



## **Extreme and non-extreme human-perceived temperature increases faster than air temperature under global warming**

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Apparent temperature (AP), a human-perceived equivalent temperature index, considers the combined effects of air temperature (AT), humidity and wind speed on thermal comfort. We compare the historical changes in extreme and non-extreme AP and AT estimated from four reanalysis data sets and Global Climate Models (GCMs), and find that AP has increased faster than AT over land which is more significant over low latitudes. GCM projections indicate that elevated increases are expected to continue in the future scenarios RCP4.5 and RCP8.5. Under RCP2.6, the increment of AP increases relative to AT is projected to be less than that under historical warming, suggesting effective climate change mitigation is important to alleviate the faster increase in AP. The summertime increases in AT-based thermal discomfort can balance the wintertime decreases, while the summertime increases based on AP are larger than the wintertime decreases. The increases of AP-based heat extremes are also higher than those based on AT.