DAMOCLES Final Conference

Perspectives and ways forward in Compound Event research

TUESDAY 6TH SEPTEMBER

8.15-9:00	*Reception of participants*
9.00-9.15	*Welcome by IPMA's Deputy Chair **Maria Ana Martins** and Instituto Dom Luiz's Climate Change Research Leader **Ricardo Trigo***
9.15-9.45	**Opening** **Bart van den Hurk**
	Session 1: Case Studies ***Chair: Jakob Zscheischler***
9.45-10.00	The compound event that triggered the destructive fires of October 2017 in Portugal – *Alexandre Ramos*
10.00-10.15	Compound Event research interest from private sector perspective: AXA Climate insights – *Mélodie Trolliet*
10.15-10.45	**BREAK**
10.45-11.00	Reclassifying historical natural disasters: from univariate to multivariate – *Ryan Lee*
11.00-11.15	Impact attribution of compound coastal flooding and wind extremes from tropical cyclone Idai to climate change – *Benedikt Mester*
11.15-11.30	Compound impacts of global change on rice yield growth in China and their effects on global food security: A spatial dependence analysis – *Cristina Suárez*
11.30-11.45	Combining atmospheric and geomorphic information to improve decision support for post-fire debris flow hazards – *Nina Oakley*
11.45-12.00	Taking compound events into account for parametric insurance – *Aglaé Jézéquel*

12.00-13.30	**LUNCH**
	Session 2: Historical Events & Socio-economic Impacts **Chair: Fiachra O'Loughlin**
13.30-13.45	The Linkage of Serial Cyclone Clustering and Weather Regimes in the North Atlantic-European Region in Boreal Winter – *Joaquim Pinto*
13.45-14.00	Recurrence of drought events over Iberia under present and future climate conditions – *Julia Moemken*
14.00-14.15	Multi-hazard assessment over Europe-Mediterranean Region – *Mehmet Barış Kelebek*
14.15-14.30	Changes in the Dependence between Compound Coastal and Inland Flooding Drivers along the Contiguous United States Coastline – *Ahmed Nasr*
14.30-14.45	Humidity, heat and health: a novel framework for assessing high-impact events – *Sidharth Sivaraj*
14.45-15.15	Drivers and risks of concurrent heat extremes / Introduction to the Risk-Kan Initiative and the Centre for Climate and Foreign Policy (DGAP) – *Kai Kornhuber*
15.15-15.45	**BREAK**
	Special Session: Training School Presentations ***Chair: Fiachra O'Loughlin***
15.45-16.00	A downward counterfactual analysis of compound tropical cyclone risk
16.00-16.15	Disentangling winter climate preconditioning effects on summer vegetation activity
16.15-16.30	How does climate change affect compound flood types and their drivers in pre-alpine catchments?
16.30-16.45	The influence of modes of variability and their interplay on compound extreme wind and precipitation events in the northern hemisphere

16.45-17.15	**BREAK**
17.15-18.30	**POSTER SESSION 1**
19.30	**CONFERENCE DINNER**

WEDNESDAY 7TH SEPTEMBER

Session 3: The Drivers of Compound Events

Chair: Minna Keinänen-Toivola

Invited Lecture

9.15-9.45	**Human responses to compound climate events and the drivers of climate change risk – *Nicholas Simpson***
9.45-10.00	Recurrent Rossby wave packets and the temporal clustering and persistence of surface extremes – *Olivia Martius*
10.00-10.15	Drought impacts profiles: Deriving compound and cascading impact patterns from a 20-year, cross-sectoral drought impact dataset – *Jan Sodoge*
10.15-10.45	**BREAK**
10.45-11.00	Contribution of hydrometeorological drivers to compound impacts of natural hazards: an impact-based methodology – *Javed Ali*
11.00-11.15	Explainable machine learning reveals the compound effect of river flooding – *Shijie Jiang*
11.15-11.30	Co-occurring wintertime flooding and extreme wind over North-West Europe, from daily to seasonal timescales – *John Hillier*

