Geophysical Research Abstracts
Vol. 15, EGU2013-6863-1, 2013
EGU General Assembly 2013

Response of Runoff to Climate Change in Bortala River Basin

Dilinuer Aji (1,2) and Hamid Yimit (1,2)

(1) College of Geographic Science and Tourism, Xinjiang Normal University, Urumqi, China (403590148@qq.com), (2) Xinjiang Laboratory of Lake Environment and Resources in Arid Zone, Urumqi, China (hyimit@yahoo.com.cn)

Abstract:Bortala River, originated from the Alatao Mountain in Xinjiang, China, is supplied mainly by the melting snow. The annual melting snow is about 45% of the total annual run-off. The annual monthly maximum run-off usually occurs in June, run-off in April to June consists 60% of the total in snow-melt seasons. Temperature of the river basin has started to heat up since late 80s in last century, and the annual mean temperature raised from 5.5 degree that is in 60s to 7.9 degree in 2000s, annual precipitation has been in the tendency of rising too, especially got its peak in springs. Along with the climatic warming, there has been an enormous change in the hydrological process of the river, it mainly includes that the monthly maximum run-off in June has shifted to May, the total monthly run-off has increased about 15%, and the percentage of monthly melting snow in April to June in total run-off has raised from 60% to 70%. In the change tendency of long standing, raising of the temperature mainly occurs in winter, increasing of the precipitation in winter is also distinct, the hydrological process is mainly obvious decreasing of the run-off in summer and obvious increasing of the run-off in spring. Analysis by the image data of the same time shows that the hydrological process caused by climatic warming has already effected the land use/cover changes around the lake Ebnur that situated in the lower reaches of the river.

Key words: Bortala River; Hydrological process; melting snow; run-off; climate warming