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## The response of North American ice sheets to the Younger Dryas (12.9 ka to 11.7 ka) climate event

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The response of continental ice sheets to late glacial climate fluctuations (Bølling warming, Younger Dryas cooling) offers key insight into the interconnectedness between ice sheets and climate. The Younger Dryas was an abrupt climate cooling event that occurred between 12.9 ka and 11.7 ka, as the Northern Hemisphere was undergoing progressive deglaciation from the last glacial maximum (~25 ka). Ice sheets in Northern Europe (Fennoscandian Ice Sheet) underwent a significant re-advance at that time. However, the reaction of North American ice sheets (Laurentide, Cordilleran, Innuitian; which comprise the largest ice mass in the Northern Hemisphere at the time) to Younger Dryas cooling is not well understood. Some localized studies have shown evidence of ice re-advance or stagnation corresponding to the Younger Dryas; however, no large-scale, unifying study of the impact of Younger Dryas cooling on North American ice sheets has been attempted. Here, we present preliminary maps showing the response of North American ice sheets to the Younger Dryas climate event in key regions. To delineate changes in the ice margin, we integrate a geochronological dataset consisting of calibrated radiocarbon ages and cosmogenic nuclide ages, with mapping of glacial features (ie. moraines) and an extensive literature review. Results suggest a highly variable response of North American ice sheets to Younger Dryas cooling, notably a re-advance of remnant ice lobes in eastern Canada, and stagnation of the ice margin at more western sites.