



## AKTION Czech Republic – Austria

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Final report of the project n. 93p3

### Project title:

Application of connectivity science in sustainable river and catchment management – promoting joint research and education

Time frame of the project: 1 July – 31 December 2022

Participants of the project:

doc. RNDr. Zdeněk Máčka, Ph.D.  
Masaryk University, Brno

Mag. Dr. Ronald Pöpl, BA  
University of Vienna, Vienna

### Introduction

In summary, the following activities were carried out as part of the project. We held two working meetings (Brno, Vienna) and a summer field trip for students as core activities planned for the project. We were also successful to achieve the general goal, which was to establish the framework for a longer-term cooperation of our institutions in science and education. As a part of the long-term cooperation in the field of connectivity science, we prepared a draft for a journal article, elaborated a proposal for a special issue in a scientific journal, submitted a proposal for an international project within the Horizon Europe framework, and negotiated a joint doctorate (cotutelle) for one of Masaryk University's PhD students. A more detailed description of realized activities can be found below.

### Meeting in Vienna

Meeting took place 16 to 17 August.

Guests from Masaryk University: Zdeněk Máčka, Monika Šulc Michalková

The first meeting focused mainly on the preparation of the summer field trip programme. We planned suitable sites and developed a travel itinerary, discussed the goals of the field work conducted by students, and prepared field work materials (i.e., guidelines, forms for data collecting, maps, working tools for field work).

### Fieldtrip with students

Joint fieldtrip for Czech and Austrian students took place from 22 to 25 August.

Day 1 (22 August)

Guided excursion to selected sites in the national parks Thayatal and Podyjí. Opening the field trip in the national park Thayatal visitors' centre in Hardegg; presenting the role of beaver dams in moderating hydrological connectivity in the Fugnitz stream; presenting the role of artificial ponds and in-stream large wood in moderating sediment connectivity in the Kajabach stream; presenting the landscape of the Podyjí National Park, the Devět mlýnů vista; presenting the fluvial geomorphology of the Dyje River, the Šobes meander.

#### Day 2 (23 August)

Guided excursion to the dam and power station the Vranov water reservoir. Explanation of dam operation, electricity production and the Dyje catchment water management by the personnel of the Morava River Catchment state enterprise. This was followed by introducing the students to field methods in fluvial geomorphology and instructions for field work in the Klaperův potok Brook catchment.

#### Day 3 (24 August)

Fieldwork of students in the tributary catchments of the Dyje under supervision of the academic support (see table below).

#### Day 4 (25 August)

Finishing the fieldwork in the tributary catchments of the Dyje. Final joint discussion of Czech and Austrian students and academics on experience with the concepts and research methods introduced during the field trip.

#### Fieldtrip participants

<i>Masaryk University</i>	<i>University of Vienna</i>
Academic support	
doc. RNDr. Zdeněk Máčka, Ph.D.	Mag. Dr. Ronald Pöppl, BA
Mgr. Monika Šulc Michalková, Ph.D. et Ph.D.	John Perez, MSc.
Students	
Dominik Holíš	Pit Back
Simona Koreňová	Johanna Gebetsroithner
Kateřina Kovářová	Hannah Fergg
Eva Stará	Damir Hatunic
Barbora Šípková	Vanessa Mix
	Katharina Wachabauer

#### Meeting in Brno

Meeting took place 24 to 25 November.

Guests from University of Vienna: Ronald Pöppl, Alina Reininger

The second meeting focused on summarizing and recapitulation of the summer fieldtrip, followed by discussions of possible future cooperation of our institutions. We discussed shared experience with the teaching field methods in connectivity science to undergraduate students; organised and evaluated the data acquired by students during fieldwork; began to conceptualise a draft for a journal article dealing with the topic "Large wood is moderating tributary-trunk sedimentary links in forested high-gradient streams: a case study from the Dyje River catchment, Czechia-Austria" which is based on

data from the summer field trip; negotiated the conditions of potential joint doctorate for students of our universities; and discussed a strategy for joint research project proposals.

#### Other results achieved within the project

Four other outcomes of the project further developing the cooperation between the partners in the field of education and science were achieved:

1. Joint doctorate (cotutelle) was negotiated for Simona Koreňová, a PhD student at Masaryk University, which should be focused on the topic of connectivity science (theme of Ph.D. theses is "Connectivity of fluvial systems in the Anthropocene era"). Simona will conduct research in both partner countries based on a cotutelle contract between both universities. Within the agreement, Simona will spend the upcoming spring semester of 2023 at the University of Vienna.
2. During the academic debate of the partners, the idea arose to edit a special issue (SI) for a scientific journal devoted to relations between the large wood and water/sediment connectivity in fluvial systems. The proposal received positive response from the chief editor of the journal (*Geomorphology*) and has been submitted to the editorial board of *Geomorphology* (title of the SI: "Effects of large wood on water and sediment connectivity in fluvial systems: concepts and applications"). The proposal included abstracts of thirteen potential journal articles. The special issue will be opened for paper submission until October 2023.
3. Joint fieldwork of students from both universities continued in December. Dominik Holiš and Simona Koreňová (Brno) spent two days doing fieldwork with Alina Reininger (Vienna) in the tributary catchments on the Austrian side of the Dyje River valley.
4. A proposal for an international research project entitled "Flash flood susceptibility assessment in headwater catchments based on physiographic parameters analysis" has been submitted within the Water4All programme (the Horizon Europe framework) to the Technological Agency of Czech Rep as well as to the FWF in Austria. Besides our universities, other partners from Czechia (Palacký University, Water Research Institute), Slovakia (Slovak Academy of Sciences) and Hungary (University of Pécs) joined the project proposal. Therefore, the positive outcome of the Aktion project is also an establishment of wider consortium of central European institutions participating in the field of connectivity science.

#### Prospects of the future cooperation

The partners agreed to continue to cooperate in research and education. For 2023, the main tasks will be the editorship for a special issue in *Geomorphology* as well as the preparation of a journal article based on the data obtained during the summer field trip. The efforts to obtain joint scientific projects will also continue. After the preparation of the proposal for the Water4All call, the preparation of the project application for the Weave program (bilateral projects of Czech Science Agency, GA ČR, and Austrian Science Fund, FWF) during spring 2023 will follow. The continuity in education is sustained by the joint doctorate of a PhD student from the Masaryk University.

#### Project expenses

Detailed summaries of project expenses confirmed by universities' economical departments are sent as separate documents to respective agencies in Czech Rep. and Austria.

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doc. RNDr. Zdeněk Máčka, Ph.D.

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Mag. Dr. Ronald Pöpl, BA