
42-15 - Booth No. 182: DYNAMICS OF DUST IN THE SAN LUIS VALLEY: ANALYZING STORM TRACKS, DUST COMPOSITION AND SOURCE IN THE FACE OF CLIMATE CHANGE



Sunday, September 22, 2024



8:00 AM - 5:30 PM



Hall D (Anaheim Convention Center)

Booth No. 182

Abstract

Dust deposition reduces late season snowpack and alters the timing of snowmelt, negatively affecting late summer baseflows and thus the communities and habitats that rely on snowmelt baseflow. Due to climate change and direct human alteration, vegetation regimes are potentially becoming more vulnerable to wind erosion and dust production. Here, we quantify the dust composition and production around different vegetation regimes in the San Luis Valley, Colorado, and combine with dust event simulations to predict the future trajectory of dust events. The San Luis Valley is an agricultural valley that hosts key wetland habitat, notably supporting annual sand hill crane migrations. We created vegetation transects reflecting different biozones and vegetation structure, and measured dust deposition over a 24-hour period at different heights within each transect. From this, we created a model of dust transport in each biozone and vegetation structure. We combined this with predicted climatic changes and HYSPLIT simulations of forecasted dust events to predict how dust transport will be altered in the future. Our results shed light on the future susceptibility of the San Luis Valley to wind erosion and dust production, with implications for dust deposition and snowmelt timing in the nearby Sangre de Cristo and San Juan ranges.

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