

## **RAPID QUANTIFICATION OF URANIUM IN BEDROCK: A NEW FRAMEWORK FOR PARAMETERIZING GEOGENIC CONTRIBUTION TO GROUNDWATER CONTAMINATION**

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The Navajo Nation is the largest Native American reservation in the United States and is located on the Colorado Plateau. Uranium is a significant groundwater contaminant that leaches into groundwater aquifers through anthropogenic activities, but limited information is known about its natural distribution, contribution from geogenic sources, and the relative importance of exposure from water, air, and soil for human health. We developed a new framework to parametrize the distribution of uranium in bedrock through rapid analysis of over 850 meters of rock cores collected in Petrified Forest National Park (PFNP). We generated a continuous geochemical profile using X-Ray Fluorescence (XRF) Spectroscopy and identified several intervals of elevated concentrations of uranium. We performed high-resolution sampling across these intervals to develop a new uranium calibration appropriate for material from this region and plan to subsequently use this material for further isotopic study to improve our ability to trace the migration of uranium from bedrock sources to groundwater sinks. This project serves as an important constraint on assessing the extent to which unworked, small-scale occurrences of uranium throughout the region may impact groundwater quality. Furthermore, as we work toward building models of the integrated geologic history of the region (from Mesozoic depositional systems to the modern hydrogeologic environment), an understanding of the mechanistic processes that mobilize and concentrate uranium in both bedrock and groundwater is essential for differentiating the exposure risk between geogenic and anthropogenic sources of uranium.