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Strong future increases in Arctic precipitation variability linked to poleward moisture transport

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The Arctic region is projected to experience amplified warming as well as strongly increasing precipitation rates. Equally important to trends in the mean climate are changes in interannual variability, but changes in precipitation fluctuations are highly uncertain and the associated processes unknown. Here we use various state-of-the-art global climate model simulations to show that interannual variability of Arctic precipitation will likely increase markedly (up to 40% over the 21st century), especially in summer. This can be attributed to increased poleward atmospheric moisture transport variability associated with enhanced moisture content, possibly modulated by atmospheric dynamics. Because both the means and variability of Arctic precipitation will increase, years/seasons with excessive precipitation will occur more often, as will the associated impacts.