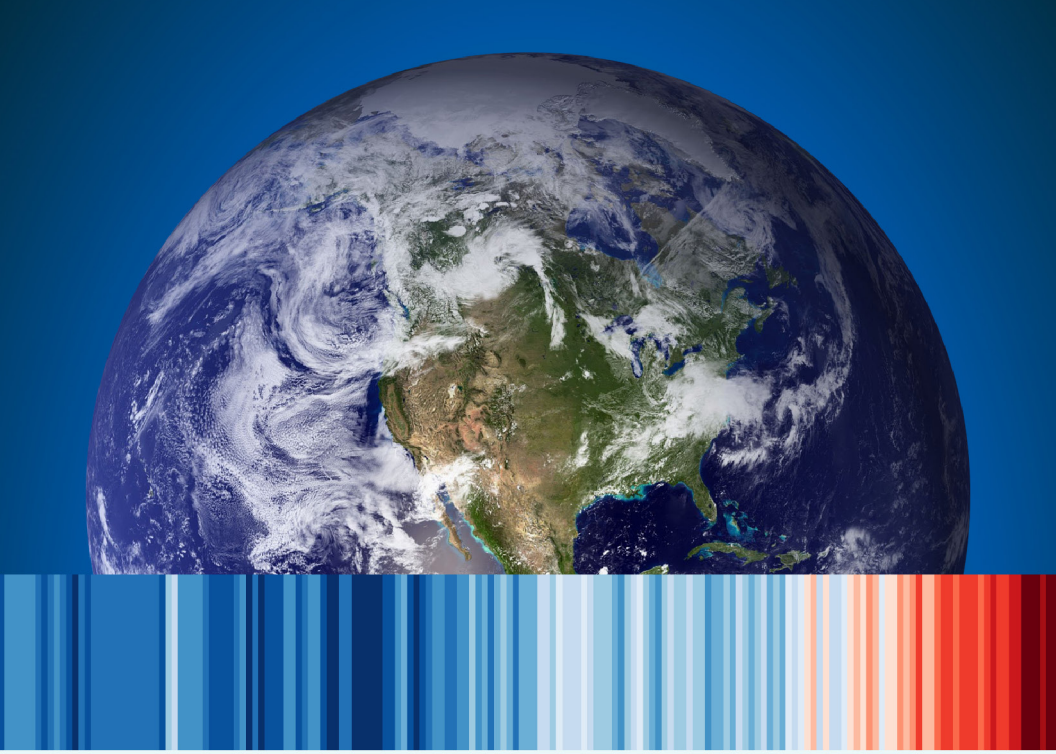


Globe warming stripe graphic is produced by Professor Ed Hawkins (University of Reading)

AVIATION AND CLIMATE CHANGE FORUM

THURSDAY
JANUARY 20, 2022
10:00 AM - 1:30 PM (PST)

Hosted by:

SJSU SAN JOSÉ STATE UNIVERSITY

MTI MINETA TRANSPORTATION INSTITUTE

With participation from:

NASA

icct THE INTERNATIONAL COUNCIL ON CLEAN TRANSPORTATION

THE UNIVERSITY OF CALIFORNIA 1868

THE UNIVERSITY OF CALIFORNIA BERKELEY 1868

ABOUT THE EVENT

Aviation's impact on climate change is significant; without mitigation, this impact is expected to grow as the industry recovers from the global pandemic. Climate change has a correspondingly large impact on aviation; changing weather patterns can affect aircraft performance, infrastructure, and operations. Over the coming decades, the decarbonization of the aviation sector will present numerous technological, policy, and environmental challenges, while extreme weather will create challenges and new requirements for aviation safety and growth.

On January 20, 2022, SJSU and its Mineta Transportation Institute will host a virtual forum on Aviation and Climate Change to discuss these issues. The forum will bring together Silicon Valley leaders in academia, government, and industry to showcase the regional capabilities available to address climate change and aviation challenges, and to encourage the public-private partnerships and collaborations needed to do so.