11.30-11.45	The effect of differing drought-heat signatures on terrestrial carbon dynamics and vegetation composition: a multi-model comparison – *Elisabeth Tschumi*
11.45-12.00	Hotspots and drivers of compound marine heatwave and low net primary production extremes in two Earth system models – *Natacha Le Grix*
12.00-13.30	**LUNCH**
	Session 4: Statistical and Physical Modelling
	Chair: Andreia Ribeiro
	Invited Lecture
13.30-14.00	**Compound Hazards in a Changing Climate: Typology, Risk Assessment and Attribution – *Amir AghaKouchak***
14.00-14.15	Predicting risks of temperature extremes under atmospheric blocking using r-Pareto processes – *Jonathan Koh*
14.15-14.30	Time of Emergence of compound events: contribution of univariate and dependence properties – *Bastien François*
14.30-14.45	Characterising temperature and precipitation multi-variate biases in 12 km and 2.2 km UK Climate Projections – *Freya Garry*
14.45-15.00	Calculating the compound effects of temperature-humidity-radiation on human physiology within plant environments in the Community Earth System Model – *Jonathan Buzan*
15.00-15.30	**BREAK**
15.30-15.45	Changes in hot-dry conditions leading to crop failures due to global warming – *Henrique Goulart*
15.45-16.00	Extreme Humid Heat Variability during the South Asian Summer Monsoon – *Catherine Ivanovich*
16.00-16.15	A globally-applicable framework for compound flood risk modeling – *Dirk Eilander*

16.15-16.30	Countries Most Exposed to Concurrent Extremes at Different Global Warming Levels – *Fulden Batibeniz*
16.30-16.45	Emerging progress in compound drought and heatwave understanding in Brazil: the cascading impacts over the public health and wildfires – *Renata Libonati*
16.45-17.15	**BREAK**
17.15-18.30	**POSTER SESSION 2**

THURSDAY 8TH SEPTEMBER

Session 5: Forecasting, Trends, and Projections

Chair: Bart van den Hurk

	Invited Lecture
9.00-9.30	**High-impact compound events in current and future climates – *Nina Nadine Ridder***
9-30-9.45	Precipitation trends determine future occurrences of compound hot-dry events – *Emanuele Bevacqua*
9.45-10.00	Statistical, hydrodynamic and machine learning modelling of compound flooding – *Indiana Olbert*
10.00-10.15	Large-scale environments of successive atmospheric river events leading to compound precipitation extremes in California – *Anna Wilson*
10.15-10.30	Verification of Precipitation Extreme Event Occurrence in S2S Forecasts over Europe – *Pauline Rivoire*
10.30-11.00	**BREAK**
11.00-11.15	Progress within compound events research in the 10-years since the IPCC SREX – *Louise Brett*
11.15-11.30	Climate change scenarios of dry seasons over Europe – *Ondrej Lhotka*

11.30-11.45	The Decadal Variability of Extreme European Heat – *Laura Suarez-Gutierrez*
11.45-12.00	Present and future compound hot and dry summers in Europe: impacts on water availability – *Benjamin Poschlod*
12.00-12.15	Drivers of combined footprints of extreme wind and rainfall within extra-tropical cyclones – *Colin Manning*
12.15-12.30	Assessing the role of soil moisture–temperature coupling in triggering mega-heatwaves and wildfires in Brazil – *João Lucas Geirinhas*
12.30-13.00	**Closing** **Jakob Zscheischler**

