Geophysical Research Abstracts
Vol. 18, EGU2016-7232, 2016
EGU General Assembly 2016

Willingness-to-pay for a probabilistic flood forecast: a risk-based decision-making game

Louise Arnal (1,2), Maria-Helena Ramos (3), Erin Coughlan (4), Hannah L. Cloke (1,5), Elisabeth Stephens (1), Fredrik Wetterhall (2), Schalk-Jan van Andel (6), Florian Pappenberger (2,7)

(1) Department of Geography and Environmental Science, University of Reading, Reading, United Kingdom, (2) ECMWF, Forecast Department, Reading, United Kingdom, (3) IRSTEA, Catchment Hydrology Research Group, UR HBAN, Antony, France, (4) Red Cross/Red Crescent Climate Centre, The Hague, the Netherlands, (5) Department of Meteorology, University of Reading, Reading, United Kingdom, (6) UNESCO-IHE Institute for Water Education, Delft, the Netherlands, (7) School of Geographical Sciences, University of Bristol, Bristol, United Kingdom

Forecast uncertainty is a twofold issue, as it constitutes both an added value and a challenge for the forecaster and the user of the forecasts. Many authors have demonstrated the added (economic) value of probabilistic forecasts over deterministic forecasts for a diversity of activities in the water sector (e.g. flood protection, hydroelectric power management and navigation). However, the richness of the information is also a source of challenges for operational uses, due partially to the difficulty to transform the probability of occurrence of an event into a binary decision. The setup and the results of a risk-based decision-making experiment, designed as a game on the topic of flood protection mitigation, called "How much are you prepared to pay for a forecast?", will be presented. The game was played at several workshops in 2015, including during this session at the EGU conference in 2015, and a total of 129 worksheets were collected and analysed. The aim of this experiment was to contribute to the understanding of the role of probabilistic forecasts in decision-making processes and their perceived value by decision-makers. Based on the participants' willingness-to-pay for a forecast, the results of the game showed that the value (or the usefulness) of a forecast depends on several factors, including the way users perceive the quality of their forecasts and link it to the perception of their own performances as decision-makers. Balancing avoided costs and the cost (or the benefit) of having forecasts available for making decisions is not straightforward, even in a simplified game situation, and is a topic that deserves more attention from the hydrological forecasting community in the future.