INTERNATIONAL SPACE SCIENCE INSTITUTE

Workshop *Advancing Science to Aid Preparedness for Climate Extremes: Integrating Observations, Models and Space-based Capabilities*

23-27 November 2026

Agenda

Monday, 23 November		
10:00-10:30	*Registration – Coffee area*	
10:30-10:45	ISSI welcome and introduction	Michael Rast
10:45-11:00	Aims and organisation of the workshop	Conveners
Session 1: Observations, Data Records, and Benchmarks of Climate and Impact Extremes **Chair:** Marta Marcos		
11:00-11:20	ESA Extremes and Disasters Science Cluster	Anca Anghelea
11:20-11:40	What we know (and don't know) about global observed changes in precipitation extremes	Lisa Alexander
11:40-12:00	Cataloguing and mapping extreme events with modern machine learning approaches	Patrick Ebel
12:00-12:20	Quantifying Extreme Drought Risk using Palaeoclimate Observations and Model Simulations from the Last Millennium	Katherine Taylor
12:20-12:40	Rapid assessment of a rock-ice avalanche in the Nepal Himalaya: what we can and cannot say about the role of climate change	Ben Clarke
Lunch (12:40–14:00)		
14:00-14:30	Discussion – Session 1	All
Session 2: Modelling Climate Extremes in a Non-Stationary Climate **Chair:** Vikki Thompson		
14:30-14:50	Coupling multivariate extreme modelling and AI diffusion models	Philippe Naveau
14:50-15:10	Estimating Changes in Storm Surge Extremes with Spatiotemporal Bayesian Models	Francisco Calafat
15:10-15:30	Understanding and predicting dynamical drivers of extremes across time-scales using targeted representation learning	Fiona Spuler
15:30-15:50	Impact-based forecasts of extremes using AI (alt.: droughts, teleconnections, breadbasket failures)	Dim Coumou
15:50-16:30	Discussion – Session 2	All
Ice breaker (from 17:00)		
Tuesday, 24 November		
Session 2: Modelling Climate Extremes in a Non-Stationary Climate (continued) **Chair:** Dominik Schumacher		

9:00-9:20	Marine heatwaves in a changing climate	Catherine Gregory
9:20-9:40	Compound ocean extremes in a changing climate	Thomas Frölicher
9:40-10:00	What controls European storm-surge extremes? Circulation, internal variability and predictability in a large ensemble	Marta Marcos
10:00-10:30	Discussion – Session 2	All
Coffee break (10:30–11:00)		
Chair: Dorothy Heinrich		
11:00-11:20	Atmospheric circulation changes driving accelerated warming of European summer temperatures and heat extremes are underestimated by current climate models due to signal-to-noise errors	Markus Donat
11:20-11:40	Identifying and understanding the drivers of accelerating Heat Extremes in Europe	Kai Kornhuber
11:40-12:00	Past atmospheric circulation changes prime regional heatwaves for future surprises	Dominik Schumacher
12:00-12:30	Discussion – Session 2	All
Lunch (12:30–14:00)		
Chair: Thomas Frölicher		
14:00-14:20	European summer drying largely driven by atmospheric circulation changes since the 1980s	Sebastian Sippel
14:20-14:40	Climate Change and Fire Extremes, what do we (don't) know?	Seppe Lampe
14:40-15:00	Escalating Risks from Extreme Weather in a Warming Climate: How EXTREME-FUTURES Will Help	Hayley Fowler
15:00-15:30	Discussion – Session 2	All
Coffee break (15:30–16:00)		
Chair: Michael Rast		
16:00-16:20	Modeling changes in floods	Manuela Brunner
16:20-16:40	Towards high-resolution hydrometeorological information for the assessment of extremes and other applications across the Southern Andes	Juan Boisier
16:40-17:00	Storylines and flood forecasting tools for flood preparedness in Switzerland	Olivia Romppainen
17:00-17:30	Discussion – Session 2	All
Wednesday, 25 November		
Session 3: Attribution and Anticipation of Climate and Impact Extremes **Chair:** Vikki Thompson		
9:00-9:20	Attributing extreme weather events to climate change: an Irish perspective	Claire Bergin

