



Assessments of snow cover characteristics reproduced in snow classification experiments with GCM of Hydrometcentre of Russia

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Snow is very important component of climate system. Adequate simulation of snow cover characteristics in hydrodynamical models is indicator of reliable parameterization of hydrological and heat balance processes in the model. The objective of the present study is to evaluate, how well the GCM model of Hydrometcentre of Russia in snow classification experiments reproduces snow cover characteristics in the Northern Hemisphere. Classification of the effective snow cover properties with account of temporal and spatial snow variability and the specifics of snow cover evolution based on Sturm, 1995 classification approach. Before evaluation process of model data, we investigated which is snow data set can be used as etalon. Validation of snow water equivalent (SWE) from 4 types of reanalysis (ECMWF, NCEP/NCAR, NCEP/DOE and JRA-25) against measured SWE from snow survey routs over FSU territory for period from 1979 to 2000 using several statistical criteria was performed. The results of comparative analysis indicated that SWE from ECMWF is the closest to observational data for mostly FSU territory. SWE from JRA-25 reanalysis is reasonably reproducing observational data since 1986. NCEP/DOE is only able adequately simulate the long-term tendencies of SWE averaged over large regions. So, the global SWE from ECMWF reanalysis was used for validation of outputs from GCM of Hydrometcentre of Russia. The snow classification GCM experiments correspond to AMIP protocol requirements. Preliminary results indicate that seasonal variability of snow cover extent is reproduced well in the model, although the spatial distribution in some regions contradicts with etalon data. The maximum of snow accumulation in Northern Hemisphere from model data is clearly observed in March. Distribution of SWE from

ECMWF demonstrates maximum accumulation of snow cover in February and March. Quantitative estimates of SWE from both sources has been given also using different statistical parameters.

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