WCRP workshop on attribution of multi-annual to decadal changes in the climate system

22 – 24 September 2021, Online

PROGRAMME (as of September 23, 2021)

Day 1- 22nd September: 20:00 - 23:15 UTC

20:00-20:15 **Welcome and introduction** – 15 minutes

- **Rowan Sutton**, WCRP Lighthouse activity on Explaining and Predicting Earth System Change
- **Doug Smith**, aims of the workshop

20:15-20:45 **Session 1: Approaches (Chair: Doug Smith)**

- ***Thomas Knutson***, On attribution of regional decadal changes in the climate system using univariate methods
- ***Mark Risser***, A regional detection and attribution formula for historical precipitation over the United States
- ***Zachary Labe***, Exploring climate model large ensembles with explainable neural networks
- ***Andrew Schurer***, Role of three major climate modes on decadal climate variability and change

Q&A Session – 10 minutes

20:45-21:15 **Session 2: Forcing uncertainties (Chair: Doug Smith)**

- ***John Fyfe***, Significant impact of forcing uncertainty in a large ensemble of climate model simulations
- ***Ken Carslaw***, How much can uncertainty in aerosol forcing be reduced?
- ***Laura Wilcox***, The role of anthropogenic aerosol in near-future Asian climate change
- ***Laura Endres***, Revisiting the influence of solar variability on North Atlantic winter climate

Q&A Session – 10 minutes

21:15-21:25 Break – 10 minutes

21:25-21:55 **Session 3: Case studies (Chair: Daniela Faggiani Dias)**

- ***Haiyan Teng***, Heatwaves and the 1990s shift
- ***Celine Bonfils***, Identifiable decadal signatures of greenhouse gases and particulate atmospheric pollution on the changing hydroclimate
- ***Ivonne García Martínez***, Identifying the evolving human imprint on heat wave trends over Mexico and the United States
- ***Huanping Huang***, Rise in Northeast US Extreme Precipitation Caused by Atlantic Variability and Climate Change

Q&A Session – 10 minutes

21:55-22:25 **Session 3 (cont): Case studies (Chair: Daniela Faggiani Dias)**

- ***Leandro Diaz***, Attribution of observed precipitation trends in Southern South America
- ***Robert Jnglin Wills***, Large ensembles unable to simulate observed multi-decadal trends in SST and SLP
- ***Liping Zhang***, Using large ensembles to elucidate the possible roles of Southern Ocean meridional overturning circulation in the Southern Ocean SST trend
- ***Amy Butler***, Stratospheric contribution to winter temperature trends in a warming climate

Q&A Session – 10 minutes

22:25-22:35 Break – 10 minutes

22:35-23:15 **Posters** – 40 minutes **(Chair: Nathan Gillett)**

- **(the list of posters is available below the programme)**

Day 2 - 23rd September: 12:00-15:30 UTC

12:00-12:30 **Session 4: Observations (Chair: Lijing Cheng)**

- ***John Kennedy***, Where noise and signal collide: observational challenges for monitoring global change at the limits of detectability
- ***Andrea Storto***, The 20th century global warming signature on the ocean at global and basin scales as depicted from historical reanalyses
- ***Andrea K. Steiner***, Satellite observations for detection and attribution of atmospheric temperature change
- ***Kewei Lyu***, Projected ocean warming constrained by the Argo-era ocean observational record

Q&A Session – 10 minutes

12:30-13:00 **Session 5: Global/model error (Chair: Lijing Cheng)**

- ***Karsten Haustein***, A limited role for unforced internal variability in 20th century warming
- ***Rémy Bonnet***, Increased risk of near term global warming due to a recent AMOC weakening
- ***Yona Silvy***, Towards understanding the mechanisms of anthropogenic temperature and salinity emergence in the ocean
- ***Doug Smith***, What if modelled signals are too weak?

