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Anthropogenic influence on multi-decadal changes in reconstructed global evapotranspiration

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Global warming is expected to intensify the global hydrological cycle, with an increase of both evapotranspiration (ET) and precipitation. Yet, the regional distribution of this global and annual mean response remains highly uncertain. Better constraining land ET in 21st century climate scenarios is critical for predicting changes in surface climate, including heat waves and droughts, evaluating impacts on ecosystems and water resources, and designing adaptation policies. Continental-scale ET changes may already be under way, but have never been attributed to anthropogenic emissions of greenhouse gases and sulphate aerosols. Here we provide global gridded estimates of annual ET and demonstrate that the latitudinal and decadal differentiation of recent ET variations cannot be understood without invoking both anthropogenic and natural radiative forcings. In the mid-latitudes, the emerging picture of enhanced ET confirms the end of the "dimming" decades and highlights the possible threat posed by increasing drought frequency to managing water resources and achieving food security in a changing climate.