Strategies for Utilizing SHOUT Rapid Response Global Hawk observations for Improving and Augmenting Hurricane track and Intensity Forecasting

Peter G Black[1], Robbie Hood[2], Vijay Tallapragada[3], Avichal Mehra[3], Jason Sippel[4] and Holger Voemel[5]

Peter.black@noaa.gov

[1]Unmanned Systems Division, Cherokee Nation Technologies, LLC supporting NOAA UAS Program Office, Salinas, CA; [2]NOAA/ OAR/ UAS Program Office, Silver Spring, MD; [3]NOAA/NWS/NCEP/EMC Global Climate and Weather Modeling Branch, College Park, MD; [4]NOAA/AOML Hurricane Research Division, College Park, MD/ Miami, FL; [5]NCAR Earth Observing Laboratory, Boulder, CO

Flight tracks from several Global Hawk flights from 2012-2016 during hurricane flights relative to feature identification and timing have been reviewed for: 1) HS3 and 2) SHOUT Hurricane Rapid Response projects. This evaluation is being driven by a shift in high-altitude Global Hawk use from a research platform to an operational platform. An agenda item is proposed for development of an Operational Demo project to evaluate a range of forecast improvements, especially intensity improvements, which preliminary analysis suggest may be as much as 20%. This review suggests that improvements in feature structural definition and model impact can be anticipated based upon use of new NCAR NRD-94 'minisonde' technology as well as flight pattern alignment relative to: 1) supporting aircraft and satellite data coverage, 2) feature orientation, 3) feature motion, 4) environmental wind shear as well as phasing relative to: i) anticipated intensity change times, ii) feature diurnal variation and iii) model Data Assimilation time/ duration. The importance of these considerations vs issues such as observational focus on predicted high uncertainty regions in various ensemble model guidance will be discussed.