9:20-9:40	Uncertain dynamical response of rainfall in storm Babet: A comparison of extreme event attribution methods	Shirin Ermis
9:40-10:00	Could climate change shift the dynamical unfolding of an extreme event? A hybrid storyline approach	Marylou Athanase
10:00-10:30	Discussion – Session 3	All
Coffee break (10:30-11:00)		
Chair: Dorothy Heinrich		
11:00-11:20	The potential role of North Pacific and North Atlantic SST forcing in recent European Spring and Summer atmospheric circulation trends.	Karsten Haustein
11:20-11:40	The role of historical variability for record breaking probabilities of and preparedness for extremes	Iris de Vries
11:40-12:00	Anticipating catastrophic weather events	Tom Matthews
12:00-12:20	Heat extremes in subseasonal hindcasts: a General Extreme Value perspective	Pauline Rivoire
Lunch (12:20–14:00)		
14:00-14:30	Discussion - Session 3	All
Chair: Marta Marcos		
14:30-14:50	Hazard monitoring and attribution of forecasted events	Sjoukje Philip
14:50-15:10	Real-time attribution of excess mortality to extreme heat: recent advances and open questions	Clair Barnes
15:10-15:30	Where in Europe is less prepared for extreme rainfall?	Vikki Thompson
Coffee break (15:30–16:00)		
16:00-16:45	Discussion – Session 3	All
Group dinner – Restaurant Rosengarten, 19:00 h		
Thursday, 26 November		
Session 4: From Hazard to Impact: Bridging Physical and Societal Systems **Chair:** Thomas Frölicher		
9:00-9:20	Reanalysis-based attribution and storylines of extreme events	Ed Hawkins
9:20-9:40	Attribution of the Impacts of the 2024 Extreme Floods in Rio Grande do Sul, Brazil, to Climate Change	Mireia Ginesta
9:40-10:10	Memory, Luck, and Changing Risk: Identifying Sitting Ducks for Tropical Cyclones	Dorothy Heinrich
10:10-10:30	Discussion – Session 4	All
Coffee break (10:30–11:00)		
Chair: Dorothy Heinrich		
11:00-11:20	Integrating Climate Modelling, Extremes, and Co-Production: The Ouranos Climate Modelling System	Dominic Matte

11:20-11:40	Translating Science into Practice: Co-production for Climate Extremes Preparedness in Beira City, Mozambique	Genito Maure
11:40-12:10	TBC	Luis Artur
Lunch (12:10–14:00)		
14:00-14:30	Discussion – Session 4	All
Chair: Dominik Schumacher		
14:30-14:50	Translate climate projections to actionable risk: Approaches, gaps, and the role of intermediaries	Haiyan Teng
14:50-15:10	Integrating Knowledge on Climate Extremes: From Observations and Attribution to Impacts and Preparedness	Hindumathi Palanisamy
15:10-16:00	Discussion – Session 4	All
17:00-19:30	***Public talk by Prof. Ed Hawkins: "Our changing climate: why does 1°C matter?*** ***Building of Exact Sciences, University of Bern***	
Friday, 27 November		
Session 5: Synthesis and Next Steps **Chair:** Michael Rast		
9:00-9:30	How to stop being surprised: understanding unprecedented extremes in a warming climate	Erich Fischer
9:30-10:00	Increasing societal awareness for climate change by linking it to today's weather	Hylke de Vries
Coffee break (10:00–10:30)		
Chair: conveners		
10:30-11:30	Plenary / groups discussion – key outcomes	All
11:30-12:00	Plenary report-back / next steps	All
12:00-12:30	Closing remarks	All