

PROPOSAL

Thematic International Study Day

TRACING 2022

**Novel strategies of sediment tracing
in catchments and river systems**



Sunday 22 May 2022

Meeting place: University of Vienna, Austria

Main organisers : Dr. Sabine Kraushaar (Univ. of Vienna, Austria) and Dr. Olivier Evrard (Univ. Paris-Saclay, France)

Context and objectives of the Thematic Day

Soil and water resources that are essential to human and aquatic life are increasingly threatened by human activities and the impacts of land use and climate change. Sediment and sediment-associated constituents, in particular, can contribute substantially to water-quality impairment. In order to take effective conservation measures to protect these resources from erosion and alteration, and use them in a more sustainable way, a preliminary assessment is needed to: (1) quantify soil losses; (2) identify the sources and the pathways of runoff and sediment across the landscapes to the river systems; and (3) calculate the transfer and residence times of sediment and particle-bound contaminants in the river network.

Several innovative techniques have been developed recently opening up new avenues to establish this assessment of sediment flux in the critical zone. These innovative techniques include the tracing or “fingerprinting” methods to identify the sources and quantify the dynamics of sediment and particle-bound contaminants, high resolution topographic mapping using various emerging technologies (i.e. Lidar) to map connectivity and sediment pathways, the development and installation of multiple low-cost sensors in the rivers. However, the use of these techniques is often associated with several methodological and statistical limitations, that are often reported although rarely addressed in the framework of concerted actions taken at the level of the international scientific community. Among the main methodological difficulties associated with these techniques are the following:

- conservativeness of tracers during the erosion to delivery cycle;
- collection and representativeness of sampling in the field;
- use of correction factors to remove the effect associated with differences in particle size or organic matter content between source and target samples;
- Bayesian versus multivariate statistical analyses;
- calibration of sensors/samplers installed in the field/in rivers;
- validation and uncertainty of model results.

In this context, the objective of this Thematic Scientific Meeting Day is to bring together international experts working on these topics together. It is organised to follow-up the discussions initiated during specifically dedicated sessions organised during the last years at the General Assembly of the *European Geoscience Union* (EGU) and the *American Geophysical Union* (AGU). This event will take place on Sunday 3 April 2022 – just before the 2022 edition of the EGU conference starts – to facilitate the participation of European and non-European colleagues and minimize the environmental impact of the meeting. In the future, we hope that other similar events will be organised in the framework of international conferences (e.g. EGU 2023) to continue stimulating discussions about this topic in coming years.

Audience

Researchers/lecturers, postdoctoral fellows, PhD students.

Depending the covid regulations in application in May 2022, 30 to 50 participants are expected.

The official language of the Thematic Day will be English.

Logistics

The event will take place at the Lecture Hall 1 at the University of Vienna (Subway station U2 Schottentor) Universitätsring 1

1010 Wien
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It will be organised on **Sunday 22 May from 9:30 am to 5:15 pm** so that the participants will have time to go the Vienna International Convention Centre to attend the EGU Conference 'Opening Reception' (commonly organised from 6:30 pm to 9:00 pm).

Participation cost

The participation to the event will be **free**, and the intention is to provide free-of-charge coffee breaks and a lunch to the confirmed participants. All the participants will be required to register in advance (see below). No participation in hybrid mode will be possible.

Format/programme of the Thematic Day

9:30 – 10:00 *Welcome coffee/tea*

10:00 – 10:15 General introduction by the organisers

10:15 – 10:30 First keynote lecture on the design of tomorrow's tracers

10:30 – 10:45 Second keynote lecture on optimized modelling methods

10:45 – 12:15 General discussion between the audience and the keynote speakers

12:15 – 13:00 *Lunch break*

13:00 – 13:15 Feedback on a Tracing Thematic School organised in 2021 and proposition to organise a tracing inter-comparison exercise

13:15 – 14:30 Work in three thematic groups: (1) design of tomorrow's tracers; (2) optimized modelling methods; (3) organisation of an inter-comparison tracing exercise.

14:30 – 15:00 Feedback from the group (1) and discussion with the audience

15:00 – 15:30 Feedback from the group (2) and discussion with the audience

15:30 – 16:00 Feedback from the group (3) and discussion with the audience

16:00 – 17:00 General discussion on the organisation of future exchange events and potential sponsors

17:00 – 17:15 General conclusions by the organisers

Registration/expression of interest

Please send an-email to inform us of your interest to participate to the Tracing Day **by 1st May** to sabine.kraushaar@univie.ac.at and olivier.evrard@lsce.ipsl.fr with the following information:

- *Name/surname*
- *Status (PhD student, researcher, lecturer)*
- *Institution, city, country*
- *Birthdate*
- *Your experience/interest in sediment tracing (in one or two lines)*
- *Your favourite thematic group (1/2 or 3; see above) for the afternoon session*