Monsoons and the ITCZ: the annual cycle in the Holocene and the future

Agenda

DAY 1 PALEO CLIMATE (Sept. 15th, Davis Auditorium, Shapiro)
12noon- 12:45pm: Sign In
12:45pm-1:00pm: Welcome.
   Michela Biasutti & Aiko Voigt
1:00pm-1:30pm: Keynote: Paleo Observation
   Sandy Harrison Paleo-Monsoons: Representation and Reality
1:30pm-2:00pm: Keynote: Paleo Modeling
   Pascale Braconnot Afro-Asian monsoon and large scale hydrological changes in the tropics
2:00pm-2:30pm: Poster Intro
2:30pm-3:00pm: Coffee Break
3:00pm-4:30pm: Talks
   1. Bronwen Konecky Viewing Holocene ITCZ and monsoon dynamics through the lens of modern tropical water isotope signatures
   2. Alyssa Atwood: Spatial variations of the ITCZ response to North Atlantic freshwater forcing
   3. David McGee Saharan dust as a recorder of and feedback on North African climate change over the last 25,000 years
   4. Tony Broccoli The Response of Tropical Climate to Orbital, Ice Sheet, and Greenhouse Gas Forcing
   5. Natalie Burls Contrasting the Hydrological Cycle in Past and Future Warm Climates
4:30pm-5:00pm: Coffee Break
5:00pm-6:00pm: Response (10min) & Discussion
   David Battisti
6:00pm-7:30pm: Poster Viewing and Icebreaker Reception
1 Tripti Bhattacharya Early Medieval Droughts in Mesoamerica: Reconciling Proxies and Dynamics
2 Christine Chen Closed-Basin Paleolakes in the Central Andes: Implications for the South American Summer Monsoon During Heinrich Event 1 and the Last Glacial Maximum
3 Alice Doughty Modeling orographic precipitation in the Rwenzori Mountains, Uganda
4 Kenji Izumi Influence of cloud radiative effects on tropical circulation and hydrological cycle in the Mid-Holocene
5 Christopher Colose On the Influence of Interhemispheric Aerosol Forcing Distribution on Tropical Hydroclimate in Last Millennium Simulations
6 Marco Gaetani Mid-Holocene summer circulation over North Africa modulated by Saharan dust and vegetation
7 Julia Hargreaves The Past-to-Future Challenge
8 Allison Jacobel Deglacial Dust Fluxes in the Equatorial Pacific: Implications for ITCZ movement
9 Wenwen Kong Seasonality and Westerly Jet Changes in the Holocene East Asian Summer Monsoon
10 Luciana Prado Changes in the Amazon rainfall regime during the last millennium related to explosive volcanic events impacts on the tropical Atlantic Ocean
11 Harunur Rashid An expression of Indian summer monsoon change during the last 24,000 years recorded in the radioisotopes of the Andaman Sea marine sediment
12 Anji Seth The South American Monsoon Variability over the Last Millennium in CMIP5/PMIP3 simulations
13 Chris Skinner The role of tropical plumes in enhancing Saharan rainfall during the African Humid Period
14 Ny Riavo Voarintsoa Stronger Monsoon during southward migration of the ITCZ recorded in a Namibian stalagmite

