

Hurricane Imaging Radiometer

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The Hurricane Imaging Radiometer (HIRAD) is a synthetic thinned array passive microwave radiometer designed to allow retrieval of surface wind speed in hurricanes, up through category five intensity. The retrieval technology follows the Stepped Frequency Microwave Radiometer (SFMR), which measures surface wind speed in hurricanes along a narrow strip beneath the aircraft. HIRAD maps wind speeds in a swath below the aircraft, about 50-60 km wide when flown in the lower stratosphere. HIRAD has flown in the NASA Genesis and Rapid Intensification Processes (GRIP) experiment in 2010 on a WB-57 aircraft, and on a Global Hawk unmanned aircraft system (UAS) in 2012 and 2013 as part of NASA's Hurricane and Severe Storms Sentinel (HS3) program. The GRIP program included flights over Hurricanes Earl and Karl (2010). The 2012 HS3 deployment did not include any hurricane flights for the UAS carrying HIRAD. The 2013 HS3 flights included one flight over the predecessor to TS Gabrielle, and one flight over Hurricane Ingrid.

This presentation will describe the HIRAD instrument, its results from the 2010 and 2013 flights, and potential future developments.