

ATS/CIRA Colloquium

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Hosted by Pat Keys

3 p.m. Thursday, January 25
ATS 101 and Zoom

Linking Crops to Global Climate: Agricultural Management in an Earth System Model

Land management practices are widely used to maintain and increase agricultural productivity. While management decisions are often motivated by site-specific efforts to optimize productivity, they also have the potential to alter biogeophysical and biogeochemical properties of the land surface that can alter local to global climate. In this talk, we explore how agricultural management has influenced global food production and altered climate using a state-of-the-art Earth system model. We highlight that industrial fertilization has contributed to nearly half the increase in global food production over the past century and has increased the seasonal cycle of CO₂. Additionally, we illustrate that tall cover crops may contribute to winter warming, but this impact is minimized when cover crops are short. Overall, agricultural expansion and management have greatly increased global food production and have also altered Earth's climate by changing physical and biogeochemical properties of terrestrial ecosystems.

Colloquia page: atmos.colostate.edu/colloquia