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5th International Workshop on High Temporal Resolution Water Quality Monitoring and Analysis

The James Hutton Institute, Aberdeen, Scotland
17th-19th of June 2024

Click or scan below to register

For specific questions email: hrmw@hutton.ac.uk

[Click here](#)



Confirmed Programme:

- **One-day field trip** to the Easter Beltie Restoration Site & Glensaugh UK Environmental Change Network monitoring site
- **Conference dinner** at the Palm Court Hotel (18th of June)
- **Key note talks** from Professor Phil Jordan (University of Ulster) & Professor Richard McDowell (Lincoln University)

Cost Information:

- Cost of attendance per delegate: **£80 2-day workshop** to include daytime catering; **£40 conference dinner** and **£40 field trip**.

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Scientific Description

This meeting follows a series of scientific workshops previously held in Uppsala (2021), Clonakilty (2018), Sandjberg (2016), and Magdeburg (2014). The 5th in the series will explore recent technological and scientific advances in water quality measurements allowing for high-resolution determination of chemicals in water with a range of instruments deployed in situ (optical sensors, passive samplers, wet-chemistry analysers, lab-on-a-chip) and remote sensing. These new technologies have brought new insights into mechanistic understanding of catchment and stream processes and are progressively utilised to evaluate the effectiveness of water management efforts..

Travelling to Aberdeen



Aberdeen International Airport is located 7-miles north-west of the city and is accessible by:



Bus – approximately 30-minutes in normal traffic for a fare of about £4 to the city centre.



Taxi - taking approximately 15-minutes in normal traffic for a fare of around £20 to the city centre, check Rainbow City Taxis <https://www.rainbowcitytaxis.com/>



Flights to Glasgow International Airport and Edinburgh Airport can be considered, however, connecting buses and trains will be required to travel to Aberdeen.

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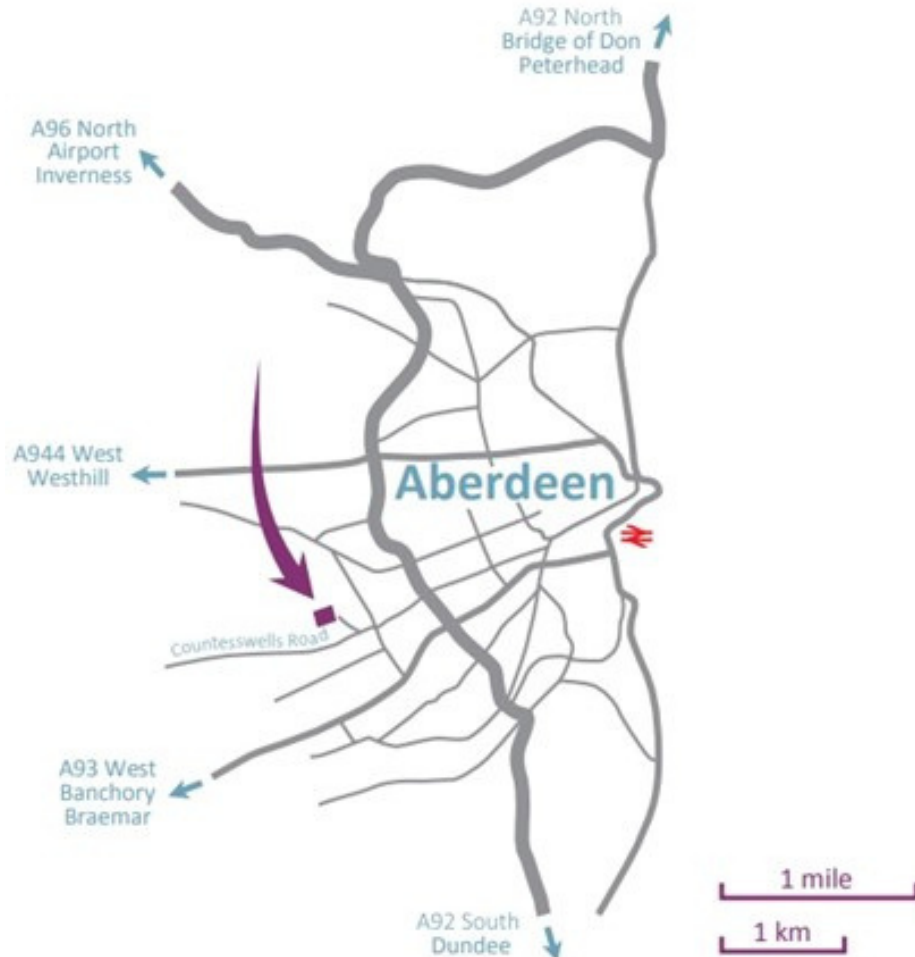


