



Predicting the June 2013 European Flooding based on Precipitation, Soil Moisture and Sea Level Pressure

Monica Ionita (1), Mihai Dima (1,2), Gerrit Lohmann (1), Patrick Scholz (1), Norel Rimbu (1,3)

(1) Alfred Wegener Institute Helmholtz Center, Paleoclimate Dynamics, Bremerhaven, Germany (monica.ionita@awi.de), (2) University of Bucharest, Faculty of Physics, Bucharest, Romania, (3) Climed Norad, Bucharest, Romania

Over the past decades Europe has experienced heavy floods with major consequences for thousands of people and billions of Euros worth of damage. In particular, the summer 2013 flood in Central Europe showed how vulnerable modern society is to hydrological extremes and emphasizes once more the need for improved forecast methods of such extreme climatic events. Based on a multiple linear regression model, it is shown here that 55% of the June 2013 Elbe River extreme discharge could have been predicted using May precipitation, soil moisture and sea level pressure. Moreover, our model was able to predict more than 75% of the total Elbe River discharge for June 2013 (in terms of magnitude) by incorporating also the amount of precipitation recorded during the days prior the flood, but the predicted discharge for the June 2013 event was still underestimated by 25%. Given that all predictors used in the model are available at the end of each month, the forecast scheme can be used to predict extreme events and to provide early warnings for upcoming floods. The forecast methodology could be efficient for other rivers also, depending on their location and their climatic background.