Q&A Session – 10 minutes

13:00-13:10 Break – 10 minutes

13:10-13:40 **Session 6: Pacific (Chair: Flavio Lehner)**

- ***Masahiro Watanabe***, Enhanced near-term warming constrained by past trends in the equatorial Pacific sea surface temperature gradient
- ***Yohan Ruprich-Robert***, Impacts of the Atlantic Multidecadal Variability (AMV) on the tropical Pacific: a multi-model study

- ***Andrea Dittus***, The role of aerosol forcing in recent Pacific multi-decadal variability
- ***Antonietta Capotondi***, A CLIVAR Pacific Region Panel Working Group on Tropical Pacific Decadal Variability: Goals and possible synergies

Q&A Session – 10 minutes

13:40-14:10 **Session 7: Atlantic (Chair: Flavio Lehner)**

- ***Matthew Menary***, Aerosol-forced AMOC changes in CMIP6 historical simulations
- ***Jon Robson***, How does anthropogenic aerosol forcing drive a strengthening of the AMOC in CMIP6 historical simulations?
- ***Daniel Grosvenor***, What controls the historical timeseries of shortwave fluxes in the North Atlantic?
- ***Brady Ferster***, Sensitivity of the Atlantic meridional overturning circulation and climate to tropical Indian Ocean warming

Q&A Session – 10 minutes

14:10-14:20 Break – 10 minutes

14:20-14:50 **Session 7 (cont): Atlantic/Asia (Chair: Leandro Díaz)**

- ***Leonard Borchert***, Natural forcing influence on decadal subpolar North Atlantic temperature variations and implications for predictions
- ***Shih-Wei Fang***, Disentangling Internal and External Contribution to Atlantic Multidecadal Variability over Past Millennium
- ***Laura Suarez-Gutierrez***, The Decadal Variability of Extreme European Heat (Withdrawn)
- ***Buwen Dong***, Recent decadal weakening of the Eurasian westerly jet attributable to anthropogenic aerosol emissions

Q&A Session – 10 minutes

14:50-15:30 **Break out groups**

Day 3 - 24th September: 05:00-08:00 UTC

05:00-05:30 **Session 8: Asia and southern hemisphere (Chair: Shoshiro Minobe)**

- ***June-Yi Lee***, Decadal changes in the Madden-Julian Oscillation: A source for decadal changes in high-latitude climate
- ***Jie Jiang***, Human-induced rainfall reduction in drought-prone northern Central Asia
- ***Surendra Rauniyar***, Attribution of observed multi-decadal changes in rainfall and future prospects over Victoria, Australia
- ***Neven Fuckar***, On dynamics and attribution of the 2018-2021 drought in Southern Africa (Withdrawn)

Q&A Session – 10 minutes

05:30-06:00 **Session 9: Monsoons/India (Chair: Shoshiro Minobe)**

- ***Paul-Arthur Monerie***, Effects of external forcings on Northern Hemisphere monsoon precipitation

- ***Andrew Turner***, Uncertainty in aerosol radiative forcing impacts the simulated global monsoon in the 20th century
- ***Shipra Jain***, How Extreme could trends in Indian Monsoon rainfall be?
- ***Ashish Manoj J***, Investigating Compound Soil Moisture-Precipitation Coupling Over India

Q&A Session – 10 minutes

06:00-06:10 Break – 10 minutes

06:10-07:10 **Posters –** 60 minutes **(Chair: Scott Osprey)**

- **(the list of posters is available below the programme)**

07:10-07:20 Break – 10 minutes

07:20-08:00 **Closing session**

- **Break out summary (June-Yi Lee)**
- **Group discussion and way forward (facilitators: Rowan Sutton, Doug Smith)**

