ICAMS Interagency Workshop on Social Equity

Final Report

ICAMS Working Group on Social Equity

September 2022

I. PURPOSE

The Interagency Council for Advancing Meteorological Services (ICAMS) fosters Federal agency collaboration on meteorological services to ensure the United States leads the world in meteorological services via an Earth system approach, providing societal benefits with information spanning local weather to global climate.

The ICAMS Working Group on Social Equity is tasked with the responsibility of identifying and addressing meteorological services gaps in our most vulnerable communities, in fulfilment of ICAMS responsibilities under E.O. 13985, which requires Federal agencies to advance equity through identifying and addressing barriers to equal opportunity that underserved communities may face due to government policies and programs.

To begin this process, the Working Group on Social Equity hosted a virtual workshop across government sectors on May 17, 2022, as called for in the ICAMS FY2022 Work Plan. A 17-member organizing committee (see organizing committee members in Appendix 1) from multiple Departments planned and facilitated the workshop, the purpose of which was to bring together Federal agencies to better understand meteorological services gaps in the most vulnerable communities and document ways to improve.

This report presents the results of the virtual workshop and a compendium of available resources identified in the Workshop and afterward. The report has been compiled by the Post-Workshop Team (Kurt Johnson, John Delaney, and Zoe Barr).

II. WORKSHOP ORGANIZATION

The virtual workshop featured speakers from multiple Federal agencies and the private sector, in six sessions (see agenda in Appendix 2):

a) Opening remarks and Keynote Address
b) Agency report-outs
c) Understanding service gaps and challenges
d) Data information panel
e) Demonstration of agency tools

III. WORKSHOP RESULTS

The workshop was recorded and is available at this link. Presenter biographical sketches are available in Appendix 3. The workshop was attended by over 149 participants from 10 Federal agencies and several other organizations.

Keynote Address

- Dr. Elisabeth Grinspoon Spiro, Ph.D. (Economic Research Service, Department of Agriculture)

Dr. Grinspoon provided historic context regarding Federal efforts in support of environmental justice, beginning with Executive Order 12898. Her presentation included insights into the

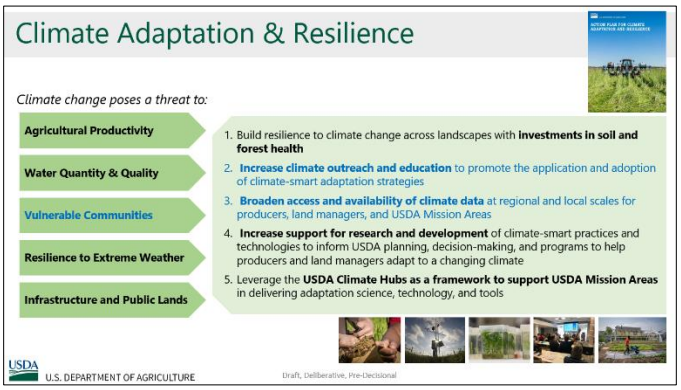
practical application of principles of environmental justice and equity in Federal programs based upon direct project experience.

Agency report-outs

- Department of Agriculture (Speaker: Stephanie Morris, Ph.D.; Office of Energy and Environmental Policy, Office of the Chief Economist)

Dr. Morris presented the USDA Climate Principles and Climate Priorities, and highlighted the USDA Climate-Smart Agriculture & Forestry Strategy which has seven recommended elements and five main areas threatened by climate change.

Following this was a discussion of USDA Climate Hubs with a focus on: (1) Science and data syntheses; (2) Outreach, convening, and training; and (3) Tool/technology co-development and support.



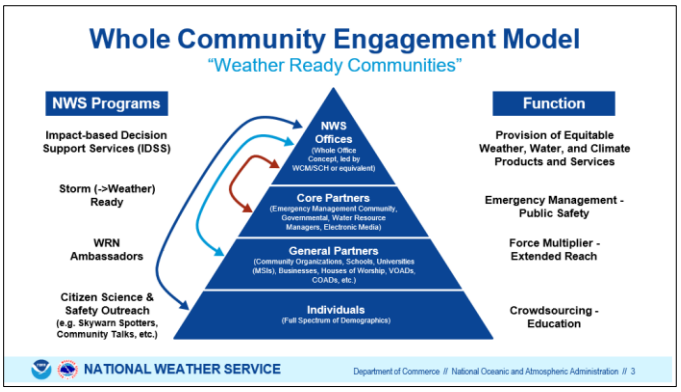
Cross-USDA Disaster Recovery & Preparedness was discussed at length, including the Disaster Resource Center and the Disaster Assistance Recovery Tool.

