Geophysical Research Abstracts, Vol. 8, 03671, 2006
SRef-ID: 1607-7962/gra/EGU06-A-03671

Variability of cloud cover in observations and coupled ocean/atmosphere GCM

K. Schepanski, N. Keenlyside, A. Macke and W.Park
Leibniz-Institut für Meereswissenschaften Kiel, Germany

Clouds play an important role in the energetics and the water transport in the climate system. The aim of this study is to investigate possible causes for variability of cloud cover. To this end, monthly cloud cover data from more than 21 years (1983 - 2005) of global cloud observations from the International Satellite Cloud Climatology Project ISCCP D2, observed SST data for the same time period, and model data from a 50 year run of the coupled ECHAM5/NEMO atmosphere/ocean general circulation model have been used. There are local linear correlations between observed SST and cloud cover anomalies, especially in the tropics and over upwelling regions. Temporal evolution of large scale ocean/atmosphere pattern like ENSO and NAO are strongly correlated with cloud cover both in the observations and in the coupled model. Large scale negative and small scale positive cloud-SST correlations as reported in the literature (Xie, 2004) are also found in the model. However, the spatial distribution of these pattern is different between model and observations, but the mechanisms of interactions are reproduced. Strong local correlations with respect to cloud cover are also found for sea-level pressure with negative correlations in the tropics, and positive correlations in subtropical high pressure regions. Further correlations and possible physical explanations will be discussed.

Shang-Ping Xie, Satellite observations of cool ocean-atmosphere interaction, Bulletin of the American Meteorological Society, 85(2): 195-208, 2004.