

The Mathematics of Climate Tipping Points and their Impacts

Monday 24 – Friday 28 March 2025

The programme is subject to change. All times are Greenwich Main Time (GMT).

MONDAY 24 MARCH 2025	
09.00 – 09.45	Registration and Refreshments
09.45 – 10.00	Welcome and Housekeeping
10.00 – 10.45	Chris KRT Jones , George Mason University/UNC- Chapel Hill <i>Noise induced transitions in a carbon cycle model</i>
10.45 – 11.15	Refreshments
11.15 – 12.00	Gabriele Hegerl , University of Edinburgh <i>The link between extreme events and tipping points</i>
12.00 – 12.20	Iacopo P. Longo , Imperial College London <i>Nonautonomous modelling in energy balance models of climate. Limitations of averaging and climate sensitivity</i>
12.20 – 13.30	Lunch
13.30 – 14.15	Manuel Santos Gutierrez , Weizmann Institute of Science <i>Non-normality in dynamical systems: sensitivity and response</i>
14.15 – 14.35	Isobel Parry , University of Exeter <i>An early warning indicator for tipping points in strongly forced systems</i>
14.35 – 14.55	Ulrike Feudel , University of Oldenburg <i>Rate-dependent critical phenomena in ecosystems</i>
15.00	Poster session/ welcome reception
17.30 – 19.00	Informal Dinner at ICMS

TUESDAY 25 MARCH 2025	
09.30 – 10.15	Sebastian Wieczorek , University College Cork <i>Rate-induced tipping by crossing elusive quasithresholds: atmospheric warming and zombie fires.</i>
10.15 – 10.35	Katherine Slyman , Boston College <i>Tipping mechanisms in a carbon cycle model</i>
10.35 – 11.15	Refreshments
11.15 – 12.00	Johannes Lohmann , University of Copenhagen <i>Observables for early-warning signals of tipping points</i>
12.00 – 12.20	Tobias Grafke , Warwick Mathematics Institute <i>Transition path sampling and large deviations for climate tipping points</i>
12.20 – 13.30	Lunch
13.30 – 14.15	Swinda Falkena , Utrecht University <i>Mechanisms of subpolar gyre variability in CMIP6</i>
14.15 – 14.35	Ruth Chapman , Niels Bohr Institute, University of Copenhagen <i>Quantifying tipping behavior: geometric early warnings and quasipotentials for a box model of AMOC</i>
14.35 – 15.00	Refreshments
15.00 – 15.40	David Stainforth , London School of Economics <i>Ensemble design to support societal transformation</i>
15.40 – 16.00	Sandy Trust , Baillie Gifford <i>Planetary Solvency – finding our balance with nature</i>
16.00 – 16.30	Panel discussion: Handling climate risk
17.30 – 18.30	Public Lecture Peter Ditlevsen , University of Copenhagen <i>A Tipping Point in the Climate: Possible Collapse of the Atlantic Current</i>

	Self-organised dinner
--	-----------------------

WEDNESDAY 26 MARCH 2025	
09.30 – 10.15	Sergei Petrovskii , University of Leicester <i>Regime shifts, tipping points and long transients in models of coupled climate-biota dynamics</i>
10.15 – 10.35	Chris Budd , University of Bath <i>Dynamic tipping near resonance in the Stommel model of the MAOC</i>
10.35 – 11.15	Refreshments
11.15 – 12.00	Nico Wunderling , Potsdam Institute for Climate Impact Research <i>Emulating tipping elements in the Earth system: Towards a comprehensive tipping risk assessment</i>
12.00 – 12.20	Andreas Morr , Technical University Munich <i>Internal noise interference to warnings of tipping points in generic multi-dimensional dynamical system</i>
12.20 – 13.30	Packed Lunch
13.30	Social activity and self-organised dinner

THURSDAY 27 MARCH 2025	
09.30 – 10.15	Paul Ritchie , University of Exeter <i>The role of coupling in interacting tipping elements</i>
10.15 – 10.35	Emmanuel Fleurentin , George Mason University <i>Understanding tipping phenomena via the Maslov index</i>
10.35 – 11.15	Refreshments
11.15 – 12.00	Beatrice Pelloni Heriot-Watt University, Charlie Egan Georg August Universität Göttingen <i>Optimal transport techniques in modelling of atmospheric flows</i>
12.00 – 12.20	Frank Kwasniok , University of Exeter <i>Data-driven anticipation and prediction of Atlantic Meridional Overturning Circulation collapse using non-autonomous spatio-temporal dynamical modelling</i>
12.20 – 13.30	Lunch
13.30 – 14.15	Susanne Ditlevsen , University of Copenhagen <i>Parameter estimation in stochastic models of tipping elements</i>
14.15 – 14.35	Hassan Alkhayuon , University College Cork <i>Heat waves and Zombie fires: rate-induced phase-tipping in fast-slow nonautonomous systems</i>
14.35 – 15.10	Refreshments
15.10 – 15.30	Sebastian Bathiany (video) , Technical University of Munich <i>Do plants know about dynamical systems theory?</i>
15.30 – 16.05	JF Mercure (video) , University of Exeter <i>Positive tipping points as effective climate policy tools</i>
16.05 – 16.25	Sacha Sinet , Utrecht University <i>Safe Tipping Point Overshoots in Interacting Systems</i>
	Self-organised dinner

FRIDAY 28 MARCH 2025	
09.30 – 10.15	Nikki Vercauteren , University of Cologne <i>Stochastic parameterization of turbulence: why and how?</i>
10.15 – 10.35	Joseph Clarke , University of Exeter <i>Spatial Early Warning Signals for Rapidly Forced Systems</i>
10.35 – 11.15	Refreshments

11.15 – 12.00	Rachel Kuske , Georgia Tech <i>Identifying critical scales for tipping in noisy, nearly non-smooth Stommel-type models</i>
12.00	Packed Lunch/Depart