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R RESEARCH UPDATE

Cirrus clouds and climate

Sections: Cirrus composition; Cirrus radiative forcing; Cirrus and greenhouse warming; Contrail cirrus; Indirect effects

Cirrus are thin, wispy clouds that appear at high altitude and consist of ice crystals. At midlatitudes, clouds with base heights above about 6 km (20,000 ft) are designated as high clouds, a category that includes cirrus (Ci), cirrostratus (Cs), and cirrocumulus (Cc). Cirrus clouds are globally distributed at all latitudes over land or sea at any season of the year. They undergo continuous changes in area coverage, thickness, texture, and position. The most striking cirriform cloud features are produced by weather disturbances in midlatitudes. In the tropics, cirrus clouds are related to outflows from tower cumulus associated with the convective activity over the oceans. The global cirrus cover has been estimated to be about 20–25%, but recent analysis using the satellite infrared channels at the 15-micrometer carbon dioxide (CO₂) band has shown that their occurrence is more than 70% over the tropics.

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