DAY 2 Theory & Large Scale (Sept. 16th, Davis Aud. Shapiro)
8:30am-9:00am: Sign In
9:00am-9:30am: Keynote: ITCZ
   Isaac Held Factors controlling ITCZ position
9:30am-10:00am: Keynote: Monsoons
   Bill Boos An overview of thermodynamic theories for monsoons
10:00am-10:30am: Poster Intro
10:30am-11:00am: Coffee Break
11:00am-12:30pm: Talks
   1. Aaron Donohoe The quantitative relationship between ITCZ shifts and inter-hemispheric energy transport; constraints provided by the seasonal cycle.
   2. Martin Singh Response of the seasonal cycle of tropical precipitation to idealized climate forcings
   3. Elizabeth Maroon Tropical precipitation in GCM simulations with an idealized subtropical continent
   4. Sugata Narsey Modelling Large Scale Dynamical Features of the Australian Monsoon
   5. Philippe Peyrille The annual cycle of the West African Monsoon in a two-dimensional model: Mechanisms of the rainband migration
   6. Benjamin Moebis The influence of the cloud radiative effect on the double ITCZ bias
12:30pm-2:00pm: Lunch Break
2:00pm-2:30pm: MIP Update
   Aiko Voigt
2:30pm-3:30pm: Response (10min) & Discussion
   Tiffany Shaw
3:30pm-4:00pm: Coffee Break
4:00pm-5:30pm: Poster Viewing
1 Ori Adam Seasonal and interannual variations of the energy flux equator and ITCZ in the present climate
2 Michael Byrne Energetic and dynamical constraints on the width of the ITCZ
3 Jesse Day The Relation of Indian Ocean ITCZ Latitude and the Distribution of Monsoon Rainfall
4 Vishal Dixit The mechanism governing abrupt jump of the ITCZ in an aqua planet model
5 Ross Dixon Comparing Tropical Atlantic precipitation variability across CMIP5 models
6 Nicole Feldl Characterizing the Hadley circulation response through regional climate feedbacks
7 Matt Hawcroft Inter-Hemispheric Albedo, the ITCZ and the West African Monsoon
8 Shineng Hu Albedo-elevation compensation in radiative-convective equilibrium: implications for monsoons and climate
9 Sarah Kang Sensitivity of tropical responses to the latitudinal position of zonally asymmetric thermal forcing in an aqua-planet setting
10 Catherine Pomposi The role of the tropical Atlantic in the ENSO Sahel rainfall teleconnection
11 Tiffany Shaw Response of the intertropical convergence zone to zonally-asymmetric subtropical surface forcings
12 Malte Stuecker A new framework explaining linkages between ENSO and the Monsoon

DAY 3 Convection (Sept. 17th, Lerner Hall 555)

8:30am-9:00am: Sign In
9:00am-9:30am: Keynote: Observations of Convection
   Courtney Schumacher From Ackee to Acai: The variable characteristics of tropical convective rainfall
9:30am-10:00am: Keynote Modeling of Convective Processes
   Tony Del Genio Cumulus parameterization: Moving away from quasi-equilibrium
10:00am-10:30am: Poster Intro
10:30am-11:00am: Coffee Break
11:00am-11:30am: Keynote Land Processes
   Pierre Gentine The life cycle and organization of convection over land and ocean
11:30am-12:30pm: Talks
   1. Larissa Back The vertical motion profile structure of the ITCZ and its disturbances
   2. Gill Martin Monsoons and tropical rainfall in the MetUM general circulation model
   3. Nick Klingaman Using a novel coupled-modelling framework to reduce tropical precipitation biases
   4. David Raymond Implications of New Observational Results for the Parameterization of Tropical Convection
12:30pm-2:00pm: Lunch Break
2:00pm-2:30pm: Talks
   5. Naftali Cohen Interaction between gravity wave breaking over the
Tibetan Plateau and Tropical convection

6. David Nolan The structure and variability of the ITCZ with and without cumulus parameterizations as seen in a tropical channel model in an “aquapatch” configuration
2:30pm-3:30pm: Response (10min) & Discussion
Brian Mapes

