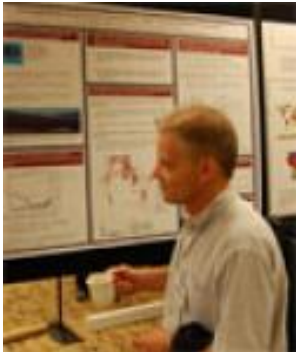







2022 Meet a Scientist

 A photograph of Julio Bacmeister, a man with short blonde hair, wearing a light-colored button-down shirt. He is standing in front of a display board with several papers pinned to it, looking at one of the papers.	<p>Julio Bacmeister</p> <p>Dr. Bacmeister is a scientist in the Atmospheric Modeling and Prediction Section (AMP) of the Climate & Global Dynamics Laboratory (CGD). He received his Ph. D. in 1987 and has worked in a number of areas related to atmospheric modeling and parameterization. His research interests include global modeling of the atmosphere at "high" resolution. High resolution in the context of global models currently means horizontal grid spacing on the order of tens of kilometers. In this resolution range global models begin to simulate some important mesoscale features, such as tropical cyclones, but most convective motion in the atmosphere is still poorly resolved. Unfortunately, parameterizations of deep convection developed for climate models at much coarser resolution also perform poorly in this setting, often interfering with incipient mesoscale "organization". Julio is trying to understand the interactions between parameterized and resolved dynamics in these simulations, and to help develop better methods for representing deep convection in global models.</p>	Wednesday
 A photograph of Gokhan Danabasoglu, a man with dark hair, wearing a light blue button-down shirt. He is smiling and looking towards the camera.	<p>Gokhan Danabasoglu</p> <p>Dr. Danabasoglu is a Senior Scientist in the Oceanography Section of the Climate and Global Dynamics division in NESL. The general subjects of his research are understanding the role of the oceans in the earth's climate system and computational modelling of the ocean as geophysical fluid. His particular interests include developing subgrid scale parameterizations to represent unresolved physics in ocean general circulation models and investigating mechanisms and potential predictability associated with the (multi)decadal variability of the Atlantic meridional overturning circulation. He is currently serving as a co-chair of the Community Earth System Model Ocean Model Working Group and</p>	Wednesday

	<p>a co-chair of the CLIVAR Working Group on Ocean Model Development. His publications include over 50 research papers. Dr. Danabasoglu is the recipient of the 2009 Community Climate System Model Distinguished Achievement Award.</p>	
	<p>Anna-Lena Deppenmeier</p> <p>Dr. Deppenmeier is a project scientist in the Ocean Section within the Climate Global Dynamic laboratory at NCAR. Her research focuses on understanding processes that govern climate variability in the tropical Pacific, especially on (local) air-sea interactions. Prior to her NCAR appointment, she has conducted research in a wide variety of fields, from computational quantum chemistry to laboratory based LED research. During her PhD studies she investigated air-sea interaction in the tropical Atlantic, and how those mechanisms relate to state-of-the-art global climate model biases.</p>	Thursday
	<p>Peter Gent</p> <p>Dr. Gent is a Senior Scientist in the Oceanography Section of the Climate and Global Dynamics Division. He has worked on theoretical and numerical models of ocean circulation in both tropical and global domains. He is best known for a parameterization of the effects of mesoscale eddies on the mean flow in ocean models that do not resolve mesoscale eddies. The Gent and McWilliams eddy scheme is now used in virtually all ocean components of climate models and in a very large percentage of ocean models. He has been heavily involved, since its inception in 1996, in the Community Climate System Model, a cooperative project between NCAR, Universities and National</p>	Thursday

