcanoes on land and offshore

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The mass imbalance of Boron (B) and B isotopes ($\delta^{11}\text{B}$) in the ocean is an outstanding geochemical question. The B fluxes into the ocean is much less than the outputs, possibly due to neglected remobilization flux of sedimentary B in convergent margins. Mud volcanism is common in accretion and collisional settings and is an efficient conduit from deep reservoirs to exchange. Recently, enhanced B in mud volcano fluids/sediments in Taiwan Accretionary Prism and Caucasus Continental Collision Zone. The former shows >10 mM B in MVs and >11 mM in submarine MVs, where the latter displays up to >148 mM B in MVs, 510~1600 ppm B in mud and illite-rich clays. These B-bearing minerals may shed lights on the missing B sources. At the Kerch peninsula, unique accumulation of hydrated Na and Na-Ca borates. The chemical environments of NaCl-dominated MVs are optimal for ulexite crystallization. Separated ulexite, tinalconite, borax and B-enriched clays will be analyzed for B and $\delta^{11}\text{B}$, combined with other stable isotopes results in MVs for a detailed examination of the B sources and fractionation.