List of posters

Day 1- 22nd September: 22:35-23:15 UTC

Poster N°	Last Name	First Name	Poster title
D1-P01	**AVILA**	Alvaro	Climate extremes of precipitation and temperature over Brazil during 1980-2016
D1-P02	**BARSUGLI**	Joseph	How critical is knowing the spatial pattern of ocean temperature change for attribution of the last 20 years of regional drought?
D1-P03	**CHHIN**	Rattana	Time-lagged correlations of pre-monsoon precipitation in the Indochina Peninsula confirmed in a large ensemble simulation Dataset
D1-P04	**CHRISTIAN**	John Erich	A probabilistic framework for attribution of rapid outlet glacier retreat
D1-P05	**COLORADO-RUIZ**	Gabriela	Synoptic patterns that modulate the summer rainfall in northeast Mexico
D1-P06	**FAKHRUDDIN**	Bapon	NZ Climate Measurement Standards Initiative (CMSI): Seamless integration for foreseeable future
D1-P07	**DIBA**	Ibrahima	Characterization of compound rainfall and temperature extreme in Senegal: present and future climate
D1-P08	**IMADA**	Yukiko	Long-term potential predictability of regional extreme events in East Asia estimated from a high-resolution large ensemble
D1-P09	**JOH**	Youngji	Seasonal-to-decadal variability and predictability of the Kuroshio Extension in the GFDL Coupled Ensemble Reanalysis and Forecasting system
D1-P10	**LEE**	Jiwoo	On the robustness of the evaluation of ENSO in climate models: How many ensemble members are needed?
D1-P11	**LEE**	Olivia	Challenges in using earth system models for regional and sub-regional adaptation planning in Alaska
D1-P12	**LEE**	Yong-Han	Regime shift in the occurrence of extreme heat day in East Asia during boreal summer
D1-P13	**MEDEIROS**	Felipe	Evaluation of CMIP6 extreme rainfall event simulations and their projected changes over Northeast Brazil
D1-P14	**MINDLIN**	Julia	Storyline Approach for the Evaluation of Near-Term Regional Climate Changes in southern South America (WITHDRAWN)
D1-P15	**MONERIE**	Paul-Arthur	Is the Atlantic Multidecadal Variability useful for predicting East Asian surface-air temperature?
D1-P16	**OLMO**	Matias	Atmospheric circulation influence on the seasonal trends of daily extreme temperature and precipitation events over southern South America
D1-P17	**PLANTON**	Yann	How well climate models simulate ENSO? How well do we know ENSO?
D1-P18	**RAGHURAMAN**	Shiv Priyam	Decomposition of cloud radiative effect trends into forcing, feedbacks, and cloud masking (WITHDRAWN)
D1-P19	**REED**	Kevin	An attribution framework to calculate climate change impacts on hurricane seasons
D1-P20	**OH**	Sae-Yoon	Exploring the changes in Atmospheric Circulation in East Asia during summer using K-mean clustering method
D1-P21	**SALDÍVAR-LUCIO**	Romeo	Moved to Day3 – D3-P44

D1-P22	**SENAN**	Retish	Deconstructing seasonal forecasts for attribution of predicable signals: the 2019/20 positive NAO case (WITHDRAWN)
D1-P23	**SUTTON**	Rowan	Recent trends in summer atmospheric circulation in the North Atlantic/European region: is there a role for anthropogenic aerosols?
D1-P24	**WEHNER**	Michael	Evidence for adding categories to the Saffir-Simpson hurricane intensity scale
D1-P25	**YAMAGAMI**	Yoko	Barents-Kara sea-ice decrease caused by sea surface warming in the Gulf Stream

Day 3 - 24th September: 6:10-7:10 UTC

Poster N°	Last name	First name	Poster title
D3-P01	**ACOSTA NAVARRO**	Juan Camilo	Added value of springtime Arctic sea ice concentration assimilation for summer and fall climate predictions
D3-P02	**AKILA S.P.**	S.P.	Influence of individual forcings on climate system
D3-P03	**AROUF**	Assia	Analysis of Time Series of Global Surface Longwave Cloud Radiative Effect from Space Lidar Observations
D3-P04	**BÔNE**	Constantin	Modelling the non-additivity of forcings using a convolutional neural network
D3-P05	**BELLUCCI**	Alessio	On the (non)stationarity of the AMV-AMOC relationship
D3-P06	**BILBAO**	Roberto	Impact of volcanic eruptions in CMIP6 decadal prediction systems: a multi-model analysis
D3-P07	**CK**	Sajidh	Mean and variability of the Dynamic Sea Level of the Indian Ocean from CMIP6 models
D3-P08	**COLLIGNAN**	Julie	Identifying and quantifying the impact of non-climatic effects on river discharge
D3-P09	**DALLAN**	Eleonora	A new methodology for regional trends in sub-daily rainfall annual maxima by using the Meta-statistical Extreme Value Distribution
D3-P10	**DE VRIES**	Iris	Detection of forced global and regional changes in the temporal precipitation distribution
D3-P11	**DOGAR**	Muhammad Mubashar Ahmad	Revisiting the Climatic Impacts of Strong and Weak ENSO using High-Resolution Atmospheric Model
D3-P12	**DONAT**	Markus	Windows of opportunity for multi-annual prediction conditional on ENSO phase
D3-P13	**ENGDAW**	Mastawesha	Detection and attribution of changes in regional temperature extremes with a focus on Africa
D3-P14	**FABIANO**	Federico	A regime view of future atmospheric circulation changes in Northern mid-latitudes
D3-P15	**HADI**	Tri W.	On the relationships between low-frequency variations of Earth's rotation and equatorial atmospheric angular momentum
D3-P16	**GANAPATHY**	Abinesh	Multi-timescale SST-Streamflow connectivity: A complex network approach
D3-P17	**GATTU**	Sachin	Support Farmers to build a Sustainable and climate-smart Food value chain
D3-P18	**GENEL**	Mustafa Talha	Selection of Representative Climate Models for West Asia Precipitation Patterns
D3-P19	**GENEL**	Mustafa Talha	Selection of representative climate models for Central America's temperature pattern
D3-P20	**HASSAN**	Mujtaba	Dynamic of South Asian Summer Monsoon and effect of model bias on simulated changes in high resolution Regional Climate Model (RegCM4)
D3-P21	**HONG**	Jin-Sil	Changes in the relationship of East Asian surface temperature and Pacific Decadal Oscillation during boreal winter in a new climate normal period (1991-2020)

