A user-oriented verification method for an operational forecasting system based on economic decision models

J. Bliefernicht, A. Bárdossy and C. Ebert

Institute of Hydraulic Engineering, University of Stuttgart, Germany
(Jan.Bliefernicht@iws.uni-stuttgart.de /Phone: ++49 711 685 64703)

One of the reasons of using a hydrological forecast is to get an economic benefit from it. To quantify this benefit, economic decision models have been introduced in weather forecasting, which can be also applied in hydrological forecasting. These decision models show which strategy a user should take during a decision making process to maximize his gain. Furthermore, they give also an answer why a probabilistic forecast is more successful in predicting extreme events than a deterministic or a pure ensemble forecast. In the framework of this work two economic decision models based on a static or a dynamic cost-loss approach are selected. They are applied to a probabilistic forecast model for daily areal precipitation, which based on a statistical downscaling method. This downscaling approach uses the analogue method conditioned by daily atmospheric circulation patterns derived by a fuzzy-rule based classification scheme. Four mesoscale catchments located in the Rhine an Elbe basin are selected as test sites. A specific user of the forecast system is defined by its cost-loss ratio. The economic benefit of the forecast is determined for a set of users ranging from small to high cost-loss ratios for a period of more than 50 years. In this work the outcomes of the comparison of both decision models are presented and it is discussed, how a forecast should be applied for decision making to maximize the economic benefit from it.