A recent doubling of global warming rate signals a 1.5 °C breach by 2028

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Abstract

Timely and accurate projections of when global warming will exceed the Paris Agreement's 1.5 °C threshold are essential for effective climate policy. Existing estimates place this exceedance in the early 2030 s but carry substantial uncertainty. Here we analyze the latest observational temperature records through 2025 and identify a statistically significant doubling of the global warming rate during 2011–2025 (0.40 °C per decade) compared to 1971–2025 (0.20 °C per decade). Extrapolating this accelerated rate projects a crossing of the 1.5 °C threshold by 2028, nearly a decade earlier than previous estimates. Regional analyses attribute this acceleration primarily to intensified warming over East Asia–the North Pacific, mid-latitude Eurasia, and the South Atlantic–Antarctic regions. The ensemble mean of 26 climate models fails to capture the observed doubling of the warming rate, simulating a rate of only 0.29 °C per decade. **These findings suggest a narrower window remains to limit warming to 1.5 °C, underscoring the urgency for rapid and substantial reductions in greenhouse gas emissions.**