

## P1.70 COMPARISON OF GPS-SONDE OBSERVATIONS AND SURFACE DATA: AN UPDATE

Samuel H. Houston\*

Department of Meteorology, University of Hawaii at Manoa, Honolulu, Hawaii

Peter P. Dodge, Jr.

NOAA/AOML, Hurricane Research Division, Miami, Florida

The Global Position System (GPS) dropwindsondes (GPS-sondes), described by Hock and Franklin (1999), have been launched in several tropical cyclones (TCs) from aircraft by the Hurricane Research Division (HRD) of NOAA since 1996. During TC landfall missions conducted by HRD, some of these GPS-sondes were intentionally dropped in the vicinity of National Data Buoy Center (NDBC) platforms that have reliable and very accurate measurements of surface atmospheric conditions. These data include air temperature, surface pressure and wind speed and direction. In addition, many of these NDBC platforms recorded surface oceanic parameters, such as sea surface temperature and ocean wave and swell characteristics. The NDBC platforms have historically performed very well under the extreme conditions that occur in severe oceanic storms, including TCs. The NDBC observations of atmospheric conditions were available for comparison with high-resolution vertical profiles of winds, temperature and pressure that were made by the GPS-sondes dropped nearby.

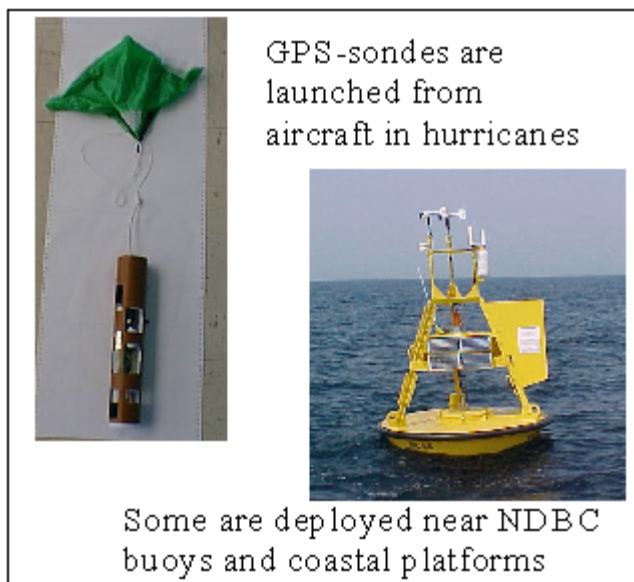
The previous study by Houston et al. (2000) that provided comparisons between GPS-sondes and NDBC platforms using 1998-99 TCs was based on only 26 cases. Despite this rather small sample number, the comparisons of GPS-sonde near surface temperatures and pressures were very close (within 1 °C and 1 mb, respectively) with a relatively small variance. However, the wind speed measurements showed a great deal of variability.

This paper will present an update of new statistics using the additional GPS-sonde measurements that have been made in TCs near NDBC platforms during the 2000-03 Atlantic hurricane seasons. In addition, several "GPS-sondes of opportunity" were launched by the U.S. Air Force Reserves reconnaissance aircraft in the vicinity of NDBC platforms. These cases were also added to the

\*Corresponding author address: Sam Houston, Central Pacific Hurricane Center, NWS/NOAA, 2525 Correa Rd., Suite 250, Honolulu, HI 96822,

e-mail: [sam.houston@noaa.gov](mailto:sam.houston@noaa.gov)

statistics. The results of statistics performed on the larger sample of comparisons of surface winds for the 1996-2003 hurricane seasons will be presented.



Acknowledgments. The first author is being supported at the University of Hawaii at Manoa under the NWS University Assignment program. Special thanks to Steve Feuer of HRD for providing archived GPS-sonde data.

### REFERENCES

Hock, T.R., and J.L. Franklin, 1999: The NCAR-GPS dropwindsonde. *Bull. Amer. Meteor. Soc.*, **80**, 407-420.

Houston, S. H., P.P. Dodge, M.D. Powell, M.L. Black, G.M. Barnes, and P.S. Chu, 2000: Surface winds in hurricanes from GPS-sondes: Comparisons with observations. *Preprints: 24<sup>th</sup> A.M.S. Conference on Hurricanes and Tropical Meteorology*, 29 May - 2 June 2000, Fort Lauderdale, FL, 339.