Internship project: Design and field implementation of an optical sensing unit

1 Background and project description

Groundwater is the largest reliable source of drinking water on Earth. Understanding processes in the subsurface environment is necessary in order to maintain sustainable usage of groundwater. Real-time monitoring of groundwater temperature and flow near wells can prevent future problems with pollution or water scarcity. Optical fibers with Fiber Bragg grating sensors are a promising tool for this purpose as they cause minimal disturbance to the environment.
The student will design a sensing unit capable of autonomous operation in field conditions. The system will be powered by wind turbine/solar panel and controlled by Raspberry Pi that will communicate remotely with a server. The goal of the project is to ensure fail-safe operation of both hardware and custom software parts. Prototypes will be tested in outdoor conditions. A successful project will be able to run for long period of time without human intervention. Additional research tasks might include investigation of the system precision and optimization of the sampling process.

2 Requirements

The ideal candidate has an experience with embedded system design and implementation and general interest in technology. Pluses are low level programming skills to communicate with hardware. The student is capable of working in an international environment, where B2/C1 English skills are required.
Starting date: November 2017 (can be discussed)
Duration: min 3 months

3 Research institute

The research will be conducted mostly at Wetsus, centre of excellence for sustainable water technology in Leeuwarden, Netherlands (www.wetsus.nl). Field testing will take place in multiple locations in Friesland and Gelderland.

4 Application

Please contact Sandra Drusová (sandra.drusova@wetsus.nl) for additional information or apply by sending your CV (1 page) and motivation letter (1 page). The internship includes a reimbursement of living expenses of 350 euro per month.