National Park Service
U.S. Department of the Interior
Yosemite National Park
Resources Management and Science

Looking Downstream Fall 2025 update

National Park Service Research in Poopenaut Valley

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Purpose of Looking Downstream project

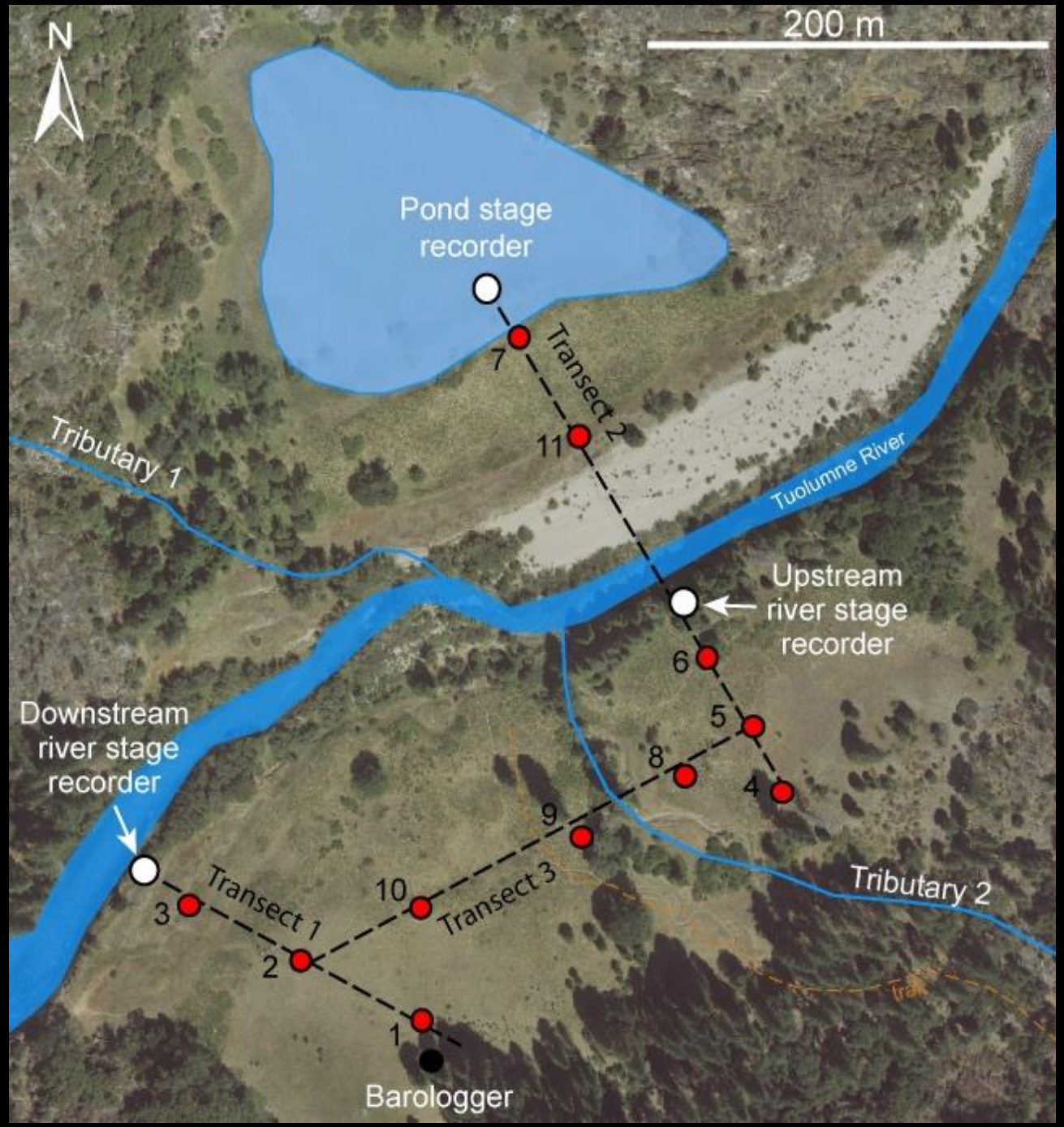
Investigate the riverine, riparian, wetland, and meadow ecosystems in Poopenaut Valley below O'Shaughnessy Dam to assess their overall condition and inform future water management for ecological benefit

Methods

- Quantify the hydrology (river, tributary, and groundwater flows) across a range of environmental conditions
- Vegetation surveys of riparian, wetland, and meadow habitats
- Bird and bat surveys of riverine and riparian habitat
- Benthic macroinvertebrate surveys