Finally, a discussion of Climate, Equity, & Environmental Justice at USDA was presented. Particularly highlighted was a "Tribal Climate Adaptation Menu," a product of Climate Hubs (https://www.climatehubs.usda.gov/hubs/northern-forests/topic/tribal-climate-adaptation-menu).

- Department of Commerce - National Oceanic and Atmospheric Administration (Speaker: Stephan Smith, Ph.D.; Director, National Weather Service (NWS) Office of Science and Technology Integration)

Dr. Smith speaker began by discussing equitable services for a weather-ready nation: "Building a Weather-Ready Nation, One Community at a Time" through the Whole Community Engagement Model.

NWS is planning to transition from a limited area of "Legacy service" to a broader and more equitable area of "Equitable services" to better address issues of community vulnerability.



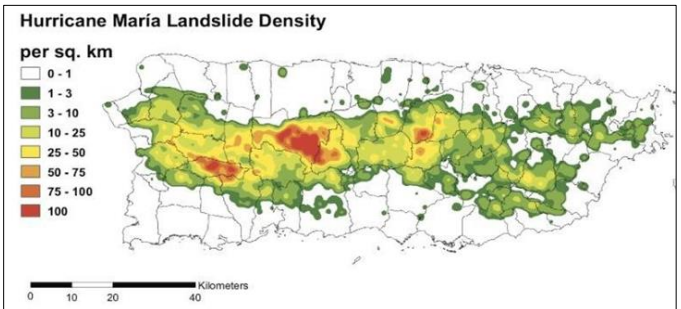
- Department of Commerce - Census Bureau (Speaker: Bethany DeSalvo, Ph.D., Branch Chief of Small Area Modeling and Development, Social, Economic and Housing Statistics Division)

Dr. DeSalvo detailed Census Bureau efforts to help agencies utilize multiple data sources to create statistically accurate, mission-aligned data products and tools. In 2020, Census created the Community Resilience Estimates, a screening tool that can help determine which households in communities are most at risk in the event of environmental disaster. The Bureau is now involved in the creation of microdata infrastructure that will enable a more precise, locationally specific understanding of the impact of environmental hazards on households and businesses, including migration patterns and other impacts that occur over time. This work is reflected in the current development of the Environmental Impacts Frame (EIF), which utilizes longitudinal microdata infrastructure to assess the effects of wide-ranging environmental hazards, including climate events. The Bureau is collaborating with other agencies on work that will help ensure that the benefits of federal programs extend to vulnerable and underserved communities.

- Department of the Interior (Speaker: Anne Kinsinger, Ph.D.; Associate Director, Ecosystems Mission Area, U.S. Geological Survey)

Dr. Kinsinger discussed the USGS's developing Environmental Justice Program. The USGS approach recognizes that (1) advancing environmental justice requires the combination of scientific expertise with the expertise that comes from diverse lived experiences; and (2) EJ principles must be integrated holistically throughout planning and decision-making processes, including throughout the research and product development cycle from initial design and partnership to evaluation. Fully achieving these goals may require a closer examination of rules and guidelines that may inhibit collaboration

Dr. Kinsinger highlighted a successful project in Puerto Rico. In response to more than 200 landslides related to Hurricane Maria (2017), USGS engaged local communities through public workshops to develop a suite of new, relevant outreach products based on community feedback to reduce landslide risk and promote resilience.



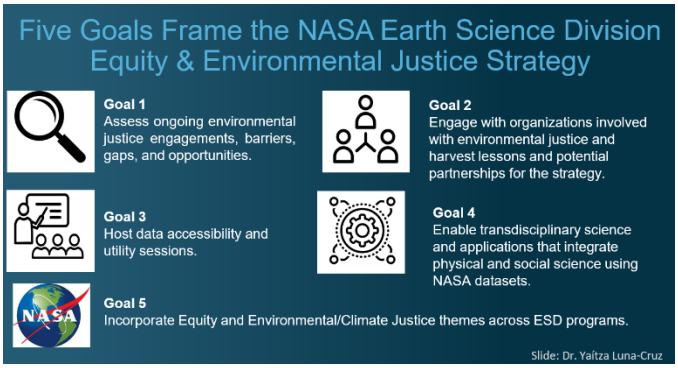
Landslide scarps density map after Hurricane Maria, data from: Hughes et al, 2019.

