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GSA Connects 2021 in Portland, Oregon

Paper No. 224-3

Presentation Time: 9:00 AM-1:00 PM

DIATOM PALEOECOLOGY REVEALS ANTHROPOGENICALLY DRIVEN CHANGES AT JACKSON LAKE (WYOMING)

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Jackson Lake, located in northwestern Wyoming, is the largest piedmont lake in Grand Teton National Park and is a crucial reservoir for the upper Snake River Valley. Damming of the lake's outlet from 1908-1916 resulted in a ~12 m increase in lake level elevation, drastically changing lake surface area and morphology by flooding marginal environments. To investigate paleolimnological changes associated with dam installation, we compiled regional hydroclimate data, and developed new diatom assemblage and geochemical data on a well-dated deepwater sediment core. The core spans the termination of the Little Ice Age (LIA) and extends to the present day (~1650-2019 CE). Diatom assemblages prior to dam installation are characterized by high relative abundances of planktonic species indicative of low nutrient availability, perhaps due to a single, short-lived season of partial water column mixing. Following dam construction, diatom assemblages transitioned to dominance by planktonic species commonly associated with nutrient-rich waters. The diatom flora suggest that since emplacement of the dam, the lake's nutrient concentrations have increased, likely a result of the change in lake-level elevation and a possible reduction in nutrient loss at the outlet, which has been restricted due to dam emplacement. Geochemical indices obtained from the lake's sediments, show an increase in nutrient concentrations and organic matter content post dam emplacement, supporting the interpretations of the diatom paleoecology. Changes in Jackson Lakes, paleoecology and geochemistry has occurred as a direct result of the anthropogenic modification to the lake's outlet resulting in lake conditions changing dramatically from post LIA conditions to present day.

Handouts

[GSA Poster Diatoms_JD.pdf](#) (8.6 MB)

Session No. 224--Booth# 68

[T68. Lacustrine Systems around the World \(Posters\): In Honor of Michael Rosen](#)

Wednesday, 13 October 2021: 9:00 AM-1:00 PM

[Exhibit Hall A \(Oregon Convention Center\)](#)

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