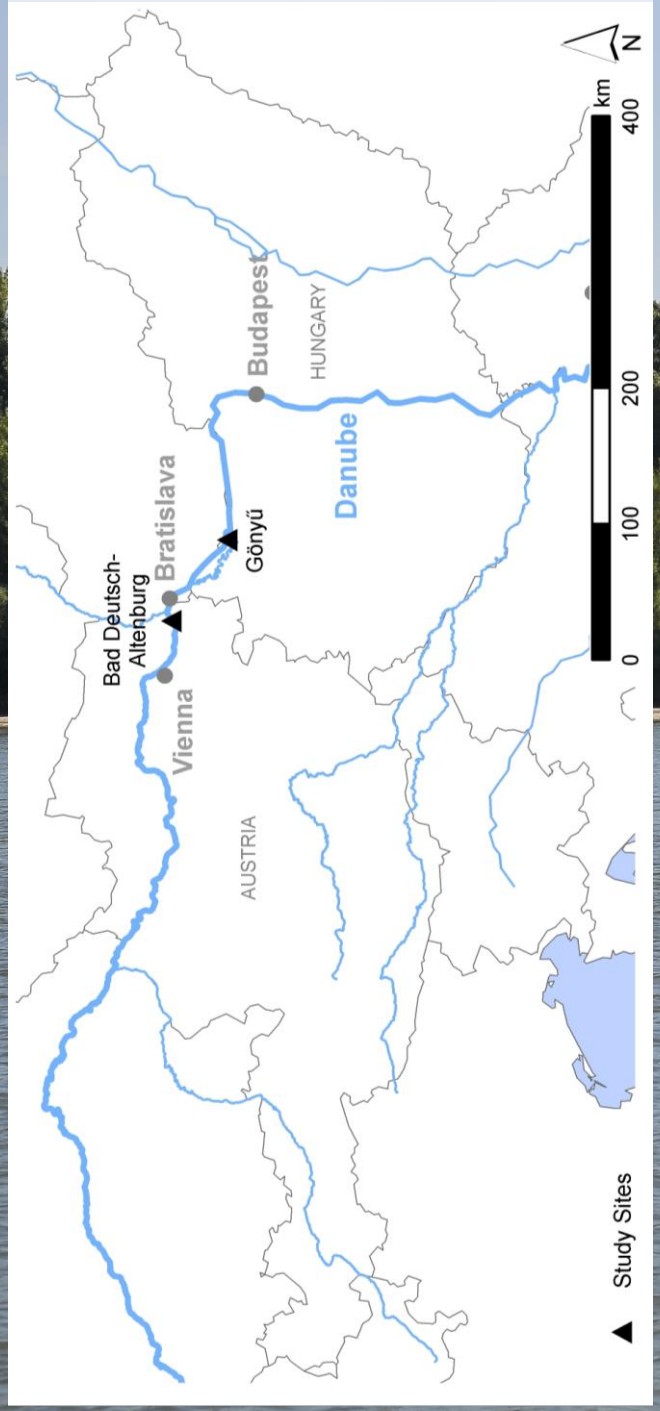
PROJECT AREA



Danube near Gönyű (©Haimann 2013)

ORGANISATION

Lead Partner

University of Natural Resources and Life Sciences, Vienna (BOKU)
Department of Water, Atmosphere and Environment
Institute of Water Management, Hydrology and Hydraulic Engineering (IWHW)

Partner 1

Budapest University of Technology and Economics (BME)
Faculty of Civil Engineering
Department of Hydraulic and Water Resources Engineering

Partner 2

North Transdanubian Water Directorate (EDUVIZIG)

Strategic Partner

Federal Agency for Water Management, Vienna (BAW)
Institute for Hydraulic Engineering and Calibration of Hydrometrical Current-Meters

CONTACT

Univ. Prof. DI Dr. Helmut Habersack
Christian Doppler Laboratory for Advanced Methods
in River Monitoring, Modelling and Engineering
Institute of Water Management, Hydrology and Hydraulic Engineering
Department of Water, Atmosphere and Environment
University of Natural Resources and Life Sciences, Vienna
Muthgasse 107, 1190 Vienna, Austria
✉ seddon@boku.ac.at
✆ 0043 1 3189900 101

www.seddon.boku.ac.at

EUROPEAN UNION
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SEDDON

Sediment research and management on the Danube River

Project period

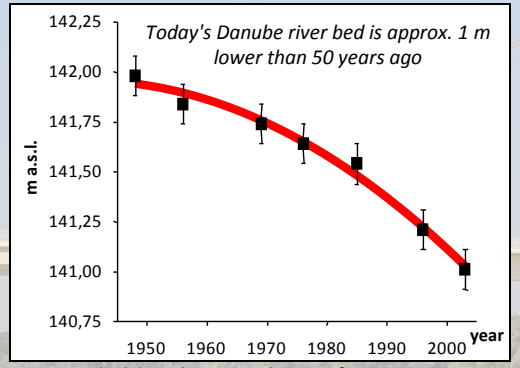
01.01.2013 - 31.12.2014

This project is co-financed by the
'European Regional Development Fund'