	Laboratories. Most recently, he was Chairman of the CCSM Science Steering Committee for over four years from 2005-2009.	
	<p>Kristen Krumhardt</p> <p>Dr. Kristen Krumhardt is an Assoc Scientist II in the Ocean Section of the Climate & Global Dynamics Laboratory at the National Center for Atmospheric Research. She is interested in how the biology of the oceans affects global biogeochemical cycles. Her current research focuses on how marine phytoplankton are responding to global change. Specifically, she is studying coccolithophores, a type of calcifying phytoplankton that are widespread and influence global carbon cycling. Calcifying organisms, such as coccolithophores, can be especially susceptible to changes in ocean chemistry from anthropogenic carbon emissions (ocean acidification). She uses oceanographic data and Earth System Models to improve projections on how coccolithophore populations and marine ecosystems may change with further warming and ocean acidification.</p>	Thursday
	<p>Peter Lauritzen</p> <p>Dr. Lauritzen is a Scientist (from Denmark) working in the Atmospheric Modeling and Predictability (AMP) Section of the National Center for Atmospheric Research (NCAR) located in Boulder, Colorado. The mission of our section is to improve our understanding of the global atmosphere and its role in the climate system through modeling and observational studies, and to represent that understanding in the form of improved numerical models of the atmosphere and larger climate system. Research interests include: Dynamical cores for weather and climate models, remapping between spherical grids, advection/transport schemes (in particular, finite-volume methods) for unstructured grid, idealized test cases, limiters/filters for monotonicity, physics-dynamics coupling.</p>	Thursday

**Peter Lawrence**

Peter Lawrence is a Project Scientist in the Terrestrial Sciences Section within the Climate and Global Dynamics Laboratory at NCAR. His research investigates how human and natural systems respond to the world's changing climate, and how human activities in turn impact back on the climate system. He has been responsible for developing the CMIP5 and CMIP6 land cover and land use representations in the NCAR CCSM4, CESM1 and CESM2 models as well as running and analyzing the outputs of those models. These investigations begin with historical and paleo representations of vegetation and land use starting in 6000 bce and change annually following population reconstructions and historical data annually to current day, and from there along the Shared Socioeconomic Pathways (SSPs) to 2100.

Thursday

**Dr. Melissa Moulton**

Dr. Melissa Moulton is a Project Scientist I in the Oceanography Section of the Climate and Global Dynamics Division. She received a Ph.D. in Physical Oceanography in the MIT-WHOI Joint Program in 2016. Using coupled hydrologic and ocean models and field observations, Moulton is investigating the dispersal of contaminants and freshwater during extreme flooding events under changing climate and land use. Other interests include surface waves, nearshore processes, extreme events reconnaissance, cross-shelf exchange, larval transport, coastal water quality, and coupled human-natural systems.

Wednesday

**Rich Neale**

Dr. Neale is a Project Scientist in the climate and global dynamics division (CGD) of NESL. His expertise lies in several aspects of the tropical and global climate including the mean tropical circulation, El Nino, the Madden Julian Oscillation and the diurnal cycle of precipitation. As a lead developer for the atmosphere component of the NSF-DOE Community Earth System Model (CESM) his research focus has been on representing moist processes in climate models and in particular the parameterization of precipitating convection and its role in atmospheric organization. He is currently a co-chair of the CESM Atmosphere Model Working Group (AMWG). Dr. Neale is a founding member of the Aqua-Planet Experiment (APE); a climate model intercomparison project which compares contributions from modelling groups across the world and forms the basis for commonly used idealized dynamical core testing.

Current research activities have been focused on developing the most recent version of the CESM Community Atmosphere Model, version 5 (CAM5). The model is specifically targeted at representing the climate response to cloud-aerosol-radiation interactions; a major source of future climate uncertainty as highlighted in the most recent report of the Intergovernmental Panel on Climate Change (IPCC).

Wednesday

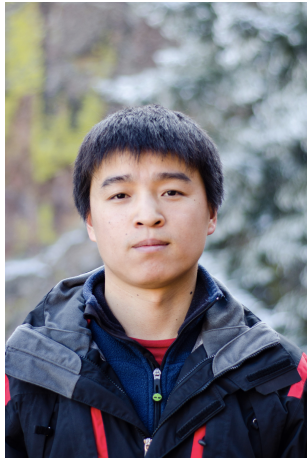


Bette Otto-Bliesner

Dr. Otto-Bliesner is a Senior Scientist in the Paleo and Polar Climate section and is the CGD Deputy Director. Her career has spanned synoptic meteorology, climate diagnostics, and climate change modeling, and has included teaching, research and community service. Her early research focused on the development of a climate model of intermediate complexity, which she used to understand the modern climate system and past climate change. She has focused her recent scientific activities on development and testing, within the framework of the CESM, of our understanding of past climate change to enhance the credibility of future projections.

