



Folyóvízi életterek hidro-ökológiai működőképességének vizsgálata
Research of the hydro-ecological activity of river habitats

Hydro-ecology and river habitats

Implementation of the EU Water Framework Directive

Case Study Hungary/Austria



Österreich - Magyarország



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Észak-dunántúli Környezetvédelmi és Vízügyi Igazgatóság

The Blue Planet

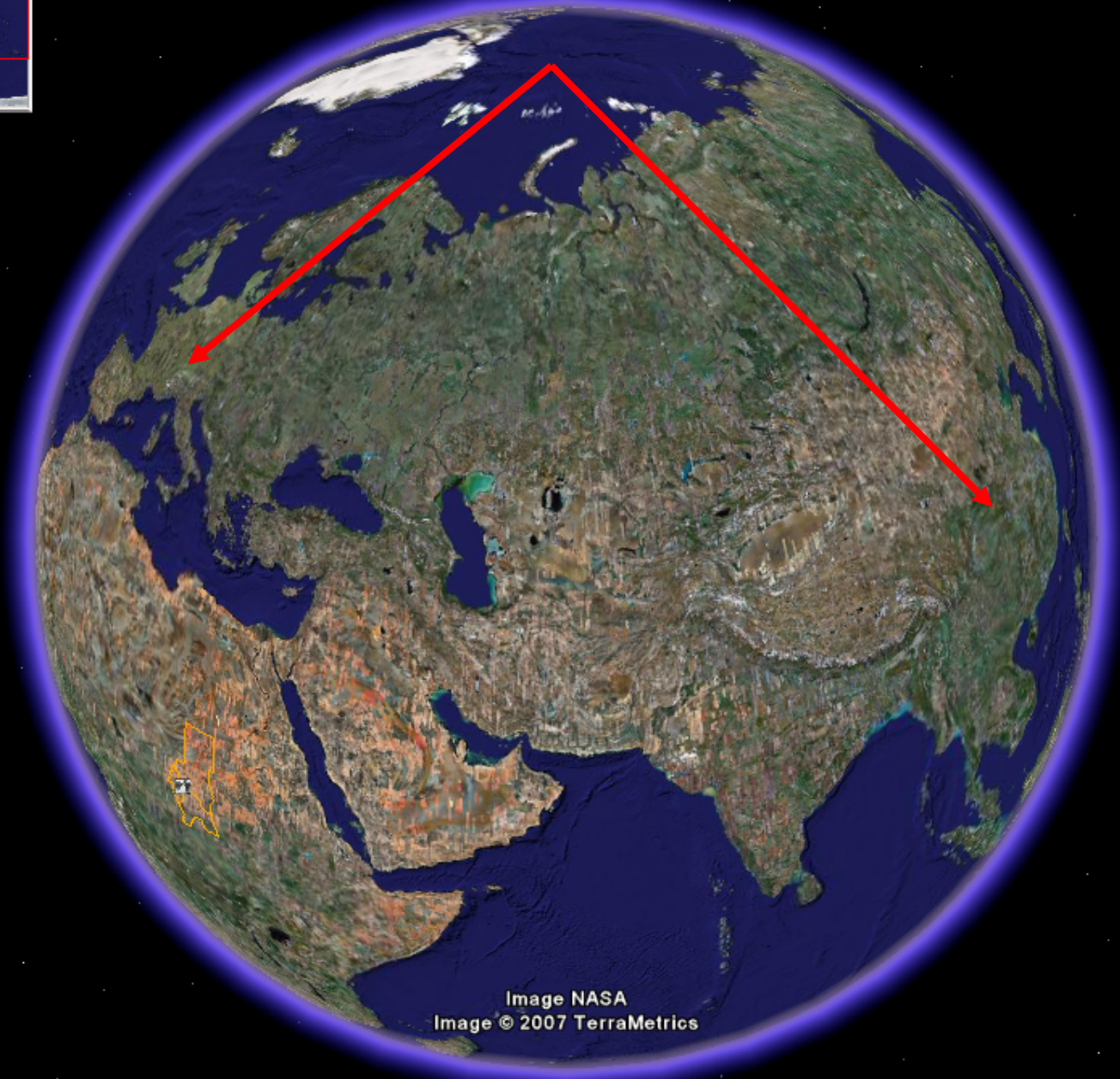


Image NASA
Image © 2007 TerraMetrics

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Pointer 42°10'37.61" N 60°44'19.98" E

