

CSAFM_01: Land-atmosphere interactions and fluxes in a changing climate and environment

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Session Description

Physical and biological land surface characteristics affect how energy, water, aerosols, and greenhouse gases are exchanged with the atmosphere. Thus, interactions between land surface and atmosphere represent a key component of the climate system. To improve predictions of global and regional air temperature and precipitation changes, a better understanding of the tight coupling between land and atmosphere is needed. Land-atmosphere interactions are sensitive to human activities through human-induced land use and cover change, management practices, and climate change-induced shifts in vegetation structure and composition and disturbance patterns. Observational, experimental and modelling studies can improve our understanding of land-atmosphere interactions. For example, eddy covariance measurements of fluxes of energy and matter help constraining flux dynamics across multiple time scales from hours to years. Ecosystem models and land surface schemes provide powerful tools to explore biophysical and biogeochemical processes underlying land-atmosphere interactions. Their spatial patterns can be analyzed by combining remotely sensed surface temperatures, vegetation properties and indices, and atmospheric greenhouse gas concentrations. How land-atmosphere interactions alter regional climate change pathways can be quantified using coupled climate and Earth system models. This session highlights innovative research of all aspects of land-atmosphere interactions and particularly welcomes contributions at the interface between biogeosciences, hydrology, remote sensing, and atmospheric sciences.

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