Department of Atmospheric and Oceanic Sciences

Earth System & Space Science Poster Conference

Friday, December 8, 2023

Please join us for the keynote seminar of the Earth System & Space Science (ESSS) poster conference, which will be held in **SEEC C120 on Friday, December 8 at 10:30–11:30AM**. This year's keynote speaker will be **Dr. Rebecca Bucholz,** National Center for Atmospheric Research.

Title: **"Fire in the Earth System: interactions between climate, fire and the atmosphere"**

Abstract:

Fires are a major component and highly uncertain aspect of the Earth System. Fire frequency, strength, and evolution, and the resulting emissions and chemistry substantially impacts the atmosphere, as well as the climate through feedback mechanisms. In turn, environmental changes impact an ecosystem's propensity to burn. Direct human-driven changes to both atmosphere and land conditions, combined with changes resulting from a warming planet, influences fire activity. Uncertainty in future fire regimes and the increasing extreme impacts has developed an urgency to understand fires in the Earth System.

This presentation highlights the multiple aspects of the connection between climate and fires, through the lens of atmospheric chemistry applied to regional and global studies. We explore recent extreme fire seasons in the Pacific Northwest using satellite-based remote sensing and global modeling. The increased widespread pollution due to wildfires in North America is examined within the context of a long-term trend. In addition to long-term forcing, climate variability can influence fire and smoke variability, especially in fire-prone regions. Climate-chemistry relationships are shown using statistical modeling between climate modes, such as the El Niño Southern Oscillation (ENSO), and satellite-based observations of atmospheric composition over fire-prone regions. Finally, global modeling of the extreme atmospheric composition perturbation from the Australian 2019/2020 wildfires has implied a large feedback into the climate system, resulting in a hemispheric radiative imbalance and an influence on ENSO magnitude in subsequent years.

About the ESSS Poster Conference

This free conference highlights work by students and postdoctoral scientists conducting research in Earth System & Planetary Science and Space Physics & Engineering. Participants and visitors from CU departments and research institutes, as well as other Front Range schools and organizations, are encouraged to participate. Please email the ESSS Poster Conference Chairs, Dr. Sara Sanchez (sara.sanchez@colorado.edu) and Dr. Xinyue Wang (xinyuew@colorado.edu).