Streaming ||||| 100%

Eye alt 11929.51 km

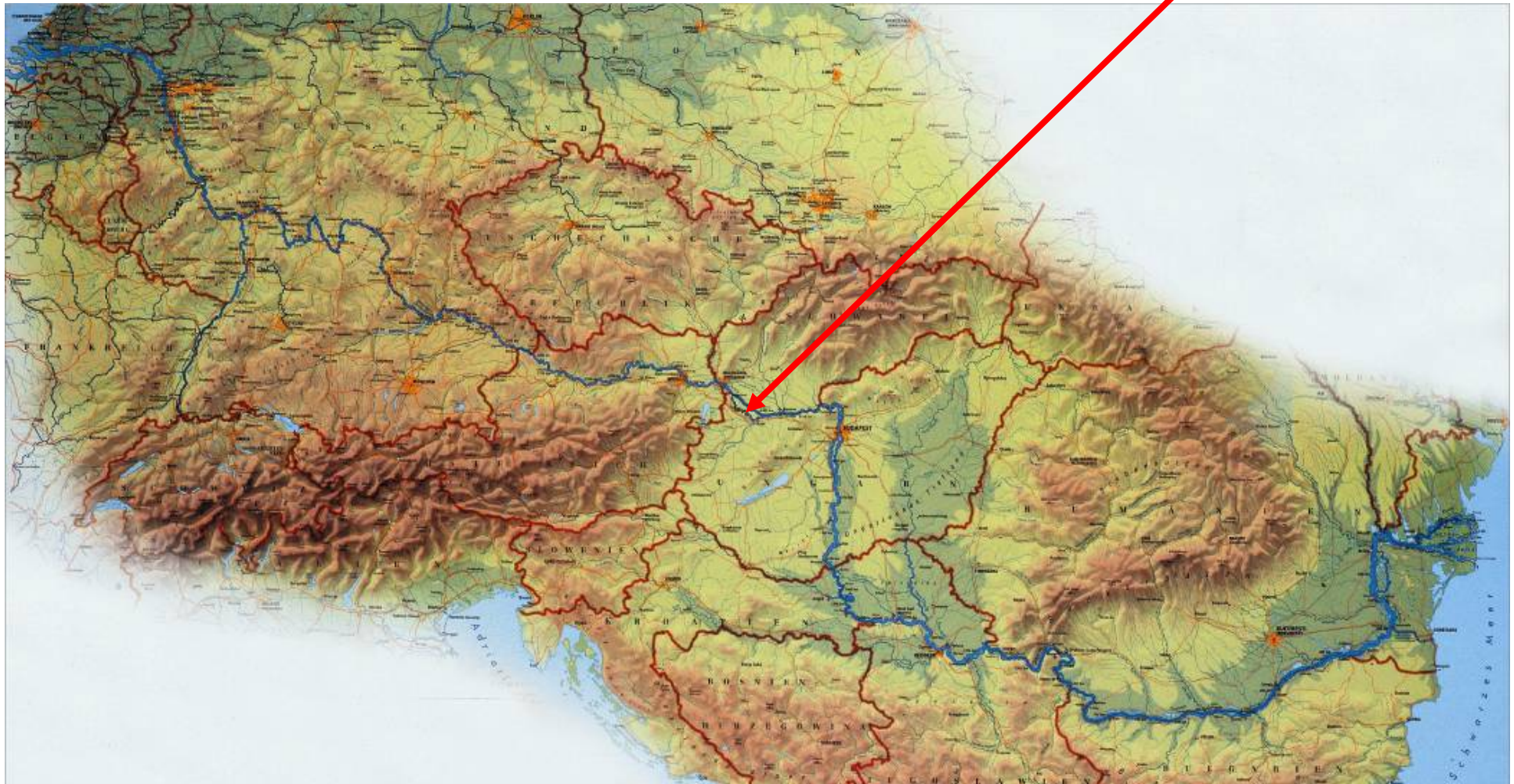


MAJOR RIVERS
and
MAJOR RIVER BASINS
in
EUROPE

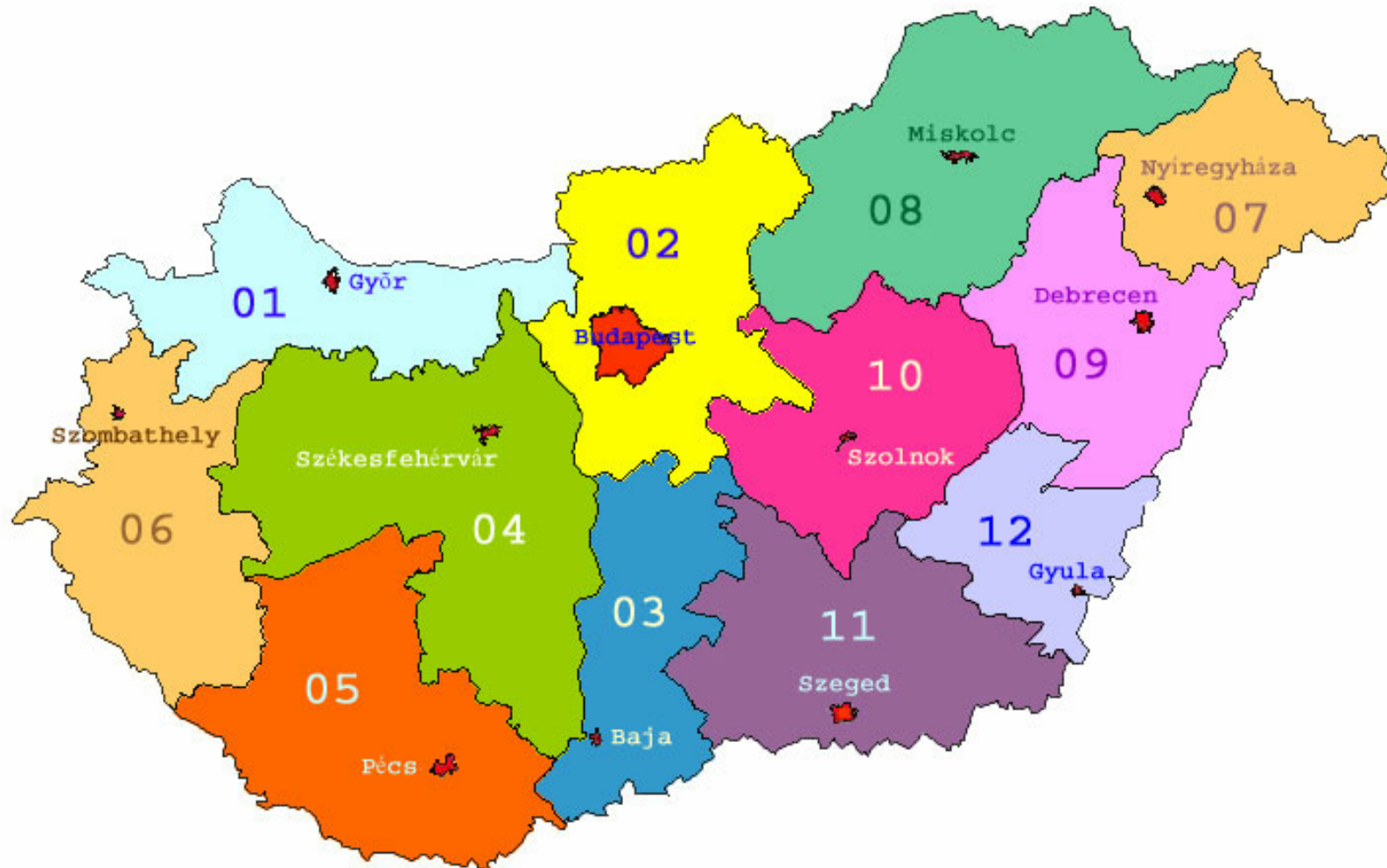
Rhine Danube catchment area, the main navigation corridor

Szigetköz

1848-1795 fkm.



12 District Environment and Water Directorates Responsible for implementation of WFD



Central concept of the WFD is integration

**of environmental objectives
of all water resources
of all water uses, functions and values
of disciplines
of water legislation
of all significant management and ecological
aspects
of a wide range of measures
of stakeholders and civil society
of different decision-making levels
of water management by different MemberStates**

The biggest Challenge!

- We have to decrease the mistrust between the experts!

