

THE RAAB FLOOD FORECASTING SYSTEM. AN INTERNATIONAL FLOOD RISK MANAGEMENT PROJECT.

CHRISTOPHE Ruch¹, KARL Maracek², ROBERT Schatzl³, PETER Somogyi⁴ and LÁSZLÓ Sütheő⁵

1. Institut für WasserRessourcenManagement, JOANNEUM RESEARCH Forschungsgesellschaft mbH, Elisabethstraße 16/II, 8010 Graz Austria
2. Abteilung 9, Wasser- und Abfallwirtschaft, Amt der Burgenländischen Landesregierung, 7000 Eisenstadt Austria
3. FA19A - Hydrographie, Amt der Steiermärkischen Landesregierung, 8010 Graz Austria
4. West-Transdanubische Direktion für Umweltschutz und Wasserwesen, Vörösmarty u. 2. 9700 Szombathely, Hungary
5. Nord-Transdanubische Direktion für Umweltschutz und Wasserwesen
Árpád út 28-32, 9021 Győr Hungary

1. THE EUROPEAN PROJECT: FLOOD FORECASTING RAAB

The Raab Flood Forecasting System generation is a project with European dimensions. The Raab watershed extends over two countries: Austria and Hungary whereas the last one is located downstream compared to Austria. Due to these geographical characteristics the probability for a flood genesis is much more significant in Austria than in Hungary but the related flooding risks are distributed over the entire watershed. The project Flood Forecasting Raab gives a concrete example of international cooperation in the field of flood management

The structure in development will be build out of one International Flood Forecasting Centre and four regional centres. It illustrates how a trans-boundary flood forecasting system can operate. The main element is the International Flood Forecasting Centre installed in Graz (Austria) where all the necessary online data and meteorological forecasts will be automatically collected and formatted for the simulations. Furthermore, each hour will start a simulation with a forecasted time of two days whereas the main results will be published on the internet. The complete model setup and the results will be transferred to the four regional centres. Therefore, on these regional centres it will be possible to analyse detailed results and to develop local scenarios using for example modified meteorological forecasts or other initial conditions.

This technical solution allows a perfect synchronisation for online data, pre and posts processing files, information and results from the simulations between all five Flood Forecasting Centres. It contributes therefore to a noticeable improvement for information organisation between Austria and Hungary and should be considered as a new method for Flood and Risk management. The new communication strategy coupled with the automatic and continuous modelling as well as the result publication on the internet delivers a concrete example for Flood prevention and resources management that can be transferred to other trans-boundary watersheds.

The Raab Forecasting system is based on the MIKE 11 modelling software and the MIKE Flood Watch real time decision support system. This combined forecasting system is a well proven approach, which has been applied successfully in many real time applications worldwide (one example is the “Trans-boundary Flood Forecasting Project in Austria, Slovenia, Hungary and Croatia” – (Ruch & Jorgensen, 2005).

The catchment area of the river Raab and its tributaries in Austria (figure 1) is located in a rural area with small villages and towns near the rivers. The lower parts outside the populated areas are mainly used for agricultural purposes. In order to safeguard the infrastructure of this living space and economic area, a variety of linear measures has been combined with the construction of flood retention basins. The protection of agricultural areas is less important. The big challenge for a forecasting model is to exactly and comprehensively simulate all the protective measures to create an unerring tool for flood management and also taking into account the relatively short times of the rising of flood waters.

The Raab Forecasting System will be developed in two phases – the upstream Austrian part and the downstream Hungarian part. This paper describes the setup for the Austrian component of the Raab catchment. The first part of the paper describes the Austrian watershed whereas the second is dedicated

to the spatial and temporal data. Finally, the last part shortly introduces the modelling system used in this project.

