Geophysical Research Abstracts, Vol. 8, 04996, 2006
SRef-ID: 1607-7962/gra/EGU06-A-04996

Observations of soil moisture dependence of thermal infrared emissivity on soil moisture

K. Ogawa (1) **T. Schmugge** (2) ,S. Rokugawa (1)

(1) School of Engineering, University of Tokyo, Tokyo, 113-8656, Japan, (2) New Mexico State University, Las Cruces New Mexico, USA [schmugge@nmsu.edu]

Two years of monthly composites of thermal infrared (TIR) surface emissivity data from the MODerate resolution Imaging Spectrometer (MODIS) sensor on NASA's Terra satellite were analysed for temporal variations over North Africa and the Arabian peninsula. It was found that the emissivity of the 8.6 micrometer band (MODIS band 29) increased by about 0.1 each July/August in southeastern Sahara (20 N, 3.5W). To understand this increase, the emissivity variation was compared with the normalized difference vegetation index (ndvi) also derived from MODIS and with soil moisture estimates from the Advanced Microwave Scanning Radiometer (AMSR-E) microwave sensor on NASA's Aqua satellite in eight regions. No correspondence was found with ndvi in these areas, however the TIR emissivity increase was found to be qualitatively correlated with an increase in AMSR derived soil moisture in some regions. This increase in TIR emissivity with soil moisture is in agreement with the lab measurements.