



MACRONUTRIENT CYCLES FINAL MEETING

Macronutrient cycles - nitrogen (N), carbon (C) and phosphorus (P) - are pivotal in the stability of global biogeochemical cycles, in sustaining natural resources and in protecting human health and biodiversity. Human activities have enhanced global cycles of N and P by on average 100% and 400%, respectively.

In order to study these cycles NERC, DEFRA and the Scottish Government have combined to fund the Macronutrient Cycles programme. The NERC Macronutrient Cycles Programme has been a £10.55 million investment in research in 11 Universities and 4 Research Institutes with the overall aim: 'How do we quantify the scales and spatial/temporal variation of nitrogen and phosphorus fluxes and cycles under a changing climate and perturbed carbon cycle'. The programme has involved 120 Research Scientists, plus Doctoral and Masters students and has been managed and coordinated by Professor Paul Whitehead and Dr Jill Crossman in the OUCE Water Group.

The final meeting of the programme is to be held at the prestigious Royal Society of London on June 15th and 16th, 2016. The meeting at the Royal Society will present the results of the research and also address the key issues for Policy Makers and Stakeholders in Government and Catchment Management at scales from local to National. Paul and Jill have also invited key international researchers to present their research at the meeting as well as all the participants of the research programme. See <http://macronutrient-cycles.ouce.ox.ac.uk/> for background information about the programme.

And for registration please go to

<http://www.oxforduniversitystores.co.uk/browse/product.asp?compid=1&modid=1&catid=2589>

Email paul.whitehead@ouce.ox.ac.uk if you have any questions



Final agenda for the meeting

MACRONUTRIENT CYCLES PROGRAMME

ROYAL SOCIETY MEETING

June 15th and 16th, 2016

Location: Royal Society of London, 6-9 Carlton House Terrace, London, SW1Y 5AG

AGENDA

DAY 1 --- June 15th

12.30 Coffee and snacks

13.00 Welcome and Brief Overview of the Macronutrient Cycles Programme –Paul Whitehead

13.10 Welcome from Dr Ruth Kelman – Head of Freshwater Sciences NERC

SESSION 1 Chair Prof Paul Whitehead

13.15- 13.40 Invited Talk by Prof Jim Galloway on the Global and Local Importance of Macronutrients Cycles

13.40 -15.00 The Long-Term Large-Scale Macronutrients Project

13.40 Introduction- Prof Edward Tipping

13.50 Modelling semi-natural terrestrial ecosystems. Dr Jessica Davies

14.05 Modelling agricultural terrestrial ecosystems. Dr Shibu Muhammed,

14.20 Integrated modelling of rivers and lakes. Dr Victoria Bell

14.40 Summary and conclusions. Prof Edward Tipping

14.50 Ten minutes of questions

15.00 -15.25 Coffee

SESSION 2 Chair Prof Louise Heathwaite

15.25 - 15.50 Invited Talk by Prof Erik Jeppesen on Macronutrients, Aquatic Systems and Climate Change

15.50 - 17.10 Overview of Consortium Project Turf to Surf

15.50 Introduction. Prof Andrew Wade

16.00 The role of coupled macronutrient cycles in biodiversity, production and decomposition. Prof Bridget Emmett

16.15 Coupled macronutrient cycles in streams and rivers. Prof Paul Withers

16.30 The fate of nutrients and contaminants at the land-ocean interface. Prof Colin Jago

16.50 Integration through modelling and conclusions Prof Andrew Wade

17.00 Ten minutes of questions

17.10 Poster session and reception

18.45 Finish for the day

DAY 2 ---- June 16th

9.00 Welcome Prof Paul Whitehead

SESSION 3 Chair Prof Jack Cosby

9.05 - 9.25 Invited Talk by Prof Magdalena Bieroza (SLU Sweden) on surface/groundwater macronutrient interactions

9.25 – 10.45 Overview of Consortium Project led by Prof. Mark Trimmer

9.25 The Role of lateral exchange in modulating the seaward flux of C, N and P . Prof Mark Trimmer

9.35 Terrestrial CNP cycling – from microbial processes to greenhouse gas fluxes. Prof Phil Ineson

9.50 Hydrological and hydrochemical pathways and fluxes - connecting land to river across mixed geologies. Prof Andrew Binley

10.05 Riverine CNP cycling - interacting processes and greenhouse gas fluxes. Prof Ronnie Glud and Mark Trimmer

10.20 Biodiversity - Nutrient linkages and feedbacks – from microbes to ecosystems. Dr Iwan Jones

10.35 Ten Minutes of Questions

10.45- 11.05 Coffee/Tea

Session 4 Chair Dr Jill Crossman

11.05 -11.25 NERC BESS Projects (DURESS and CBESS) Prof Isabelle Durance

11.25 – 12.35 Christchurch Harbour Macronutrient project

11.35 Overview of Project Prof Duncan Purdie

11.50 The influence of changing river flows on macronutrient inorganic and organic fluxes into the Christchurch Harbour Estuary. Prof Gary Fones

12.05 Modelling the macronutrient dynamics in the Hampshire Avon River using a Bayesian approach. Dr Dujit Sahu

12.20 Integrated Process Modelling of Nitrogen Dynamic in the River Estuary System: A Scenario Analysis Prof Paul Whitehead

