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Paper No. 109-13
Presentation Time: 9:00 AM-6:30 PM

USING LAKE CORES TO ANALYZE SEDIMENT TRANSPORT AND ENVIRONMENTAL CHANGE IN SWIFTCURRENT LAKE, GLACIER NATIONAL PARK, MONTANA, USA

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Swiftcurrent Lake in Glacier National Park, Montana, is fed by both the Grinnell Valley and Swiftcurrent Valley watersheds, making it a complex depositional setting. Previous coring in the lake revealed a record spanning ~17,000 years (Schachtman and others, 2015); interpretations of glacial history are complicated by a chain of lakes and streams between Grinnell Glacier and Swiftcurrent Lake that changes through time. In summer 2018 we collected a transect of cores in the southern subbasin of Swiftcurrent Lake along the delta formed by the inlet stream from Lake Josephine to better understand the pattern of sediment deposition over time. In addition, we made a limited number of water discharge and total suspended solids (TSS) measurements to understand the current magnitude of hydrologic and sedimentologic contributions to Swiftcurrent Lake.

In all three Swiftcurrent Lake cores we collected the Mazama ash (7.7 ka), and the longest core contained the Glacier Peak G ash (13.55 ka) and Mount St. Helens J ash (13.87 ka) (Schachtman and others, 2015). The Mazama ash occurs at different depths in each core in the transect, and shows that sedimentation rates are variable across the inlet despite similar water depths. Hiatuses are also likely in these sequences. In the last 7.7 ka, total sediment accumulation was greater at the distal end of the delta, suggesting the bypass of some sediment into deeper water. Preliminary observations suggest coarser sediments are deposited closer to the inlet, with finer grained material transported farther out into the lake. Smear slides show an increase in grain size from clays dominating sediments older than the Glacier Peak G/Mt. St. Helens J ashes to coarser sediment in the upper ~2 m of the cores. Preliminary estimates of water discharge coming from Lake Josephine show more water enters Swiftcurrent Lake from Grinnell Valley than that from Swiftcurrent Valley, but TSS concentrations are lower in the Grinnell Valley discharge. This pattern has implications for depositional records in the northern subbasin of Swiftcurrent Lake, which receives water and sediment from both valley systems.

Session No. 109--Booth# 215

T110. Lakes through Space and Time (Posters)
Monday, 5 November 2018: 9:00 AM-6:30 PM

Halls J-K (Indiana Convention Center)

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Back to: T110. Lakes through Space and Time (Posters)

<< Previous Abstract | Next Abstract >>