



Snow cover feedback on environmental system

Sergey A. Sokratov

Faculty of Geography, Moscow State University (sokratov@geol.msu.ru/+7 495 9328836)

Snow cover is accepted to be the important component of climate and landscape systems, affecting the meteorological, hydrological, biological, and geochemical processes at land surface at different spatial and temporal scales. One of the main problems in attempts to account the snow cover effects for in different types of environmental interrelationships is the snow quantity and snow cover properties variability. The latter is determined by variability in snowpack stratigraphy. The quality of a description of the snow cover-related processes for climate and other applications depends on selection of scales and resolutions of the snow cover introduction. Some results providing understanding of the required temporal scales for estimation of the effect of the snow cover on energy balance of an underlying soil were previously reported based on observational data. Certain progress was recently achieved in incorporation of the spatial variability of the snow cover properties by coarse classes of snow cover as components of a global circulation model. Moreover, the climate models allow introduction of the intraseasonal evolution of the snow cover stratigraphy in terms of the succeeding at each grid point snow cover classes. However, these results do not provide true estimation of the snow cover feedback on climate system, recently mainly expressed as the abrupt change of the surface albedo with snow cover appearance, in large degree because the precipitations are usually the emitted term in physical models of climate system. The presentation is aimed to discuss the position of the snow cover in the processes of energy exchange at the land surface—atmosphere boundary with an intention to find ways of improving the quantification of the snow cover weight in various environmental applications.