

The global diurnal cycle of clouds seen by the CATS spaceborne lidar

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We take advantage of the ability of the Cloud and Aerosol Transport System (CATS) lidar on the International Space Station to document, for the first time, the diurnal cycle of vertical profiles of cloud fraction.

We compare cycles of cloud fraction profiles from CATS with those from ground-based active sensors at local scale, then compare cloud cover cycles from CATS with those from passive sensors at global scale. Finally, we document diurnal cycles of cloud fraction profiles globally and in large regions of the globe.

We document large variations in the frequency of low and high clouds according to regions. We also identify strong differences in the winter and summer cycles depending on the hemisphere.