Technicians vs. Naturalists in implementation process?

- Ecology
- chemistry
- engineering
- hydrology,
- hydraulics,
- soil sciences,
- technology,

Who has the philosopher's stone?



Participants and Partners

**Two countries, different organizations
(state, local authorities, universities, private
sector and civil organizations)**

North-transdanubian Environment and Waste Directorate
Fertő-Hanság National Park Directorate
Hungarian Academy of Science Danube Research Station
Budapest University of Technology and Economics
City of Győr
City of Mosonmagyaróvár
Hullámvonal Engineer Ltd.
City of Vienna
University of Vienna

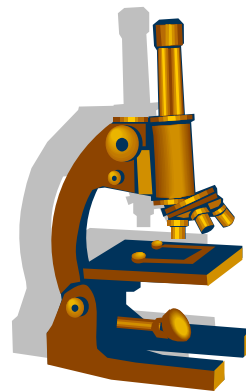
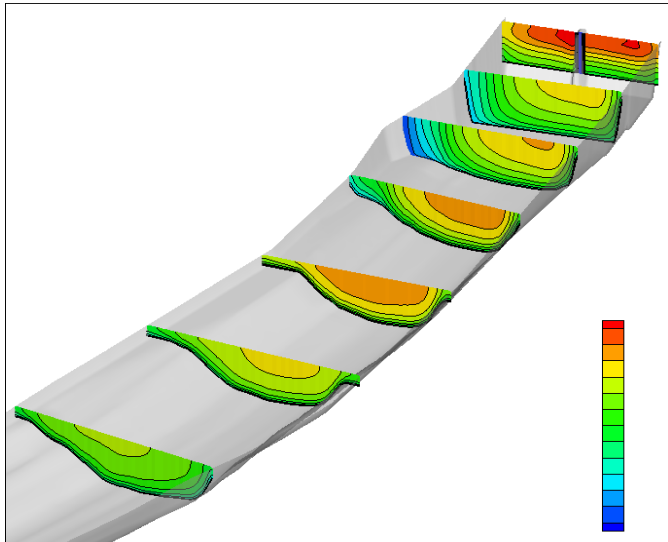
Water management cross border cooperation between H-A

