

Complex social-ecological systems: linking theory and reality

Wednesday 20th March
9am-5pm

University of Southampton
Building 85, Room 2213



Nanjing, China. Contrasts between green and grey, and old and new, represent human-environment interactions in time and space. In the future, managing the dynamics of urban environments and surrounding ecosystems in ways that sustain water, food and amenity may require greater insight from complexity science.

A Multidisciplinary Research Week Event bringing together the Sustainability Science and Complexity in the Real World group

Improved understanding of real world social-ecological systems is seen by many as one of the major challenges facing management of food supply, biodiversity and other ecosystem services across the world. Complexity theory – including variants like resilience theory – has pointed to the importance of utilizing mathematical concepts and models to understand the nonlinear, emergent effects in such systems that lead to unpredictable changes such as critical transitions. This EPSRC-funded ‘Bridging the Gap’ workshop aims to take stock of how complexity theory may be applied to the understanding and management of urban ecosystems, agricultural landscapes, river catchments and coastal systems. We want to examine two topics:

Topic 1. Tipping points, critical transitions and early warning signals

How far can theories, like fold bifurcations, flickering signals and critical slowing down, be currently applied to real world social-ecological systems?

What pieces of evidence or case studies exist to show that these mathematical phenomena are actually manifested in the real world?

What is holding back progress in applying or testing these theories to real world issues?

Topic 2. Real world complex social-ecological systems in the future

How do we obtain useful insight into how real world systems may change in the future?

Given the inherent unpredictability of social-ecological systems, to what extent will any type of modelling provide useful information for management?

If so, in which type of modelling should we be investing our research resources?

If not, how should we deal with management needs for ‘scientific’ and ‘evidence-based’ information for decision-making?

All workshop participants should at least ‘fast read’ the associated reading materials and prepare views for discussion. Participants are encouraged to prepare one or two SINGLE powerpoint slides to support their views on these two themes. We intend that the meeting should lead to further discussions with World University Network colleagues, new grant applications and possible publications.

Workshop timetable

8:30–9:00	<i>Registration and coffee</i>
9:00-9.30	Topic 1: Introductory talks John Dearing/James Dyke
9.30- 11.30	Breakout sessions/coffee
11.30- 12.30	Reporting/feedback
12.30- 13.30	<i>Lunch</i>
13.30- 14.00	Topic 2: Introductory talks Simon Willcock/Attila Lazar
14.00- 16.00	Breakout sessions/tea
16:00– 17.00	Reporting/feedback/wrap-up

Zhang Ke and John Dearing 25-02-13