Rheinische-Friedrich-Wilhelms-Universität Bonn,
Institut für Geodäsie und Geoinformation,
Professur für Astronomische, Physikalische und Mathematische Geodäsie

Real-time Monitoring of River Level with a Low-cost GNSS-Buoy System

Institution: Institute of Geodesy and Geoinformation (IGG), Astronomical, Physical and Mathematical Geodesy (APMG) Working group
Position: Research assistant (WHK) or student assistant (SHK/WHF)
Start date: March 1, 2024
Duration: 12 -15 months
Working hours : up to 20 hours per week
Application deadline: 19.01.2024

Description

The successful candidate will design and develop an innovative, cost-effective, and energy-efficient GNSS-Buoy system capable of real-time river level monitoring across various river widths and diverse environmental and topographical settings. The project will use low-cost GNSS receivers and antennas to determine real-time water level data in an optimal design that balances power efficiency, sustainability, and reliability. This involves a trade-off between the need for real-time water level monitoring in a flood early-warning system, a low-power consumption strategy when using a photovoltaic energy system, and telemetry bandwidth.

The candidate will have access to a mechanical and electronic lab at the APMG group of IGG, where they can build the system. They will assess off-the-shelf GNSS receivers, antennas, IoT boards, and network communication tools. The position will be based at the Institute of Geodesy and Geoinformation (IGG) in Bonn, in the APMG research group under the supervision of Dr. Makan Karegar.

Qualifications

- Candidates should have a master or bachelor degree in geodesy, meteorology, geophysics, computer science or a related field.
- Good programming skills (Python, Matlab) and Linux knowledge.
- Experience with Raspberry Pi, IoT, DIY sensors
- Familiar with GNSS theory and preferably GNSS data processing

For further information please contact Dr. Makan Karegar at karegar@uni-bonn.de