- National Aeronautics and Space Administration (Speaker: Allison Leidner, Ph.D.; Climate & Resilience Program Manager, NASA Earth Science Division)

Dr. Leidner highlighted NASA's commitments to Equity and Environmental Justice, including leveraging Earth science and socioeconomic data to help mitigate environmental challenges in underserved communities.

NASA's Earth Science Division commitments to equity and environmental justice include: (1) diversifying Earth science research and applications communities with representation from all backgrounds; and (2) supporting environmental justice communities by expanding awareness, accessibility, and use of Earth science data and enabling contributions to Earth science research and applications from a broad array of users.

Five Goals Frame the NASA Earth Science Division Equity & Environmental Justice Strategy.



NASA's Disasters program area uses Earth-observing data and applied research to improve the prediction of, preparation for, response to and recovery from hazards and disasters around the world. Disaster data is provided in standard GIS format on the Disasters Dashboards to broaden accessibility.

Earth Science has three new program areas: (1) Wildfire; (2) Environmental Justice; (3) Climate. One example of the data products emerging from the focus on disaster impacts: NASA – Navajo Nation Drought Severity Assessment Tool.

- Federal Emergency Management Agency (Speaker: Whitney E. Flynn, CEM, Hydrologist | FEMA LNO to the National Water Center FEMA HQ | Office of Response and Recovery)

Ms. Flynn discussed FEMA's commitment to social equity. Goal 1 in the FEMA 2022-2026 Strategic Plan is "Instill Equity as a Foundation of Emergency Management." FEMA has a number of programs addressing social equity gaps of meteorological data and information, working closely with NOAA/NWS:

- National Hurricane Program, which provides data, resources and technical assistance for hurricane evacuation planning for local, state, Tribal, territorial and Federal government partners
- Severe Weather Program, which provides weather information sharing between FEMA and other partners to overcome language, knowledge and other barriers to climate risk information that might disproportionately impact lower income and minority communities.
- Hydrology Program, which helps all communities understand flood and drought risks.

Risk Rating 2.0 is an updated pricing methodology that supports FEMA's flood insurance risk rating methodology. This represents "Equity in Action": Building an accurate flood insurance policy quote is fundamental to ensuring citizens at risk are properly insured. No "one size fits all" approach. Risk Rating 2.0 leverages industry best practices and cutting-edge technology to enable FEMA to deliver rates that are actuarily sound, equitable, easier to understand and better reflect a property's flood risk.

FEMA also leverages the NOAA National Water Model to provide flood inundation mapping services to all communities across the country, eliminating some climate information gaps in underserved areas.

Understanding service gaps and challenges

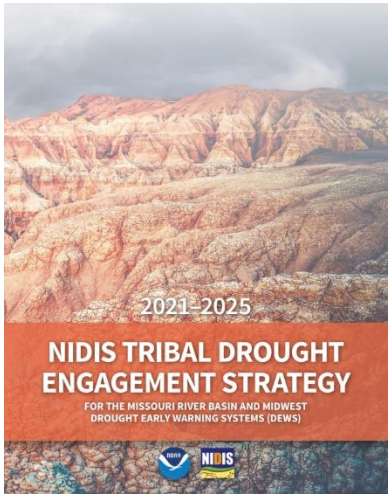
- Speaker: Aisha Haynes, Ph.D. (NOAA/NWS)

Dr. Haynes' presentation "Did You Get the Warning? An Investigation of the Relationship between Vulnerable Populations and Hazard Casualties in Warning Dissemination Coverage Gaps" examined the dissemination of tornado warnings in Mississippi. Using Geographic Information Systems, this identified television, radio, cell phone, and outdoor siren coverage areas by using viewshed analysis and other tools to locate broadcast coverage gaps in order to develop an index that identifies areas of limited to no coverage. U.S. Census data was used to examine demographic information to identify socially vulnerable populations. It was found that warned tornadoes that resulted in the most casualties occurred in areas with limited to no coverage.

