

CGD SEMINAR



DATE: Tuesday, 06 February 2018

TIME: 11 a.m.

LOCATION: NCAR, 1850 Table Mesa Drive
Mesa Lab, Main Seminar Room

TITLE: Land BGC and Societal Dimensions WG –
Detecting Global Carbon-Climate
Feedbacks: Recent lessons from NASA
Observations and NCAR Models

SPEAKER: Nicholas Parazoo, NASA JPL

ABSTRACT:

The Grand Challenge of Carbon Cycle Science is to understand how carbon exchange between the land and atmosphere will evolve under future climate change and how this will impact atmospheric CO₂ concentrations. Large pools of carbon stored in soils and in biomass have potential to be released to the atmosphere and accelerate climate feedbacks. Reducing uncertainties in carbon cycle projections requires methods to constrain overall rates of net carbon exchange and component fluxes (photosynthesis, respiration, fires) at planetary scale and detect feedback processes (drought, heat waves, permafrost degradation), especially in tropical and Arctic regions where feedbacks are likely to be largest but where observations are the fewest. NASA observational products provide important constraints on carbon flux processes at regional and global scale over multiple consecutive years, while NCAR models of land surface biogeochemistry enable more detailed process understanding and insight into future change. The combination of the 2015-2016 ENSO and sustained rapid warming in northern high latitudes have provided timely large scale experiments to study carbon dynamics in critical tropical and Arctic regions as observed from recent NASA satellite and airborne missions (OCO-2, CARVE) and predicted by NCAR (CLM4.5). Here, I will summarize recent efforts using atmospheric (CO₂, CO) and vegetation (plant fluorescence) observations to detect feedbacks in tropical and Arctic regions, and discuss plans moving forward for more sophisticated synthesis of satellite, airborne, and tower data with CLM/FATES-DART.

Live webcast: <http://www.fin.ucar.edu/it/mms/ml-live.htm>

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