

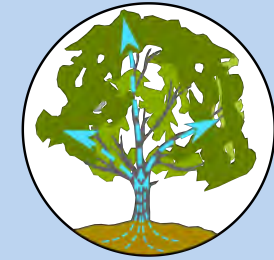
Workshop Program

Monday, 11. 10. 2021	
8:00	Ice-breaker and conference opening
9:00	Session 1: Transport/Residence Times
10:30	Coffee break
11:00	Session 1: Transport/Residence Times
12:20	Lunch break
14:00	Session 2: Tracers in the Subsurface
15:30	Coffee break
16:00	Session 2: Tracers in the Subsurface
17:20	Design thinking challenge group meeting
18:00	

Tuesday, 12. 10. 2021	
8:00	
9:00	Session 3: Ecohydrological Storages/Fluxes
10:30	Coffee break
11:00	Session 3: Ecohydrological Storages/Fluxes
12:20	Lunch break
14:00	Session 4: Methodological Developments
15:30	Coffee break
16:00	Session 4: Methodological Developments
17:20	Design thinking challenge group meeting
18:00	Panel discussion and conference wrap-up

Heidelberger Akademie der Wissenschaften
Heidelberg, Germany

Water and Nutrient Fluxes in Ecosystems Under a Changing Climate: a Tracer-based Perspective



11 + 12 October 2021



Workshop Format

Scientific talks presented by invited speakers and workshop participants, mixed discipline break-out-group discussions, plenary discussion, informal interaction and time for networking.

Important Dates

Abstract submission deadline: **03 September 2021**

Registration deadline: **24 September 2021**

Register at: www.eco-tracer.uni-freiburg.de

Online Workshop

The workshop is free of charge and will be held online.

eco-tracer@hydrology.uni-freiburg.de
www.eco-tracer.uni-freiburg.de

Organizers

Dr. Natalie Orłowski, Dr. Michael Rinderer,
Jaane Krüger, Dr. Maren Dubbert



**HEIDELBERGER AKADEMIE
DER WISSENSCHAFTEN**
Akademie der Wissenschaften
des Landes Baden-Württemberg



Workshop Aim

Water flows through ecosystems via interacting pathways, along which nutrients are mobilized, transported and retained. These pathways and biogeochemical processes are difficult to observe directly. Tracers (e.g., stable and radioactive isotopes or artificial tracers) provide a cross-disciplinary toolset for measuring water and nutrient fluxes through different ecosystems. Our conference aims at connecting different disciplines (e.g., ecosystem ecology, plant physiology, soil science and hydrology) to foster interdisciplinary discussion, highlight open questions and open new opportunities for collaborative research. This helps to overcome shared research gaps and generate a more holistic view of water and nutrient fluxes in diverse ecosystems. This is needed given the rapid changes in climatic conditions that we already face today.

Workshop Sessions

1. Transport Processes and Residence Times in Ecohydrological Systems



Chairs: Dr. Michael Rinderer,
Uni Freiburg, Germany
Prof. Dr. Markus Hrachowitz,
TU Delft, Netherlands

Inv. speaker: Ass. Prof. Dr. Giulia Zuecco,
Uni Padua, Italy

High frequency measurements of water fluxes and their constituents as well as tracer applications allow for a better identification of flowpaths and a more precise estimation of transit times in different ecohydrological systems. However, different tracers, sampling strategies and analysis methods seem to capture different residence times. This session aims at

identifying progress, challenges, and opportunities in the use of diverse tracers to identify water and nutrient flowpaths and quantify the transit time of water and its constituents. The session invites contributions from the catchment to the plot scale across an array of tracers and modeling techniques.

2. Novel Tracer Techniques for Investigating Processes in the Subsurface



Chairs: Jaane Krüger,
Uni Freiburg, Germany
Dr. Federica Tamburini,
ETH, Switzerland

Inv. speaker: Jun. Prof. Dr. Michaela Dippold,
Uni Goettingen, Germany

Novel analytical techniques offer the opportunity to investigate tracers at unprecedented temporal and spatial resolution and precision. New experimental approaches (e.g., isotope dilution, component specific labeling) afford opportunities to study turnover of soil organic matter, nutrient uptake by plants, and nutrient sorption and exchange (in particular phosphorus and nitrogen), and thus help to identify the variables controlling nutrient and water cycling in soils. This session includes field and laboratory studies of soil nutrient and soil-hydrologic processes, particularly those using ^{18}O , ^{13}C , ^{15}N , ^{32}P , ^{33}P isotopes.

3. Ecohydrological Storages and Fluxes Mediated by Plants



Chairs: Dr. Maren Dubbert,
Uni Freiburg, Germany
Prof. Dr. Arthur Gessler,
WSL, Switzerland

Inv. speaker: Dr. Matthias Beyer,
TU Braunschweig, Germany

Plants play a crucial role in controlling ecosystem's water and nutrient fluxes and storages. In this session, we welcome research that considers water and nutrient availability, soil-plant-atmosphere feedbacks and species competition to improve our understanding of ecosystem's water and nutrient fluxes. We also invite tracer studies that investigate how interactions between plants and their environment determine the partitioning and redistribution of water and nutrients in ecosystems under current and changing climate.

4. Methodological Developments and Monitoring Systems



Chairs: Dr. Natalie Orlowski,
Uni Freiburg, Germany
Prof. Dr. Youri Rothfuss,
Research Centre Juelich, Germany

Inv. speaker: Dr. Matthias Sprenger,
IDAEA, Spain

Analytical advances have a strong bearing on ecosystem process understanding and interpretation of findings. This session aims at addressing the current state of the art of methods, applications, and process interpretations using environmental tracers in the soil-plant-atmosphere continuum. We welcome experimental and modeling studies that present methodological developments and applications of environmental tracers to improve the actual knowledge of water and nutrient exchanges at the cross-disciplinary interfaces between soils, plants and atmosphere.