Data information panel

- Speaker: Elizabeth Ossowski (Program Coordinator, NOAA NIDIS)

Ms. Ossowski presented on "Supporting Tribal Resilience: NOAA's National Integrated Drought Information System." NIDIS was authorized by Congress in 2006 to provide a national drought early warning system in partnership with other federal agencies as well as state, local and Tribal entities. Currently there are eight regional drought early warning systems across the country. The presentation discussed development of NIDIS's Tribal Engagement Strategy in response to key gaps and needs, and the hiring of a Tribal Engagement Coordinator. NIDIS Tribal Engagement portal, which pulls together data from across the federal family to improve drought monitoring, planning and forecasting on tribal lands, is presented here: https://www.drought.gov/about/tribal-engagement. And the "NIDIS Tribal Drought Engagement Strategy: 2021-2025" here: https://www.drought.gov/sites/default/files/2020-11/NIDIS-Tribal-Engagement-Strategy-2021-2025.pdf.

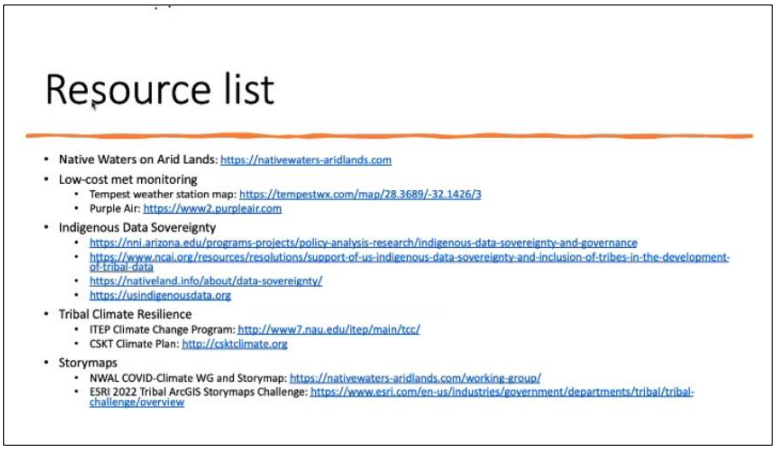


- Speaker: Sean Bath (Program Manager/Scientist, NOAA Climate Program Office)

Mr. Bath explained how NOAA's Regional Integrated Sciences and Assessments (RISA) program expands regional capacity to adapt to climate change by supporting relationships between researchers and decision makers through grant funding opportunities that prioritize vulnerable and underserved communities.

- Speaker: Maureen McCarthy (Desert Research Institute – Native Waters on Arid Lands)

Dr. McCarthy described working with tribal communities to enhance the resilience of tribal agriculture for many years. Challenges noted included:



- The need to make climate data more accessible and useful for tribal communities
- The little monitoring done on reservations
- The importance of affordable monitoring
- The need to make data relevant to agriculture audience on reservations.
- The importance of respecting tribal data sovereignty, and the rights of tribes to govern the collection, analysis and use of data gathered in their communities.

<u>Demonstration of agency tools</u>

- Speaker: Chip Walker (Census Bureau)

Mr. Walker gave a detailed presentation on the new "My Community Explorer" Tool. Data on the site include: (1) American Community Survey (ACS); (2) Community Resilience Estimates (CRE); (3) County Business Patterns (CBP); (4) Nonemployer Statistics (NES); and (5) Data from Other Agencies & Sources – (a) Active Hurricanes, Cyclones & Typhoons, NOAA; (b) USA Current Wildfires, IRWIN; (c) NWS 3 Day Min/Max Temperature Forecast, NWS; and (d) AirNow Air Quality Monitoring Site Data, EPA. The tool is available here: https://experience.arcgis.com/experience/13a111e06ad242fba0fb62f25199c7dd/.

The speaker also discussed the then week-old Digital Equity Act Population Viewer, a tool developed to help the National Telecommunications and Information Administration (NTIA) administer programs designed to expand broadband access in underserved communities by bringing together community demographic data with broadband usage and access data. https://mtgis-portal.geo.census.gov/arcgis/apps/MapSeries/index.html?appid=a0013a9dcbb9419e855f563d78e892ef

IV. KEY MESSAGES FROM THE ICAMS SOCIAL EQUITY WORKSHOP

The ICAMS Social Equity Workshop was not the end but the beginning of a conservation about equity in the delivery of meteorological services delivered by Federal agencies. Among key messages from the Workshop are:

a) Gaps in meteorological services have been identified and acknowledged (e.g., gaps in tornado warning system in Mississippi; lack of basic weather data collection on many Tribal lands, particularly in the western United States).

b) Federal agencies are working toward equity and environmental justice in meteorological services by reviewing gaps and needs (e.g., NWS legacy service to equitable service assessment), increasing community engagement (e.g., NWS "Whole Community Engagement Model") developing strategic plans to fill gaps (e.g., USDA Climate-Smart Agriculture & Forestry Strategy), conducting vital research (e.g., USDA Climate Hubs, NOAA RISAs, and USGS CASCs) and developing new tools and resources to help build equitable service networks (e.g., "My Community Explorer," USDA "Tribal Climate Adaptation Menu").

c) Federal agencies will require continued support from the Administration and Congress to complete the task of developing an equitable and environmentally just system of integrated meteorological services in the United States.

d) The ICAMS Working Group on Social Equity can continue to play an important role in this through information sharing and coordination. Possible involvement might include sponsoring future workshops, developing a Community of Practice, sponsoring webinars, and other activities.

