

Osmium in groundwater, how much is there and what does it tell us?

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The osmium (Os) isotopic system is probably best known for its use in mantle geochemistry and crustal geochronology. However, for this talk I will be presenting the results of the first dedicated study that attempted to analyze the composition of Os in deep groundwater (> 1km). The ultimate goal of this study was to gain a better understanding of how Os is transported and evolves between and within different reservoirs (e.g. mantle, crust, ocean, ore, petroleum) and speculate on the applicability of Os isotopes to tracing studies. This talk is broken down in three digestible parts:

(1) A short introduction of the Os isotopic system

(2) What were the Os isotopic compositions of the water and oil collected from the Athabasca River and the Williston Basin?

(3) A brief investigation of how these results may be used to better constrain our understanding of the Re-Os system in sediment-hosted ore deposits and petroleum systems, while investigating its potential applicability to environmental tracing.