Changing ecosystems –

Opportunities and challenges in integrated research

Oulanka 20.-22.8.2018

PROGRAM:

Monday 20.8. 2018	
15:00	arriving and registration
16:00	*dinner*
17:00	welcome & INAR RI Ecosystems intro (Jaana Bäck)
Needs and challenges in scaling up from local to regional — chair: Annalea Lohila	
17:15	KEYNOTE: Needs and challenges in scaling up from local to regional (Tarmo Virtanen, UH)
18:00	Mapping vegetation in a north-boreal fen in very-high and ultra-high spatial resolution (Aleksi Räsänen, UH)
18:20	Long-term trends and mass budgets for N and S compounds at European LTER-sites (Martin Forsius, SYKE)
	break
18:45	PäijänneLTER - research and education environment in the lake landscape of Central Finland (Pauliina Salmi, JyU)
19:05	Upscaling greenhouse gas fluxes on adjacent peatland, lake and forest ecosystems within a subarctic catchment (Lauri Heiskanen, FMI)
19:25	Long-term monitoring of boreal forest ecosystems serves science and policy (Päivi Merilä, Luke)
19:45	Oulanka introduction (Riku Paavola) + evening snack + sauna

Tuesday 21.8. 2018	
7:00	*breakfast*
Lateral Carbon Transport — chair: Janne Sundell/Terhi Rasilo	
8:00	KEYNOTE: *Lateral Carbon Transport: Combining long-term monitoring with process research* (Hjalmar Laudon, SLU)
8:45	Seepage from peatland influencing groundwater patterns and DOC processes in river-side esker (Hannu Marttila, UO)
9:05	Transport and transformation of soil-derived CO_2, CH_4 and DOC sustain CO_2 supersaturation in small boreal streams (Terhi Rasilo, UH)
9:25	Integrated aquatic studies based on a continuously operated measuring platform: Visionary path to bring future or random walk into the unknown (Anne Ojala, UH)
9:45	
10:00	*coffee*
New technologies and their possibilities in ecosystem research — chair: Riku Paavola	
10:15	KEYNOTE: Researcher wearing glasses: seeing better or seeing different? (Mikhail Mastepanov, Aarhus University)
11:00	Novel Stable Isotope Approaches in Tree Ring Research for Climate Change Studies (Yu Tang, Luke)
11:20	Root lab facility for studying tree responses to abiotic stresses (Tapani Repo, Luke)
11:40	High-resolution Arctic water isotope ($\delta^{18}O$ and $\delta^{2}H$) cycle measurements of water vapor and stream water in N Finland (Kaisa-Riikka Mustonen, UO)
12:00	Imaging spectroscopy in environmental monitoring (Markku Keinänen, UEF)

12:20	*lunch*
Mitigation of climate change through ecosystems (mitigation) — chair: Jaana Bäck	
13:20	KEYNOTE: Trade-offs and synergies between biodiversity, climate change mitigation and environmental loading in peatland ecosystems (Anne Tolvanen, Luke/UO)
14:05	Mitigation of climate change: sustainability and multi-functionality of European forests (Jaana Bäck, UH)
14:25	Continuous cover management as a tool to mitigate emissions from peatland forestry – a case study from Southern Finland (Annalea Lohila, FMI)
14:45	Discussion
15:00	*coffee + EMEP visit*
Workshops	
16:30	Experiences and plans for technical solutions for long term experiments Data management Research Infrastructure sustainability Measurements across disciplines – how to achieve a real integration?
18:30	*dinner*
	sauna site posters

Wednesday 22.8. 2018	
7:00	*breakfast*
Links between biodiversity and climate change — chair:Jussi Heinonsalo	
8:00	KEYNOTE: Climate as driver of long-term trends in freshwater invertebrate communities (Peter Haase)
8:45	Interactions of Polyporales fungi in decomposition of dead coniferous wood (Taina Lundell, UH)
9:05	Impacts of drought, nutrient enrichment and canopy removal on stream ecosystems (Jussi Jyväsjärvi, UO)
9:25	The plant-microbial impacts on soil processes with direct climate feedbacks: conclusions from studies on CO_2, CH_4, N_2O, VOCs and amines (Jussi Heinonsalo, HY)
9:45	*coffee*
10:00	Changes in treeline ecosystem and its herbivore assemblage in a changing world (Otso Suominen, UTu)
10:20	Coherence, stability and species turnover in boreal stream communities (Kaisa-Leena Huttunen, UO)
10:40	Mycological long-term experiments at Oulanka (Esteri Ohenoja, Botanical Museum, UO)
11:00	summary
11:20	*lunch*
12:20	departure

WORKSHOPS:

Experiences and plans for technical solutions for long term experiments
When building a new research infrastructure, things do not always go according to plan, despite the best efforts and the often extensive experience of people designing the infra. There is also a very large number of important decisions to be made at every step – decisions that cannot be changed later. Therefore, it makes sense to compile and to compare real-world experiences to create a list of best practices and recommendations.

Data management
Data management is necessary part of research and research site management, but it is easily forgotten or seen as an un-inspiring duty. However, the value of data depends also on its management. Today, scientific data should be findable, accessible, interoperable and reusable. In this session, based on the knowledge gained in "Big data, small data, no data" -workshop in Hyytiälä, we discuss common practices, concerns and needs of data management both at research group and research station level.

Research Infrastructure sustainability
In this session we want to discuss practical ways how to keep the Finnish ecosystems RIs sustainable and internationally competitive and how to foster their success and development through their usage.

Research infrastructures (RIs) are facilities, resources and services used by the science community to conduct research, train new generations of scientists and foster innovation. Whilst these RIs offer great opportunities, they also present the challenge of ensuring that they can be operated sustainably at a high level. To be successful and sustainable, any RI need to pay attention to good planning and operation of RIs, taking into account several dimensions for sustainability. Some identified aspects are:

- Ensuring scientific excellence,
- Attracting and training the managers, operators and users of tomorrow,
- Unlocking the innovation potential of RI,
- Measuring socio-economic impact of RI,
- Exploiting better the data generated by the RI,
- Establishing adequate framework conditions for effective governance and sustainable long-term funding for the RI at every stage in their life-cycle,
- Structuring the international outreach of RI.

Measurements across disciplines – how to achieve a real integration?
The environmental problems are often very complex and thus they require a holistic approach and tools from many disciplines. However, it is not always easy to integrate methods or approaches between natural sciences, and even harder when aiming at addressing the socially relevant research questions. What are the challenges in integration, and how can they be overcome? What can we gain from integration?