CGD SEMINAR

NCAR

DATE: Tuesday, 27 November 2018

TIME: 11 a.m.

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

TITLE: The feedback of hurricane cold wakes on tropical cyclones

SPEAKER: Kristopher Karnauskas, CU Boulder

ABSTRACT:

Hurricanes are frequently observed to cause negative sea surface temperature (SST) anomalies by vertical mixing, evaporative heat flux and other processes. So–called cold wakes, which follow closely the tracks of intense tropical cyclones (TCs) throughout their mature life cycle, can be substantial in terms of spatial extent, amplitude and persistence. It has long been surmised that cold wakes left behind by intense TCs may reduce the likelihood of subsequent TC development. Neither this hypothesis, nor the possibility of non-local effects of cold wakes on TCs, has been rigorously tested. Here we employ a unique modeling framework combining an atmospheric general circulation model (AGCM) and a TC downscaling model to explore the feedback of cold wakes on subsequent TC tracks and intensities. First, realistic SST anomaly fields are derived from high–resolution satellite observations and used to perturb the boundary forcing in AGCM simulations. Then, the TC downscaling model is run with different combinations of SST forcing (with and without the presence of cold wakes) and large–scale atmospheric parameters (as perturbed and not perturbed by cold wakes). We are thus able to estimate the net impact of cold wakes on TCs, while disentangling the contribution of locally cooler SSTs from that of remotely–driven atmospheric anomalies.

Live webcast: http://ucarconnect.ucar.edu/live

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