

## OBSERVATION OF RADIATIVE SMOOTHING (RS) IN REFLECTED AND TRANSMITTED SKYLIGHT FROM OPTICALLY THICK CLOUDS

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We report on experimental observations of RS in reflected and transmitted light from optically thick cloud covers. RS describes the phenomenon at spatial scales related to the cloud vertical extension (e.g. a few hundred meters for stratocumulus), the reflected skylight appears to be smoother than the underlying cloud inhomogeneity can account for. RS has been observed first by *Cahalan and Snider* [1989] in reflected skylight analyzed from Landsat imagery. Recently, *Savigny et al.* [1999] showed that RS also occurs in transmitted skylight monitored with a fast (2 Hz), narrow band zenith looking radiometer from the ground. Theoretical estimates - based on photon diffusion in vertically extended, optically thick and homogeneous clouds - by *Marshak et al.* [1995] and *Davis et al.* [1997] have shown a good agreement between the observed and theoretically predicted RS scales for both reflected and transmitted skylight. The present talk will summarize all these findings, and discuss their consequences for radiative transfer and remote sensing of cloud properties.