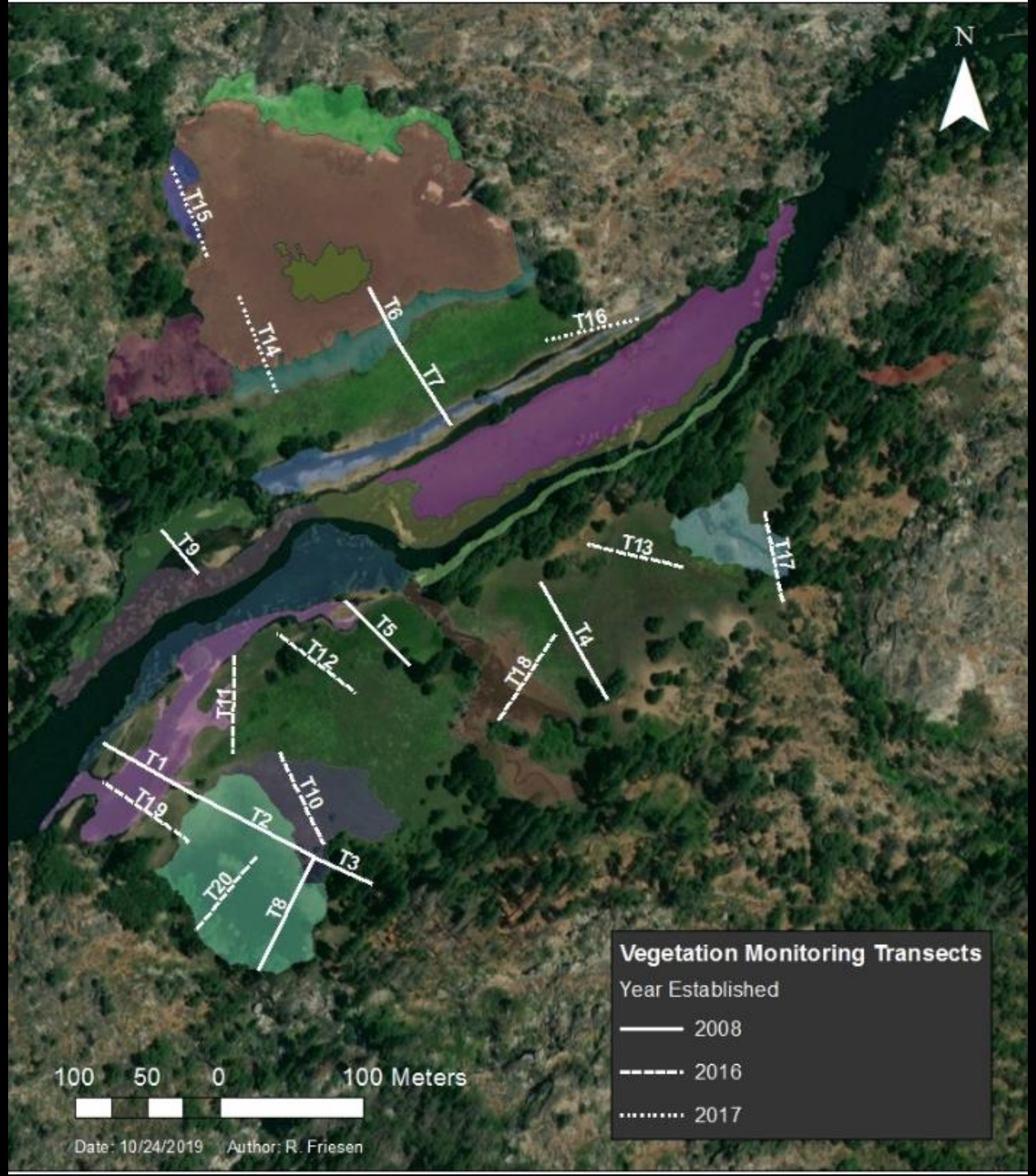


Poopenaut Valley hydrologic monitoring

- River discharge
- Groundwater levels
- Poopenaut Pond stage – working to get real time data transmission from this gauge

Poopenaut Valley vegetation monitoring

- 3 visits between June 16 and July 17, 2025
- Read 20 point-intercept transects
- Repeat photopoints



Poopenaut Valley bird surveys

- 19th consecutive year of breeding bird surveys
- 3 visits between May 21 and June 25, 2025
- Point counts, area searches, and spot mapping
- Near absence of yellow warblers

River insects and algae above and below Hetch Hetchy

- 2025 surveying continued as normal despite challenges
- Didymo was present in even lower amounts than in 2024, essentially at trace levels
- Manuscript submitted focusing on the effects of large releases during the severe drought (and one big winter) of 2015-2019

