

MAMS Department Colloquium

Date/Time: Friday, October 9, 2015 at 3:00 p.m.

Location: Yost Hall Room 306

Speaker: Amy Braverman (Principal Statistician, Jet Propulsion Laboratory, California Institute of Technology)

Hosted by Jenný Brynjarsdóttir

Title: Uncertainty Quantification for NASA's Orbiting Carbon Observatory 2 Mission

Abstract: NASA's Orbiting Carbon Observatory 2 (OCO-2) was launched last July, and has been collecting data on carbon dioxide concentrations in Earth's atmosphere ever since. OCO-2 observes spectral radiances at 3048 wavelengths on ground footprints that are approximately 1 square km. These radiances are used to infer CO₂ concentration through a procedure called a retrieval. The OCO-2 retrieval is based on Bayes' Theorem, and provides estimates of the posterior mean and variance of total column CO₂ concentration, given the observed radiances, in each footprint. However, various conceptual and computational approximations are required in order to implement the procedure in an operational environment. Uncertainty quantification for OCO-2 seeks to quantify the statistical performance of the calculated posterior mean and variance as estimators of the true posterior quantities. This talk presents our approach and some preliminary results of our analysis.