



Relationship between monthly cloudiness cover and rain rate trends for last three decades

O. Pokrovsky

Russian Federation (pokrov_06@mail.ru)

The ISCCP cloudiness data of monthly resolution since 1983 to 2009 years were used in statistical analysis of climate time series. Our study showed that there is a strong negative trend in the global total cloudiness. The global cloudiness magnitude demonstrates a decreasing in eighties and in nineties, but returned to neutral behavior in first decade of the current century. This trend provides a very distinguished tendency over oceans, especially over Pacific. Smoothed cloudiness curve obtained by cross-validation technique demonstrates a strong correlation with the global SAT - CRUTEM3 data for relevant time interval. Cross correlation has achieved 80% level. The cloudiness trend is weaker over continents. The wavelet spectrum analysis confirmed existence of above close linkage between cloudiness and SAT trends. Related analysis was performed with account for the global CMAP (CPC/NCEP/NOAA) rain rate data. The global rain rate demonstrates a weak negative trend in 1979-2010, which is stronger in the tropics than in the middle latitudes. Most sizeable rain rate reduction was observed in eighties and in nineties and more moderate in first decade of current century. Thus, the cloudiness and rain rate trends are coherent ones in its behavior during last three decades. Latter has evident physical explanation.