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Tropical cirrus cloud lofting

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Cloud-radiative interaction has been recognized as an important element for the evolution of cirrus clouds. In tropical high altitude thin and subvisual cirrus clouds, radiative heating may lead to warming and dissipation, or lofting and maintenance of the cloud. Although the potential importance of cloud lofting is known, a detailed examination and explicit simulation of the mechanism has never been performed. In this study, we present detailed simulations of tropical cirrus clouds with focus on cloud-radiation interaction on the mesoscale. We find that cirrus cloud lofting is a plausible mechanism for the maintenance of tropical thin cirrus clouds and generally has a positive effect on the lifetime of subvisual cirrus clouds.