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## Correlation between equatorial Kelvin waves and the occurrence of extremely thin ice clouds at the tropical tropopause

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**Abstract.** A number of field-campaigns in the tropics have been conducted in recent years with two different LIDAR systems at Paramaribo (5.8° N, 55.2° W), Suriname. The lidars detect particles in the atmosphere with high vertical and temporal resolution and are capable of detecting extremely thin cloud layers which frequently occur in the tropical tropopause layer (TTL). Radiosonde as well as operational ECMWF analysis showed that equatorial Kelvin waves propagated in the TTL and greatly modulated its temperature structure. We found a clear correlation between the temperature anomalies introduced by these waves and the occurrence of thin cirrus in the TTL. In particular we found that extremely thin ice clouds form regularly where cold anomalies shift the tropopause to high altitudes. These findings suggest an influence of Kelvin wave activity on the dehydration in the TTL and thus on the global stratospheric water vapour concentration.

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