3.5 Professional Development Hours will be available for attendees.

PROGRAMMING

10:00 am

Welcome and Forum Overview

- **Dr. Karen Philbrick, Executive Director, Mineta Transportation Institute**

Karen Philbrick serves as the executive director of the Mineta Transportation Institute (MTI) at San José State University, a position she has held since 2014. MTI leads two competitively selected multi-university consortiums: the California State University Transportation Consortium (CSUTC) which unifies the surface transportation research and workforce development efforts of the 23-campus California State University system and the Mineta Consortium for Transportation Mobility (MCTM). MCTM unifies and focuses the efforts of four outstanding institutions that represent and support the geographical, cultural, racial, and socioeconomic diversity that makes our nation strong: Howard University; Navajo Technical University; San José State University; and the University of North Carolina Charlotte.

- **Dr. Tina Panontin, Director of Program Content, Professor of Practice, SJSU COE**

Dr. Tina Panontin is a Professor of Practice in the College of Engineering at SJSU. With her extensive, practical experience, Dr. Panontin supports the college by serving as a resource for creating new, cross-discipline research concepts and strategic partnerships, and integrating experiential work. She also supports students through instruction, advising, and opportunities for internships and networking. Previously, Dr. Pantonin was at the NASA Ames Research Center where she was the Chief Engineer for 17 years, making key contributions to crewed space flight programs, breakthrough programs, low cost lunar science missions, and complex technology developments. Her work has been recognized with more than 25 awards, including the Silver Snoopy—the Astronauts' Personal Achievement Award. Dr. Panontin has authored many papers and book chapters and has her BS in Mechanical Engineering from SCU, and received her MS in Mechanics of Materials and a PhD in Mechanical Engineering from Stanford University.

10:05 am

Welcome and SJSU Perspective, Dr. Vincent Del Casino, Provost and Senior Vice President, SJSU

As SJSU's provost and senior vice president for Academic Affairs, Vincent J. Del Casino Jr. serves as a key member of the university president's leadership team with primary responsibility for ensuring academic excellence in undergraduate and graduate studies as well as a continual commitment to research, scholarship, and creative activities that benefit all students and society at large.

At the University of Arizona, Del Casino provided leadership and administrative oversight as the campus redeveloped central spaces for student support activities; re-organized its central administrative areas; increased online enrollment and program offerings; and enhanced student success and retention. With more than 18 years of academic and administrative experience in higher education, he also served as professor and chair of the Department of Geography at California State University, Long Beach.

Del Casino is a prolific writer and researcher who authored, edited, coedited and co-authored multiple books, articles, and book chapters on topics ranging from health, robots and robotic technologies, cartographic theory, and tourism, in the context of geography. His numerous commentaries on higher education have been published in The EvoLLLution and Inside Higher Education, including "Machine Learning, Big Data and the Future of Higher Education."

10:15 am

Silicon Valley Policy-Maker Perspectives

- **Congresswoman Zoe Lofgren, 19th District of California**

Zoe Lofgren has been a Democratic member of the United States House of Representatives since 1995. She represents the 19th District of California, based in the "Capital of Silicon Valley," San Jose, and the Santa Clara Valley.

A lifelong Bay Area resident and the daughter of a truck driver and a cafeteria cook, Zoe graduated with a bachelor's degree in political science in 1970. In 1980, she was elected to the Santa Clara County Board of Supervisors where she served for 14 years. Later, Zoe was elected to the House of Representatives, where she currently serves on the House Judiciary Committee, the House Science, Space and Technology Committee, and the Committee on House Administration. Zoe's political work has also allowed her to champion such causes as immigration reform and education, bridging the digital divide while advocating for digital rights and net neutrality, and was appointed by Speaker Nancy Pelosi to chair the Committee on House Administration (CHA). The CHA was established, in part, to streamline the U.S. House of Representatives' committee system and to modernize its internal management and operations while also ensuring safe and fair federal elections.

- **Senator Dave Cortese, State Senate District 15**

Senator Dave Cortese State Senate District 15, which encompasses much of Santa Clara County. Along with his accomplished career as an attorney and business owner, the Senator previously served on the Santa Clara County Board of Supervisors for over a decade, with four years as Board President, on the San Jose City Council for eight years, including two years as Vice Mayor, and as a trustee for the East Side Union High School District for eight years. He grew up in San Jose as part of a family that has been active in civic, cultural, and business activities for generations. Dave graduated from Bellarmine College Preparatory then University of California, Davis where he earned a Bachelor of Science Degree in Political Science. He earned his Juris Doctorate at Lincoln University Law School in San Jose.

