11th Annual Earth System and Space Science Poster Conference

Friday, December 1, 2017
CU Sustainability, Energy, and Environment Complex (SEEC)
4001 Discovery Drive, Boulder, CO

Sponsored by the University of Colorado
Department of Atmospheric and Oceanic Sciences (ATOC)

Program:

10:30AM – 11:30AM	Keynote Lecture Dr. Paty Lankao, National Center for Atmospheric Research
11:30AM – 2:30PM	Poster Session

Keynote Lecture

Understanding the Dynamics of Risk in an Urbanizing World

Dr. Paty Lankao, National Center for Atmospheric Research

As environmental impacts increasingly acquire an urban face, the human driven disruption of earth systems will only increase the multiple risks cities, now home to more than 50% of the world's population, are confronting. Yet, in its current state, research often fails to provide officials, utilities, and urban dwellers with the information they need to prepare for and take advantage of a changing risk landscape. The goal of this talk is to highlight research on two policy relevant themes: the links between urbanization and risk across countries; and the nuanced interactions between risk and inequality within and across select cities.

As a Senior Scientist at the National Center for Atmospheric Research (NCAR), where **Paty Lankao** has worked for 11 years, she leads the "Urban Futures" initiative. Throughout her career, she has developed a considerable body of highly regarded research, resulting in some 115 peer-reviewed publications. This work primarily focuses on crucial intersections between urbanization, urban areas, and inequality in environmental risks at multiple scales; and on the ways institutions, values, and power differentials create and perpetuate unequal capacities to mitigate and adapt to risk. Paty has extensive experience as a sociologist working across disciplines, and at the science-policy interface, in the US and many other urban locations internationally. She was co-leading author to Working Group II of the Nobel prize-winning IPCC Fourth Assessment Report (AR4).

Participants by Research Area:

Posters are separated by research area and then listed in order by poster number, followed by the participant's name; poster title; and participant's home department. Posters signed up for the best student poster competition will be judged from 11:30 – 1:00 p.m. for Categories A-C and from 1:00 p.m. – 2:30 p.m. for Categories D-G.

Category A – Atmospheric Chemistry

A.1 **Aroob Abdelhamid;** Measurements of positive ambient ions in Lamont OK as part of the Holistic Interaction of Shallow Clouds Aerosols and Land Ecosystem (HISCALE II) field campaign (CU–CIRES)

A.2 **Melissa Ugelow;** Negative ion chemistry during early Earth haze analog formation (CU–CIRES)

A.3 **Natalie Kille;** Separating methane emissions from agricultural sources and natural gas: Direct measurement of excess columns of CH4, C2H6 and NH3 in Colorado front range (CU–CIRES)

A.4 **Jennifer Berry;** Chemical composition of positive ions during laboratory simulations of Titan's haze formation (CU–CIRES)

Category B – Oceanography

B.1 **Riley Brady;** What controls the variability of CO2 fluxes in Eastern boundary upwelling systems? (CU–ATOC/INSTAAR)

B.2 **Jessica Hankins;** Identification of the aragonite saturation horizon and analysis of carbonate chemistry properties in the Drake Passage (CU–ATOC)

B.3 **Ryan Fontaine;** Exploring coastal environments as microplastic sinks: A case study in the San Diego Bay area (CU–ENVS)

B.4 **Lauren Goldfarb;** Examining metal content in corals: Implications for impact of land use on coral reefs in Belize (CU–ENVS)

B.5 **Kristen Krumhardt;** Parameterizing coccolithophores in CESM (CU–ENVS)

B.6 **Aaron Schroeder;** Assessing the role of ocean circulation and atmospheric forcing on the oceanic radiocarbon distribution at the Last Glacial Maximum (CU–ATOC/INSTAAR)

B.7 **Jessica Kenigson;** A simple adiabatic model of the Beaufort Gyre Halocline (CU–ATOC)

B.8 **Danielle Lemmon;** Quantifying ENSO diversity with implications for tropical mean state interaction (CU–ATOC)

