



A new feedback on climate change from the hydrological cycle

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An intensification of the hydrological cycle is a likely consequence of global warming. But changes in the hydrological cycle could affect sea-surface temperature by modifying diffusive ocean heat transports. We investigate this mechanism by studying a coupled general circulation model sensitivity experiment in which the hydrological cycle is artificially amplified. We find that the amplified hydrological cycle depresses sea-surface temperature by enhancing ocean heat uptake in low latitudes. We estimate that a 10 per cent increase in the hydrological cycle will contribute a basin-scale sea-surface temperature decrease of around 0.1 K away from high latitudes, with larger decreases locally. We conclude that an intensified hydrological cycle is likely to contribute a weak negative feedback to anthropogenic climate change.