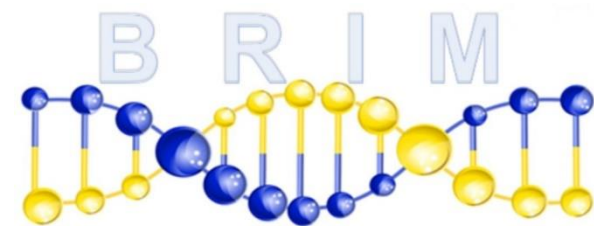


The Influence of Weather and Climate Variability on Water Resources Management

Exeter, 23-24 Jan, 2017

Peter Ashwin (Mathematics, University of Exeter)

Guangtao Fu (Engineering, University of Exeter)



Aims of this workshop



To explore how weather/climate variability will shape water resources management in the long term and identify themes for research that may be able to help develop management strategies to better cope with the variability in means and extremes.

This includes:

- Understanding weather/climate variability and climatic risk on water resources management.
- Understanding relations between weather variability and fluctuations in water supply capacity and water demand.
- Understanding longer-term challenges of climate change on meeting water demand.
- Developing and using climate forecasts for water infrastructure planning and management.
- Developing resilient water supply to weather/climate variability.

About ReCoVER

EPSRC funded “Mathematics for LWEC” network

Research on Changes of Variability and Environmental Risk

1st April 2015 to 31st March 2018.

<http://www.recoverlwec.org>

Aim:

- ❑ To nurture the development of novel mathematical tools and novel applications of mathematics for understanding, predicting and managing the effects of environmental change, in particular those related to climate variability and impacts on societal resilience.
- ❑ To establish a network of people that brings together climate scientists with mathematicians and statisticians to address these issues, and in addition focuses on highlighting the issues among early career researchers, giving them an opportunity for leadership of small research projects.

About ReCoVER

Three scientific focus areas:

- (i) Computing complexity (including mathematical and computational methods that reach across scales).
- (ii) Extreme events, tipping points and quantifying uncertainty (including outliers and extremes in noisy nonlinear systems and abrupt changes).
- (iii) Modelling coupled social-environmental systems (including models of coupled human-environmental systems).



About ReCoVER

Four feasibility funding calls have resulted in £258k of support to 25 projects.

Continued support of

CliMathNet (<http://www.climathnet.org>)

Planned events:

1. This event
2. Next Generation HPC architectures for studying climate variability, 20th - 22nd March 2017, Exeter. Co-organised by Beth Wingate (University of Exeter), Lawrence Mitchell (Imperial College, London and Chris Budd, University of Bath)
3. Hot House Earths, Dartington, Devon, summer 2017
4. Fifth CliMathNet Conference, 29th August - 1st September 2017, University of Reading (Joint with Reading/Imperial MPE CDT)
5. Joint Maths for LWEC meeting, Leeds, 11th-12th Jan 2018

About BRIM

EPSRC funded “Engineering Grand Challenge Network +”

1st Mar 2016 to 28th Feb 2019

The aim:

To nurture the development of novel methodologies and tools of building resilience into networked risk management of critical infrastructure systems.

Network Themes

- Risk and resilience paradigms: specified and general resilience, conceptual frameworks, relationships between risk and resilience
- Networked risks and tipping points: system of systems, cascaded uncertainty modelling, and system interdependence
- Metrics and intervention strategies: performance indicators, structural and non-structural measures, adaptive pathways



About BRIM

Network activities

Conferences, workshops and seminars We provide a range of mechanisms to develop new ideas and collaborations.

- Flood risk and resilience in Sept 2016
- Water supply risk and resilience (tbc)

For researchers: funding is available to facilitate pilot studies, hot topic workshops, staff exchanges and international collaborations.

For engineers: develop collaboration with the research community, steer research efforts etc.



About BRIM

Incoming call for Feasibility Studies

Pilot Studies - Up to £25K can be awarded for studies that will run for up to six months. These projects should aim to conduct original research on a specific topic, which could potentially lead to a full grant proposal at the end of the study.

Embedded Research - Up to £5K can be awarded for research of up to three months. This could be for secondment of one researcher to another organisation.

Mini-project/Meeting Fund - This fund is up to £2K and for up to one month which can be used for short collaborative visits or for small meetings.



Agenda

First session (23rd January, 2017)

12:00 Buffet Lunch on Arrival

13:00 Introduction [*Peter Ashwin*](#) & [*Guangtao Fu*](#)

13:15 **Invited Speaker:** Future changes in rainfall [*Mat Collins*](#)

13:45 Future changes in summer wind and convective precipitation over the UK and Europe from a regional climate simulation [*Alan Gadian*](#)

13:55 The quest for water vapour parametrization in weather and climate models [*Yue-Kin Tsang*](#)

14:05 Real options and robust adaptive management in irrigated agriculture and urban drainage: supporting the next generation of UK climate change projections [*Michael Green*](#)

14:15 Tea & Coffee Break

Agenda

First session (23rd January, 2017)

14:45 Invited Speaker: Water resources management under uncertain climate change predictions: linking hydrology to decision-making [Francesca Pianosi](#)

15:15 Invited Speaker: Designing and applying water resource planning approaches in the UK [Julien Harou](#)

15:45 Optimisation of water resources operation and how to bridge this into practice [Barney Dobson](#)

15:55 Climate change and variability and its influence on the resilience and vulnerability of water infrastructure: Examples from Scotland [Alexandre Gagnon](#)

16:05 Quantitative and qualitative Robust Decision Making for water resources adaptation decision making under uncertainty [Ajay Bhawe](#)

16:15 Smart Cities: synergies between SuDS and Rainfall Harvesting Systems [Bruno Venturini](#)

16:25 Invited Speaker: Planning for extreme droughts: Current approaches for developing extreme drought scenarios and options for developing new methods [Steven Wade](#)

16:55 Discussion

17:30 Session end

19:00 [Workshop Dinner](#) at **Mill on the Exe**

Agenda



Second session (24th January, 2017)

- 09:00** **Invited Speaker:** How should evidence inform operational decisions in an uncertain world [*Paul Leinster*](#)
- 09:30** Structured discussions
- 10:30** Tea & Coffee Break
- 11:00** Structured discussions
- 11:45** Wrap-up Session
- 12:00** Buffet Lunch
- 13:00** Depart