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Travelling to The James Hutton Institute


The James Hutton Institute is accessible from the city centre using the 11A or 15 bus. No. 19 also stops within a walking distance of the Institute. You can check the schedule via [First Bus](#), or download the First Bus app.

Taxis are also available from the Union Street and the Train Station.



Staying in Aberdeen

There are a variety of places to stay in Aberdeen, below are options both close to the James Hutton Institute and in the City Centre:

 **The Palm Court** is closest to the James Hutton Institute and where the conference dinner will take place. However, rooms are limited. Use the discount code CORPORATE.

 **Great Western Hotel** - 1.6 miles from the James Hutton Institute

 **Holiday Inn Express Aberdeen City Centre** - 2.2 miles from the James Hutton Institute

 **Leonardo Hotel Aberdeen City Centre** - 2.6 miles from the James Hutton Institute

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Guidelines for presenters

To ensure smooth running of the conference, we kindly ask our conference speakers to keep to the following times:



Highlight speaker: 15 minute talk + 5 minutes Q&A



Session speaker: 10 minute talk + 2 minutes Q&A

Please use Powerpoint widescreen format. We kindly ask that presentations are sent to hrmw@hutton.ac.uk no later than 18:00 GMT on Thursday the 13th of June 2024.



Poster presenters: Please ensure posters are A0 sized and portrait. All poster presenters will be asked to provide a 1-minute poster pitch to the audience before the poster session begins.

Field Trip

We will meet at the James Hutton Institute in front of the main entrance on Wednesday 19th of June at 08:45, the bus departing at 9:00 from the rear of the building. Packed lunch will be provided. Be prepared for all weather and uneven ground for walking. The following is required:



Walking boots



Spare socks



Insect repellent



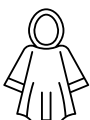
Wellies



Hat/Cap



Checking for ticks



Waterproofs



Suncream



Bottled water

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5th International Workshop on High Temporal Resolution Water Quality Monitoring and Analysis

Programme Outline

17/06/2024		18/06/2024		19/06/2024	
09:30	Arrival, registration, coffee	09:25	Welcome	08:45	Meet at JHI
		09:30	Keynote speaker and Q&A	09:00	Departure for field trip
10:15	Welcome	10:00	New approaches to data integration across different spatial and temporal resolution, remote sensing, modelling, and AI for improved process understanding	09:45	Beltie Burn
10:30	Keynote speaker and Q&A				
11:00	New advances in high-resolution water quality monitoring - biological monitoring, nutrients, sediments and emerging contaminants; innovative low-cost solutions	11:00	Coffee break		
		11:30	New approaches to data integration across different spatial and temporal resolution, remote sensing, modelling, and AI for improved process understanding		
12:30	Lunch	12:30	Lunch	12:00	Packed Lunch and transfer
13:40	Highlight speakers and Q&A	13:40	Highlight speaker and Q&A	12:30	Glensaugh
14:00	Best practice in high-temporal resolution monitoring - experimental design, data handling and assimilation, quality control	14:00	New process understanding for management and decision support		
15:00	Coffee Break	15:00	Coffee Break	15:00	Departure Glensaugh
15:30	Best practice in high-temporal resolution monitoring - experimental design, data handling and assimilation, quality control	15:30	New process understanding for management and decision support	16:00	Return to Aberdeen
16:30	1 minute poster pitches, poster session and networking	17:00	Closing remarks		
			End of the day		
18:00	End of the day	18:30	Conference Dinner		

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Easter Beltie Restoration Site

The Easter Beltie Restoration project returned a straightened agricultural stream to a natural meandering course, to improve habitats for nature and boost climate resilience. The benefits of the restoration are being studied by the James Hutton Institute and Napier University to evaluate the changes in the natural environment. The aim is to greatly increase habitat diversity, so that a much wider range of native species – from plants and insects to birds and mammals – can thrive at the site. The restoration project won the Nature and Climate Action award at the RSPB Nature of Scotland Awards by bringing multiple benefits for biodiversity and climate resilience.

