

1-5 - DEVELOPING A GEOSPATIAL DATABASE OF LATE PLEISTOCENE MOUNTAIN GLACIERS IN THE WESTERN UNITED STATES



Tuesday, 23 May 2023



9:25 AM - 9:45 AM



Room 304-306 (Lory Student Center)

Abstract

The glacial geology community has developed digital reconstructions of Pleistocene glaciers in the western U.S. through decades of regionally focused research and interpretations of geologic maps. These paleoglacier reconstructions afford an opportunity to develop paleoclimate reconstructions for the Late Quaternary in the western U.S., especially when combined with cosmogenic chronologies and other paleoclimate proxies and model output. Here, we present a geospatial database of Late Pleistocene mountain glaciers for the conterminous western U.S. based on compilations of paleoglacier reconstructions spanning glaciated mountains in the region. The database consists of paleoglacier outlines as georeferenced polygons drawn at scales ranging from 1:24,000 to 1:100,000, reflecting differences in available mapping data and degrees of confidence in identifying glacial deposits and landforms used to identify paleoglacier limits. The database is available as a web feature service designed to be easily represented in a geographic information system or web mapping application to enable visualization of the pattern of Late Pleistocene mountain glaciation and analysis of paleoglacier outlines and derivative products, such as equilibrium-line altitudes and boundaries of modeled paleoglaciers. We illustrate potential applications of the database for visualization and data assimilation with an example from mountains neighboring the Lake Bonneville basin, where paleoglacier outlines are based on 1:24,000 scale mapping of glacial deposits and landforms and cosmogenic chronologies of moraines are abundant. For this research, the database enables an analysis of the pattern of glaciation in the region and, through assimilation with chronological data, an assessment of the relative timing of glacier maxima and the time when Lake Bonneville overflowed. While the database can be easily shared among users and represented in a geographic information system, development of the database requires community input to maximize its utility for users across disciplines. A goal of this presentation is to encourage interested users to share ideas for developing an accessible, scalable, and community-supported database of paleoglaciers.

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