

# Low water forecast for the Austrian Danube

This is a translation – for the original challenge description, contacts and submission got to:

[LINK](#)



An initiative of

Federal Ministry

In cooperation with

 Federal Ministry  
Republic of Austria  
Digital and  
Economic Affairs

Republic of Austria  
Climate Action, Environment,  
Energy, Mobility,  
Innovation and Technology

 **BBG**  
BUNDESBESCHAFFUNG

## Point of Departure

For freight shipping, the available depth of the shipping channel and thus the possible weight of a ship is a decisive economic criterion. Higher depths and weight significantly reduces the transport costs per tonne. The depth of the shipping channel depends on the water level of the Danube, which is subject to natural fluctuations (journey time to the port of destination).

For this reason, reliable forecasts of the development of fairway conditions on the planned route are important when loading cargo vessels. Reliable forecasts for several days are required for the loading calculation as the journey lasts often several days. Particularly in periods of low water, they are decisive in determining whether a transport is economically viable. An accurate forecast with optimization for low water can facilitate logistical planning, furthermore reduces forced breaks in freight shipping and prevent possible unloading of ships or accidents.

Important information on the development of the water level is currently available to shipping operators from an ongoing research cooperation with the Vienna University of Technology. The system is a fully automated operation and calculates forecasts for the two navigation-relevant gauges Kienstock and Wildungsmauer (5-day forecast for low water).

In addition, there are forecasts of the Danube water levels provided by the Federal Province of Lower Austria, e.g. for Kienstock and Wildungsmauer, which are, however, optimised for the case of flooding (up to 48-hour forecast).

via donau - Österreichische Wasserstraßen-Gesellschaft mbH, which is responsible for the operation of the waterway, wants to make the important information on low water available in an improved form as soon as possible.

## Main Question

Which company can develop a reliable, multi-day low water forecast for viadonau and make it available to the operators of the Danube waterway in a customer-oriented manner?

## Desired situation

### The goal:

The new low-water forecast is to provide multi-day discharge/water level forecasts for the two navigation-relevant gauges Kienstock (river-km 2015,21) and Wildungsmauer (river-km 1894,72).

In direct comparison to the existing forecasts, the forecasts must ultimately be more accurate and reliable, i.e. show the least possible deviation between the predicted and the actually observed water levels (of course, this cannot yet be verified in the course of the challenge, but is part of a possible joint project). From autumn 2021 onwards, the improved forecast is to be taken into operational use and published.

The possible path to get there:

Following the challenge and depending on the findings of this market consultation, a professional service provider will develop a prototype for a forecast for the above-mentioned navigation-relevant gauges optimised for the low-water area. This could take

place within the framework of an innovation partnership in accordance with BVergG 2018. The starting signal for this could be given in autumn 2020; ideally, the development of a prototype should be completed by the end of 2020 or the beginning of 2021. Following successful evaluation, a marketable product would be developed on this basis and a contract would be concluded with viadonau for the fully automated operational service planned for autumn 2021.

viadonau can provide existing hydrological basic data (water level data, flows of the Danube and, if necessary, also of the relevant feeder rivers), which can be used in the development of the approach.

The applied technologies, methods and approaches to the problem are basically free to the companies. In addition to classical hydrological (precipitation-runoff models), mathematical and statistical approaches, instruments are explicitly allowed that are originally used in other disciplines or were designed for another purpose.

Customers should be able to call up forecasts via an online presence of viadonau. The presentation of the data should be user-friendly and clearly arranged. Subsequently, an intuitively manageable application with individualisation and interaction possibilities with users is intended.

### **Call for proposals – Deadline March 30<sup>th</sup>, 2020**

In the course of this market exploration, viadonau is seeking an early exchange with companies in the IÖB-Challenge format. As a first step, companies hand in a brief proposal online via the button "LÖSUNG EINREICHEN" (Submit Solution).

In a clearly structured exposé, the following points should be conceptually explained on a maximum of three to five A4 pages:

#### References and company structure:

- Short description of the company
- Reference projects with a focus on longer-term forecasts (e.g.: hydrological models, meteorological models, forecasts with target parameters discharge and water level, processing of long-term data series, etc.)
- Operational of 24/7 online systems
- Personnel capacities of the company
- Experience in customer service

#### Low water prognosis: product description and approach

- Objective and expectations of forecast accuracy (deviation of forecast value from observed value)
- Methodology/Solution approach/Data preparation/Data management
- Optimization of customer perspective: Presentation/ Communication
- adaptation to changing boundary conditions (e.g. climate, soil sealing)
- viadonau is aware that the task is a challenge - please use the exposé as a qualified prospective to point what, in your opinion, the hurdles and limits are.

Upload the exposé in pdf format under "Files & Info".

Use the form field „Vertrauliche Zusatzinformationen für die Jury (max. 1000 Zeichen)“ (Confidential additional information for the jury) for information on the rough total costs (price indication):

- Prototype development
- Development of a marketable product
- Costs of operational operation (24/7) per year, taking into account response times (support levels)

For a quick overview for interested parties and a good visual appearance, please also fill in the other fields of the form: Title; cover picture; description (short but comprehensible); added value through you; logos of cooperation partners.

