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## **Intense regional climate change in northwestern Canada**

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Anthropogenic climate change and accompanying rising global surface temperatures have been well established; however, there is large spatial variability in the magnitude of this warming trend. Many GCM simulations, including those made in support of Working Group I of the Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report (AR4), show a polar amplification of the warming, but project the largest North American changes to be over the northeastern Canadian archipelago.

In contrast, the largest observed warming to date has been located over polar and high-latitude northwestern Canada. Possible mechanisms for the unique warming of this area, at its strongest in wintertime, include northward shifting storm tracks combined with increased Pacific SSTs and orographically induced positive feedbacks, or the inhibition of radiative formation of polar continental air masses typical of this region. Using 11 geographically representative stations in the Mackenzie River Basin region of Northwestern Canada with long-term temperature records, we have explored secular trends in intensity and structure of synoptic scale warm and cold events associated with these possible mechanisms.