Glensaugh

Glensaugh is managed as an upland livestock farm, just over 1000ha in area, with sheep, cattle and red deer, improved and extensive pastures, moorland, woodland and peatland. The farm has the ambition of becoming a climate-positive farm, tackling the climate and biodiversity crises with transformative farming and technological innovations.

Glensaugh has a fantastic collection of historical baseline data and scientific observation spanning many decades, which is ideal for underpinning research and demonstration of the scale and nature of transformation needed in farming, as well as the significant contribution that the sector can make towards the Government's climate and biodiversity targets. Glensaugh is also a national monitoring centre for the Environmental Change Network (ECN), Cosmic-ray Soil Moisture Observing System UK (COSMOS-UK), and the Defra Acid deposition (UKEAP) network.

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While you're in Aberdeen

The city of Aberdeen is located in North East Scotland and its economy is mostly based on the offshore petroleum industry. It is also known as the “Granite City” for its many Greystone buildings. Aberdeen city centre (Union Street) is also home to a large street art collection that grows larger every year. An updated map of the collection [can be found here](#). We encourage you to network with new and old friends during free time, here are some options for where you can meet:

Landmarks



Marischal College - Monumental Victorian landmark in the city centre



Old Aberdeen - The historic heart of the University of Aberdeen (founded 1495), with buildings dating to the 15th century



Footdee - Historic fishing village located near Aberdeen harbour

Walks



Duthrie Park



Seaton Park



Cruickshank
Botanic Gardens



Aberdeen Beach



Hazlehead Park



Dunnottar Castle
(Stonehaven)

Cafes, Pubs & Restaurants



Figment



Noose & Monkey



Maggie's Grill



Food Story



SASC



Nargile

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Detailed Program

Day 1: 17th June 2024

09:30	Arrival at the James Hutton Institute, Registration & Coffee	
10:30	Welcome	Deb Roberts, Director of Science, James Hutton Institute
Theme	New advances in high-resolution water quality monitoring - biological monitoring, nutrients, sediments and emerging contaminants; innovative low-cost solutions	
10:40	Phil Jordan	Physicochemical water quality data frequency: reflections on the highs and lows
11:00	Alasdair Clark	Nanoscale Taste Buds for Monitoring Drinking Water Treatment Sites
11:12	Daniel Ruth	Optimising Water Treatment: Harnessing Online Monitoring for Enhanced Coagulation Control and Improved Drinking Water Quality
11:24	Giovanni Sandrini	Online continuous water quality biomonitoring: an early warning system for pollutants in surface water used for drinking water production
11:36	Elena von Benzon	Hydrobean: a low-cost sonde for citizen science river water quality monitoring
11:48	Oliver Hofmann	Lab Quality Testing in Near-Real-Time? Simply Miniaturise the Lab and Take it to the Water!
12:00	Arno Hooijboer	Field comparison of eight ammonium sensors and analyzers
	Discussion	
12:30	Lunch	
Theme	Best practice in high-temporal resolution monitoring – experimental design, data handling and assimilation, quality control	
13:40	Joachim Rozemeijer	Best practice in high-frequency water quality monitoring for improved management and assessment; a novel decision workflow
14:00	Remi Dupas	What can we learn when high-frequency time series increase in length and number of parameters monitored?
14:20	Shulamit Nussboim	Fate and transport of pesticides and pharmaceuticals in an agricultural Mediterranean area field and catchment scale
14:32	Sofie G. M. van't Veen	A cost-efficient method for quality assurance and quality control of high-frequency sensor data in freshwater systems - SentemQC
14:44	Discussion	
15:00	Tea break	
Theme	Best practice in high-temporal resolution monitoring – experimental design, data handling and assimilation, quality control	
15:30	Ivana Huskova	AI System for Real-Time Monitoring of Water Quality
15:42	Richard Gardiner	Automatic quality control of time series data and its role in preserving the Great Barrier Reef
15:54	Inge Elfferich	Interpretation of water quality data is strongly controlled by measurement frequency and time of day
16:06	Jakob Benisch	Would short term online monitoring improve the WFD-sampling strategy in Saxony?
16:18	Discussion	
16:30	1-minute poster pitch, Posters Session & Networking	
18:00	End of the day	

