

## Research Highlights

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# Irrigation's influence

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Irrigating crops can influence regional climate considerably, though global temperatures are barely affected, shows a new scientific study. Used to produce over 40 per cent of the world's food, the water from irrigation is equivalent to about two per cent of annual precipitation over land.

William Sacks at the University of Wisconsin-Madison and colleagues estimated how this redistribution of water affects global climate using a coupled model of the land and atmosphere. They found that irrigation cooled the climate by an average of 0.5 °C over the year in some northern mid-latitude regions, such as the central and southern United States, China, and portions of southern and southeast Asia. In contrast, it warmed much of northern Canada by about 1 °C.

The scientists attribute the drop in temperature in northern mid-latitudes mostly to an evaporation-spurred increase in low-altitude clouds, which block incoming radiation and cause regional cooling.

But in high latitudes, changes in atmospheric dynamics favour the development of warming high-altitude clouds. The study suggests that although irrigation has a surprisingly strong effect on regional climate, it has little impact on global mean temperatures.



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