ÚSTAV HYDROLÓGIE SAV
INSTITUTE OF HYDROLOGY SAS

Centre of excellence
for integrated flood protection of land

VÝSKUMNÁ AGENTÚRA

Európska únia
Európsky fond regionálneho rozvoja

Operačný program VÝSKUM a VÝVOJ

Applicant: Slovak University of Technology in Bratislava

PROJECT PARTNERS:- **Faculty of Civil Engineering, Faculty of Chemical and Food Technology)**
- Institute of Hydrology SAS
- Comenius University (Faculty of Natural Sciences)

- **Completion of the project: April 2011**
- **Financial end of the project: December 2014**

Operational Programme Research and Development
Priority axis 4: Support to research and development in the Bratislava region
Measure 4.1: Support of networks of excellence in research and development as the pillars of regional development and support to international cooperation in the Bratislava region. ***Call: OPVaV-2008/4.1/01-SORO***

The main project objective: To promote and enhance the quality of scientific research centers of excellence, with emphasis on the strategic area of integrated flood protection area.

Project solution: The project activities were implemented STU staff and external suppliers who provide the supply of information and communication technologies, R & D infrastructure for laboratories and experimental research the center of excellence and support activities. ICT suppliers and R & D infrastructure were chosen on the basis of public procurement. Supervisor of the project with key experts for different activities ensures the management of the project. Administrative is ensured by the project team of STU. Implementation of activities not undermine the continuity of scientific-research and educational process of the University and the partner institutes.

The impacts: The project was implemented by the end of April 2011. The Centre of Excellence integrated flood protection ensures sustainable development of the center, after the implementation of project activities. It ensures, in conjunction with the operators courses and their basins, the applicability of the project results in real environment. The center is fully strive to create conditions for the operation and development of own resources, grant funds as well as funds from the EU project. The sustainability of project results is ensured by the educational process in the framework of the Centre of Excellence.

Institute of Hydrology SAS

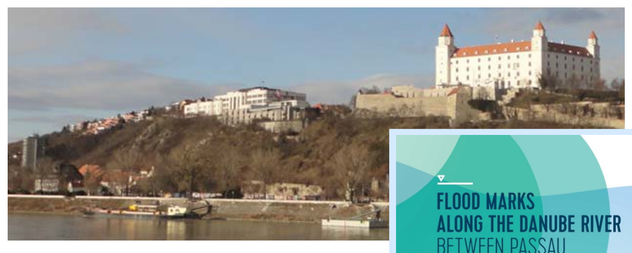
Application output type

Utilization of NLN-Danube model for the flood wave prediction in June 2013, and simulation of a catastrophic floods along the Danube.

Responsible researcher: **RNDr. Pavla Pekárová, DrSc.**, researchers: **Veronika Bačová Mitková, Dana Halmová, Pavol Miklánek**.

After the August floods along the Danube in 2002, the IH SAS was created NLNDanube model, able to predict the flood wave transformation in the Danube section Kienstock (Austria) - Nagymaros (Hungary). This model can predict the hourly flow of the Danube in gauging stations Bratislava/Devin, Medveďov, Iža, Štúrovo and Nagymaros. For its proportional simplicity, stability and undemanding input data (inputs are only measured hourly flow station in Kienstock), this model was used to predict the flood wave transformation for the Slovak section of the Danube floods in June 2013. These forecasts were continuously sent to the Slovak Hydrometeorological Institute, where they were used as another method for flow forecasting. Predictions were also published on the Internet at http://pavla.pekarova.sk/blog/clanky.

PEKÁROVÁ,, P., HALMOVÁ, D., BAČOVÁ MITKOVÁ, V., MIKLÁNEK, P., PEKÁR, J., ŠKODA, P. Historic flood marks and flood frequency analysis of the Danube River at Bratislava, Slovakia. J. Hydrol. Hydromech., 61, 2013, 4, 326–333.



Monograph**: Flood marks along the Danube River between Passau and Bratislava**

PEKÁROVÁ,, P., MIKLÁNEK, P., MELO, M., HALMOVÁ, D., PEKÁR, J., BAČOVÁ MITKOVÁ, V.

VEDA - Publishing house of SAS, 2014.

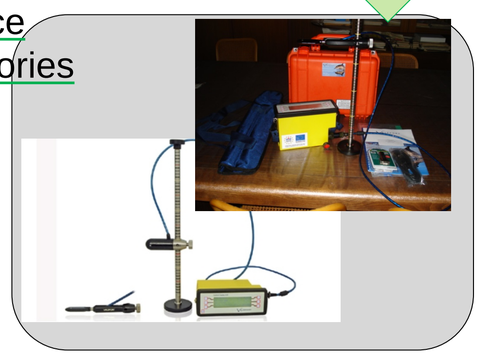
In this monograph we focused on the history of floods and extreme flood frequency analysis of the Upper Danube River at Bratislava. We describe the flood marks found on the Upper Danube River from Passau up to region of Bratislava, Slovakia. Then, we analyze the annual maximum discharge series for the period 1876–2013, including the most recent flood of June 2013. Finally, we compare the values of T-year design discharge computed with and without incorporating the historical floods (floods of the years 1501, 1682, and 1787 into the 138-year series of annual discharge peaks).

(A)

Devices financed by the funds of the Centre of Excellence:

- Disc permeameter ***(A)***
- Set for pF curve measurement ***(B)***
- Guelph permeameter
- Double ring infiltrometer ***(C)***
- GIS
- HP ELITEBOOK 8540Wi5-520/ 4G320/NV880M/DVDRW/W/B/C
- FlowTracker Handheld-ADV (Acoustic Doppler Velocity meter)-3D
- Electromagnetic Open Channel Flow Meter - model 801
- GRS-1-Handheld GNSS REC
- MIKE SHE – software – groundwater flow modeling
- Sonar Lowrance HDS 10 + accessories

(B)



(C)

The poster is the result of the project implementation ITMS 26240120004 Centre of excellence for integrated flood protection of land supported by the Research & Development Operational Programme funded by the ERDF.