



Local overbrightness of the solar irradiance on the ground generated by cirrus.

G. Thuillier (1)

(1) CNRS, Service d'Aéronomie, Verrières-le-Buisson, France (gerard.thuillier@aerov.jussieu.fr), (2) Observatoire de Haute Provence, Saint Michel l'Observatoire, France (jmperrin@oamp.fr)

Gérard Thuillier¹, Jean-Marie Perrin², Philippe Keckhut¹, Julien Jumelet¹, Nadège Montoux¹, Slimane Bekki¹, and François Huppert²

(1) Service d'Aéronomie du CNRS, (2) Observatoire de Haute Provence

At Observatoire de Haute Provence, a set of instruments has been installed for providing measurements characterising the troposphere properties as the solar spectral irradiance on the ground, water (solid, liquid, or gaseous), aerosols, minor constituents such as ozone. These instruments are lidars, pyranometers (total and UVB), a daytime all sky camera, and a sunspectrometer. A study is presented concerning the influence of the cirrus on the solar irradiance budget on the ground. Comparison between pyranometers data and predictions by modelling based on radiative transfer processes, shows cases of overbrightness occurring in total and UVB solar irradiance on the ground, which are linked to the presence of cirrus as revealed by the daytime all sky camera images. However it exists also cases for which overbrightness in UVB does not occur. To understand the above observations, we have developed a model of scattering within a cirrus cloud. To explain the absence of overbrightness in UVB, it is necessary to include a carbonaceous core inside ice aerosols.