



# Environmental Engineering & Sciences

Department of Civil and Environmental Engineering

Spring '24: CEE 595AG Seminar

Friday, January 19, 2024 | 10:00 – 10:50 a.m. CST | 3310 Yeh Center



## AGU Distinguished Lecture Series: Wildfires and Air Quality in a Warming World (Virtual Lecture)

Meeting ID: 989 6051 6746 Passcode: 737728

The world has recently experienced several record-breaking wildfire seasons. In addition to devastating local impacts on people and ecosystems, wildfires are a major source of air pollution. Wildfire smoke influences the composition of the atmosphere over large temporal (weeks) and spatial (continental) scales. Given the sporadic nature of wildfires, understanding the composition of smoke and its impact on people is challenging. The relative importance of wildfires for air quality will grow as climate change exacerbates wildfires and the emissions of other anthropogenic air pollutants decline. Thus, there is an urgent need to understand the composition of wildfire smoke, improve our ability to forecast when and where wildfire smoke will impact people, and help society anticipate and minimize hazards associated with exposure.

We will begin by describing global patterns of wildfire occurrence and then tighten our focus on the U.S. From here, we will talk about how teams of scientists have recently studied the composition of smoke emitted from wildfires and how it evolves in the atmosphere using airplanes, surface air pollution monitoring networks, and satellite measurements. We will discuss how wildfire smoke changes urban air quality, and how wildfires have contributed to recent air quality trends across the U.S. From here, we will touch on how earth scientists can work across disciplines to identify and quantify the health and societal impacts of wildfire smoke exposure. Then, we will look forward. Climate change is having profound impacts on the frequency and severity of wildfires. We will discuss how scientists anticipate wildfires will change in the future. Finally, we will end with a discussion of research needs and challenges for society to adapt to more frequent wildfire smoke.

### Dr. Emily V. Fischer, Associate Professor Dept. of Atmospheric Science at Colorado State University



#### Biography

Dr. Fischer is an Associate Professor in the Department of Atmospheric Science at Colorado State University (CSU). She also is an affiliate faculty member of the CSU School of Global Environmental Sustainability (SoGES).

Dr. Fischer and her group produce and analyze measurements of many different air pollutants. Her recent research efforts have included leading field campaigns to study the composition of wildfire smoke, the emissions from large animal feeding operations, and the impact of oil and gas operations on air quality at various scales. Dr. Fischer's research uses both field-based and applied modeling approaches to investigate the sources of atmospheric trace gases to remote environments. An underlying goal of her work is to improve our understanding of the role of climate in determining the atmosphere's self-cleansing capacity. Her current work explores the processes that redistribute anthropogenic reactive nitrogen to remote regions. Past research focused on the transpacific transport of Asian air pollutants. In addition to her atmospheric chemistry work, Dr. Fischer leads research to identify and test strategies to build more equitable and welcoming educational environments. Her recent work includes leading a mentoring program for undergraduates who identify as women and piloting best practices for preventing sexual harassment in field settings. She is also a founding member of Science Moms, a group of nonpartisan scientists working to demystify climate science and climate solutions.

Dr. Fischer is a recipient of the AGU James B. Macelwane Medal. At CSU her work has been recognized through a Monfort Professorship, an Abel Outstanding Early Career Faculty Award, and an Abell Outstanding Faculty Teaching and Mentoring Award.