ABSTRACT
Much of the Antarctic continent has warmed very little over the last 50 years, in stark contrast to extensive Arctic warming over this same period. At the same time, some parts of Antarctica, including the peninsula, have experienced record-breaking temperatures. In this talk, I will show that the high surface elevation of the Antarctic ice sheet presents a dynamic barrier to atmospheric energy transport to the continent, thereby moderating CO2-forced surface warming. The impact of Antarctic surface elevation on energy transport is especially evident when it comes to moisture: higher elevation parts of the ice sheet receive water vapor from more distant source regions, a phenomenon that may become amplified as the globe warms and the residence time of atmospheric moisture increases. Though dynamics ensures that the Antarctic continent only warms modestly in the mean, I will also show that extreme temperatures will still become more common over Antarctica. Such extremes include an increase in the intensity of heatwaves and an increase in the frequency of surface melt events, both of which favor a negative mass balance for the Antarctic Ice Sheet in the future.