V. RESOURCES SHARED AT THE WORKSHOP

a) Research Programs

- USDA Climate Hubs USDA Climate Hubs
- NOAA RISAs NOAA RISAs
- USGS CASCs USGS CASCs
- NASA Earth Science Division –Wildfire, Environmental Justice, Climate NASA Earth Science

b) Important Weather Warning Programs

- Tornadoes (FEMA) https://community.fema.gov/ProtectiveActions/s/article/Tornado-Alerts-and-Warnings
- National Hurricane Program (FEMA) https://www.fema.gov/emergency-managers/risk-management/hurricanes
- Severe Weather Program (Ready.gov) https://www.ready.gov/severe-weather
- Hydrology Program (FEMA Flood Maps) https://www.fema.gov/flood-maps

c) Important Tools

- NOAA – NIDIS https://www.drought.gov/about
- Census – My Community Explorer https://experience.arcgis.com/experience/13a111e06ad242fba0fb62f25199c7dd/
- Other equity-related tools from Census and Census partnerships: https://www.census.gov/about/what/data-equity.html

d) Special Focus: Tribal Programs

- USDA: Tribal Climate Adaptation Menu http://glifwc.org/ClimateChange/TribalAdaptationMenuV1.pdf
- NOAA: Supporting Tribal Resilience: NOAAS's NIDIS https://www.drought.gov/about/tribal-engagement
- NASA – Navajo Nation Drought Severity Assessment Tool https://wwao.jpl.nasa.gov/water-portfolio/water-projects/nasa-navajo-drought-severity-tool-user-guide/
- Native Waters on Arid Lands https://nativewaters-aridlands.com/

VI. APPENDICES

Workshop Agenda

ICAMS

Interagency Council for Advancing Meteorological Services

Social Equity Workshop Agenda

VIRTUAL

May 17, 2022

12:00 – 4:00 pm EDT

This workshop convenes agencies across the federal government to better understand the meteorological services gaps in the most vulnerable communities and document ways to improve. Meteorological services for the purposes of this discussion include programs and tools that help communities respond to climate and weather events including drought, hurricane and wildfire.

12:00pm-12:10pm **OPENING REMARKS**

Committee on Services Chair

- Toral Patel-Weynand (U.S. Department of Agriculture Forest Service)

Social Equity Working Group Chairs

- Georgia Basso (USDA Forest Service), Tyra Brown Harris (National Oceanic and Atmospheric Administration (NOAA National Weather Service)

12:10pm-12:20pm **OPENING KEYNOTE:**

- Speaker: Elisabeth Grinspoon (USDA Forest Service)
- Moderator: Kandis Boyd (National Science Foundation)

12:20pm-12:30pm Q&A (10 min)

12:30pm-1:45pm **AGENCY REPORT OUTS**

Purpose: A snapshot of what each agency is doing with regard to services for extreme events (fire, drought, hurricane) and/or alignment with Executive Orders on equity

Agencies:

- Department of Agriculture
- Department of Commerce - National Oceanic and Atmospheric Administration
- Department of Commerce - Census Bureau
- Department of Interior - United States Geological Survey
- National Aeronautics and Space Administration
- Federal Emergency Management Agency