Cross border tradition
Back to the 19th. century
1873 Rába River Regulation
Association
1955 Austria neutral state
1956 Hungarian-Austrian
Water Commission
Since 2000 based on River
Basins
and
Common implementation
of the EU Water Framework
Directive

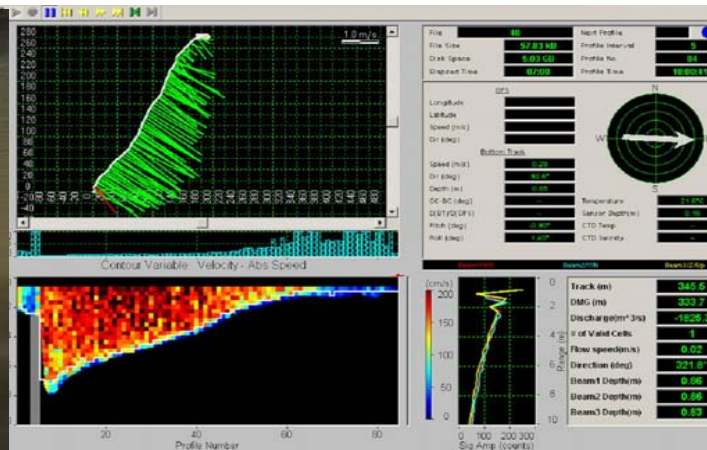


First phase/First meeting

The mistrust between disciplines



Second phase Common measurements





Flows measurements

- Gauging stations: level and temperature
- Flow measurements ADCP instrument
- Expeditional surveys – water balance





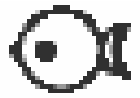
Macrophytes and macrozoobenthos

45 types of habitats

Naturalness of the area

- 25 % natural
- 50 % natural-like
- 25% non natural





Fish biology



Native fish fauna species 49

Adventive species 13

New fauna element:
Neogobius fluviatilis

Disappeared:

