MMM SEMINAR SERIES

Pathways Connecting Physics and Climate Resilience

James Done
NCAR/MMM

As populations increase in hazard-prone regions, the human, cultural and economic costs rise, and will continue to rise in the future. The likely scenario of the weather and climate hazards themselves changing in the future will compound the problem. A transformation of how weather and climate risk is assessed and integrated with risk management practice is needed for society to confront this new era of weather and climate risk. Bringing physics to bear on risk assessment has the potential to transform our understanding of weather and climate risk. Furthermore, physically based risk assessments that are informed by risk management practice are a potentially powerful component of climate resilience. Three recent examples will be presented to illustrate the flow between physically based weather and climate risk assessments and community action.

The first example is the development of a terrain-aware tropical cyclone wind probability assessment at the global scale. In collaboration with a reinsurance broker, an approach to modeling tropical cyclone wind footprints is developed by fitting a parametric wind field model to historical and synthetic cyclone track data, and bringing the winds down to the surface using a 3-dimensional numerical boundary model, accounting for terrain and surface roughness effects. The new wind probability assessments are being used to understand inland wind risk in regions of complex topography, and assess public and private risk management strategies in regions of sparse historical data. The second example explores how the relationship between residential losses and hurricane winds is modified through building codes. Adherence to the Florida building code drives down losses by up to 70%, and the code is cost-effective with a return on investment after 12 years under current climate. The final example explores the role of decadal climate predictions in water resource and flood risk management. The multi-disciplinary UDECIDE (Understanding Decision-Climate Interactions on Decadal Scales) project combines statistical and physical assessments of climate prediction skill with data from interviews with managers to identify intersections at the decadal scale in support of effective management.

This seminar will be webcast live at:
http://ucarconnect.ucar.edu/live
Recorded seminar link can be viewed here:
https://www.mmm.ucar.edu/events/seminars

Thursday, 3 August 2017, 3:30 PM
Refreshments 3:15 PM
NCAR-Foothills Laboratory
3450 Mitchell Lane
Bldg. 2, Small Seminar Room 1001