B.9 **Elizabeth Maroon;** Influence of the Atlantic meridional overturning circulation on the Northern Hemisphere surface temperature response to radiative forcing (CU–CIRES)

B.10 **Rory Laiho;** Detecting changes in the Arctic freshwater budget (CU–ATOC/INSTAAR)

Category C – Climate and Large-Scale Dynamics

C.1 **Alejandra Pedraza;** Coarse-grained mineral dust deposition in alpine lake sediments: Implications for regional drought patterns and land-use changes in the southwest USA (CU–ENVS)

C.2 **Kelsey DePorter;** Dating the magmato-metamorphic events in the Chottanagpur Gneiss Complex, Eastern India (CU–ENVS)

C.3 **Michael DeSimone;** Examining climate shocks and their effect on communal rioting in India (CU–ENVS)

C.4 **Perri Longley;** Coral seas in 50 years: Need for local policy (CU–ENVS)

C.5 **William Frey;** The observed and modeled relationship between Southern Ocean clouds and sea ice (CU–ATOC)

C.6 **Ben Toms;** A coherent image for global teleconnections associated with the Madden-Julian Oscillation (CSU–ATS)

C.7 **Lei Zhang**; Role of North Indian Ocean air-sea interaction in summer monsoon intraseasonal oscillation (CU–ATOC)

C.8 **Gang Wang;** Interannual to decadal variability of tropical Indian Ocean sea surface temperature: Pacific influence versus local Internal variability (CU–ATOC)

C.9 **Meghan Helmberger;** Patterns of seasonal heat uptake and release over the Arctic Ocean between 1979-2016 (CU–GEOG/NSIDC)

C.10 **Patricia DeRepentigny;** Transnational sea-ice exchange in the Arctic Ocean: Future projections and implications (CU–ATOC/INSTAAR)

C.11 **Abigail Ahlert;** How the timing of melt and freeze onset impacts Arctic Sea ice cover (CU–ATOC/INSTAAR)

Category D – Boundary Layer and Wind Energy

D.1 **Jessica Tomaszewski;** Quantifying wake impacts on downwind wind farms using the WRF wind farm parameterization (CU–ATOC)

D.2 **Rochelle Worsnop;** Generating wind power scenarios for probabilistic ramp event prediction using multivariate statistical post-processing (CU–ATOC)

D.3 **Nicola Bodini;** Calculation of turbulence dissipation rate from lidar measurementsl (CU–ATOC)

D.4 **Nick Luchetti;** Evaluating thunderstorm outflow boundaries in WRF-Fire (CU–ATOC)

Category E – Aerosols, Clouds, and Precipitation

E.1 **Josh Aikins;** What happens to a squall line when it encounters mountains - A high-resolution radar analysis of the 15 May 2014 IPHEx event in the Southern Appalachians (CU–CIRES/NOAA)

E.2 **Warren Smith;** The role of radiation in accelerating the genesis of Atlantic Hurricane Matthew (2016) (CU–CIRES)

E.3 **Robinson Wallace;** Identifying, observing, and nowcasting thunderstorms producing deep surface hail accumulations (CU–ATOC)

E.4 **Jennie Bukowski;** Relative contributions of convective and non-convective dust lofting over the Arabian Peninsula (CSU–ATS)

E.5 **Monique Laurita;** Seeded and natural orographic wintertime clouds: The Idaho Experiment - an overview (CU–ENVS)

E.6 **Matthew Cann;** Seeded and natural orographic wintertime clouds: The Idaho Experiment - first results (CU–ATOC)

E.7 **Christopher Maloney;** The impact upon UT/LS cirrus clouds in the CAM/CARMA model using an interactive aerosol parameterization (CU–ATOC/LASP)

E.8 **Parker Case;** Deconvolving the atmospheric impacts of the 1991 eruptions of Mount Pinatubo and Cerro Hudson (CU–ATOC)

E.9 **Lu Wang;** Warm cloud properties and CCN concentrations in climate models and observations (CU–ATOC/LASP)

