

Water Resources Assessment on Climate Change Impact Over the Korean Watersheds

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The objective of this study is to analyze the long-term trend of water resources by climate change impact in Korean basins. The selected model for simulating hydrologic responses is the PRMS developed by USGS and the A2 scenario for the climate change over the Korean peninsula is used for the future 90 years(2001-2090). For the reference run, the past 30 years (1971-2000) was used for both GCM run and rainfall-runoff model calibrations. The adopted GCM is a large-scaled grided ECHO-G model with the scale of 350x350 km. Therefore, it is inevitably necessary to apply downscaling technique to obtain climate change information for fine grided resolution data within the Korean subbasins. The statistical downscaling method was used in this study. Also, LARS-WG weather generator was used to generate daily data to feed in the hydrologic PRMS model. For the water resources assessment on climate change impact in each watershed, the five Korean major river basins (Han River, Nakdong River, Gum River, Youngsan River and Seumjin River) are divided into 139 subbasins with approximately 27 km². The comparison results of the stream flow between the past 30 years (1971-2000) and future 90 year(2001- 2030, 2031-2060, 2061-2090) show that the long-term annual runoff in the Han River has increasing trend, while the Nakdong, Youngsan and Sumjin River have decreasing.