3:30pm-4:00pm: Coffee Break
4:00pm-5:30pm: Poster Viewing
1 Usama Anber Modeling the Diurnal Cycle in the Amazon using the Weak Temperature Gradient Approximation
2 Alexis Berg The role of soil moisture in the West African Monsoon
3 Noah Brenowitz Non-local convergence coupling in stochastic models for tropical convection
4 Xin Rong Chua Effects of Anthropogenic Aerosols on Tropical Cyclones
5 Chimene Daleu Intercomparison of methods of coupling between convection and large-scale circulation.
6 Nick Klingaman Temporal and spatial intermittency of sub-daily tropical precipitation in general circulation models
7 Kuniaki Inoue On A Diagnostic Perspective of Gross Moist Stability
8 Stephanie Johnson The effect of increased convective entrainment on the Asian monsoon biases and the ITCZ in the MetUM general circulation model
9 Ji Nie Modeling interactions between the quasi-geostrophic vertical motion and convection in a single column
10 Coumba Niang Influence of Madden-Julian Oscillation (MJO) on Rainfall Variability over West Africa at Intraseasonal Timescale
11 Salvatore Pascale The Impact of Gulf Surges on the North American Monsoon and Their Modulation by Tropical and Extra-Tropical Waves
12 Dan Shaevitz The interaction of large-scale dynamics and convection during the July 2010 and September 2014 floods of northeast Pakistan
13 M.V. Subrahmanynam Interannual variations of Findlater Jet over Arabian Sea and associated rainfall in India during summer monsoon
14 Sulian Thual Asymmetric intraseasonal events in the stochastic skeleton MJO model with seasonal cycle
15 Qiu Yang A Multi-Scale Model for the Intraseasonal Impact of the Diurnal Cycle over the Maritime Continent on the Madden-Julian Oscillation.
16 Sungduk Yu Response of the double ITCZ / cold tongue bias to varying the orientation and extent of embedded cloud resolving models in the SuperParameterized CESM

DAY 4 Projections (Sept. 18th, Lerner Hall 555)
8:15am-8:45am: Sign In ***note early start time!
8:45am-9:15am: Keynote: ITCZ Projections
                Shang-Ping Xie
9:15am-9:45am: Keynote: Monsoon Projections
                Simona Bordoni
9:45am-10:15am: Posters Intro
10:15am- 10:45am: **Coffee Break**
10:45am-12:30pm: **Talks**

1. Yen-Ting Hwang  The Influence of Ocean in Hadley Circulation and Tropical Precipitation in a Warming Climate
2. Katinka Bellomo  Evidence for Weakening of Tropical Atmospheric Circulation from Cloud Datasets
3. Abby Swann  Ecoclimate Teleconnections: Land surface forcing and atmospheric responses.
5. Juergen Bader  Northern-hemispheric differential warming is the key to understanding the discrepancies in the projected Sahel rainfall
6. Yi Ming  Observational constraints on GCM-simulated Sahel rainfall response to uniform ocean warming
7. Kenneth Sperber  Present-Day Biases in the Annual Cycle of Monsoon Rainfall and Projections of Future Climate

12:30pm-2:00pm: **Lunch Break**

2:00pm-3:00pm: **Response (10min) & Discussion**
Michela Biasutti

3:00pm-3:30pm: **Coffee Break**

3:30pm-5:00pm: **Posters Viewing.**

1. Moetasim Ashfaq  Decreasing frequency of monsoon depressions in the 21st century
2. Leila Carvalho  Intraseasonal Oscillations and the Indian Summer Monsoon: the present climate and future projections with GFDL coupled model.
3. Marco Gaetani  West African Monsoon dynamics and precipitation in idealized simulations: SST warming vs CO2 increase
4. Gill Martin  Understanding regional uncertainty in CMIP5 tropical precipitation projections
5. Jong-yeon Park  Dominant impact of anthropogenic Mediterranean warming on present and future Sahel rainfall
6. Romain Roehrig  Overview of the West African monsoon in CMIP5 and updated models
7. Hansi Singh  An Analysis of Tropical Precipitation using Numerical Water Tracers in a Global Climate Model: Insights on the Pre-Industrial Mean State and Perturbations from CO2-Doubling
8. Lakemariam Y. Worku  Climate Change Impact on Variability of Rainfall Intensity in Upper Blue Nile Basin

5:00pm-6:00pm: **Synthesis Discussion** Organizing Committee

6:00pm: **CONFERENCE ENDS**

**Acknowledgements:** We gratefully acknowledge the support of the Columbia Climate Center, the Columbia Initiative on Extreme Weather and Climate, the WCRP Grand Challenge on Clouds, Circulation, and Climate Sensitivity, and The National Science Foundation GEO directorate, and in particular the programs for Climate and Large Scale Dynamics (CLD) and Paleoclimate. Hayley Martinez and Pamela Vreeland (Earth Institute) have handled all logistic planning.