E.10 **Rainwater, Bryan;** Miniature IR Laser Spectrometer for H2O Isotopologues in Clouds (CU–ATOC)

Category F – Remote Sensing and Radiative Transfer

F.1 **Hong Chen;** Validation of cloud optical parameters from passive remote sensing in the Arctic by using the aircraft measurements (CU–ATOC)

F.2 **Julie Kent;** Retrieving cloud properties from hyperspectral measurements (CU–ATOC/LASP)

F.3 **Sabrina Cochrane;** Direct aerosol radiative effects and heating rate: Results from the 2016 and 2017 ORACLES field campaigns (CU–ATOC/LASP)

F.4 **Steffen Mauceri;** Revision of the sun's spectral irradiance as measured by SORCE SIM (CU–ATOC/LASP)

F.5 **Jack Wang;** Technique to estimate the short-term variability of the migrating diurnal tide from satellite observation (CU–ASEN)

Category G – Space and Planetary Physics

G.1 **Katie Primm;** The effect of Mars-relevant minerals on the water uptake of magnesium perchlorate and implications for the near-surface of Mars (CU–CIRES)

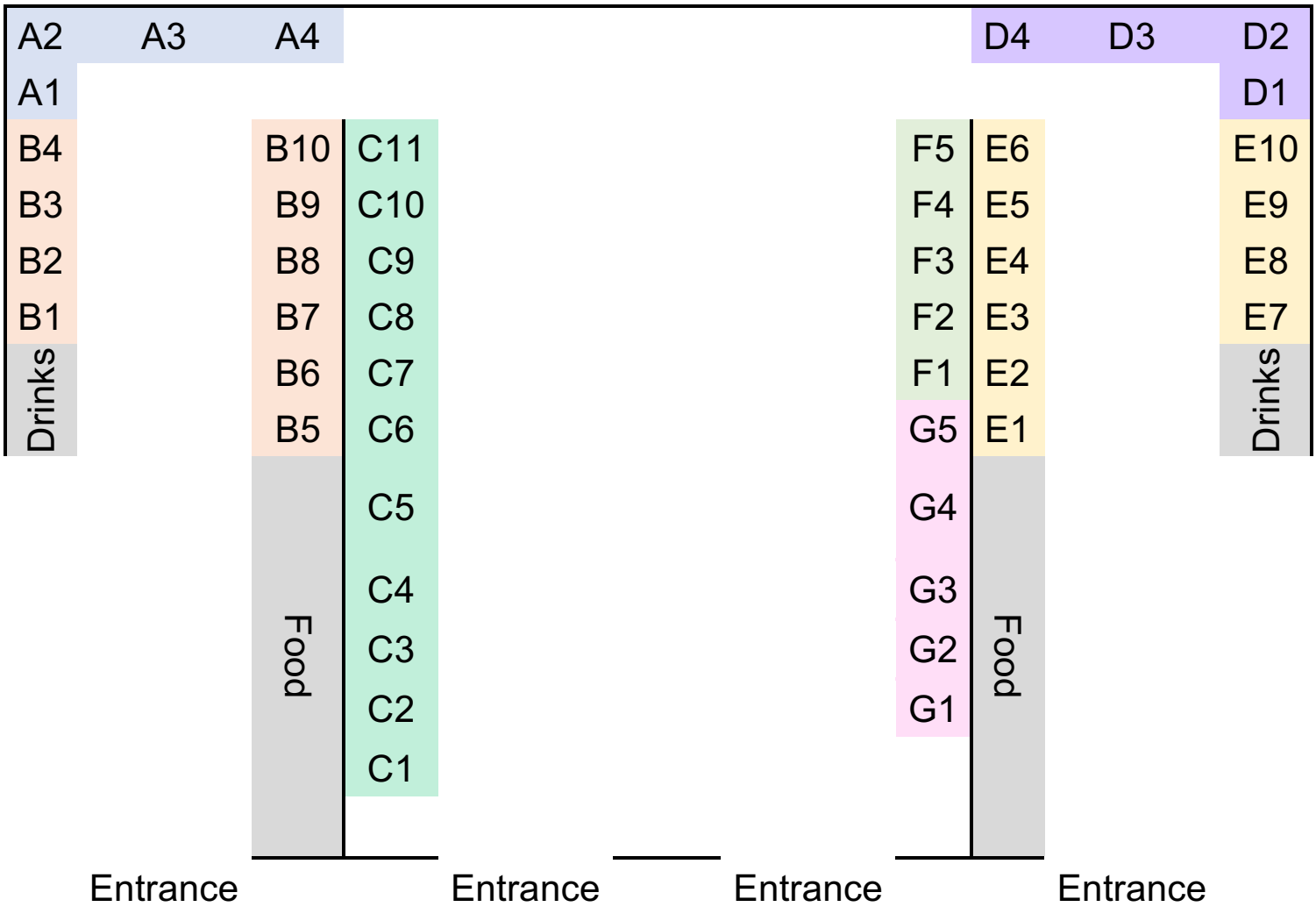
G.2 **Maya Yanez;** Analysis of potential radical chemistry on Kuiper belt objects (CU–APS)

