ArcFRI Stockholm Workshop Summary Report

Venue: Geosciences building, Stockholm University

Time: March 15-16, 2018

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Scientific highlights

- Workshop participants identified a set of key indicators for impacts on Arctic freshwater resources (see Table 1).
- We reviewed driving forces and associated freshwater system components (see Figure 1).
- We discussed how to analyze the impact of various geophysical and socio-economic scenarios on the identified indicators.

Workshop summary

The meeting opened with a general introduction of all participants. We then commenced work with reviewing the status of the draft synopsis of a paper that has been produced over a couple of teleconferences in the fall and winter of 2017. We agreed that the structure will work reasonably well.

Most of the remainder of the first day was spent on identifying key indicators for geophysical and socioeconomic changes that impact freshwater resources. The identified indicators are presented in Table 1. As the participants in Stockholm were most experienced in the geophysical indicators, we focused on these and aim to complete the table in discussions with the other project team members.

On the second day, we discussed different approaches to analyzing scenarios of geophysical and socioeconomic changes. The geophysical scenarios will be based on IPCC representative concentration pathways, and we decided that it would be useful to have a wide range of changes and that the RCP2.6 and RCP8.5 pathways are therefore most useful. On the socioeconomic side, we see several options. There is a set of scenarios that underlie the RCP emission pathways, also agreed on by the IPCC. This could form a basis for the scenarios, but we may also use specific scenarios for the Arctic.

We then had a couple of presentations from project team members and continued discussion on scenarios, driving forces and freshwater impacts (see Figure 1). The remainder of the second day was spent on the final structure of the paper and planning and assigning writing tasks. In the time following the workshop, we have had one additional teleconference discussing tasks and responsibilities.

Freshwater characteristics	Indicators
Water quality	Water temperature
	Salinity
	Contaminants
	Turbidity
Water quantity	River discharge
	Lake levels / lake surface area
	Lake and river ice duration
	Lake and river ice thickness
	Snow cover duration
	Snow water equivalent
	Soil moisture
	Groundwater table
Water infrastructure	Drinking and sewage water infrastructure damages
Anthropogenic influence	River regulation
	Hydropower
	Land use
	Mining
	Water withdrawal (industry, domestic)
	Hydrocarbon resource extraction
	Navigation and transport
	Domestic wastewater
	Industrial wastewater
	Urbanization

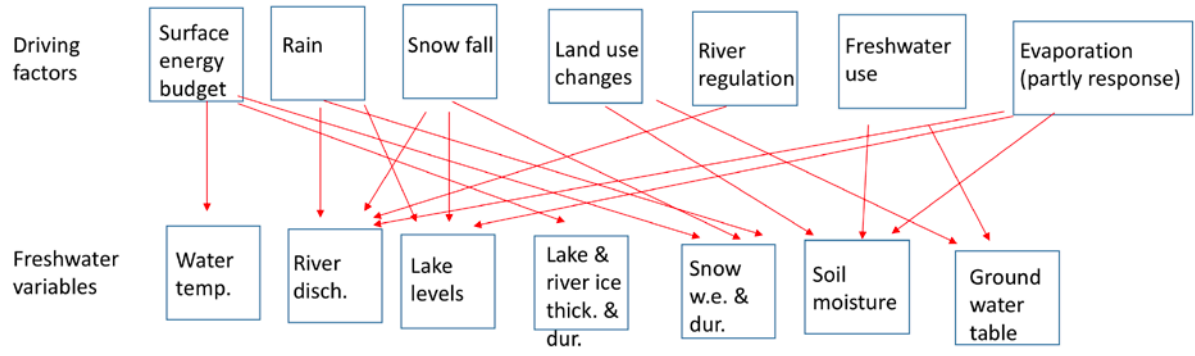*Table 1. Identified indicators of freshwater resource importance.*

Figure 1. Identified driving factors and connections to freshwater variables.