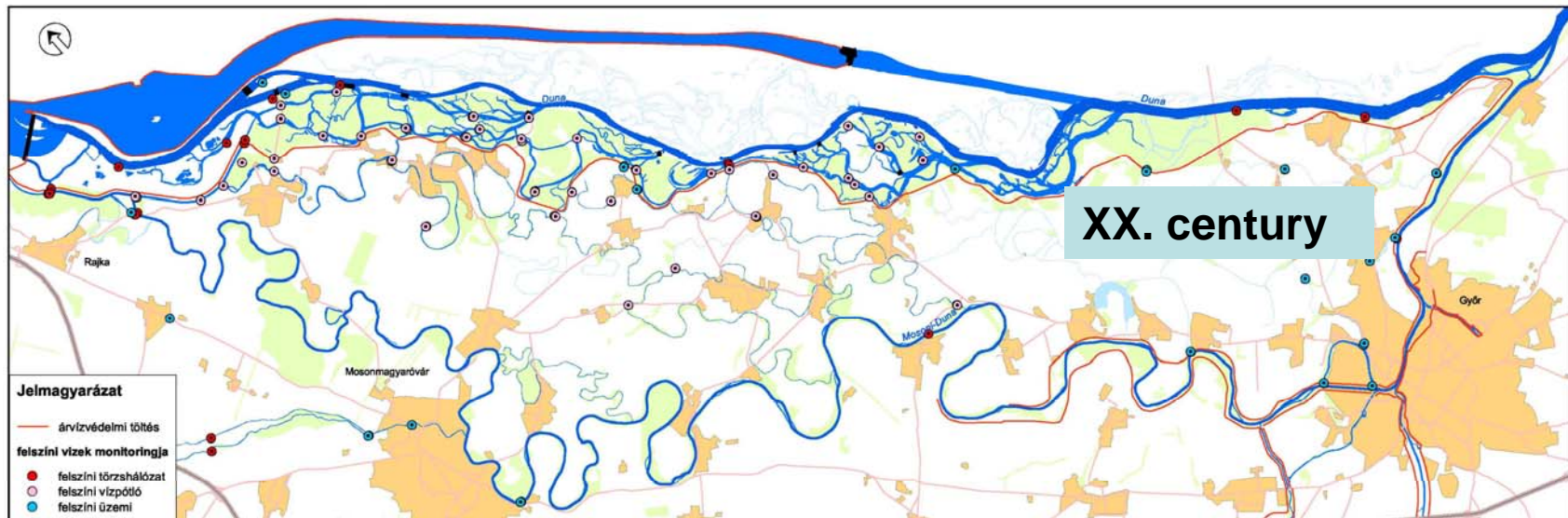
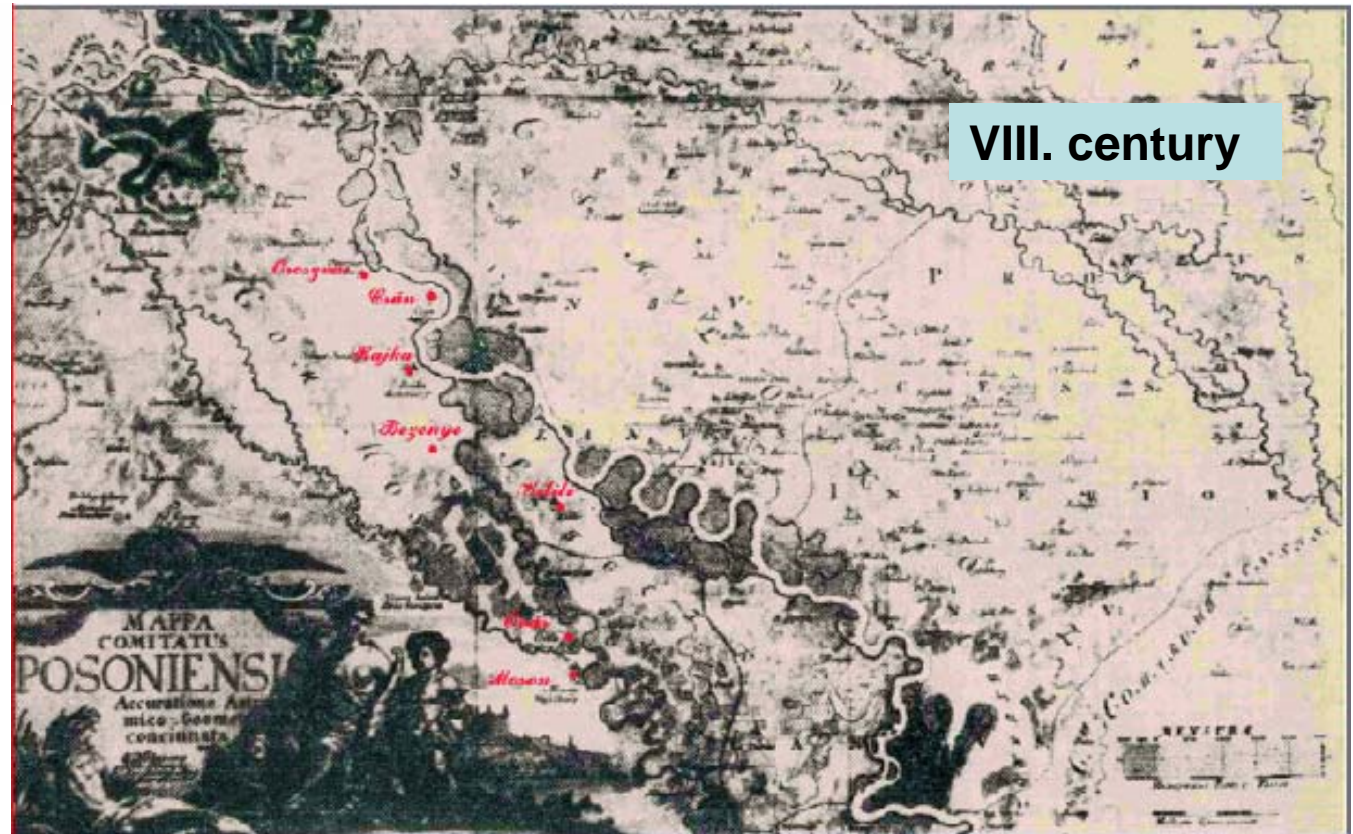
Huso huso

