

Quantitative assessment of the extreme values of rivers runoff in the context of the climate change

Summary

The main task of the dissertation is to assess the climate change impact on the extreme runoff values (i.e. low/high water periods) in the Baltic Sea region. It will include an assessment of extreme hydrological phenomena in the past, a projection of these phenomena in the future, an assessment of the environmental impact, and recommendations for water management to adapt to climate change.

Research field:	Building and civil engineering and architecture
Supervisor:	Alvina Reihan
Availability:	This position is available.
Offered by:	School of Engineering Department of Civil Engineering and Architecture
Application deadline:	Applications are accepted between June 01, 2020 00:00 and July 03, 2020 23:59 (Europe/Zurich)

Description

Water always was and still is one of the most important recourses on Earth to sustain life. Besides just drinking purposes, it is the essential part of various human activities, agricultural, industrial processes etc. Therefore, it is very important to manage the resource wisely and be prepared for maintaining it in case of unexpected accidents and various events. One of such events is the climate change which has the attention of different scientists all over the world due its drastic possible consequences for our lives and daily routine. One of such consequences could be droughts and floods that occur as extreme i.e. minimum and maximum rivers runoffs. It is planned that such extreme values and their interconnection with the climate change will be assessed in the frame of this work, including the extent of the climate change impact, the possibility to predict, prevent drastic effects on human lives and activities. The work shall include analysis of the different types of droughts (e.g. hydrological, meteorological etc.) and their indices in the Baltic region. Hydrological model HBV is planned to use for runoff projections. The proposed recommendations for more sustainable water management will reduce environmental and economic impacts of climate change.

As a result of the study, several scientific articles will be published.

Responsibilities and tasks:

1. Carry out data gathering and its analysis
2. To be involved in the other activities connected with the work under the transboundary waterbodies projects "NarvaWatMan" in collaboration with Russia and "HydroDry" in collaboration with Lithuania, Latvia and Norway
3. To assist in the teaching activities (group works, practical classes)
4. To write scientific articles in the relevant fields

Qualifications

The applicants should fulfill the following requirements:

- Master's degree in the field of environmental engineering, connected to the water issues preferably
- Experience in the relevant field will be useful
- Previous research work in the field of river runoff estimation/modeling will be useful
- Experience in the project management will be useful
- Diverse background is welcomed



- Russian language proficiency is preferable



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