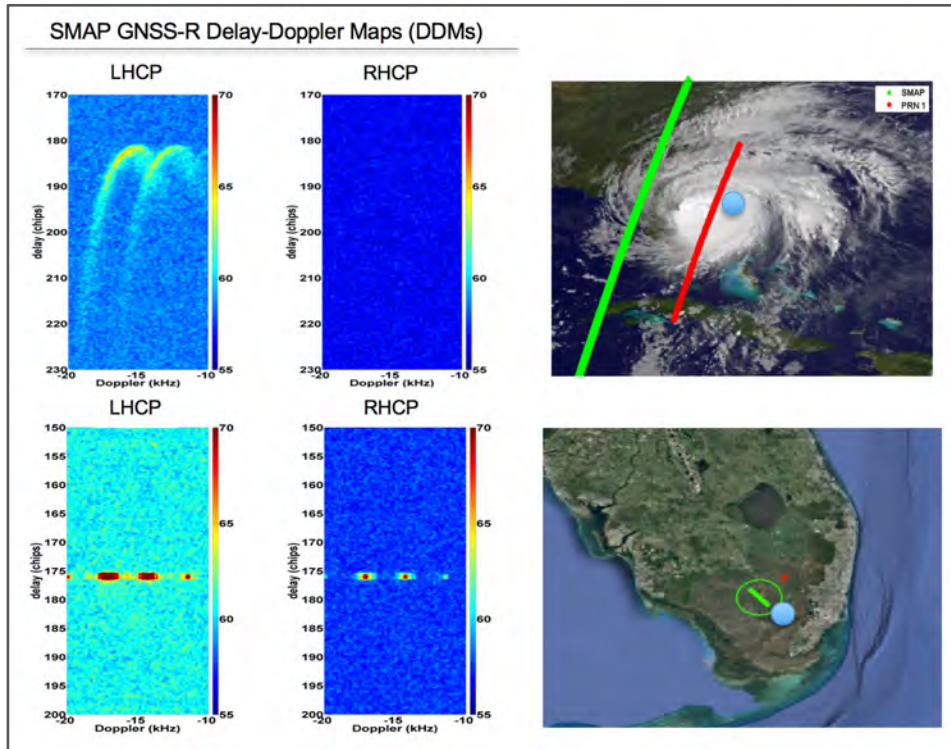


SMAP Provides a Unique Opportunity to Investigate Advanced GNSS Reflectometry Techniques



GPS Reflections observed from SMAP over the eye of Hurricane Matthew (top) and wetlands in the Everglades (bottom).

Problem: GNSS-Reflectometry utilizes GNSS signals reflected from the Earth's surface to perform remote sensing, but current spaceborne instruments, such as NASA's CYGNSS Mission, have limitations.

Finding: The high-gain, dual-polarized antenna on SMAP can observe phenomena that other GNSS-R instruments cannot. The raw signal data allows investigation into new processing techniques. The polar orbit allows novel GNSS-R investigations of the cryosphere

Impact: Results are motivating changes to future GNSS-R instrument designs, since SMAP GNSS-R measurements show new science observables are possible [1-2].

Buchanan, O'Brien, 2017: Investigation of spaceborne polarimetric GNSS-R using the SMAP radar instrument," IEEE International Geoscience and Remote Sensing Symposium IGARSS.

Buchanan, O'Brien, Johnson,, 2017: GNSS-R carrier phase measurements using the SMAP radar, GNSS+R Workshop.