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F.L. Castleman, Room 212

"A numerical weather model's ability to predict the characteristics of aircraft icing environments"

By

Dr. Greg Thompson

Project Scientist, National Center for Atmospheric Research

Abstract:
Recent advances in high-performance computing have enabled higher-resolution numerical weather models with increasingly complex data assimilation and more accurate physical parameterizations. With respect to aircraft and ground icing applications, a weather model's cloud physics scheme is responsible for the direct forecasts of the water phase and amount and is a critical ingredient to forecasting future icing conditions. In this talk, numerical model results using the Weather Research and Forecasting (WRF) model are compared with aircraft observations taken during icing research flights and operational icing pilot reports (PIREPs), and the general characteristics of liquid water content, median volume diameter, droplet concentration, and temperature within aircraft icing environments were evaluated. The comparison reveals very promising skill by the model in predicting these characteristics consistent with observations. In addition to the explicit icing application, a ten-year analysis of

surface weather conditions reveals good skill for many types of weather situations but also reveals areas that can still be improved.

Bio:

Dr. Thompson grew up in Baltimore, Maryland. He received a Bachelor's Degree in Meteorology from Penn State in 1990, then a Master's Degree in Atmospheric Science from Colorado State Univ in 1993, and a Ph.D. degree in Atmospheric and Oceanic Sciences from Univ of Colorado in 2016. The primary focus of his research has been numerical weather modeling, particularly the parameterization of cloud physics and precipitation processes. In collaborations over the last few years, he developed a bulk microphysical parameterization for use in WRF, COAMPS, NEMS, and other mesoscale models consisting of a two-moment representation of cloud water, rain, and cloud ice plus one-moment prediction of snow and graupel. More information can be found at: http://www.rap.ucar.edu/~gthompsn/.