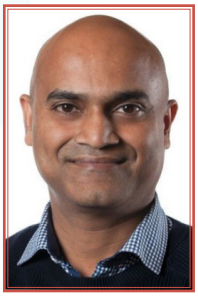
10:25 am

Aviation and Climate Change: Phenomenology

- ***Aviation Effects on Climate Change*, Dr. Minghui Diao, Associate Professor, SJSU COS, Department of Meteorology and Climate Science**

Dr. Minghui Diao is an Associate Professor in the Department of Meteorology and Climate Science at San Jose State University (SJSU). Her research focuses on cloud and aerosol processes based on aircraft in-situ measurements, remote sensing observations, and model simulations. Minghui received her BS degree from Peking University and her PhD degree from Princeton University. Some of the awards that she received include the Lawrence Livermore National Laboratory Faculty Mini-Sabbatical Fellowship, SJSU Research Foundation Early Career Investigator Award, NCAR ASP Postdoctoral Fellowship, NASA NESSF Graduate Fellowship, and the Princeton Francis Upton Fellowship.

- ***Climate Change Effects on Aviation*, Raj Pai, Senior Technologist, NASA Ames Research Center**



Raj Pai serves as Senior (Chief) Technologist for NASA, Aviation Systems Division, where he leads machine learning and big data research programs in support of the Aeronautics Research Mission Directorate (ARMD)'s Sky for All Initiative and the FAA's Info-centric National Airspace Systems (NAS). He previously spent more than 25 years in Silicon Valley in both technology and business roles. As a domain expert in machine learning, AI, big data, and cloud technologies, Pai is passionate about understanding customer needs across market segments and harnessing technology solutions to solve them. He is a well-known thought leader and a mentor for Data Science interns and researchers at NASA.

10:45 am

Aviation and Climate Change: Strategic Frameworks

- ***NASA Sustainable Aviation Program*, Robert A. Pearce, Associate Administrator, Aeronautics Research Mission Directorate**

Mr. Robert A. Pearce is the associate administrator for NASA ARMD. Pearce manages the agency's aeronautics research portfolio and guides its strategic direction. Pearce has received several medals from NASA, including NASA's Exceptional Service Medal, NASA's Exceptional Achievement Medal for outstanding leadership of the JPDO, NASA's Cooperative External Achievement Award, and several Exceptional Performance and Group Achievement Awards. He has an MS in technology and policy from the Massachusetts Institute of Technology.

- ***Policies to Reduce Aviation Impacts*, Dr. Brandon Graver, Senior Researcher, International Council on Clean Transportation**

Brandon Graver is a Senior Researcher in the ICCT's Aviation Program. His research identifies, refines, and promotes policies to reduce the environmental impacts of commercial aviation. Prior to joining the ICCT, Brandon conducted activity, energy use, and emissions research for multiple modes of transportation, including trains, automobiles, and snowmobiles, for the use by state and national governments in their decision-making process. Brandon holds a PhD. in Civil Engineering and an MS in Environmental Engineering from North Carolina State University, as well as a BS in Environmental Engineering and Science, Technology & Society from Rensselaer Polytechnic Institute.

11:10 am

Break/Q&A

11:25 am

Aviation and Climate Change: Strategic Frameworks, continued

- ***SJSU Mission and Capabilities*, Dr. Sheryl Ehrman, Don Beall Dean, SJSU College of Engineering (COE), and Dr. Michael Kaufman, Dean, SJSU College of Science (COS)**

Dr. Sheryl Ehrman has served as the Don Beall Dean of the College of Engineering at San Jose State University since 2017. As dean, she oversees 26 academic programs, delivered by 290 faculty and instructors, that serve 6500+ students, as well as the college of engineering's growing research enterprise. Dean Ehrman previously served as Keystone professor and chair of the Department of Chemical and Biomolecular Engineering at the University of Maryland, College Park. In 2006, she was named a Fulbright Scholar and visiting associate professor at the Indian Institute of Technology, Bombay. She served as a Fulbright Alumni Ambassador from 2013-16.