	• Moderator: Kathleen Boyer (FEMA)
1:45pm-2:10pm	**UNDERSTANDING SERVICE GAPS AND CHALLENGES** • Speaker: Aisha Haynes (NOAA National Weather Service) • Moderator: Kurt Johnson (DOI Fish and Wildlife Service)
2:10pm-2:20pm	Q&A (10 min)
2:20pm-2:30pm	**BREAK**
2:30pm-3:00pm	**PANEL:** Practitioners working with data information to improve resources to historically underserved and vulnerable populations • Speaker: Elizabeth Ossowski (NOAA National Integrated Drought Information System) • Speaker: Sean Bath (NOAA Regional Integrated Sciences and Assessments) • Speaker: Maureen McCarthy (Desert Research Institute – Native Waters and Arid Lands) • Moderator: Gbenga Ajilore (USDA Rural Development)
3:00pm-3:10pm	Q&A (10 min)
3:10pm-3:40pm	**DEMO PRESENTATIONS** Agency tools that address equity • Speaker: George "Chip" Walker (Census Bureau) • Moderator: Barbara Zamora-Appel (Census Bureau)
3:40pm-3:50pm	Q&A (10 min)
3:50pm-4:00pm	**CLOSING REMARKS** Kandis Boyd (National Science Foundation)

ICAMS Workshop Organizing Team

Chair

Toral Patel-Weynand, USDA/USFS	toral.patel-weynand@usda.gov

Co-Chairs

Tyra Brown, Commerce/NOAA	tyra.brown@noaa.gov
Georgia Basso, USDA/USFS (Lead organizer)	georgia.basso@usda.gov

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Speaker Biographies

Sean C. Bath is a Scientist / Program Manager of the NOAA Regional Integrated Sciences and Assessments (RISA) Program. He started his career doing participatory climate planning approaches as a Sea Grant/RISA intern and found his way into NOAA to facilitate that kind of work full-time. Sean is passionate about people-centric science and governance and co-leads the Network of Networks group affiliated with the American Society of Adaptation Professionals (ASAP).

Bethany DeSalvo has been with the United States Census Bureau for over 10 years. Currently, she is the Branch Chief of Small Area Modeling and Development in the Social, Economic and Housing Statistics Division. Her branch is responsible for the research, development and application of small area estimation techniques to provide data users with finer detail data than can be provided by direct survey estimates. Her area is also responsible for exploring, developing, and extending the use of small area estimation methods to new content areas. Previously, Bethany worked for the Federal Statistical Research Data Centers (FSRDC's) where she worked closely with academic researchers to utilize federal data to answer complex problems. Bethany has a Ph.D. in Sociology and Demography from Texas A&M University. She has received several Department of Commerce Bronze Medals for her work.

Whitney E. Flynn is a Hydrologist and FEMA Liaison Officer (LNO) to the National Weather Service (NWS) National Water Center (NWC) in Tuscaloosa, Alabama. The NWC is the first national water resources facility in the country that serves as a catalyst for delivering a new generation of water information and services to the nation. Whitney serves to establish a collaboration between FEMA, the NWC, and other emergency management and hydro communities for the purposes of disaster preparedness, mitigation, response, recovery, and resiliency. Before coming onboard with FEMA in 2021, Whitney served as a Physical Scientist and EM Specialist for the NWC's Operations Division. She played a key role in the Department of Commerce Agency Priority Goal to mitigate flood impacts by demonstrating improved decision support services to the emergency management community. Whitney graduated summa cum laude from Jacksonville State University (JSU) with a B.S. in Geography and GIS in 2015, and a M.S. in Emergency Management from JSU in 2017. In 2019, Whitney earned her Certified Emergency Manager (CEM) designation through IAEM, making her the first woman in the NWS to receive her CEM.

Elisabeth Grinspoon is a Forest Service senior subject matter expert on environmental justice and recently started a new position as National Equity Data Manager for Forest Service Business Operations. She also has comprehensive knowledge of Forest Service regulations, policies, procedures, and statutes governing the management and use of land and natural resources that she acquired through two decades of working on forest planning under the National Forest Management Act (NFMA) and project planning under the National Environmental Policy Act (NEPA). Elisabeth has academic expertise on the topics of equity and environmental justice in forest resource management gained though a master's degree from Yale University (1996) and a

PhD from University of California at Berkeley (2002). She started undertaking environmental justice analysis in project-level NEPA for the Forest Service in 2004. In 2012, she identified training requirements for environmental justice based on her expert knowledge of EO 12898 Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations. Then she served as the team lead for the development of the Striving for Inclusion training guides for environmental justice in Forest Service NEPA and Planning, which were published in 2014 and still in use today. She also served as a co-author on Environmental justice, low-income and minority populations, and forest management in the northwest forest plan area (GTR-966). Her recent analysis of executive orders on climate change (EO 14008) and environmental justice (EO 13985) for Forest Service leadership are helping ensure that new program and technical directives are consistent with laws, regulations, and policy.

