



An Assessment of Melting Season Streamflow Forecasts using EPS for a Snow Dominated Basin in Turkey

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In many mountainous regions, snowmelt makes significant contribution to streamflow, particularly during spring and summer months. Therefore, runoff modeling and forecasting during spring and early summer is important in terms of energy and water resources management. In this study, the Upper Euphrates Basin (10,275 km² area and elevation range of 1125-3500 m) located at the headwater of Euphrates River, one of Turkey's most important rivers, is selected as the application area. In this region, snowmelt runoff constitutes approximately 2/3 in volume of the total yearly runoff. The aim of the study is to make a forward-oriented, medium-range flow forecasting using Ensemble Prediction System (EPS) which is a pioneer study for Turkey. Conceptual hydrological model HBV, which has a common usage in the literature, is chosen to predict streamflows. According to preliminary results, Nash-Sutcliffe model efficiencies are 0.85 for calibration (2001-2008) and 0.71 for validation (2009-2014) respectively. After calibrating/validating the hydrologic model, EPS data including 51 different combinations produced by ECMWF is used as probability based weather forecasts. Melting period during March-June of 2009-2015 is chosen as the forecast period. The probabilistic skill of EPS based hydrological model results are analyzed to verify the ensemble forecasts.