Michael J. Kaufman has provided enthusiastic interim leadership to the college since 2017. During his brief tenure, he collaborated with stakeholders to progress the Interdisciplinary Science Building and facilitated the Deans' Leadership Academy. Michael has more than 20 years of experience at SJSU in multiple leadership roles, including a term as Academic Senate chair and six years as chair for the Department of Physics and Astronomy. He has been actively involved in supporting student research opportunities and has received more than $3 million in external funding to pursue the study of young stars and their natal environments, achieving the distinction of President's Scholar in 2012.

- ***NASA ARC Mission and Capabilities*, Dr. Eugene Tu, Center Director, NASA Ames Research Center**

Dr. Eugene L. Tu is the center director at NASA's Ames Research Center in California's Silicon Valley, where he leads a staff of civil servants and contractors in providing critical research and development support that makes the aeronautics and space missions of NASA and the nation possible. Tu was most recently director of Exploration Technology at Ames until his selection as Ames center director in May 2015. Tu is an associate fellow of the American Institute of Aeronautics and Astronautics. Tu received the NASA Outstanding Leadership Medal in 2000, and the Presidential Rank Awards for Meritorious Executive and Distinguished Executive in 2009 and 2020, respectively.

11:45 am

Aviation and Climate Change: Technology Advances

- ***Biofuels*, Dr. David Wagner, Assistant Professor of Chemical Engineering, SJSU COE**

Dr. Wagner has been a faculty member at San Jose State University since August 2018. His current research focuses on bioenergy, carbon capture, and engineering education. He incorporates many of these research experiences with his teaching of core courses including Chemical Plant Design and Graduate Kinetics. In addition, Dr. Wagner is the faculty advisor for the American Institute of Chemical Engineers and the Surface Mount Technology Association student clubs. Dr. Wagner's non-academic appointments include being an advisor to DAC City, Inc., advisor to EnviroComp Consulting, Inc., and being on the Advisory Board of the Air Pollution Science Initiative.

- ***Meteorology/Weather Prediction*, Dr. Alison Bridger, Department Chair, SJSU COS, Department of Meteorology and Climate Science**

Alison Bridger is a professor in the Department of Meteorology and Climate Science. She holds a doctoral degree in atmospheric science from Colorado State University. Her research focuses on large-scale atmospheric dynamics (Earth and Mars) and numerical prediction.

- ***Airport Surface Operations*, Shawn Engelland, Deputy Manager (A), Air Traffic Management eXploration (ATM-X) Project, NASA Ames Research Center**

Shawn Engelland managed NASA's recently-completed Airspace Technology Demonstrations (ATD) Project, which included the ATD-2 Integrated Arrival/Departure/Surface (IADS) field demonstration. The IADS single-airport demo in Charlotte, NC validated surface departure metering and overhead stream insertion capabilities that the FAA will deploy to 27 airports via Terminal Flight Data Manager (TFDM) implementation. The multi-airport demo in North TX extended IADS to improve the efficiency of surface operations as departures from multiple airports compete for constrained terminal airspace resources. Prior to ATD-2, Mr. Engelland developed and managed the NASA/FAA North Texas Research Station.

- ***Air Traffic Management*, Dr. Mark Hansen, Professor of Transportation Engineering, UC Berkeley**

Dr. Mark Hansen is a Professor of Civil and Environmental Engineering at the University of California, Berkeley. Since joining the Berkeley faculty in 1988, he has led transportation research projects in urban transportation planning, air transport systems modeling, air traffic flow management, aviation systems performance analysis, aviation safety, aviation environmental analysis, and air transport economics. Professor Hansen is the Berkeley co-director of the National Center of Excellence in Aviation Operations Research and former Chair of Transportation Research Board Committee AV-060, Airport and Airspace Capacity and Delay.

- ***Commercial Aircraft Configurations Design and Testing*, Kevin James, Senior Aerospace Engineer, NASA Ames Research Center**

Kevin James was born into an aerospace family and spent much of his youth being mentored by the watchful eye of his father, a Professor of Aerospace Engineering. He attended Iowa State University and Stanford, and he joined NASA-Ames' Fixed Wing Aerodynamics Branch in 1991. Driven by a love of aerodynamics and constrained optimized design, he's worked on a wide range of topics including the aerodynamics of automobiles, trucks, power poles, kinetic energy weapons, high-lift devices, F/A-18 and advanced fighter concepts, atmospheric gas sampling devices for ozone depletion studies, launch abort design for Orion Program, ultra-efficient aircraft for the Environmentally Responsible Aviation Project. Kevin now leads a team doing independent verification and analysis for electrified and sustainable flight test projects.