Acipenser gueldenstaedti

Acipenser nudiventris



Hydromorphology



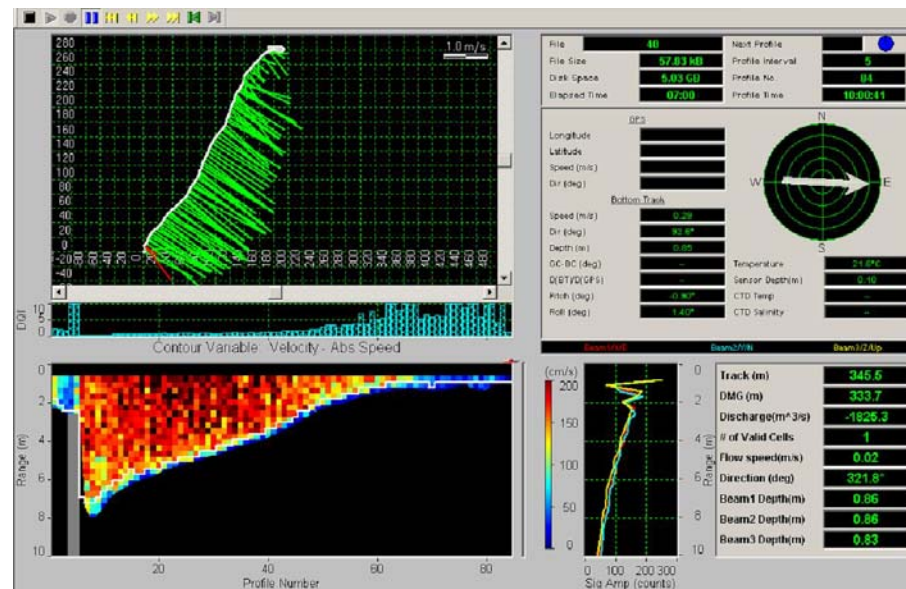
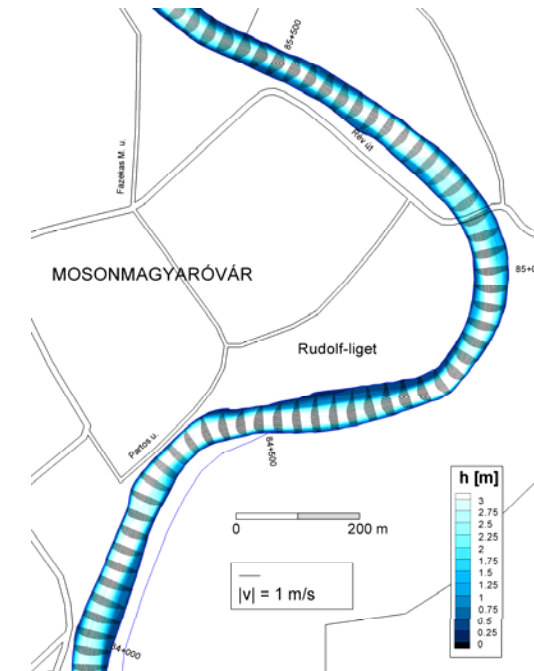
Numerical modelling 2D modell

2 D modell Fast and slow zones

- Sallow and deep zones
- Whirling

Results:

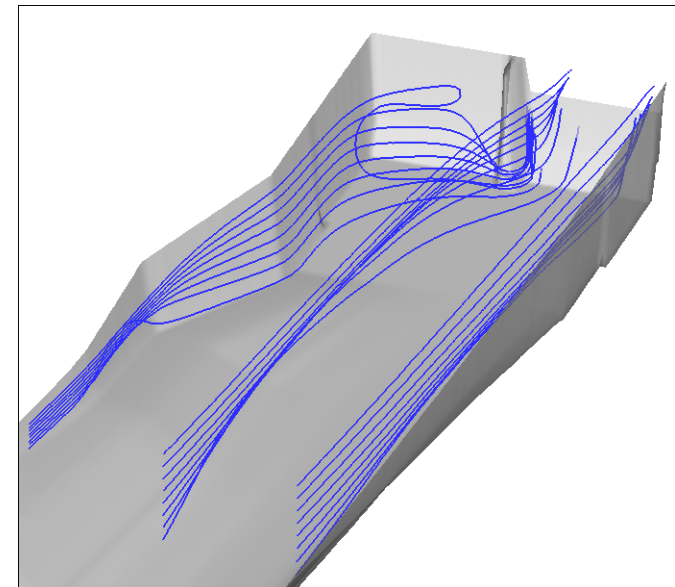
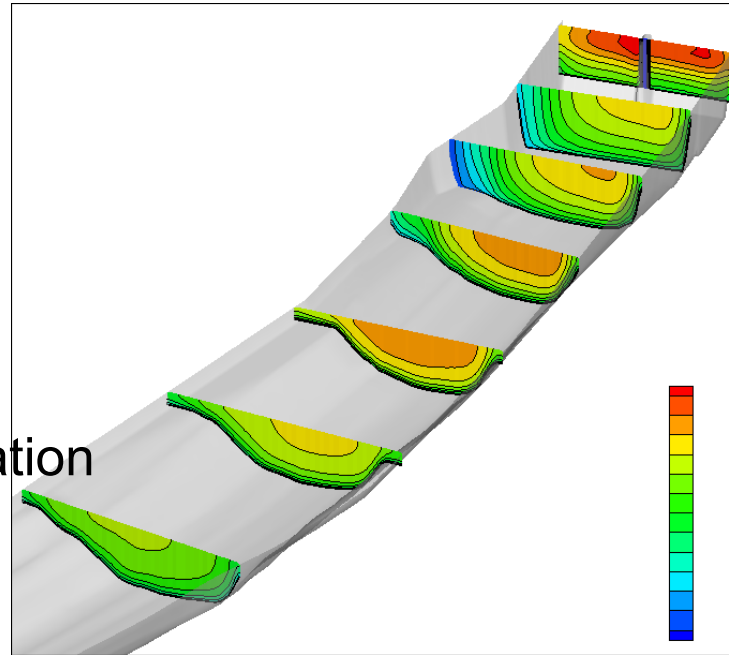
- Habitat qualification
- Species distribution in space
- Flow conditions
- Residence times
- Hydraulic impact of riverbed regulation



