Transboundary cooperation in the flood forecasting and warning service within the international Morava river basin

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Morava River Catchment

Geographical coverage of the international Danube river basin district (IDRB)

1 - 8 portions of IDRB lying within the territory of the Czech Republic
View of the basin

Area
Total: 26.658 km²
  in CZ: 21.119 km²
  Dyje: 13.426 km²

Important rivers
March (Morava)
Thaya (Dyje)
Svratka
Jihlava
Bečva

Reservoirs
Vranov (101 mio m³)
Nové Mlyny (79 mio m³)

Polder
Underneath Nové Mlyny
Floods in the Morava river basin

- winter and spring floods
  1862, 1891, 2006
- **Summer floods**
- Flash floods
- Ice floods

Comparison of summer flood 2002, spring and flash flood 2006
gauge station Podhradí - Dyje
Arrangement of the international cooperation

- **The bilateral agreements**
  - The exchange of all information related to flood protection and actual flood routing is realised by the Directives for the forecasting, reporting and warning duty on the Czech-Slovak border waters and Czech-Austrian border waters

<table>
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<th>River basin rivers</th>
<th>Riparian countries</th>
<th>Treaties</th>
<th>Year of establishment</th>
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<tbody>
<tr>
<td>The Danube river basin Morava</td>
<td>Czech Republic – Slovakia</td>
<td>Treaty between the Government of the Czech Republic and the Government of the Slovak Republic about cooperation on transboundary watercourses</td>
<td>1999</td>
</tr>
<tr>
<td>The Danube river Basin Dyje, Morava</td>
<td>Czech Republic – Austria</td>
<td>Treaty between Czechoslovak Socialist Republic and the Austrian Republic on regulation of water management issues related to border waters</td>
<td>1967</td>
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</tbody>
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Flood Action Plans of sub-basins

• To be adopted and published by countries preferably by the end of 2009

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Flood 2006

Gauge station
Moravský Svätý Ján
(Slovakia)

\[ Q_{\text{max}} = 1547 \text{ m}^3\text{s}^{-1} \]
Conclusions
The flood damages were estimated on 35 mil. Eur, there were large damages on the agricultural land due to flooding.
Three people lost their lives during the flood.

Lessons learned
60% of the Dyje catchment lies in Austria, cooperation with Austrian institutions must be improved.
The permanent task is improving of the meteorological and hydrological forecasting and warning.
Memorandum of Understanding

drawn up by the Hydrological Services of the Czech Republic and Lower Austria
represented by:

- Czech Hydrometeorological Institute (CHMI)
- Amt der Niederösterreichischen Landesregierung; Abteilung Hydrologie (Hydro NÖ)

Part 1

Providing and utilization of the measured data

Concerning the cooperation in the field data exchange for the river Dyje/Thaya the Hydrological Services of the Czech Republic and Lower Austria agree on the following items:

- The Hydrological service of Lower Austria constructs a new remote station with sensors for:
  - precipitation, air temperature and snow level
  - Limbach

- Existing remote stations with additional sensors for:
Hydrological forecasting model HYDROG

HYDROG

HYDROLOGICAL AND HYDRAULIC MODEL

Simulation of water run-off during the passage of floods

CONTROL ALGORITHM

Control of outflow from system of reservoirs in the catchment
Discharge measurement in one hour step
Precipitation measurement in one hour step
Measurement of outflows from reservoirs in one hour step
Temperature measurement in one hour step
Snow cover measurement

Precipitation and temperature forecast (ALADIN, ECMWF…)

DATA CONTROL

HYDROG
Hydrological model
Control algorithm

Text and graphical output
Data exchange

http://hydro.chmi.cz/hpps

http://www.noe.gv.at/externeseiten/wasserstand
MODEL HYDROG V ČHMÚ
- povodí Moravy -

ČESKÁ REPUBLIKA

AUSTRIA

SLOVAKIA

POLAND
Feasibility study for the trilateral CZ-A-SK Project

Starting situation
Konkreter Systementwurf – neue Modelle

HYDROG - CHMU bis Hohenau
HYDROG - SHMU Myjava
Modell – Land NÖ bis Devin/Donau

Hohenau
Moravský Sv. Ján

Quelle: CHMU
Concrete System design
Structure and Responsibility
Leadtime, Run time interval

- **Lead time**
  - 0-48 hours => for public
  - In addition 48-72 hours => only for the internal use (!!!!)
  - all Information as timeseries Q(t), W(t)

- **Run time interval**
  - **Peacetime**
    1 x daily (by 10:00 o’clock); on the working days
  - **During the Flood**
    + the first calculation by 10:00 o’clock
    + the next calculations when the circumstances change
    + calculations by appointments
Floods in the Morava river basin

Raabs an der Thaya summer flood 2002

Podhradí – Dyje flash flood 2006

Dürnkrut - Morava spring flood 2006
Central European Flood Risk Assessment and Management
CEFRAME

Goal of the Project

• In the CENTROPE Territory (Morava, west Slovakia, Northwest Hungary and Austria) there are the rivers Morava-Dyje, Danube and Leitha
• For this territory we must
  - compare and analyse the existing Floodprotection directories
  - flood risk analysis
  - harmonization of the flood design criterias
CEFRAME - results

- Review and assessment of the current situation (including natural, hydrological conditions, floodplains and flood defences)
- Flood risk analysis and mapping
- Potential Damage Maps
- Draft for the harmonization design criteria and safety regulations along and across border sections, Flood management
- To raise the awareness and preparedness of the general public
- Example for the other regions (Best Practice)
Area for cooperation improvement

- to interlink regional and national agencies on sub-busins to facilitate and promote the exchange of source data

- Routing of the information downstream as the basis of improving efficiency and lead time of flood forecasting and warning

- To improve the methodology and tools of data collection, processing, forecasting and dissemination

- Harmonization for a common approach in assessment of flood-prone areas and evaluation of flood risk (CEFRAME)
Distinguished Service Gold Medail
Low Austria
Thank You for Your Attention

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