- ***Infrastructure*, Dr. Serena Alexander, Associate Professor at SJSU, Research Associate at MTI**

Serena Alexander joined the SJSU faculty in 2016 as an Assistant Professor of Urban and Regional Planning. Her research interests include environmental planning, community economic development, and sustainable urbanism. Dr. Alexander aims at bridging the gap between technical knowledge, policy decisions and community values. Previously, Dr. Alexander conducted community economic development and environmental policy research at the Center for Economic Development and the Great Lakes Environmental Finance Center at Cleveland State University. Additionally, Dr. Alexander has more than six years of experience working as a planning and urban design practitioner.

12:15 pm
Break/Q&A

12:45 pm
***Public Private Partnerships*, Shivanjli Sharma, National Campaign Deputy Lead, NASA Ames Research Center**

Shivanjli Sharma has worked as an aerospace research engineer across many disciplines at NASA Ames Research Center for more than ten years. She has performed research and helped conduct studies in real time simulation environments for flight deck automation, operations, and procedures as well as air traffic controller focused simulations for terminal arrival operations. In addition, she has been involved in deploying software and hardware to facilities in the National Airspace System to enable efficiencies in integrated arrival, departure, and surface operations. These last few years, she has been supporting the National Campaign as Deputy Lead for the Advanced Air Mobility Project, which is focused on enabling emerging aviation markets for passenger and cargo transportation. She holds a BS and MS in aerospace engineering from the University of California at Davis.

12:50 pm

Industry Roundtable

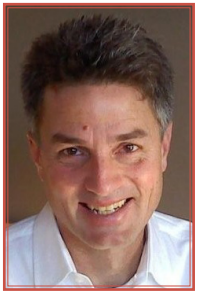
Roundtable Moderator: Andrea Pesce, Director, Industry Alliances & Licensing, UC Santa Cruz

Andrea Pesce is the Director of Industry Alliances & Licensing. She serves all divisions of campus by creating new and strengthening existing corporate partnerships for research sponsorships and collaborations. She also oversees the licensing operations, which include marketing IP, identifying licensing partners and negotiating licenses to realize the best value for UC Santa Cruz intellectual property. Previously, Andrea worked in the Office of Technology Licensing at Stanford University for over seven years. Andrea holds a B.S. in Biology from the University of New Hampshire and a M.S. in Biology from San Diego State University, as well as professional certificates from Stanford.

- **Amy Gross, Sustainability Lead, Joby Aviation**

Amy is the Sustainability Lead for Joby Aviation, where she leads and implements company policies regarding environmental regulation compliance, develops sustainability initiatives, and sets organizational goals to reduce greenhouse gas emissions and Joby's environmental footprint. Amy also manages Joby's land-use planning and site development activities. Previously, she spent 14 years at Santa Cruz County in various related roles including the Environmental Programs Coordinator at the Department of Public Works where she developed and managed a wastewater laboratory and the Environmental Compliance Unit for the Sanitation District. Amy also co-created the Monterey Bay Area Green Business Program, a now state-wide program attracting over $1.5 million in funding per year while reducing greenhouse gas emissions by over 800,000 metric tons annually.