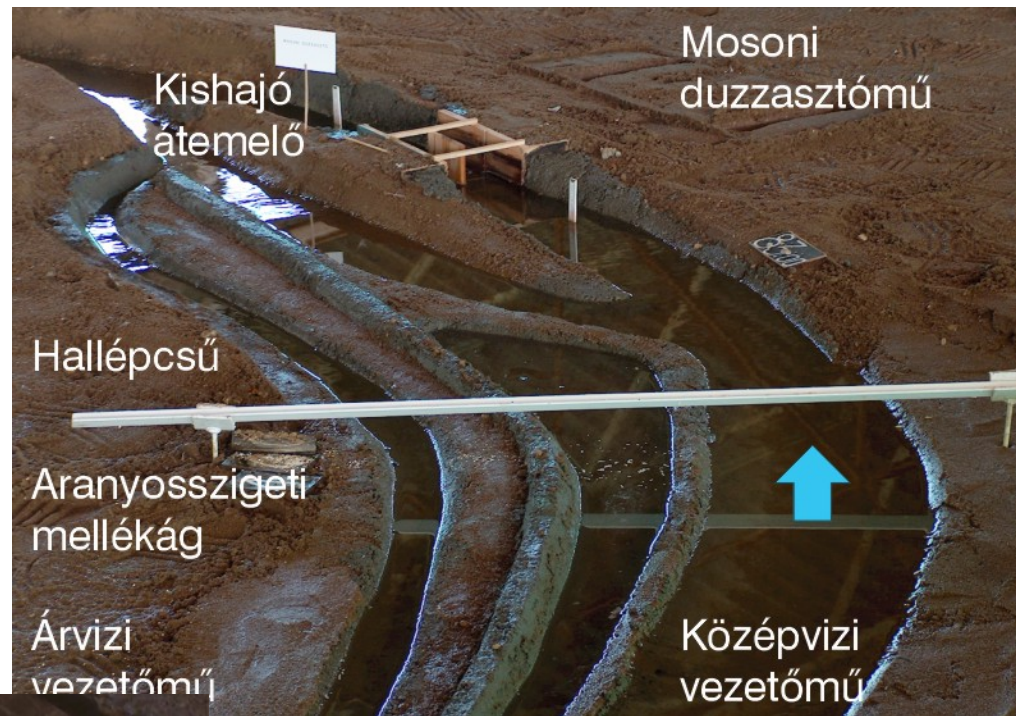
Numerical modelling 3D modell

3D modell

- Space dimension
 - Full current characterisation
 - Whirling and twisting
 - Turbulence conditions
-
- Results:
 - Ecological potential backgrounds
 - Movement of particals
 - Current conditions of wiers
 - Turbulenc conditions and flora/fauna



Physical modelling



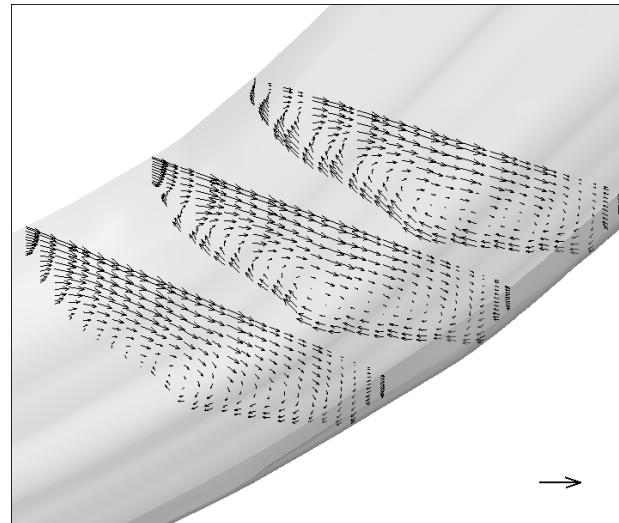
Results:

- Dredging activities
- Fish-pass
- Recontruction works
- Sediment trap
- Services needs