BACKGROUND

The Danube River is subject to multiple uses. Impacts on sediment regime (retention in catchment areas, sediment continuum interruption) as well as river regulation result in major problems for the management.

Silt up in water storage and river bed degradation in free-flowing sections occurs (East of Vienna approx. 2 cm/yr, continuous morphological changes South of Budapest).



River bed degradation Danube east of Vienna, Austria (S: Donau Consult)

Regulations cause a lack of river-morphological structures leading to deterioration of the ecological status. There are critical areas for navigation (e.g. problems in the navigable depth in fords). This implies the necessity to analyse sediment transport.

River bed adjustments (dredging and dumping) ©Haimann 2013

However, no harmonized monitoring, measuring and modeling techniques exist between Austria and Hungary. Therefore various measurement and modeling systems regarding river monitoring as well as inadequate laboratory equipment for hydraulic model experiments are used.

THE AIMS

are to…

- achieve a scientific basis to analyse problems concerning sediment transport in Austria and Hungary
- find and develop integrative management solutions
- compare the different problem fields in the Upper/Middle Danube
- harmonise monitoring, measuring and modeling systems
- standardise field reports and manuals
- evaluate existing laboratory equipment
- construct a hydraulic engineering research channel with a free-flowing discharge of 10 m^3/s
- make available project results and management strategies for all Danube countries (within the project DREAM)

ACTIVITIES AND RESULTS

Project Management

Project administration, coordination, organisation and implementation

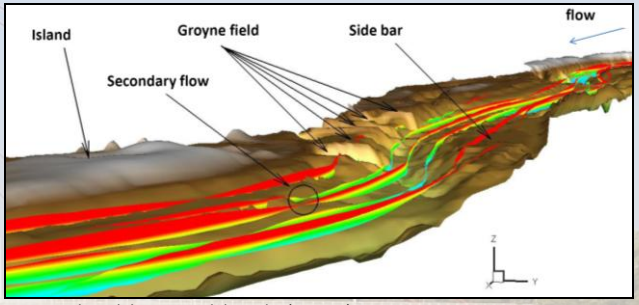
Sediment Transport Monitoring

- Field measurements to collect sediment transport data of the Danube River in Austria and Hungary
- Evaluation and harmonisation of measuring, monitoring and modeling methods to establish reports and a manual
- Evaluation of existing laboratory equipment to establish reporting about definition of necessary laboratory tests and equipment

Bedload sampling in Hungary (left) and Austria (right) © Haimann 2013

Computer Based Sediment Transport Modeling

- Evaluation of existing sediment transport models and the possibility of common use
- Common modeling of hydrodynamics, sediment transport and morphodynamics, application at two Danube river reaches in Austria and Hungary
- Simulation of practical solutions to improve sediment transport and morphodynamics



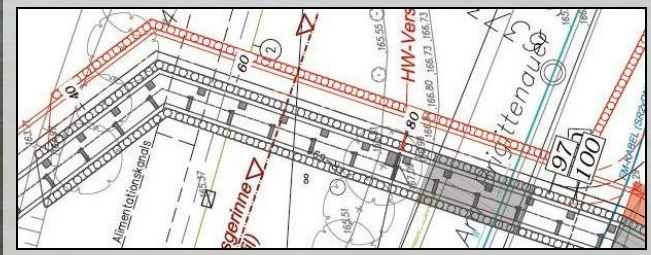
Numerical model – HD model results (S: BME)

Physical Hydraulic Models

- Construction of a research channel in Vienna between Danube and Danube Channel for an increased process understanding of sediment transport, desanding problems, flushing, attraction current for fish ladders, testing of the impact of various installations
- Dissemination and publication of research results (research channel model tests, field tests)

Research Channel

'Science meets public': Guided tours to the construction site of the research channel in Vienna, Austria



Section of the planned research channel in Vienna, Austria (S: Donau Consult)

In the end of the SEDDON project a final event will be organised for knowledge exchange.

Road bridge Bad Deutsch-Altenburg (© Haimann 2013)