- **Chris Bley, Co-Founder & Director, Monterey Bay DART**



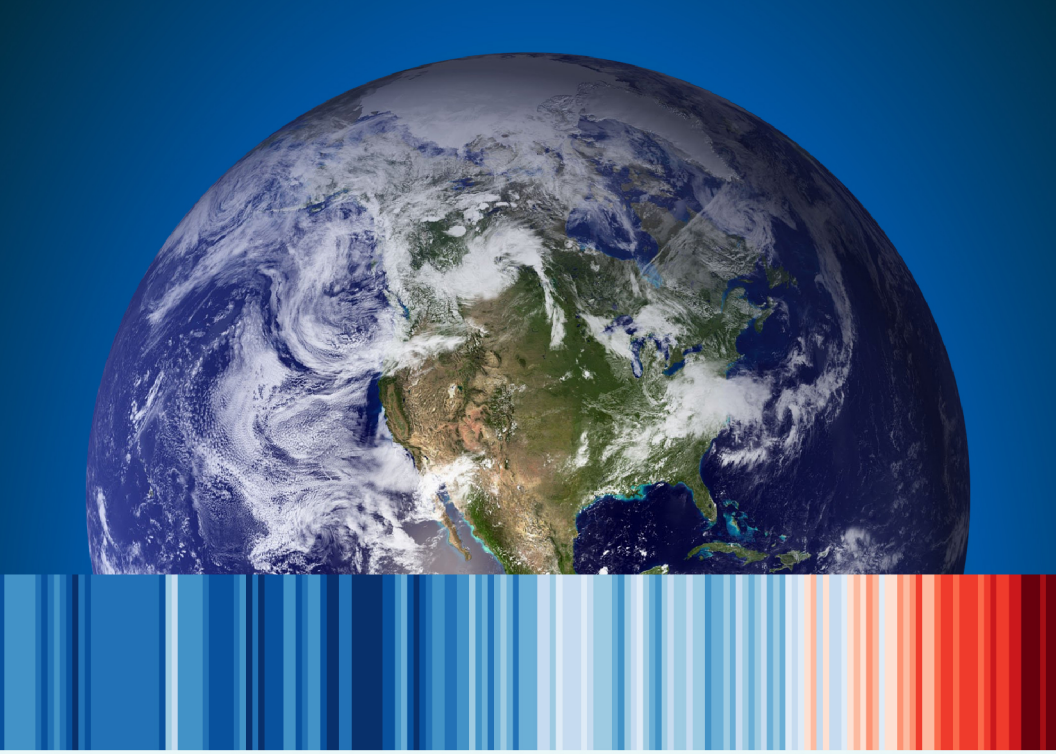
Chris Bley is a Santa Cruz-based serial entrepreneur and co-founder of drone innovation hub, Airspace Integration. Chris has been active in the wind energy industry for 19 years since founding Rope Partner, a rope access service company in Santa Cruz. In 2012 Chris co-founded InspecTools, to apply emerging drone, database, and software capabilities in solving wind energy, solar, and utility industries problems. InspecTools was acquired by PrecisionHawk in September of 2018 and continues to develop unique solutions in the Monterey Bay region. Chris is currently focused on several additional drone related projects including Monterey Bay DART, Insight Up Solutions, and AirSpace Integration.

- **David Merrill, CEO & Co-Founder, Elroy Air**

Dave Merrill is the co-founder and CEO of Elroy Air, where he leads a team of kind, dedicated experts working to expand the reach of express logistics. Dave, an MIT and Stanford graduate, is a technology executive and startup founder with a background in computer science and robotic, interactive systems. Elroy Air is developing advanced, autonomous, safe vertical-takeoff-and-landing (VTOL) cargo aircraft systems in collaboration with NASA and the US Air Force. The company has been featured by Wired, Forbes, VentureBeat, The Verge, Aviation Week, TechCrunch, Business Insider, and eVTOL.

- **Michael Read, Founder, Skybase**

Michael is the founder of Skybase, an aerospace company in New Zealand, dedicated to unlocking aviation's full potential. By studying and refining the formulas for start-up success over the last decade, combined with an aviation career spanning more than 20 years, Michael has an informed and precise approach to product design and navigating complex regulatory environments as they relate to aerospace innovation. Michael is a veteran of the Royal Australian Air Force with experience in both manned and unmanned as well as optionally polluted aviation across military, civilian, humanitarian, and experimental test flying operations.



Globe warming stripe graphic is produced by Professor Ed Hawkins (University of Reading)

Hosted by:

SJSU SAN JOSÉ STATE UNIVERSITY

MTI MINETA TRANSPORTATION INSTITUTE

With participation from:

NASA

icct THE INTERNATIONAL COUNCIL ON CLEAN TRANSPORTATION

THE UNIVERSITY OF CALIFORNIA 1868

THE UNIVERSITY OF CALIFORNIA BERKELEY 1868