D3-P22	**JEON**	Joongu	Understanding the differences in the trend of precipitation in the ITCZ in the two reanalysis datasets
D3-P23	**JEONG**	Yong-Cheol	Study on the long-term trend of Arctic Oscillation and its driver
D3-P24	**KARPECHKO**	Alexey	Climate change response of the Northern Hemisphere polar vortex in CMIP6 models: uncertainty and coupling to surface climate
D3-P25	**KESEN**	Beyza	Finding the accurate CMIP6 models to represent the precipitation pattern of Europe
D3-P26	**KESEN**	Beyza	Proposal of a statistical methodology to choose the representative CMIP6 models' daily maximum temperature (WITHDRAWN)
D3-P27	**BORDBART M.**	Hadi	Sensitivity of the wind-driven coastal and offshore upwelling across the Benguela Upwelling System to decadal climate changes
D3-P28	**MA**	Seung Joo	East Asian winter monsoon characteristics by differences in Ocean-Atmospheric interaction in the Northwest Atlantic Ocean
D3-P29	**MAHMOOD**	Rashed	Constraining decadal variability in climate projections to attribute climate variability and predictability to regional ocean contributions
D3-P30	**MESSORI**	Gabriele	Large-scale circulation anomalies driving compound climate extremes in Europe and North America
D3-P31	**NDIAYE**	Cassien Diabe	Forced modulations of Sahel rainfall at decadal timescale over the 20th Century (WITHDRAWN)
D3-P32	**OLONSCHECK**	Dirk	Large-scale emergence of regional temperature variability by the end of the 21st century
D3-P33	**RIBES**	Aurélien	Reducing uncertainty on past, near-future and long-term warming
D3-P34	**SAMSET**	Bjorn	Earlier emergence of temperature response to mitigation found when filtering annual variability using a physics based Green's function approach (WITHDRAWN)
D3-P35	**SANG-BIN**	Lee	Exploring of the role of atmospheric versus oceanic forcings leading to Marine Heatwaves in East Asian marginal seas during boreal summer using an ocean general circulation model
D3-P36	**SESTITO**	Benedetta	The ocean-atmosphere interactions in the extratropical Southern Hemisphere: a multimodel approach (WITHDRAWN)
D3-P37	**SINGH**	Manmeet	The fingerprint of volcanic forcing on the ENSOâ€"Indian monsoon coupling
D3-P38	**SONG**	Se-Yong	Role of low cloud feedback over the subtropical eastern Pacific Ocean on the ENSO development
D3-P39	**SUNDARI**	Ristina Siti	Urban greening initiation for greener city and revive food security in Tasikmalaya Municipality, Indonesia during COVID-19 pandemic
D3-P40	**TIWARI**	Yogesh	Unraveling the philosophy behind greenhouse gases emissions variability in India
D3-P41	**TOMETY**	Folly Serge	Quasi decadal to interdecadal SST variability in the Benguela upwelling system
D3-P42	**YADAV**	Ramesh Kumar	Relationship between Azores High and Indian summer monsoon
D3-P43	**YARI**	Sadegh	On the influence of Pacific climate variations on the Peruvian upwelling system
D3-P44 formerly D1-P21	**SALDÍVAR-LUCIO**	Romeo	Climatic signals in the California Current System in the context of North Pacific and planetary variability