



Revisiting the Latest Permian Mercury Anomalies: lessons for application of mercury as a sedimentary proxy for large volcanic events

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In 2012, Sanei et al. (*Geology*, 40(1), 63-66) reported anomalously elevated concentrations of mercury (Hg) in the sediment intervals of a continuous shale section from the Canadian High Arctic, which spans the Latest Permian extinction event. These elevated Hg intervals were correlated with fly ash layers (shale layers containing cenospheric char) attributed to aerial deposition of char from incineration of carbonaceous rocks (e.g., coal) during the massive Siberian Traps volcanic eruptions. Since the first reporting of the Hg anomalies in 2012, there has been numerous publications and presentations documenting similar phenomena in the sedimentary rocks contemporaneous with the eruptions associated with large igneous provinces (LIPs), which are believed to be responsible for several known great extinction events. This presentation revisits the key aspects of the “Latest Permian mercury anomalies” paper in light of what we know about the modern global Hg cycle, and recent extreme cases of aquatic Hg contamination (Minimata Bay, Japan, and lakes near the Flin Flon base metal smelter, Canada). We use these modern analogues to suggest lessons for applications of the Hg proxy as an indicator of extreme geological environmental turnover associated with LIPs eruptions, including how changes in the algal scavenging of Hg from the water column are affected by elevated Hg and associated bio-toxic contaminants.