



Online Workshop

Environmental Isotope Tracers in Hydrogeological Applications

5-9 October 2020

Program of the workshop*

Timing: Eastern European Summer Time (EEST), UTC+3, Helsinki.

Monday, October 5, 2020 - 10.00 – 15.00

Session 1: Isotope Hydrology/Hydrogeology and Analytical Techniques

- 10.00 – 10.20 Welcome and introduction (N. Hendriksson & D. Pedretti)
- 10.20 – 11.00 Basics of isotopes in hydrology/hydrogeology (M. Tiljander /Y. Lahaye)
- 11.00 – 11.45 Isotope analyses process of O&H (M. Tiljander)
- 11.45 – 12.15 Break
- 12.15 – 13.00 Isotope analyses process of O&H with Picarro. Analysis results of water samples, checking, corrections and validation; video clips (M. Tiljander)
- 13.00 – 14.00 Isotope applications in Hydrogeology; Groundwater surface water interaction in riverine systems; Exercise (K. Korkka-Niemi)
- 14.00 – 15.00 Open line for discussion, questions, exercises and networking (M. Tiljander / Y. Lahaye / K. Korkka-Niemi / N. Hendriksson)

Tuesday, October 6, 2020 - 10.00 – 15.00

Session 2: Hydrogeology, Other Environmental Tracers and Modelling Tools

- 10.00 – 12.00 Principles of flow and transport in porous and fractured media; Type of environmental tracers and their applications in hydrogeology (D. Pedretti)
- 12.00 – 12.30 Break

Session 3: Isotope Tracers and Analytical Techniques

- 12.30 – 13.30 Other isotope methods used for hydrogeology and their analysis processes (Y. Lahaye)
- 13.30 – 14.15 Isotope methods used in deep (≤ 2.5 km) bedrock groundwater studies (R. Kietäväinen)
- 14.15 – 15.00 Open line for discussion, questions, exercises and networking (D. Pedretti / Y. Lahaye / R. Kietäväinen / N. Hendriksson)





Wednesday, October 7, 2020 - 10.00 – 14.30

Session 4: Hydrogeology, Other Environmental Tracers and Modelling Tools (Cont')

10.00 - 11.00 Modeling tools for the interpretation of hydrogeological tracers, including isotopes; Exercise (D. Pedretti)

11.00 – 11.45 Isotope applications in Hydrogeology; Mining environment (K. Korkka-Niemi)

11.45 – 12.15 Break

Session 5: Isotope Tracers and Analytical Techniques (Cont')

12.15 – 13:00 Isotope analyses processes continues with Ion Chromatography: Analysis results of water samples, checking, corrections and validation; video clips (Y. Lahaye / M. Myllyperkiö)

13.00 – 13.45 Isotope analyses processes continues with ICP-MS: Analysis results of water samples, checking, corrections and validation; video clips (Y. Lahaye)

13.45 – 14.30 Open line for discussion, questions, exercises and networking (D. Pedretti / M. Tiljander / Y. Lahaye / R. Kietäväinen / N. Hendriksson)

Thursday, October 8, 2020 - 10.00 – 14:30

Session 6: Managed Aquifer Recharge and Isotope and Geochemical Techniques

10.00 – 10.20 Introduction to MAR studies in GTK (N. Hendriksson)

10.20 – 11.30 Turku Region Water Ltd. introduction, Virtual/lecture visit to the MAR facility following “the water way”, questions and discussion (O. Puurunen /S. Saraperä / A. Artimo, TSV)

11.30 – 12.00 Break

12.00 – 12.45 Isotopes and MAR: Estimating mixing ratios and residence times using the stable isotopes in water; Exercise (P. Niinikoski-Fusswinkel)

12.45 – 13.30 Isotope studies on customer’s eyes; questions and discussion (Osmo/Sami/Aki, TSV)

13.30 – 14.30 Open line for discussion. P. Niinikoski-Fusswinkel / O. Puurunen /S. Saraperä / A. Artimo / D. Pedretti / N. Hendriksson)

Friday, October 9, 2020 - 10.00 – 14.00

Session 7: Managed Aquifer Recharge and Isotope and Geochemical Techniques (Cont')

10.00 – 11.00 Isotopes and MAR: Open and closed groundwater systems, and monitoring the decomposition of organic matter with C isotopes; Exercise (P. Niinikoski-Fusswinkel)

11.00 – 11.45 MAR and microbes (L. Purkamo)

11.45 – 12.15 Break

12.15 – 13.15 Exporting knowledge of isotope and geochemical techniques utilized for MAR; ICI Viet MAR (J. Jarva/ K. Nuottimäki)

13.15 – 13.45 Discussion, questions, exercises and networking, other isotope tracers in MAR/ Y. Lahaye 15 min, questions, exercises and networking (P. Niinikoski-Fusswinkel / L. Purkamo / J. Jarva / K. Nuottimäki / D. Pedretti /N. Hendriksson)

13.45 – 14.00 Closing workshop by N. Hendriksson & D. Pedretti

**We reserve the right to make minor changes in the program.*

Session 4

Session 5

Session 6

Session 7