Poster Session 1: Tuesday 17.15-18.30

Compound Flood Events: Analysing the joint occurrence of extreme discharge events and storm surges in Northern Europe	*Philipp Heinrich*
Evolvement of irrigation-induced impacts on compound heat stress under future scenarios	*Yi Yao*
Meteorological and hydrological characteristics for the multi-purpose reservoir Modrac basin	*Omer Kovcic*
Variability and depth–duration–frequency relationship of maximum rainfall as the factor of flood risk in the Upper Vistula Basin	*Iwona Kuptel-Markiewicz*
The Role of Compound Events in Investigating, Modeling, and Supporting Climate Change Adaptation	*Riccardo Boero*
How do compound mechanisms govern lake floods?	*Fabiola Banfi*
Characterization of renewable energy compound events across Europe	*Noelia Otero*
Assessment of past and present climate-related disaster risk in Europe	*Alois Tilloy*
Assessment of Consecutive-days Wet-Cold compound Events in Greece based on observational data	*Iason Markantonis*
Climate change and its effect in renewable energy source A case study for Albania in Mediterranean region	*Lule Basha*
Changes in temperature-precipitation correlations over Europe: Are climate models reliable?	*Mathieu Vrac*
An Investigation of Düsseldorf Flood Risk using Extreme Value Theory	*Owen Vella*
Yield losses – drought compound events risk assessment over the Danube River Basin	*Vera Potopová*
Vulnerability of selected fodder production to support the demand of livestock and renewable energy sectors under climate change conditions	*Md Rafique Ahasan Chawdhery*

A Global Multi-hazard Perspective on Historic Hazards	*Judith Claassen*
Global analysis of cyclone-induced compound precipitation and wind extreme events	*Martina Messmer*
Exploring the asymmetric dependence in a river network	*Cristina Deidda*
On the impact of various types of compound weather and climate events in Denmark	*Jian Su*
Analysis of wind extremes with substantial precipitation for Hungary	*Rita Pongracz*
Droughts and Heat Waves on Iberian Peninsula with EURO-CORDEX Simulations	*João Careto*
Compound hot, dry, and burnt events in south-eastern Australia	*Patrícia Páscoa*
Simulation of decline of Norway spruce (picea abies l. karst.) forests in gorgans using the forkome model	*Taras Parpan*

Poster Session 2: Wednesday 17.15-18.30

Analysis and projection of dry-and-hot compound events in the Carpathian Basin	*Judit Bartholy*
Pre-conditioned Compound Events: Estimating Return Intervals for Extreme Climate Conditions Related to Livestock Mortality in Mongolia	*Masahiko Haraguchi*
Vegetation role during anomalous hot and dry conditions on the 2017 fire season in Portugal	*Tiago Ermitão*
Trends and projections of r100mm indices over Turkey	*Hüdaverdi Gürkan*
Trends on potential occurrence probability of compound pluvial and fluvial flood	*Xiaoxiang Guan*
Impact-based event catalogue on serially clustered extreme events of different types in south-west Germany	*Katharina Küpfer*
Effects of Compound Climate Events on extreme episodes of air pollution over Spain	*Juan Pedro Montávez*
Quantifying the extremeness of precipitation across scales using the cross-scale weather index xWEI	*Paul Voit*
How will changes in climate affect fire extremes associated with compound drought and atmospheric aridity?	*Andreia Ribeiro*
Understanding the impacts of compound precipitation and wind extremes on Amazonian Forests previously degraded by fire	*Eduardo Queiroz Marques*
Predicting crop yield across the Brazilian Cerrado-Amazonia: The role of climate and landscape native vegetation	*Bianca Ferraz Rebelatto*
Resilience of emergency infrastructure networks after flooding events	*Jonas Wassmer*
Building causally aware models of compound river floods	*Peter Miersch*
Hot and Cold Marine Extreme Events in the Mediterranean over the last four decades	*Ana Russo*
Compound Extreme Events in the Coastal zone: a case study of Halmstad city	*Kévin Dubois*

Model evaluation method affects the interpretation of machine learning models for identifying compound drivers of maize variability	*Lily-belle Sweet*
Automatic low-dimension explainable feature extraction of climatic drivers leading to forest mortality	*Mohit Anand*
The role of multiple drivers in forcing large volume changes of the Baltic Sea	*Piia Post*
Potential of multiple impact databases for understanding consequences of compound events	*Khalil Teber*
Compound Flooding Risk Analysis in Eastern Black Sea Basin of Turkey	*Emine Tanır Kayıkçı*
Joint modeling of extreme cold and weak-wind events over Europe conditioned on winter weather regimes	*Paulina Tedesco*
Cyclones with explosive development in the Eastern North Atlantic Ocean	*Margarida Liberato*