ABSTRACT

This presentation will focus on two NASA initiatives that are revolutionizing our understanding of the Earth system and how climate and land use change are altering terrestrial ecosystems. The first is the Arctic Boreal Vulnerability Experiment (ABoVE), a NASA-led field campaign taking place across Alaska and western Canada, with a wide range of interdisciplinary science objectives designed to address ecosystem and societal vulnerability to environmental change. The second of 3 phases of ABoVE kicked off in 2019, with a focus on analysis of ecosystem dynamics, ecosystem services and climate feedbacks in Arctic and boreal systems. I will provide an overview of ABoVE, summarizing a diversity of interdisciplinary research efforts partnerships among several major arctic and boreal research, management, and policy initiatives. The second part of my talk will introduce the Global Ecosystem Dynamics Investigation (GEDI), a NASA mission that recently installed a terrestrial ecosystem lidar instrument on the International Space Station (ISS). The GEDI lidar will acquire billions of laser shots at the surface over the earth during its minimum 2-year operational period. These measurements and derived data products will allow the science team to map forest canopy heights, three-dimensional canopy structure, aboveground biomass, and surface topography with unprecedented accuracy. GEDI data products will be useful for a range of science applications with societal benefits, including informing models of carbon and water cycling processes, habitat mapping, and assessments of biodiversity patterns and processes.

BIO

Scott Goetz is a Professor at Northern Arizona University in the School of Informatics, Computing and Cyber Systems (SICCS). He has conducted satellite remote sensing research over the past 30+ years and served on working groups for the IPCC, UN programs on Reducing Emissions from Deforestation and forest Degradation (REDD), the US Global Change Research Program, the US National Academy of Sciences, and interagency programs on carbon cycle science, climate change, and terrestrial ecology. He is currently the Science Lead of NASA’s ABoVE, Deputy principal investigator of NASA’s GEDI, and has authored some 200 publications that have been cited over 23,000 times. He has mentored dozens of early career scientists and graduate students, is a past Fulbright Scholar, Deputy Director of the Woods Hole Research Center, executive board member of Environmental Research Letters, and associate editor of JGR Biogeosciences and Remote Sensing of Environment.