ISOSCAN project newsletter 2024/07

Dear all,

the first 3 months of the ISOSCAN project period have already passed. ISOSCAN stands for "Isotope-aided assessment and forecasting of hydroclimatic extremes in Scandinavia through stakeholder co-design". In short, *the overall aim of ISOSCAN is to harness a large number of water isotope data from conventional and innovative sampling approaches for improved hydrological forecasts that provide better preparedness against hydrological extremes such as floods and droughts in Scandinavia*, as we stated in the project description. The ISOSCAN project is exciting, in that it tries to do something really new and at the same time applied, based off of basic research. But it is also challenging, in that it does not stick to traditional disciplinary boundaries, and even involves the public into the scientific process. Communication will be key to make the ISOCAN project work, and to achieve our project objectives. This newsletter, and the following ones which come at more or less regular intervals, can hopefully help the project participants, collaborators, and citizen scientists to follow along what is going on in the overall project, to share small and large achievements, and to connect the dots to the bigger picture.

Enjoy!
Harald

ISOSCAN participants at the Bergen kickoff. Left to right: Kristof Tomej, Harald Sodemann, Benjamin Fischer, Mahaut de Vareilles, Janne Liburd, Delphin Ruché, Andrea Popp. Photo: Kristof Tomej.

Kickoff meeting, Bergen, 4-5 April 2024

Seven ISOSCAN participants met in snowy Bergen in the beginning of April to kick off the project. As we took our lookout at the great Kranen venue in the harbour, we asked: how do we go about working together on this complex, interdisciplinary project? Maybe surprising, but in the end, the natural answer was – by establishing relations between us as the project participants. How did we get to where we are now? Why are we interested in doing what we are doing? Understanding each other helps us understand each other's way of thinking and our intentions, and thus lays the foundation for working together mostly remotely in the coming months. Furthermore, there was time to map out the first steps of the project work, and to identify where we need to spell out more concretely what is to be done and how. And we engaged in an exciting co-creation activity led by Janne and Kristof to figure out the journey of a sampling kit (see below).

Welcoming Costijn Zwart to the ISOSCAN project

We are very happy to welcome the new PostDoc Costijn Zwart to the ISOSCAN project. With an interest in meteorology, snow science, water isotopes, and fieldwork experience, and a highly relevant set of scientific publications, Costijn brings along a perfect mix of expertise for ISOSCAN. We're looking very much forward to having Costijn with us in the project after the summer at the Geophysical Institute at University of Bergen.

Costijn himself says: *"First of all I am excited to become part of the team and look forward to meeting all the participants! My background is in operational meteorology and snow science. For the past 10+ years, I have worked in the geochemistry lab at James Cook University and in remote north Australia. In my PhD research I used stable isotopes to reconstruct and interpret environmental*

change and worked on stable isotopic signatures of extreme weather events such as Tropical Cyclones."

Water4All kickoff meeting, Madrid, 23-24 April 2024

Group picture, Water4All kickoff meeting, Madrid

What is Water4All actually about? What other research is going on in the framework of this call and the entire funding scheme? To answer these questions, the Water4All secretariat organised a 2-day kickoff meeting at the Spanish Ministry for Science and Innovation in Madrid, where our project had to be represented. Principal investigator Harald Sodemann was at this meeting for ISOSCAN. In addition to presentations of each individual of the 27 projects funded within this Water4All call, the European Commission was represented by two speakers that explained the framework for how the EU plans to adapt to a changing water cycle with climate change. The ISOSCAN presentation stimulated a quite lively discussion, including many questions about the citizen science approach. In addition to all other project representatives, several funding agencies were represented as well, and it was indeed useful to participate in this networking event, for example to connect with the Norwegian and Swedish-led projects ECCO and MEWS. The mid-term event may be organised in a hybrid format such that we could reduce our travel activity.

Project activities

WP1 (Co-design): Co-creating session at the kickoff meeting

Mapping the journey of a water isotope sample

An important part of the ISOSCAN project is collaboratively designing a citizen science framework in northern Scandinavia to collect high-resolution stable water isotope data to improve hydrological forecasting. It may seem easy to involve hikers by simply distributing sampling kits and instructions. But in order to become a well-functioning and lasting citizen science arrangement, it needs to bring value to scientists, citizens and all other stakeholders involved. For this purpose, Janne Liburd and Kristof Tomej from the University of Southern Denmark use tourism co-design. Tourism co-design is a creative approach that seeks to use productively the complexities that arise when people from different backgrounds meet and interact.

As a first step, Janne and Kristof facilitated a co-design workshop with the core ISOSCAN team in Bergen to identify relations between the work packages, critical moments, and possible scenarios. The scientists were challenged to create the journey of a stable water isotope from the ocean to the snowpack to a collected sample to the university lab and beyond. The joint visualization of the isotope journey emerged in a colourful map, which uncovered many possible journeys. It also demonstrated how each of the team members, and other stakeholders, relate differently to a snow or water sample. It also revealed how value creation happens at many different levels e.g. school classes, local residents, cruise tourists, sail & ski tourists, which should be appreciated and communicated accordingly. Next, we will co-design with local nature and outdoor organisations, tourism businesses and potential citizen scientists in Norway and Sweden, to expand our shared understanding and move closer to a testable citizen science model.

WP2 (Observations) and WP3 (Modelling): Joint discussion meetings and preliminary model work

The first months of ISOSCAN were used efficiently to progress within Work Packages 2 and 3. Benjamin Fischer (University of Uppsala, lead WP2) organised a series of discussion meetings to map out the available data and data needs for the hydrological modelling. In April, Andrea Popp (SMHI, lead WP3) presented initial results of a new HYPE model set up for the Krycklan Catchment Study at the European Geosciences Union

General Assembly in Vienna. This model is able to simulate stable isotopes of water and their fractionation and serves as a testing ground for isotope-aided hydrological modeling using HYPE. In May, Andrea visited Krycklan to collect additional isotope samples, focusing on groundwater to enhance the new model. During the same month, Cristian Gudasz from Umeå University visited Andrea at SMHI to discuss the setup of another HYPE model for the Abisko area, an Arctic site critical to the project. In June, Andrea traveled to the University of Calgary in Canada to meet with Tricia Stadnyk and colleagues to discuss the technical aspects of large-scale isotope-aided modeling, which will be a focus in the coming months.

WP4 (Project management): Setting up the project website

The ISOSCAN website has been launched. Hosted by UiB, you can for now find a basic overview of the project, a map of the different partner institutes, and one of the beautiful pictures from the kickoff meeting in Bergen. Tweets with hashtag #ISOSCAN will also show up on the page. You find the website at https://www.uib.no/en/rg/meten/170462/isoscan-project-home-page.