Marine anoxia caused by abrupt global warming during deep glacial of the Earth's penultimate icehouse

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We are now living in an interglacial climate of the Cenozoic icehouse (initiated at ~34 Ma) with currently increasing pCO_2 and temperature, and facing significant loss of biodiversity on land and in the ocean. The Earth's penultimate icehouse occurred during the late Paleozoic (~340–285 Ma) when dynamic glaciation occurred in the Southern Hemisphere and the atmospheric pCO_2 was comparable to that of the modern day. The Late Paleozoic Ice Age records the only greenhouse gas–forced transition from an icehouse with complex terrestrial ecosystems to a fully greenhouse world in the Earth's history, and thus may bear deep-time geological implications for the modern Earth surface system changes. Here, we report a short-lived global warming event during the late Pennsylvanian deep glaciation, which may provide a good analogue for the modern global warming. The global warming in association with a distinct rise in pCO_2 caused global ocean anoxia and consequently a significant fall in marine biodiversity and fauna turnover.