Analysis of Baseflow at Four Major Rivers using Web-based SWAT Bflow System

Web 기반 SWAT Bflow을 이용한 4대강 유역 기저유출 분석

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Abstract

Korean Government has been promoting Four River Restoration Project (i.e., Han, Geum, Nakdong, and Yeongsan rivers) since the second half of 2008. This project is expected to protect against floods and droughts by water resources management. Many researchers have study water resources management, but most studies were focused on direct runoff. However, in order to efficiently protect against floods and droughts, baseflow should be studied as well as direct runoff. Because baseflow has a great effect on streamflow, it needs to be correctly analyzed. For more accurate analysis of baseflow, direct runoff and baseflow from streamflow should be separated first. In this study, 12 flow gauging stations of four major rivers were selected, and flow data from them were obtained (2004-2010) through WAMIS and Web-based SWAT Bflow system (http://www.envsys.co.kr/~swatbflow) which was used to separate direct runoff and baseflow. Baseflow values of Pass 2 in SWAT Bflow system were used. As a result of this study, baseflow contribution was ranged from 23.4% to 68.6% and accounted for about 50% of streamflow. Through this study, it shows that in the case of the flow fluctuation, baseflow is more affected than direct runoff by changes in streamflow in a flood or dry season. Thus, baseflow estimation should not be overlooked for efficient water resources management. However, it has a limitation in this study that because this study used to select randomly 12 flow gauging stations, it did not show a common tendency on each watershed. It is important that flow gauging stations reflected on topographic characteristics of each watershed should be selected in a rigorous manner for further reliable and accurate baseflow estimation on four major rivers.

Keywords : SWAT Bflow, Baseflow, Four Major Rivers

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