Department of Atmospheric Sciences
Seminar Announcement

Department of Atmospheric Sciences, S.O.E.S.T., University of Hawai'i at Mānoa
2525 Correa Road, HIG 350; Honolulu, HI 96822 ☎956-8775

Comparing and combining process-based crop models and statistical models with some implications for climate change

Professor Michael J. Roberts
Department of Economics
University of Hawai'i at Mānoa

Date:	**Wednesday, March 14, 2018**
Refreshments:	**3:00pm at MSB courtyard**
	Free Cookies, Coffee & Tea Provided
	(Please Bring Your Own Cup)
Seminar Time:	**3:30pm**
Location:	**Marine Sciences Building, MSB 100**

Abstract:

We compare predictions of a simple process-based crop model (Soltani and Sinclair 2012), a simple statistical model (Schlenker and Roberts 2009), and a combination of both models to actual maize yields on a large, representative sample of farmer-managed fields in the Corn Belt region of the United States. After statistical post-model calibration, the process model (Simple Simulation Model, or SSM) predicts actual outcomes slightly better than the statistical model, but the combined model performs significantly better than either model. The SSM, statistical model and combined model all show similar relationships with precipitation, while the SSM better accounts for temporal patterns of precipitation, vapor pressure deficit and solar radiation. The statistical and combined models show a more negative impact associated with extreme heat for which the process model does not account. Due to the extreme heat effect, predicted impacts under uniform climate change scenarios are considerably more severe for the statistical and combined models than for the process-based model.