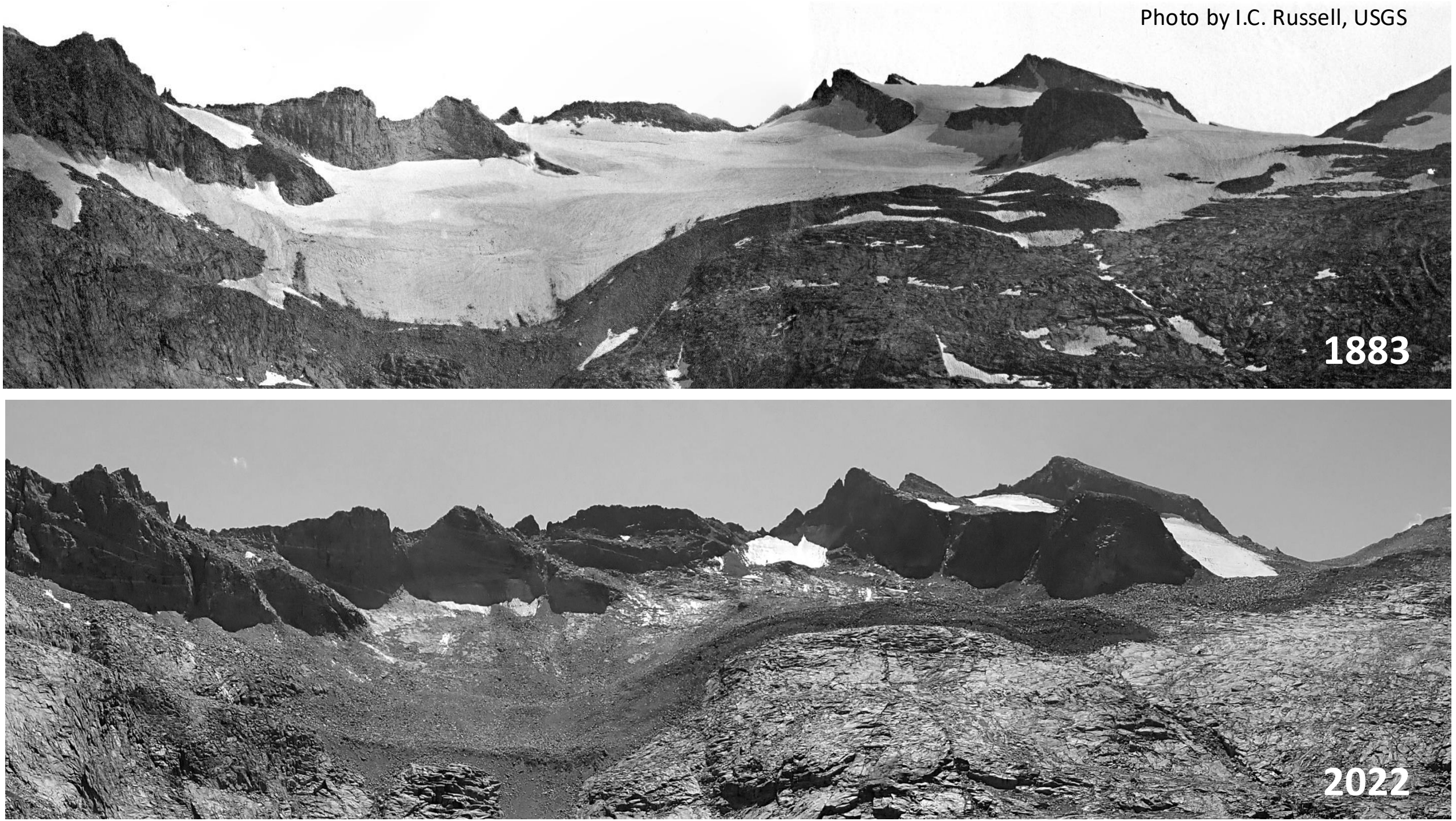
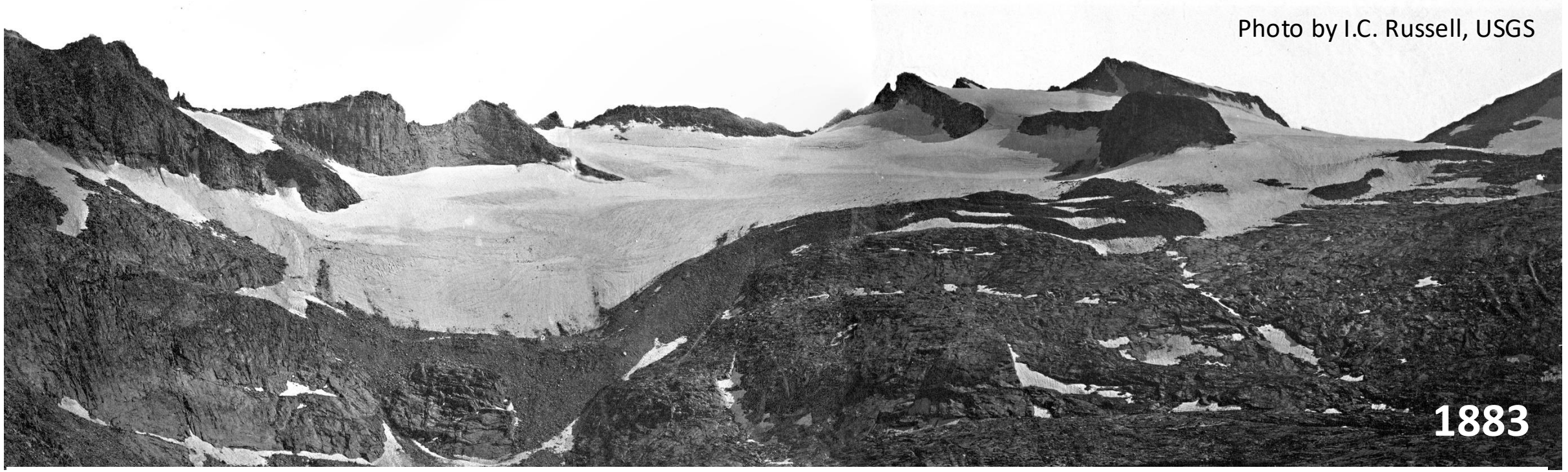