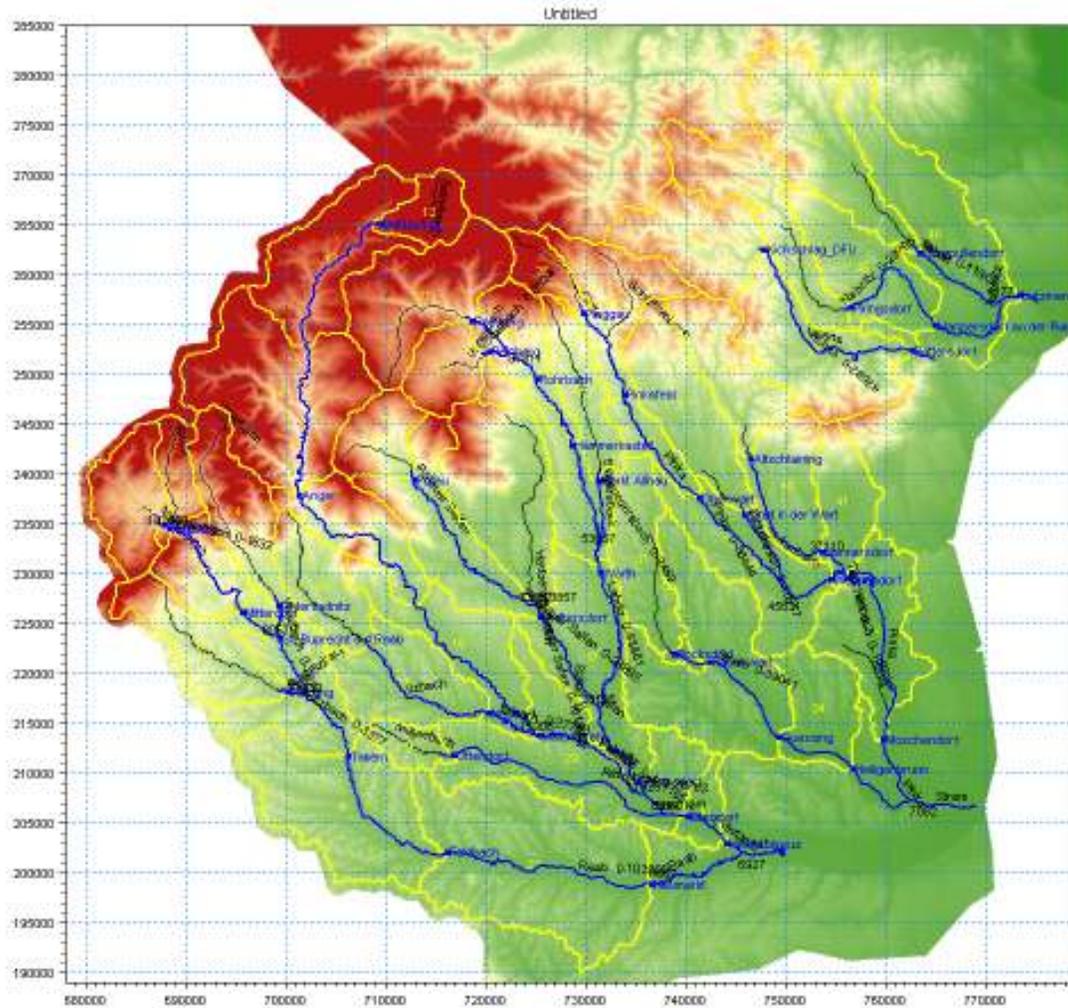


Figure 1: Austrian part of the Raab watershed with modelled sub catchments in yellow and rivers in blue

2. REFERENCES

Ruch C., Jorgensen G. 2005: Trans-boundary Flood Forecasting Project in Austria, Slovenia, Hungary and Croatia. American Geophysical Union conference in Vienna 04/2005.

ACKNOWLEDGMENT

The present work is supported by the European Union in the frame of the bi-lateral European project - (Europische Territoriale Zusammenarbeit 2007 - 2013 - AT-HU-03-011/A). Furthermore the Austrian government contributes to the financial support of this project.