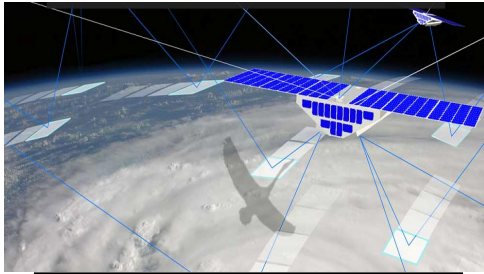
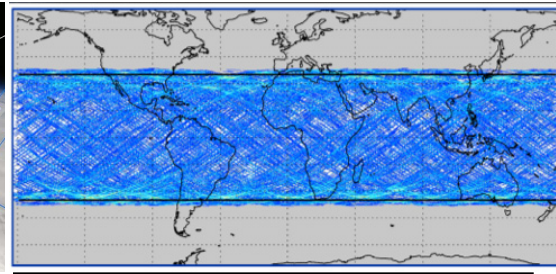


GNSS Reflectometry for Wind Sensing

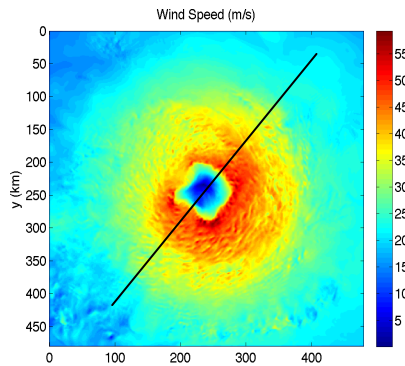
PI: Joel Johnson and Andrew O'Brien, The Ohio State University
Sponsor: NASA (Chris Ruf, University of Michigan is Prime)



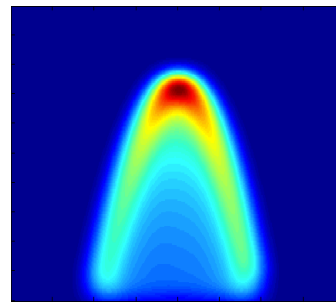
CYGNSS Satellite Constellation



1 Day Coverage of CYGNSS Constellation



Simulated Hurricane (NOAA)



Simulated CYGNSS DDM Measurement

We are a member of the Science Team working on NASA's Earth Science Pathfinder Mission called CYGNSS (Cyclone-GNSS). The objective of the mission, which launches in October 2016, is to measure all-weather global wind speeds and probe key air-sea interaction processes in the inner core of hurricanes. CYGNSS will be a constellation of eight LEO microsattellites (~5.5 feet) equipped to receive both direct and reflected L1 band GPS civilian signals. Note that the reflected signals from oceans are correlated with sea surface roughness from which wind speed can be retrieved. Each satellite signal will be capable of measuring four satellite reflections, resulting in 32 wind speed measurements per second across the globe. Thus, CYGNSS will provide wide coverage of the earth surface with high spatial and temporal resolution. We are responsible for assembling an end-to-end simulator to verify that the instrument will meet science mission requirements, and we support the engineering team with test signal generation to be used during integration and testing and on-orbit validation.

Further Reading:

Cyclone Global Navigation Satellite System (CYGNSS) Home Page at "<http://aoss-research.engin.umich.edu/missions/cygnss/>"

Ruf, C., A. Lyons, M. Unwin, J. Dickinson, R. Rose, D. Rose and M. Vincent, "CYGNSS: Enabling the Future of Hurricane Prediction," IEEE Geosci. Remote Sens. Mag., Vol. 1, No. 2, 52-67, doi: 10.1109/MGRS.2013.2260911, 2013.