(Dr. Otto-Bliesner and Dr. Zhu will meet with participants together.)

Wednesday

**Jiang Zhu**

Dr. Zhu is a Project Scientist at the Paleo & Polar Climate Section of the Climate & Global Dynamics Laboratory. He received his PhD from the University of Wisconsin-Madison in 2017. Dr. Zhu did his postdoc training at the University of Michigan, before joining NCAR in 2020.

His research focuses on understanding how the climate system responds to a range of external forcings in Earth's past and future. He is interested in learning the physical processes that govern climate sensitivity, large-scale ocean circulation, and ocean-atmosphere coupled variability through a combination of numerical modeling and paleoclimate data. Dr. Zhu is a co-developer of the water isotope-enabled Community Earth System Model.

**Isla Simpson**

Dr. Simpson is a Scientist III in the Climate Analysis Section of the Climate and Global Dynamics Division, studying large scale atmospheric dynamics and its representation in Global Climate Models. She works to understand dynamical mechanisms involved in the variability and change of the large scale atmospheric circulation and its impacts on regional climate and hydroclimate using a hierarchy of modelling approaches. The overall aim being to determine the extent which models can successfully capture the processes of relevance for the real atmosphere and to determine how they can be improved.

**Jacquelyn Shuman**

Dr. Shuman is a project scientist in the Terrestrial Sciences Section working on the development and application of the dynamic global vegetation model FATES (Functionally Assembled Terrestrial Ecosystem Simulator) for improved representation of vegetation response to altered climate and disturbance. Her research is motivated by an interest in the complex organization of vegetation and feedbacks between vegetation and the local, regional, and global system. She specializes in the use and development of ecological models that include dynamic size-structured vegetation, competition and disturbance. Recent work includes exploring the impacts of vegetation states on and interactions with disturbances, climate, carbon storage, and ecosystem services through analysis of changes in vegetation structure and composition over time. Currently my research involves the development, testing and application of the size-structured vegetation model FATES to improve our ability to capture fire-vegetation interactions. This research allows us to study the influence and feedbacks between climate, fire and vegetation.

Prior to her position at NCAR, she worked with Hank Shugart at the University of Virginia using a detailed individual-based-model of forest gap dynamics named FAREAST and later re-named UVAFME. This type of individual tree species-based modeling utilizes a monte-carlo approach summarizing canopy reorganization across independent patches to capture a typical forest landscape over time for a location. My work used forest gap modeling to investigate the impacts of changing climate and disturbance. My past research focused on development and continental scale application across the boreal forests of Russia and North America, including development of fire-induced tree mortality based on tree size and species.

**Simone Tilmes**

Dr. Simone Tilmes is a Project Scientist II at National Center for Atmospheric Research (NCAR) and the liaison for the Community Earth System Model (CESM) chemistry-climate working group. Her scientific interests cover the understanding and evaluation of chemical, aerosol and dynamical processes in chemistry-climate models. She has investigated past, present and future evolution of the ozone hole in both hemispheres based on models and observations. Her recent work also focuses on tropospheric chemistry, aerosols, air quality, long-range transport of pollutants, and of tropospheric ozone. She further studies the impact of geoengineering on the Earth's climate system, the hydrological cycle, and the impact of solar radiation management on dynamics and chemistry in both troposphere and stratosphere. She published more than 100 peer reviewed papers.

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**Will Wieder**

Will is a project scientist in the Terrestrial Scientists Section (TSS) in the Climate and Global Dynamics Laboratory (CGD) and research affiliate at the University of Colorado, Boulder. He is co-chair of the CESM Land Model Working Group (LMWG). Dr. Wieder's training is as a field ecologists, but since coming to NCAR in 2011 he's been interested in studying global biogeochemical cycles, working to improve the ecological theory that's represented in models like the Community Land Model (CLM), and branching out into broader Earth system science questions with CESM. He's currently working with a team at NCAR and NEON, the National Ecological Observatory Network, to integrate NEON observations into single point CLM simulations to facilitate greater exchange between geoscientific and biological sciences disciplines.