The barium isotopic composition of the global groundwater flux

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When modeling changes in the stable isotope composition of seawater, riverine fluxes are often considered to be the dominant terrestrial conduit for change. However, direct groundwater fluxes are garnering increased interest because they are significant for some stable and radiogenic isotope systems, such as $^{87}Sr/^{86}Sr$ [1]. We hypothesize that groundwater fluxes may be important for other isotope systems, such as $\delta^{138/134}Ba$, due to barium's enrichment in groundwater discharge relative to riverine inputs [2]. To test this hypothesis, a globally-distributed set of groundwater samples that ranges from fresh to saline was collected and analyzed. The sample locations selected drain different lithologies representing a range of ages/coastline morphologies and span across several climatic regimes. As more information becomes available regarding the implications of the marine barium isotope system, the better-constrained groundwater flux and isotope values to the global ocean will benefit modeling efforts.

[1] Beck *et al.* (2013). *GCA* 117, 33-52. [2] Shaw *et al.* (1998) *GCA* 62(18), 3047-3054.