12.40 Ten minutes for questions

12.40 - 12.55 Dr Matt Mowlem - Lab on a Chip --- Technology Proofing

12.55 - 13.40 Lunch

SESSION END USER IMPACTS: Integrated results for Stakeholders

SESSION 5 Chair Prof Paul Whitehead

13.40 - 13.50 The Policy Perspective—Stakeholder Engagement within the Macronutrient Cycles Programme- Paul Whitehead

13.50 - 14.10 Macronutrients Main Outcomes at the Catchment Scale Management
Dr Kate Heppell

14.10 - 14.25 Demonstration Test Catchments - Main outcomes - Prof Adrian Collins

14.25 - 14.35 Stakeholder response from River Trusts (Angela Fells, River Trusts)

14.35 - 14.45 Stakeholder responses from Environment Agency (Rachael Dils,
Environment Agency)

14.45 - 15.05 Macronutrients Main Outcomes for National Policy Prof Bridget
Emmett

15.05 -15.20 Responses from DEFRA (Murray Hart)

15.20 - 15.30 Scottish Government (Helen Jones)

15.30 - 15.40 Welsh Government (James Skates/Anne Humble)

15.40 -15.50 Deploying Research in the Countryside, Natural England (James
Grischeff)

15.50 - 16.10 Open Panel Debate and Questions

16.10 - 16.15 Wrap up and Thanks Paul Whitehead

Coffee and Finish

POSTER SESSION

1. LTLS1: Atmospheric modelling and measurements (U Dragosits)
2. LTLS2: Semi-natural productivity (E Tipping), Bracken productivity (E Rowe),
Macronutrients in peat (D Schillereff)
3. LTLS3: Denitrification (F Sgouridis), Terrestrial plant diversity (S Jarvis)
4. LTLS4: Erosion (J Davies), Phosphorus in groundwater (M Stuart),
Macronutrients in waste water (P Naden)
5. LTLS5: Riverine particulate organic carbon (J Adams), Macronutrients in
lakes (J Boyle)
6. LTLS6: River biology (D Monteith), Scenario analysis (R Helliwell)
7. Seasonal relationships between faecal bacterial densities and nutrient cycling
in the Conwy. (Francis Hassard, James McDonald, David Cooper, Eleanor
Howllet, Maria da Glória dos Santos Pereira, Paulina Rajko-Nenow, Karen
Perrow, David Jones, Colin Jago, Shelagh Malham)

8. Suspended sediment dynamics in the river-estuary transition zone. (Howlett E, Jago C, Bowers D, Jackson S, Hassard F, Malarkey J.)
9. Coupled C, N and P controls on photosynthesis, primary production and decomposition across a land use intensification gradient and implications for land atmosphere C exchange. (Reinsch S, Glanville H, Smart S, Blanes MC, Mercado L, Cosby BJ, Clark D, Robinson E, Jones D, Emmett BA)
10. Macronutrient processing and retention in streams. (Thompson J, Withers P, Demars B, Stutter M, Evans C, Jones D, Fovet O, Bowes MJ, Halliday SJ, Wade AJ.)
11. Modelling nutrient transport and processing through the Conwy catchment and estuary. David Cooper, Peter Robins, Emma Robinson, Miles Marshall
12. Correlating soil phosphorous metrics with above and below ground productivity. (Helen C. Glanville, Bridget A. Emmett, Simon Smart, Thomas H. DeLuca, Laura L. de Sosa, Cristina Cerdáa -Moreno, Andrew Wade, Davey L. Jones)
13. Which leaf trait best predicts above-ground Net Primary Production? Specific Leaf Area versus Leaf Dry Matter Content as effect traits across a temperate ecosystem gradient. (Smart SM, Henrys PA, Glanville H, Blanes-Alberola M, Mercado L, Emmett, BA, Jones D, Cosby JB, Butler AD, Marshall M, Reinsch S)
14. The influence of river flow on suspended particulate material fluxes from the Hampshire Avon and Stour into Christchurch Harbour estuary. (Charlie Thompson)
15. Application of the 'lab on chip' nitrate sensor for determining high frequency changes in nitrate concentration in rivers and estuaries. (Alex Beaton)
16. The impact of resuspension events in the Christchurch Harbour estuary on sediment water nutrient fluxes. (Gary Fones)
17. The influence of changing river flows from the Stour and Hampshire Avon on macronutrient fluxes into the Christchurch Harbour estuary. (Anouska Pantou)
18. SkyLine3D (Prof. Phil Ineson and Dr James Stockdale)
19. Nitrogen, phosphorus and herbivory on the selection of plants dependent on plant genome size. (Dr Maitre Guignard and Prof. Andrew Leitch)
20. Riverine carbon gas emissions – consistent patterns across mixed geologies. (Louise Olde, Prof Mark Trimmer and Dr Kate Heppell)

21. Seasonal variation of methanotrophic and methanogenic communities across mixed geologies. (Garwai Leung and Dr Corinne Whitby)
22. River metabolism on the reach scale; a novel approach using Aquatic Eddy Co-variance. (Dr Lorenzo Rovelli and Prof Ronnie Glud)
23. A new role for phosphorus in riverbed nitrogen cycling. (Dr Katrina Lansdown, Prof Mark Trimmer and Dr Kate Heppell)