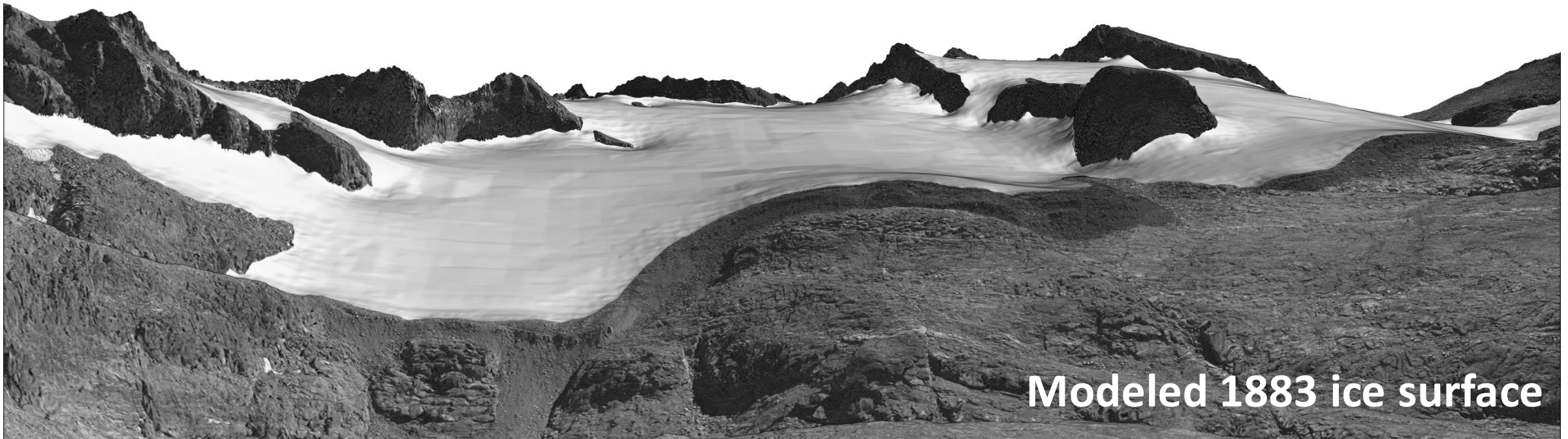


