

Poster #21-22**An Investigation of How Floodplain Deposit Ages and Permafrost Distributions Influence the Patterns, Rates, and Age of Soil Organic Carbon Fluxes to the Koyukuk River.**

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In the summer of 2018, we conducted a preliminary floodplain coring and river sampling program on the Koyukuk River and its associated floodplain in the vicinity of Huslia, AK. The Koyukuk River, one of the largest tributaries to the Yukon River, has one of the largest alluvial floodplains in Alaska. Scroll bar complexes, oxbow lakes, and peat-filled drained lake basin occupy the floodplain that reaches widths in excess of 15 km, creating a complicated mosaic of deposits that vary in age, permafrost extent, and soil organic carbon content. We mapped permafrost occurrence in exposed banks and soil cores. We observed that the presence and absence of permafrost extent in the floodplain ranged at scale of kilometers, in scroll bar complexes of varying age, to tens of meters along individual scroll bars. Analysis of aerial photographs and high-resolution satellite imagery allow us to quantify bank erosion rates at decadal and yearly time scales along 10s of km of the river at 2 m spatial resolutions. Comparing these erosion rates and patterns to our permafrost mapping allows us to explore whether, and at what scales, the presence of permafrost controls river bank erosion rates. We analyzed soil samples from cores and river bank exposure for carbon content, grain size, and radio carbon ages. This data will allow us to develop an estimate of the floodplain carbon storage and age of deposits. A comparison of the age distribution of floodplain material eroding into the river to dissolved organic carbon (DOC) radio carbon ages of river water will allow us to begin to explore the influence of bank erosion on the composition of river carbon fluxes.