

Temporal-spatial Characteristics of Surface Dry/Wet status in Northeast China by NCAR/CLM3.5

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Long term (1951-2006) Surface Water Surplus (SWS) for growing season (May to September) over Northeast China is produced by NCAR CLM3.5, which is driven by daily observations from 102 meteorological stations. Temporal-spatial variability of surface dry/wet status is analyzed based on the CLM3.5 simulation. The results show that, 1) for growing seasons, 30 year (1971-2000) averaged SWS has relatively large spatial difference, with regional SWS ranging from 100 to 800mm. Higher SWS value locates over eastern, southern and northern parts of analysis domain, indicating a wetter condition over the area. 2) Significant inter-annual and decadal variabilities are detected in CLM3.5 results; 3) Over Northeast China the SWS has decline trend showing that the surface has been drying during past 50 years. The drying signal is also found in decadal variance of spatial distribution of SWS, and with 2000s showing most dramatic drying, it implies that in the condition of global warming the aridification over Northeast China would enhance; 4) The surface moisture condition is the combined effects of land surface process and climate change; its prediction requires the thorough understanding of surface water budget.

Keywords: Northeast China, land surface, dry/wet status, land surface model, surface water surplus