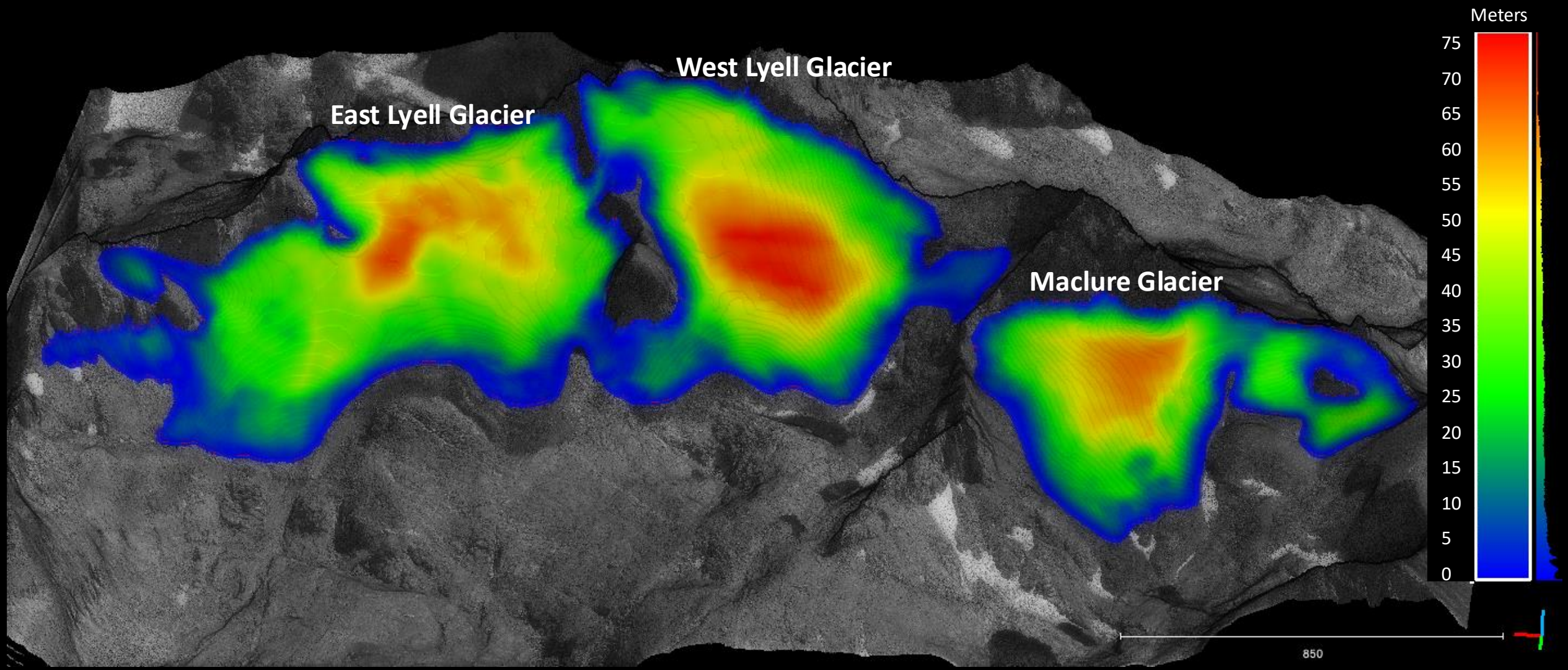
Photo by I.C. Russell, USGS
1883
2022

Photo by I.C. Russell, USGS

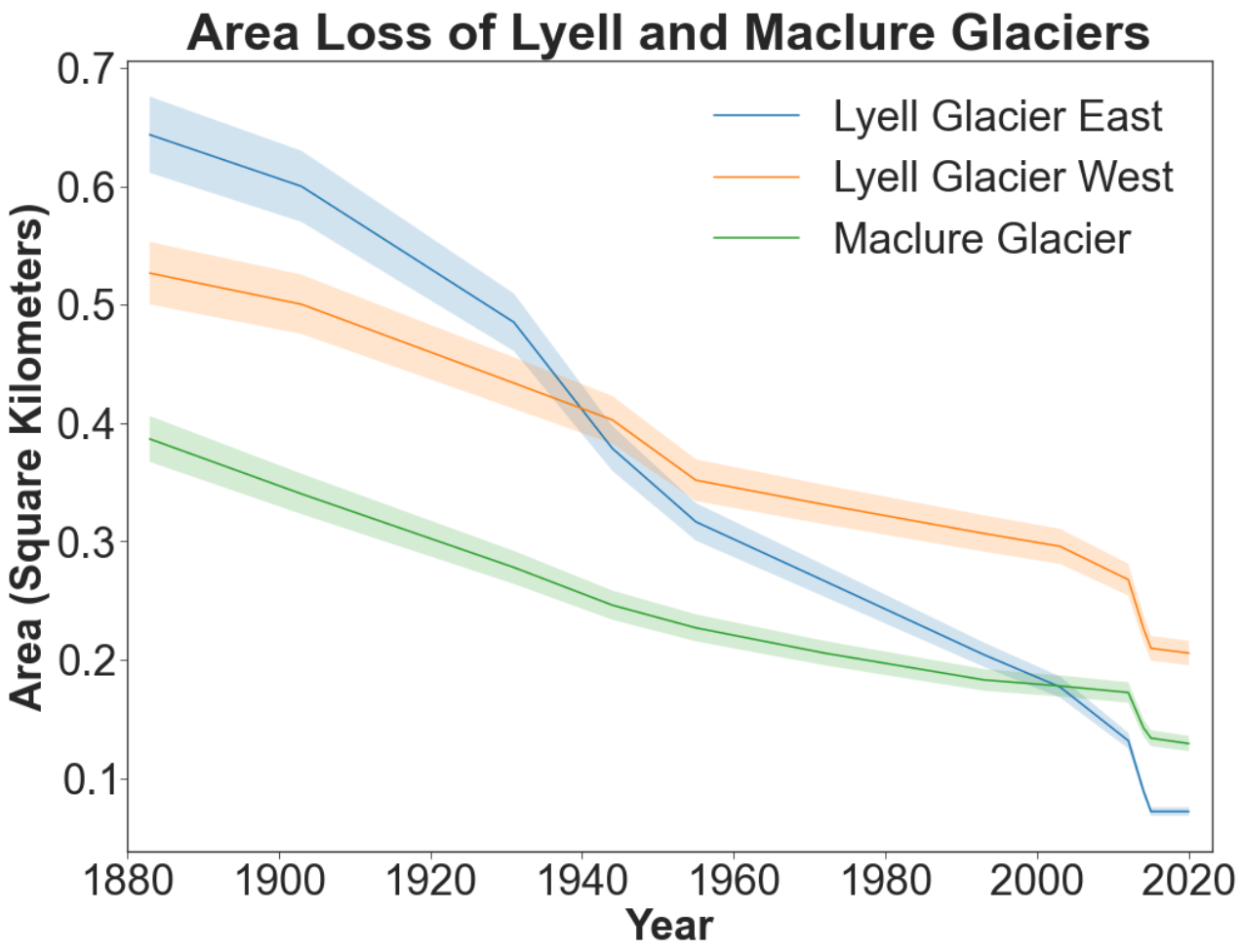


