Surface Atmosphere Integrated field Laboratory (SAIL) Campaign Overview

2020 ARM/ASR PI Meeting Warm Boundary Layer Processes Breakout Session

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Uncertainties in atmospheric inputs to watersheds complicate mountainous hydrology research.

SAIL will directly address these uncertainties by working closely with SBR’s Watershed Function SFA to achieve atmosphere-through-bedrock observations.

SAIL will deploy the AMF2 to the East River Watershed near Crested Butte, Colorado from 09/2021 – 06/2023.

Goal: characterize atmospheric processes that impact energy and mass budgets of Upper Colorado River watersheds.
SAIL will have ~34 AMF instruments, including MAOS, Ceilometer, TSI, radiometers and an X-band scanning precipitation radar.
SAIL will characterize processes across seasons.

1. Precipitation: how and how much.
2. Winds: sublimation and snow redistribution.
3. Aerosols: surface and atmosphere radiative impacts
5. Controls on surface fluxes and the surface energy balance.
Surface fluxes change dramatically across seasons.

Springtime evolution of the surface layer, with land-atmosphere and advective fluxes, strongly governs snow-melt dynamics.
Controls on monsoonal precipitation at the northern edge of the North American Monsoon are understudied.

Summer precipitation has outsized impact on Watershed hydrology and gross primary productivity.
The sky-view is limited by complex terrain, with implications for SW and LW radiation. These effects generally are not included in process and earth-system models.
For Discussion

1. What are your science interests in working with SAIL data?

2. Will spatiotemporal heterogeneity impact your science interests? Have you considered how to address heterogeneity?

3. Would you like to do research in spring or summer? What should an IOP include?

For more info, visit https://sail.lbl.gov or email me (drfeldman@lbl.gov)