ATS/CIRA Colloquium

Robert Hart

Visiting ATS from the Department of Earth, Ocean, and Atmospheric Science, Florida State University

Two perspectives on meteorological history: Academic family trees and Fujiwhara-enhanced U.S. TC landfall

Hosted by FORTCAST

Friday, October 25, 2013

ATS room 101; Discussion will begin at 11:15am
Refreshments will be served at 10:45am in the weather lab

As part of the American Meteorological Society's 30th Conference on Hurricanes and Tropical Meteorology in Ponte Vedra Beach, Florida, in April 2012, an academic lineage ("family tree") of that community was presented to document the history of contributors to the field on the anniversary. For every self-identified or colleague-identified tropical meteorology scientist, the year of the person's most senior degree, major professor or mentors of that degree, and institution of that degree were documented and graphically presented. This information was supplemented through mining of websites, libraries, news and journal articles, obituaries, and other various historical archives. The first third of this seminar documents the genesis of the family tree, the overall history represented by it, some statistics represented by the latest incarnation, colorful personal stories that have come forward during its development, plans for its expansion to the broader meteorology community – and the critical role of Colorado State University in forming that foundation.

Motivated by the recent case of Hurricane Sandy, the second part of the seminar is dedicated to the discussion of the role that vortex interaction (first named by Fujiwhara and conceptualized by Lander and Holland in 1993) plays in enhancing U.S. East Coast TC landfall risk – whether by TC-TC interaction or by TC-Extratropical Cyclone Interaction. The classic historical examples of such interaction are given by the 1893 New York City hurricane and the 1938 New England Hurricane (or more recently, Hurricane Sandy), respectively. An overview of the anomalous motion induced by Fujiwhara interaction is first presented, succeeded by a climatology of vortex interaction for the Atlantic basin, followed by a quantification of the anomalous landfall risk induced by such interaction, and concluding with a summary and physical interpretation of WRF-ARW simulations of the three cases mentioned previously. The overall influence on U.S. landfall risk of such cases is summarized within the perspective of stochastic event sets, which are the voluminous collectives of hypothetical TCs produced by the reinsurance industry to quantify the broader TC risk starting from a relatively and unsatisfyingly short (one-century) historical record.

Link to colloquium videos and announcement page: http://www.atmos.colostate.edu/dept/colloquia.php