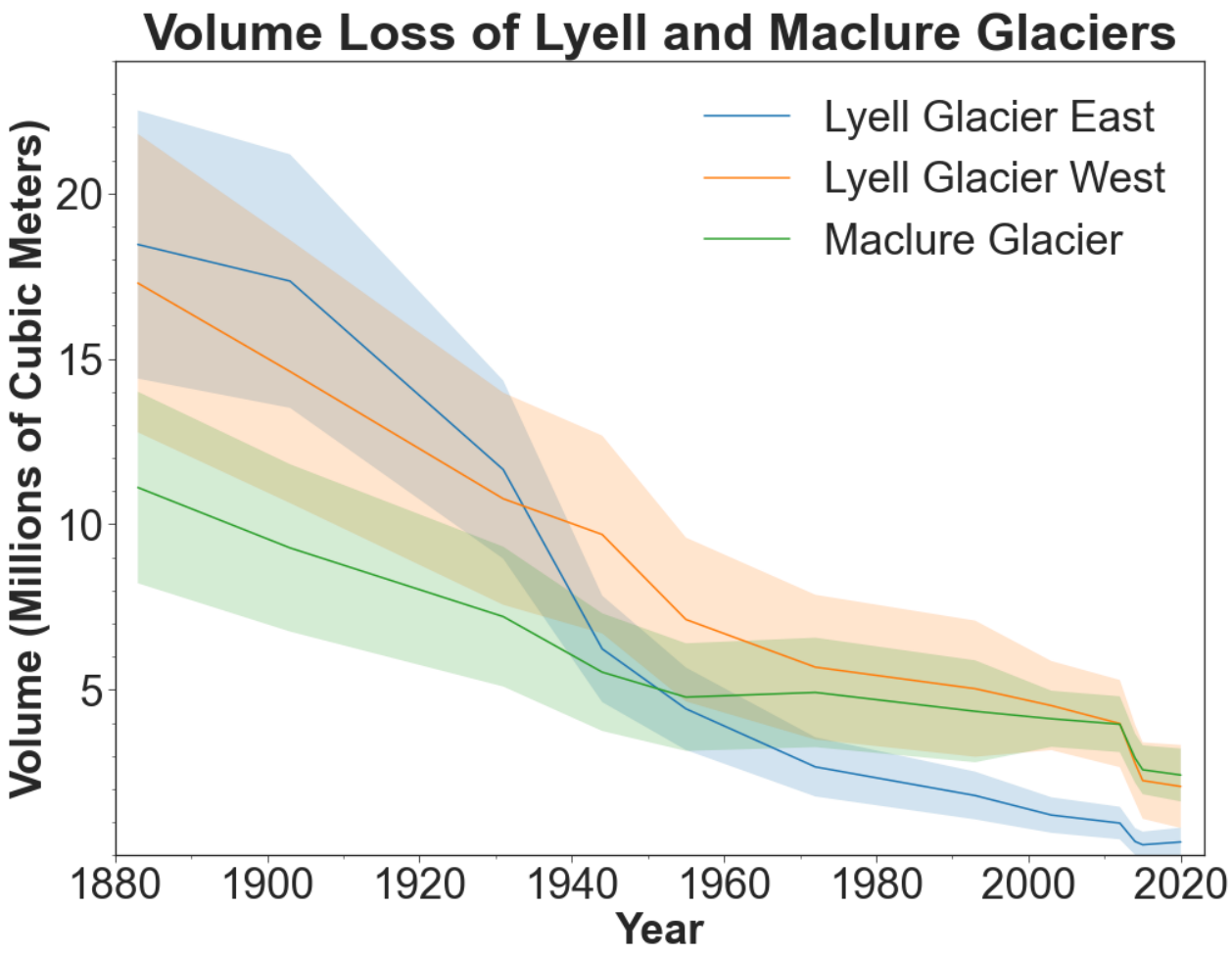


Glacier ice thickness change 1883-2022



Historical area and volume loss (1883-2022)



