

Abstract Submitted  
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**Development and Testing of a 360 Differential Pressure Gust Sensor for Extreme Weather Environments** ANDREW COLE, RANNOCK THOMAS, TAYLOR MITCHELL, VICTORIA NATALIE, JAMEY JACOB, Oklahoma State University, SEAN WAUGH, NOAA — Measuring rapidly fluctuating high wind speeds and direction in extreme weather environments such as hurricanes and severe storms proves difficult with current sensors. For example, mechanical anemometers do not provide sufficient response time to detect micro-gusts and ultrasonic anemometers are quickly obscured by rain and other particles, and all are susceptible to damage from hail and debris. This presentation details the development and testing of a 360 gust probe using differential pressure sensors. Similar in concept to a multi-hole pitot or boundary layer probes, this circular probe is surrounded by multiple inlets connected to pressure sensors whose differential readings provide high-speed wind magnitude and vector results. The probe is equipped with a purge system to vent water and debris from the inlets and its small size and rigid construction make it damage resistant, creating a system uniquely suited to capture data in an environment that was previously unavailable. Results of wind tunnel and field tests of the system are presented.

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