G.3 **Alex Lanzano;** Assessing the habitablility of tidally locked planets orbiting M stars (CU–ATOC/LASP)

G.4 **Josh Pettit;** Comparisons of two medium energy electron data sets in WACCM (CU–LASP)

G.5 **Evan Anders;** Internally heated convection and its implications for the solar convective conundrum (title = WIP) (CU–APS/LASP)

Map of Poster Location



Participants by Alphabetical Order:

Participants are listed in alphabetical order by last name of the author followed by the poster location.

Aroob Abdelhamid, A.1
Abigail Ahlert, C.11
Josh Aikins, E.1
Evan Anders, G.5
Jennifer Berry, A.4
Riley Brady, B.1
Nicola Bodini, D.3
Jennie Bukowski, E.4
Matthew Cann, E.6
Parker Case, E.8
Hong Chen, F.1
Sabrina Cochrane, F.3
Kelsey DePorter, C.2
Patricia DeRepentigny, C.10
Michael DeSimone, C.3
Ryan Fontaine, B.3
William Frey, C.5
Lauren Goldfarb, B.4
Jessica Hankins, B.2
Meghan Helmberger, C.9
Jessica Kenigson, B.7
Julia Kent, F.2
Natalie Kille, A.3
Kristen Krumhardt, B.5
Rory Laiho, B.10
Alex Lanzano, G.3
Monique Laurita, E.5
Danielle Lemmon, B.8
Perri Longley, C.4
Nick Luchetti, D.4
Christopher Maloney, E.7
Elizabeth Maroon, B.9
Steffen Mauceri, F.4
Alejandra Pedraza, C.1
Josh Pettit, G.4
Katie Primm, G.1
Bryan Rainwater, E.10
Aaron Schroeder, B.6
Warren Smith, E.2
Jessica Tomaszewski, D.1
Ben Toms, C.6
Melissa Ugelow, A.2
Robinson Wallace, E.3
Gang Wang, C.8
Jack Wang, F.5
Lu Wang, E.9
Rochelle Worsnop, D.2
Maya Yanez, G.2
Lei Zhang, C.7

Acronyms Key

APS – Department of Astrophysical and Planetary Sciences
ASEN – Department of Aerospace Engineering Sciences
ATOC – Department of Atmospheric and Oceanic Sciences
ATS – Department of Atmospheric Science
CIRES – Cooperative Institute for Research in Environmental Sciences
CSU – Colorado State University
CU – University of Colorado Boulder
ENVS – Environmental Studies Program
GEOG – Department of Geography
INSTAAR – Institute of Arctic and Alpine Research
LASP – Laboratory for Atmospheric and Space Physics
NOAA – National Oceanic and Atmospheric Administration
NSIDC – National Snow and Ice Data Center