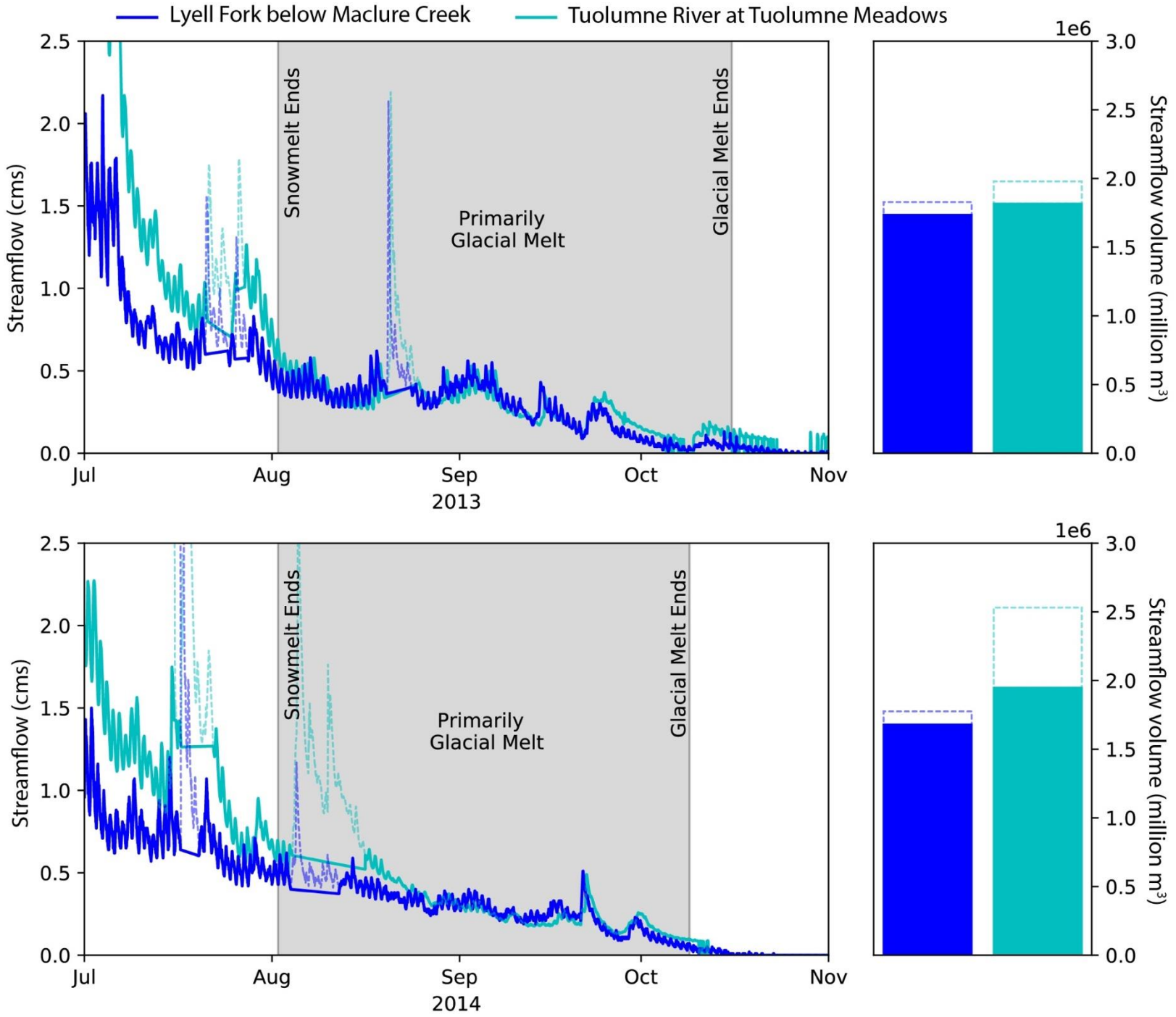


78% decrease in total area

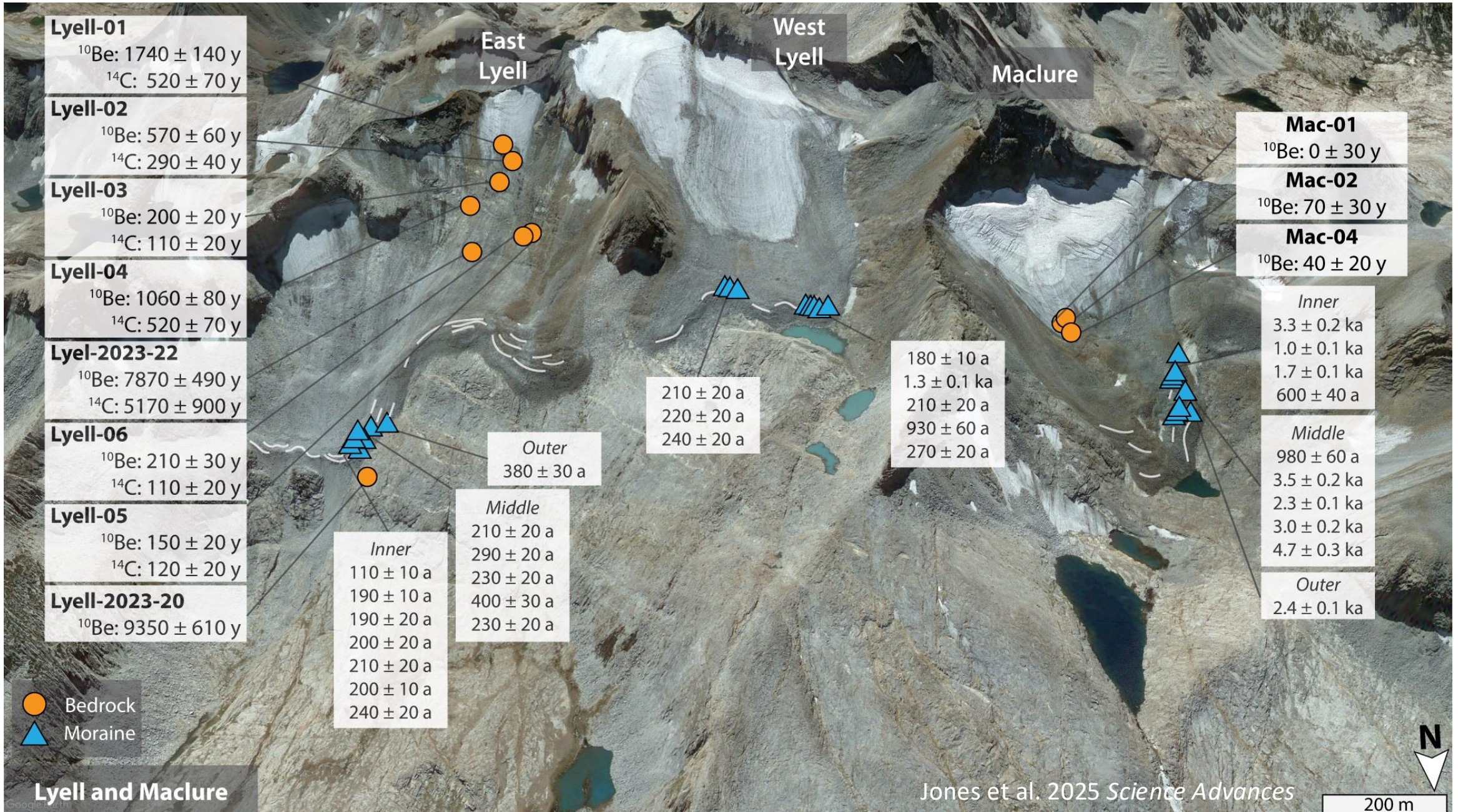
90% decrease in total volume

Glacier loss impacts to streamflows

- During drought years, glacier meltwater provides ~70-90% of river baseflows in Tuolumne Meadows
- Overall volume of water is very small, but buffering effect in drought years is large



Yosemite glaciers may have persisted throughout the Holocene