Aisha Haynes is a Physical Scientist and she works at the National Weather Service Operations Center as an Emergency Response and GIS Specialist. Aisha graduated from Jackson State University with a B.S. in Meteorology, and she received a M.S. in Atmospheric Science from Purdue University. After obtaining a Master's degree, she was a Congressional Black Caucus Foundation (CBCF) Congressional Fellow in the U.S. House of Representatives. She covered several legislative issues during her time as a Congressional Fellow, including emergency management and marginalized communities with a focus on Hurricane Katrina. Following that, Aisha interned at the Library of Congress's Congressional Research Services in the Resource, Science, and Industry division, where she researched hazardous weather events and related legislation. During her time there, Aisha participated in the Weather and Society* Integrated Studies (WAS*IS) workshop at the University Corporation of Atmospheric Research (UCAR) in Boulder, Colorado, which spurred her to seek a Ph.D. in a field that could integrate her weather studies with another field that has societal applications. Aisha attended George Mason University, where she received her Ph.D. in Earth Systems and Geoinformation Sciences. Her research identified relationships between vulnerable populations and storm casualties, respectively, and coverage gaps in warning dissemination technologies. While she was pursuing her Ph.D., Aisha joined the National Oceanic and Atmospheric Administration as a Graduate Science Program Scholar. During her time at NOAA, she has performed work in numerous research and operational capacities at the National Weather Service and National Ocean Service, where she has been able to incorporate her meteorological, geospatial, and social science knowledge.

Anne Kinsinger Anne Kinsinger is the Associate Director for Ecosystems at the United States Geological Survey. She is responsible for USGS research and monitoring on freshwater, terrestrial, and marine ecosystems, and the human and fish and wildlife communities they support. Ms. Kinsinger has held numerous positions since joining the USGS in 1995. She was Regional Director for the former USGS Western Region, where beginning in 2007 she oversaw activities related to biological, hydrological, geological, and geographic research and assessments. She was also the USGS Western Regional Biologist and was responsible for the

cross-disciplinary USGS research strategy in the Pacific Northwest. From 1998 until 2001, she worked at USGS headquarters in Reston, Va., in the Associate Director for Biology's office, and as Chief of Strategic Planning and Analysis in the Director's Office. She joined the USGS in 1995, and for the next three years served as director of the USGS Western Ecological Research Center in Davis, Calif. Before joining the USGS, she worked for the U. S. Fish and Wildlife Service National Fisheries Contaminant Research Center (now the USGS Columbia Environmental Research Center), National Fish and Wildlife Foundation, and the National Biological Survey.

Allison Leidner is the Climate & Resilience Program Manager NASA Earth Science Division. Allison is a conservation biologist by training, and began her tenure at NASA in 2010 as a AAAS Science and Technology Policy Fellow working with the Biodiversity Program. She coordinated and managed numerous aspects of the program, led involvement in special activities such as the 2016 IUCN World Conservation Congress, and served as a liaison to the domestic and international conservation remote sensing community via her work with the Group on Earth Observation (GEO) and the Committee on Earth Observation Satellites (CEOS). Allison also coordinated NASA's involvement in the Third National Climate Assessment, a U.S. Global Change Research Program (USGCRP) activity, and later served as the co-chair for the USGCRP Sustained Assessment Interagency Working Group. She received a NASA Special Service Award in 2014. She accepted her current position in 2018.

Maureen McCarthy is Graduate Faculty in Hydrologic Sciences at the University of Nevada, Reno (UNR), Research Faculty in Earth and Ecosystem Sciences at the Desert Research Institute (DRI), and Affiliate Faculty at the Montana Climate Office of the University of Montana. Her research portfolio reflects her commitment to forging partnerships among diverse communities to anticipate and respond to the impacts of climate change on water, agriculture, and Indigenous communities. In addition to her academic appointments, Dr. McCarthy is founder and President of McCarthy & Smith Consulting, where she advises federal agencies and private companies on national security issues, including climate threats to national security. Before moving west, Dr. McCarthy spent nearly fifteen years in Washington, DC, leading national security research, intelligence, and policy analysis programs for the Departments of Defense, Energy, and Homeland Security. She was the Lady Davis Postdoctoral Fellow at the Hebrew University in Jerusalem, Israel, and holds a Ph.D. in Chemical Physics from the University of Colorado, and a B.Sc. in Chemistry from Boston College.

