

Mathematics of the Climate Crisis: Extremes and Tipping Points

ICMS, Edinburgh (Bayes Centre, 47 Potterrow, EH8 9BT)

Monday 1 – Friday 5 November 2021

All timings are Greenwich Mean Time (GMT)

Programme

Monday 1 November

14.00–15.00	Registration with coffee/tea
15.00–16.00	Michael Ghil I (ENS and University of California, Los Angeles) <i>Mathematics for the Climate Crisis: A Grand Unification</i>
16.00–17.00	Michael Ghil II (ENS and University of California, Los Angeles) <i>Mathematics for the Climate Crisis: A Few Applications</i>
17.00	Informal welcome reception with light supper, hosted at ICMS

Tuesday 2 November

09.00–10.00	Vera Melinda Galfi I (University of Uppsala) <i>Asymptotic theories for extreme events: Applications of extreme value theory and large deviation theory to climate data</i>
10.00–10.30	Coffee/Tea
10.30–11.30	Vera Melinda Galfi II (University of Uppsala)
11.30–13.30	Lunch & Posters I
13.30–14.30	Ulrike Feudel I (University of Oldenburg) <i>Tipping phenomena and resilience: Examples from ecosystems</i>
14.30–15.00	Coffee/Tea
15.00–16.00	Ulrike Feudel II (University of Oldenburg) <i>Transient chaos in dynamical systems subject to a parameter drift</i>
16.00–17.00	Chris Budd (University of Bath) <i>Mathematical models for the ice ages</i>

Wednesday 3 November

09.00–10.00	Valerio Lucarini (University of Reading) <i>Multistability in the Climate System: Melancholia States and Noise-induced Transitions</i>
10.00–10.30	Coffee/Tea
10.30–11.30	Hayley Fowler (Newcastle University) <i>Anthropogenic intensification of short-duration rainfall extremes and increasing flood risks</i>
11.30–13.30	Lunch
13.30–14.30	Rosalind Cornforth (University of Reading) <i>Talk title TBC</i>

14.30–15.00	Coffee/Tea
15.00–16.00	Tim Lenton (University of Exeter) <i>Talk title TBC</i>
16.00–17.00	Peter Cox (University of Exeter) <i>Tipping Points in a rapidly changing climate: results from CMIP6 climate models</i>
18.00–19.00	Public lecture with panel discussion, hosted online via Zoom Webinar Chris Budd (University of Bath) <i>How Maths Predicts the Climate</i> Panellists: Chris Budd (University of Bath), Niklas Boers (TU Munich/ PIK–Potsdam, University of Exeter), Peter Cox (University of Exeter) & Gabi Hegerl (University of Edinburgh) – more to be announced Chair: Peter Ashwin (University of Exeter)

Thursday 4 November

09.00–10.00	Davide Faranda I (CEA/CNRS) <i>Physics-driven methods for understanding Extreme Events in the Earth System</i>
10.00–10.30	Coffee/Tea
10.30–11.30	Davide Faranda II (CEA/CNRS)
11.30–13.30	Lunch & Posters II
13.30–14.30	Peter Ashwin (University of Exeter) <i>Nonautonomous Systems Approaches to Tipping Points in the Earth System</i>
14.30–15.00	Coffee/Tea
15.00–16.00	Peter Ditlevsen I (University of Copenhagen) <i>The role of stochastic dynamics in climate variability</i>
16.00–17.00	Peter Ditlevsen II (University of Copenhagen)
17.30	Workshop dinner, hosted at ICMS

Friday 5 November

09.00–10.00	Anna von der Heydt (University of Utrecht) <i>Climate response and climate tipping points: dynamical systems approaches</i>
10.00–10.30	Coffee/Tea
10.30–11.30	Alberto Carrassi (University of Reading/NCEO) <i>Talk title TBC</i>
11.30–12.30	Niklas Boers (TU Munich/ PIK–Potsdam, University of Exeter) <i>Critical Transitions in Earth System Models</i>
12.30	Workshop close, packed lunches available