Geophysical Research Abstracts, Vol. 8, 02925, 2006
SRef-ID: 1607-7962/gra/EGU06-A-02925


# The greenhouse-induced radiative forcing at the surface as projected in GCMs and observed.

**M.Wild** and A. Ohmura

Institute for Atmospheric and Climate Science ETH, Swiss Federal Institute of Technology, Universitaetsstr. 16, CH-8092 Zurich, Switzerland (martin.wild@env.ethz.ch)

The most immediate consequence of an increase in atmospheric greenhouse gases experienced at the earth's surface is an enhanced emission of thermal radiation from the atmosphere back to the surface (longwave downward radiation, LWD). Projections of the evolution of LWD as simulated in transient climate change scenarios with acoupled atmosphere-ocean GCM suggest that the LWD change signal emerges earlier from the background noise than the surface temperature. The LWD is therefore a valuable candidate for the detection of the greenhouse signal and its evolution of particular interest in the context of greenhousegas-induced climate change. The monitoring of the LWD is a central objective of the Baseline Surface Radiation Network (BSRN/WCRP) centered at the authors' institute. In this study, projections of LWD as simulated in transient climate change scenarios with a coupled atmosphere-ocean model are analyzed and put in relation to the evolution of LWD as observed at worldwide BSRN sites. The overall trend averaged over all observation sites is in quantitative agreement with the GCM-predicted increase in LWD of currently 2.5 Wm-2 per decade.