



AEROSPACE ENGINEERING SCIENCES

Seminar



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Between Earth and Space: Data Assimilation and Predictability of the Aerospace Environment

The Earth's upper atmosphere is a critical juncture between the Earth and space. Both space and terrestrial weathers impact its conditions, which in turn affect a number of modern technologies and infrastructures, including satellite, aircraft and spacecraft operations as well as telecommunication, navigation and positioning. To fully address the predictability of the aerospace environment seamlessly from the Earth's surface to the edge of space, it is important to systematically integrate observations into an Earth-geospace system model through data assimilation. The state estimation problem at hand is often challenged by the high-dimensionality and nonlinearity of dynamical systems as well as by the high volume of observational data. This talk will demonstrate how unobserved upper atmosphere states can be inferred from remote sensing observations such as from GPS receivers on the low Earth-orbiting platforms and FUV imagers at geostationary orbit, and how upper atmosphere predictability can be extended through data assimilation.

Tuesday, April 19, 2016

10:00 am

Onizuka Conference Room

TOMOKO MATSUO is a Scientist III at CU-Boulder's Cooperative Institute for Research in Environmental Science (CIRES) and NOAA's Space Weather Prediction Center. As a Principal Investigator with funding from the NSF, NASA, AFOSR and AFRL, she has developed original and independent research programs centered on data assimilation of remote sensing data of the Earth's upper atmosphere and near-Earth space. Because of the interdisciplinary nature of data assimilation research, she collaborates widely across academic boundaries with space physicists, atmospheric scientists, engineers and statisticians. Before joining CIRES and SWPC, she was at NCAR's Institute for Mathematics Applied to Geosciences as a postdoc. She has a PhD in Atmospheric Sciences from SUNY Stony Brook, and Master's and Bachelor's degrees in Physics from Nagoya and Hokkaido Universities in Japan.