



A CLOUD CLASSIFICATION SCHEME BASED ON 183.31 GHZ RADIOMETRIC MEASUREMENTS FROM SATELLITES

J. Miao (1) and K.-P. Johnsen (2)

(1) Institute of Environmental Physics, University of Bremen, Germany,

(2) GKSS Research Center Geesthacht GmbH, Geesthacht, Germany.

(jmiao@uni-bremen.de/Fax.: 0049-421-2184555)

Satellite radiometric measurements near the 183.31 GHz water vapor resonance line have been operationally used to derive atmospheric humidity profiles in cloud free regions. These measurements have also been used to retrieve the total column of water vapor in ice or snow covered polar regions. Recent works in UTH (Upper Tropospheric Humidity) community have shown that measurements near the 183.31 GHz

have some advantages compared with similar measurements at infrared wavelengths. However, problems associated with the usage of the 183.31 GHz measurements arise from the difficulties to quantify the influence of clouds, especially high clouds.

To move toward solving the problems, we present a scheme which can be used to classify the scene into 4 categories: no ice cloud, thick cirrus clouds, strong convective clouds, and extremely dry regions. This classification scheme is based only on the multi-channel measurements near 183.31 GHz and used in tropics.

No auxiliary information is needed. The relations between the areal coverages of the strong convections and the extremely dry regions in the tropics are studied by using satellite data from SSM/T2 and AMSU-B for the years 2000 and 2001.