

Land use impacts on river hydrological regimes in Northern Asia

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Abstract River flow is vitally important to many human activities. River flow is influenced by climatic and land-cover changes. Land-use practices have a significant effect on water flow and quality. Land use can change surface runoff, which in turn can be used as an environmental indicator of a land use level of sustainability. Along with the regional climate, hydrological processes occurring in river basins in Siberia and mountainous Kyrgyzia are controlled by forest logging and afforestation. The method used to analyse annual river flow genesis to date allowed the onset of, and assessment of, the level of human activities in the watersheds. Moreover, river flow genesis can be used in land use decision-making. River flow reflects all watershed changes, which can have opposite effects, thus compensating for each other. This study confirmed that river flow changes in time, thus reflecting land cover changes in watersheds.

Key words hydrological regime; precipitation; river flow; river catchments; clear cuts; forest logging; afforestation