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## Glaciation During the Late Paleozoic Ice Age

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The Late Paleozoic Ice Age (LPIA) was one of Earth's most extreme climatic events where sea level and biotic restructuring were driven by linked oscillations in the climate system. Despite an evolving understanding of the ice age, the size, distribution, paleogeography, timing, depositional settings, and possible bipolarity of the glaciation remains unresolved. However, new and refined radioisotopic age dates are revising the timing and extent of individual stages of the ice age. Recent studies suggest numerous, ice centers fluctuated diachronously as glaciation shifted across Gondwana. The LPIA began in the Famennian in northern South America and Africa and ended in eastern Australia during the Wuchiapingian. Although glaciation was widespread, numerous ice-free areas occurred adjacent to major glacial centers. Deglaciation was also diachronous beginning in the Bashkirian in western Argentina, shifting to the Paraná Basin by the end of the Pennsylvanian, with deglaciation of the South Polar Region occurring during the late Early Permian. Deglaciation culminated in eastern Australia with the disappearance of high, mid-latitude, alpine glaciers during the Wuchiapingian at a time when Polar Gondwana was ice-free. Recent work on diamictites in northeastern Russia indicates that these strata were not glacial but instead were deposited as volcanic debris flows and slides/slumps associated with concurrent activity in the Okhotsk-Taigono volcanic arc. Therefore, bipolar glaciation cannot be confirmed. Although fluctuations in greenhouse gases were a major driver of climate, paleogeography, tectonism, and other minor drivers also played a role in the nucleation and disappearance of LPIA glaciers.