Companies that offer partial aspects can also submit. For a possible later contractual relationship, viadonau aims at a long-term and stable cooperation (preferably with a general contractor).

### **Benefits of the Challenge and further course of the project**

With the submissions to this challenge viadonau gets an overview of possible solutions and possible partners. The jury then invites those companies to an innovation dialogue in Vienna whose proposals stand out. As a submitting company, please save May 14 for the innovation dialogue.

For companies, the challenge has the following advantages: By participating, you will get on the radar of the public client. Your submission will remain visible as your business card for other interested parties even after the Challenge is over. If you are among the winners and are invited to the final innovation dialogue, you can present your solution at a market discussion. You will exchange ideas directly with the project managers.

This creates sensitivity and understanding on the part of the public client - among other things for suitable innovations. This is important so that the public client, after the market exploration, can consider innovative approaches in any purchasing project in accordance with the Federal Procurement Act.

Depending on the results, the further project plan after the challenge provides for the following:

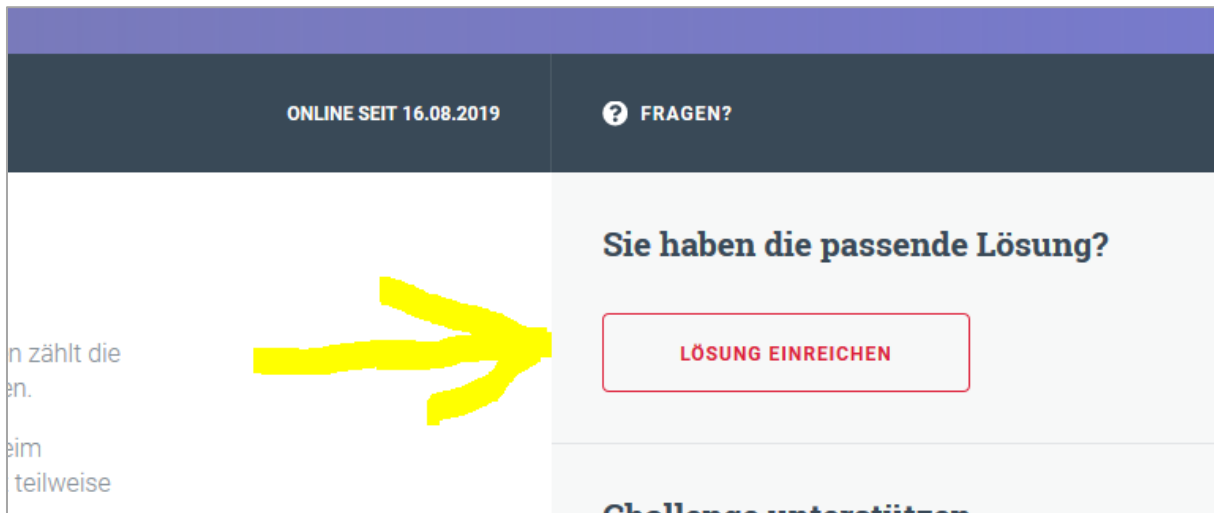
viadonau assumes a necessary product development for this project. Therefore, the awarding instrument "innovation partnership" would be an option for the possible procurement. In addition to the technical cornerstones, the submissions and discussions therefore also serve to get to know the perspective of the relevant market on a possible innovation partnership. Initial information on the innovation partnership can be found here: <https://www.wko.at/service/wirtschaftsrecht-gewerberecht/innovationspartnerschaft.html>. For further information, please call the moderators of the PPPI Service Centre.

### **Your Questions**

Contact the moderator or post your question about the Challenge. Our moderators will check, research and publish your question together with the answer. This way, all potential participants are certain to receive the same information.

## How to submit a solution/idea

Go to the challenge page. Click on the button "Lösung einreichen" on the top right side of the page.



- Beschreibung  
Post a meaningful description (make references to the description of the challenge and evaluation criteria on the right side of the challenge page)
- Mehrwert  
Highlight the benefits of your solution.
- Titelbild  
Upload a picture to be displayed on the landing page of the challenge.
- Kooperationspartner  
If you are handing in a joint contribution with other companies, this is where you make sure they are represented with logos and names.
- Dateien & Infos  
If necessary in addition to the descriptions above: add pdf-files (e.g. existing product brochures). But: Keep your contribution manageable for the jury.
- Vertrauliche Infos  
If necessary, place a confidential information for the jury, the sponsor and moderator (e.g. indication of approximate price range). All other parts of the contribution will be public.

Please be aware of the fact, that a challenge is the market research / market engagement prior to a possible procurement. The challenge will not decide upon a contract award nor will it lead to any unfair advantage in a tender. Please balance your time and effort.

## Contact Information

PPPI Service Center  
Lassallestraße 9B  
A-1020 Vienna

[www.ioeb.at](http://www.ioeb.at)

[www.ioeb-innovationsplattform.at](http://www.ioeb-innovationsplattform.at)

PPPI Service Line: +43 1 245 70-817