Public participation

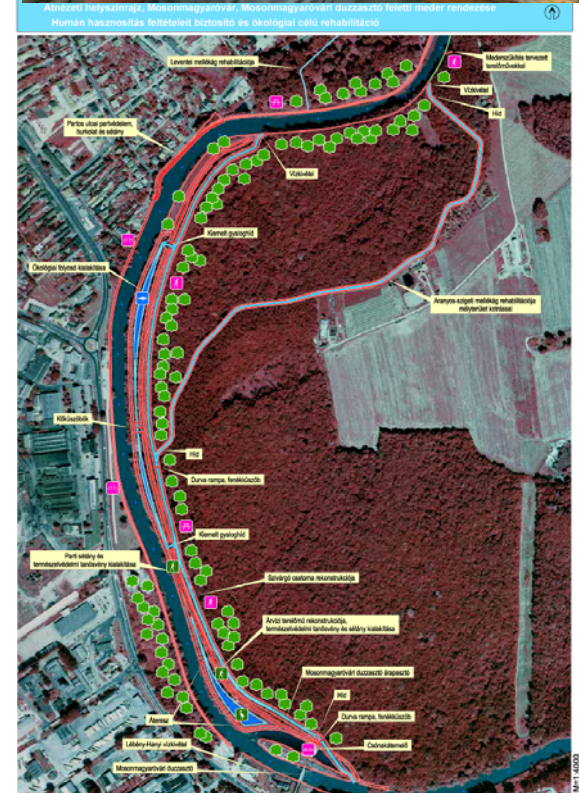


Third phase common thinking programme of measures



Utilization of the results by the partners

- Designation of the water bodies according to the WFD
- Planning of the monitoring systems
- Mosoni Danube HMWB verification
- Reference sites for HMWB
- Background data to rehabilitation
- Data to the operation of the Mosoni Danube
- Background to the river basin management planning
- Experience in international cooperation
- Coordination of different professional fields
- Public involvement



Lesson learned

Multidisciplinary tasks need common understandings

International river basin needs trust between parties

Successful cooperation between civil engineers and naturalists results in sustainable river basin planning

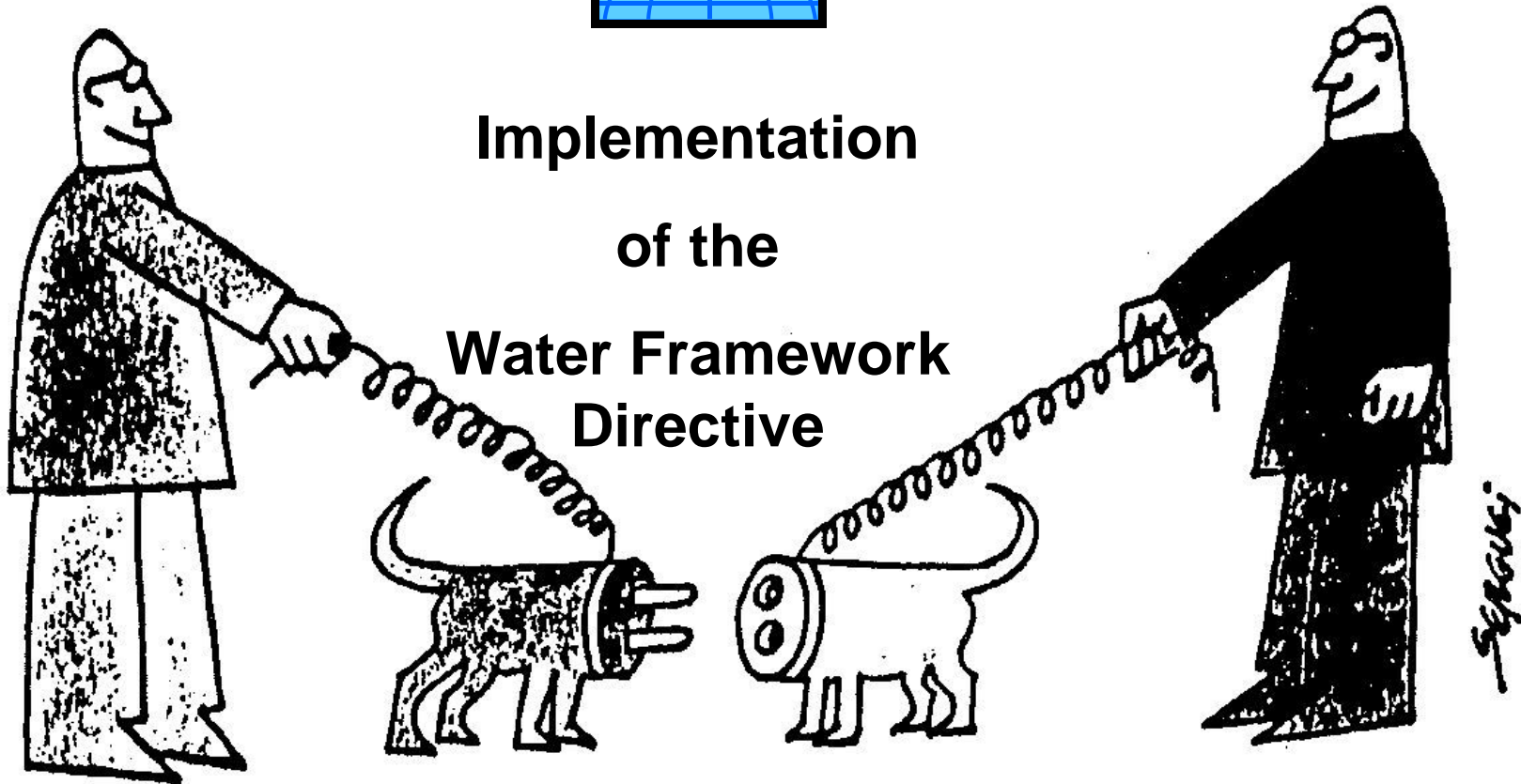
Participation of civil society is fundamental



Technical science – Natural science



Implementation
of the
Water Framework
Directive



Thank you for your attention