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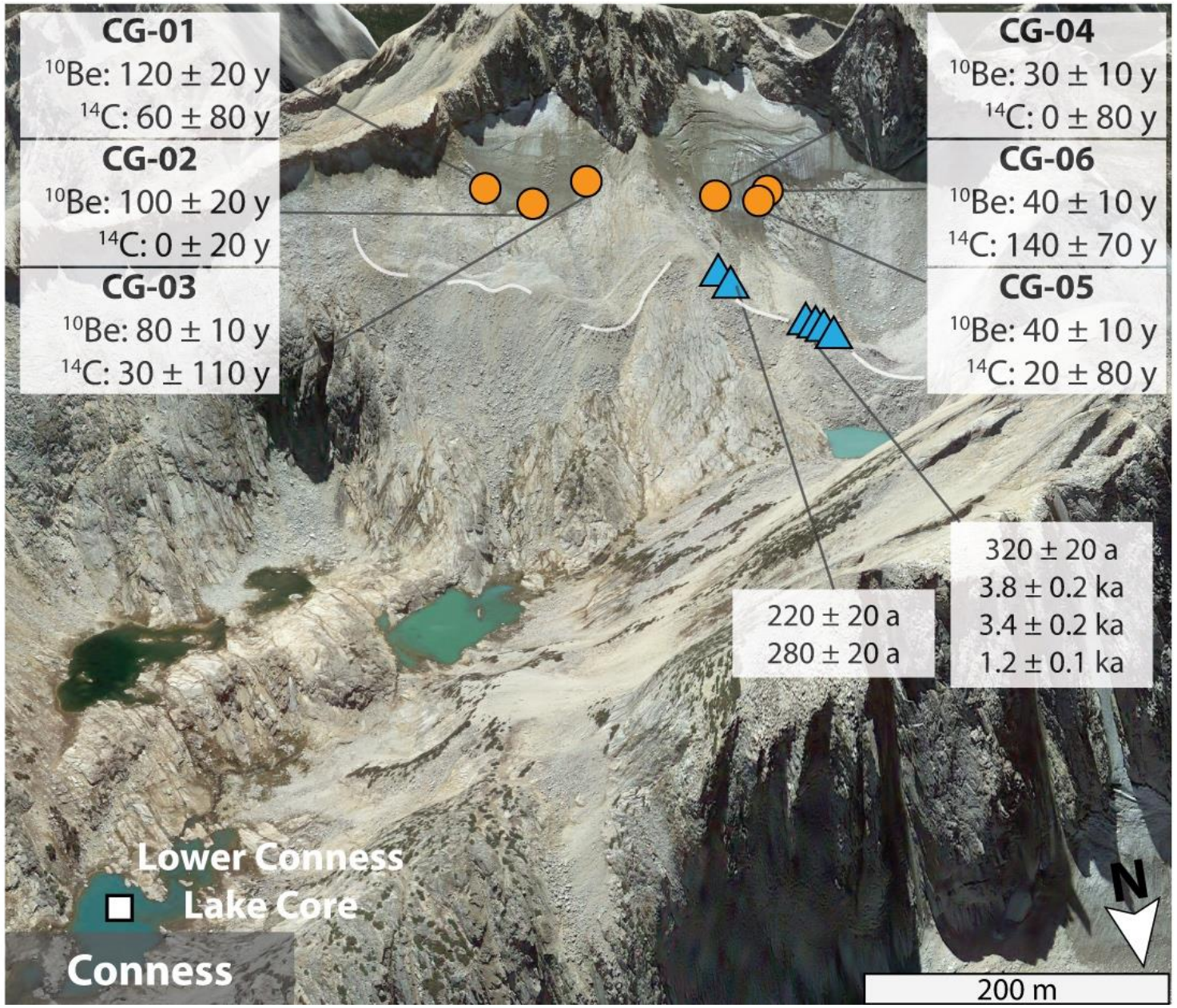

Exposure ages from moraines are distributed across the past several thousand years.

Exposure ages from recently exposed proglacial bedrock indicate continuous Holocene cover, likely by ice.

An ice-free Sierra Nevada is unprecedented in the current glacial cycle

Future alpine environments are a non-analogue scenario in the current interglacial

Jones et al. 2025 *Science Advances*