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Detailed Program

Day 2: 18th June 2024

09:30	Welcome	Rachel Helliwell, Director, Hydronation International Centre
Theme	New approaches to data integration across different spatial and temporal resolution, remote sensing, modelling, and AI for improved process understanding	
09:35	Richard McDowell	A national approach to detecting changes in water quality
10:00	Luigi Spezia	Bayesian modelling of hydrological non-linear time series
10:12	Kimia Montevalli	Leveraging high-frequency data to model and better understand the oxythermal conditions and light environments along a latitudinal gradient from meridional to arctic lakes
10:24	Thomas Cornulier	COVID-19 RNA monitoring in wastewater: adjusting for uncertainty due to dilution and lab effects
10:36	Tom Lendrem	s::can sensors and academia - a collaborative journey
10:48	Discussion	
11:00	Coffee break	
Theme	New approaches to data integration across different spatial and temporal resolution, remote sensing, modelling, and AI for improved process understanding	
11:30	Dalia Grendaitė	Optical Remote Sensing and Machine Learning for Monitoring Algal Blooms in Inland Waters: A Case Study in Lithuania
11:42	Ionut Paun	Analytics pipelines to integrate complex national scale data on river ecosystem quality
11:54	Jacopo Furlanetto	Multi-Risk Dynamics of Water Quality under Climate Change and Anthropogenic Pressures: An AI Approach Across Spatial Scales
12:06	Camilla Negri	Testing the transferability of a Bayesian Belief Network to diverse agricultural catchments using high-frequency hydrology and land management data sets
12:18	Discussion	
12:30	Lunch	
Theme	New process understanding for management and decision support	
13:40	Roland Bol	Long-term integrated observation at the TERENO test site Wüstebach – One blueprint for the new eLTER initiative
14:00	Golnaz Ezzati	Understanding catchments' behaviour and nutrient dynamics in view of the changing weather patterns: Insight from high temporal resolution data
14:12	Carolin Winter	Drought-induced shifts in hydrological and biogeochemical processes revealed by multi-solute high-frequency monitoring
14:24	Michael Rode	Diurnal nitrate retention patterns and their shifts during droughts
14:36	Magda Bierozza	Assessing biogeochemical function of remediated streams with high-frequency water quality measurements
14:48	Discussion	
15:00	Tea break	
Theme	New process understanding for management and decision support	
15:30	Bridget Rusk	How's the Water? Improving Recreational Water Quality Monitoring and Forecasting in the River Almond Catchment
15:42	Aaron Packman	Long-term high-resolution monitoring to understand urban stormwater discharge and storage in embedded prairie and wetland ecosystems
15:54	Maria Kämäri	High frequency sensors in detection of stream water quality trends and impacts of gypsum soil amendment at different scales
16:06	Nick Chappell	High frequency measurement of phosphate, nitrate, DOC and turbidity for NbS evaluation
16:18	Russell Adams	Towards an Improved Framework for Modelling Mitigation Measures with High-Resolution Water Quality Data
16:30	Edward Burgess	Agricultural Stakeholder Engagement in a High Resolution Water Quality Monitoring Programme: Experiences gained over 15 years in the ACP
16:42	Discussion	
17:00	Closing remarks	
17:30	End of the day	
18:30	Conference Dinner	For those with a conference dinner booking, please join us at the Palm Court

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Detailed Program Day 3: 19th June 2024

08:45	Arrival	Meet at the James Hutton Institute reception
09:00	Depart	A Bus to depart the back entrance of the James Hutton Institute
09:45	Stop 1	Arrive at the Beltie Burn
12:00	Lunch	Lunch will be provided on the coach as we transfer to Glensaugh
12:30	Stop 2	Arrive at Glensaugh
15:00	Depart	Depart Glensaugh and travel back to Aberdeen
16:00	Return	Return to the James Hutton Institute

Please remember to bring the items outlined in the 'Field Trip' section of this booklet. The field sites will involve walking over rough and in some parts steep terrain. If you have any concerns regarding travel or when out in the field, please notify a member of the team (hrmw@hutton.ac.uk).