Stephanie Morris joined the Office of Energy and Environmental Policy (OEEP) as an Agricultural Project Coordinator in March 2021, where she coordinates climate adaptation efforts across the Department. In this role, she works with USDA Mission Areas to integrate climate adaptation into their planning, programs, and activities to prepare the USDA and its stakeholders to be resilient and successful in a changing climate. Stephanie came to OEEP from USDA's Office of the Chief Scientist, where she was a AAAS Science & Technology Policy Fellow. Prior to joining USDA, she worked as a research scientist at the Environment Laboratories of the International Atomic Energy Agency and served as a NOAA John A. Knauss Legislative Fellow in the U.S. House of

Representatives. Dr. Morris has a B.S. in Chemistry from Sewanee: The University of the South and a Ph.D. in Chemical Oceanography from the Massachusetts Institute of Technology and Woods Hole Oceanographic Institution Joint Program.

Elizabeth Ossowski is a Program Coordinator with NOAA's National Integrated Drought Information System (NIDIS). She coordinates the work of the NIDIS Executive Council, NIDIS Working Groups, and oversees a team of staff at the Cooperative Institute for Research in Environmental Sciences (CIRES) at CU-Boulder who support the NIDIS program. Prior to joining NIDIS, she served as a Robert Bosch Foundation Fellow in Berlin, Germany. Elizabeth also worked as an Advisor in the Commissioner's Office at the Bureau of Reclamation and in the Immediate Office of the Secretary at the Department of the Interior. She also served as Special Assistant to the President at the White House during President Obama's first term and worked as a legislative aide in his former Illinois Senate office.

Stephan Smith is Director of the Office of Science and Technology Integration (OSTI) and is responsible for: (1) the Meteorological Development Laboratory (MDL); (2) the Operational Proving Ground (OPG); (3) the Modeling Program Team; and (4) the Field Driven Research to Operations (R2O). OSTI also collaborates with the Central Processing and Dissemination offices to maintain and enhance a centralized research, development, and testing environment, which enables transitioning research to operations through streamlining development, testing, training, and field implementation. Stephan joined the NWS in 1993, and, as a branch chief in MDL, has brought diverse and talented people together from different organizations to solve challenging problems. He led the development and implementation of more than 30 decision support tools and guidance products to enhance NWS operations, for which he has been recognized with the NOAA Administrator's Award and the DOC Bronze Medal. At the NOAA level, Steve has been a catalyst in improving the transition of research to operations through the creation of policy, processes, and funding initiatives. In 2013, he established the NOAA Virtual Laboratory, a foundational piece of the NWS R2O2R strategy. In 2019, Steve was selected as the Director of the NWS Meteorological Development Laboratory (MDL). Steve earned both his Ph.D. and M.S. degrees in Meteorology from McGill University in Montreal, Canada. He received his B.S. in Mathematics and Physical Sciences from the University of Maryland. Before joining NWS, Steve was a Research Associate at the Cooperative Institute for Research in the Atmosphere (CIRA) in Fort Collins.

Chip Walker is the Co-lead for the Census Bureau's Emergency Preparedness and Response Team. Since coming to the Census Bureau in 2006, he has worked on the development teams of OnTheMap for Emergency Management, and Census Business Builder. Most recently, he was the project lead for the Census Bureau's COVID-19 Interactive Data Hub. Prior to the Census Bureau, he worked on Census Bureau issues on Capitol Hill.

Background on ICAMS (From Website https://www.icams-portal.gov/index.html):

ICAMS fosters collaboration on meteorological services to ensure that the United States leads the world in meteorological services via an Earth system approach, providing societal benefits with information spanning local weather to global climate.

The Interagency Council for Advancing Meteorological Services (ICAMS) is the principal means within the Executive Branch to coordinate priorities across the diverse agencies that make up the Federal meteorological services enterprise. The ICAMS convenes Federal leaders and establishes clear national goals for advancing meteorological services priorities and implementation. ICAMS promotes robust engagement with governmental and non-governmental stakeholders to communicate and coordinate with the broader meteorological enterprise its progress and receive input regarding future directions.

This Cabinet-level Council is co-chaired by the Director of The White House Office of Science and Technology Policy (OSTP) and the Undersecretary of Commerce for Oceans and Atmosphere, the latter of whom also serves as the Federal Coordinator for Meteorology. The membership of ICAMS is made up of Cabinet Secretaries and Agency Heads with significant science and technology responsibilities, and other White House officials.

ICAMS was chartered on July 31, 2020. The Interagency Meteorological Coordination Office (IMCO) is the administrative headquarters of ICAMS and provides logistical and other support for the Council and its subordinate bodies.