

Talk Title: Future Arctic (Wild)Fires

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Abstract:

Wildland fires in the boreal and Arctic are increasing in frequency and severity, with extreme fire seasons documented across the Pan-Arctic and boreal in five of the last seven years – including an early start to extreme fires in 2023. Human-caused and wildland fires above 60°N were larger sources of black carbon and methane than current modeled estimates of anthropogenic sectors like energy extraction and transportation. Further, these large boreal and Arctic fires have the potential to release large amounts of carbon dioxide and subsequent methane emissions from degraded permafrost and peat fires, as well as negatively impacting air quality thousands of miles south. By end of this century, current extreme fire years in the Arctic will likely be a normal fire year for much of Greenland, North America, Northern Europe, and Eurasia. As a new horizon in global wildland fire science, novel scientific pathways must be undertaken to improve our understanding and management of wildfires in the High Northern Latitudes – including understanding how NASA and U.S. researchers can enhance collaboration and develop near-real-time fire and smoke monitoring and modeling between North American and European ecology, fire, and climate scientists and stakeholders. Issues of inclusion, diversity, and equity are inherent to understanding fire ecology, impacts, and management in the Arctic and boreal, including centering and deferring to Indigenous and local communities when constructing best management practices.

Bio:

Jessica McCarty is the Branch Chief of Biospheric Sciences at NASA Ames Research Center, with more than 15 years' experience in applications of remote sensing and geospatial science to quantify wildland and human-caused fires, fire emissions, forestry and natural resources, agriculture and food security, and land-cover/land-use change. She is a NASA-funded PI and author or co-author of more than 40 peer-reviewed journal articles, four book chapters, four data citations, and one NASA Technology Transfer. Jessica is a member of the Arctic Council's Arctic Monitoring and Assessment Programme's Expert Group on Short-Lived Climate Forcers, a U.S. representative to the Intergovernmental Panel on Climate Change (IPCC) Expert Group on Short-Lived Climate Forcers, a contributor to the EU-funded Arctic Black Carbon impacting on Climate and Air Pollution (ABC-iCAP), and has co-developed fire emission methodologies used by the U.S. Environmental Protection Agency for the U.S. Greenhouse Gas Inventory and National Emissions Inventory. In June 2021, prior to joining NASA, Dr. McCarty was invited to testify to the House Science, Space, and Technology Committee of the U. S. House of Representatives Hearing on "The State of Federal Wildland Fire Science: Examining Opportunities for Further Research & Coordination."