



AGU Fall 2020

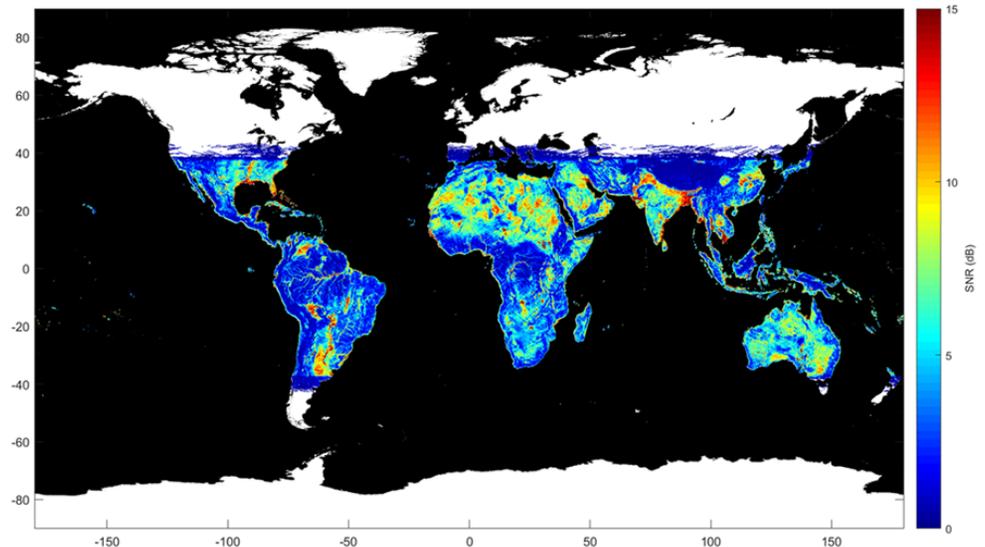
H107. Remote Sensing, Modeling and Data Assimilation of the Terrestrial Water Cycle

Remote Sensing of the Terrestrial Water Cycle with the Cyclone Global Navigation Satellite System (CYGNSS)

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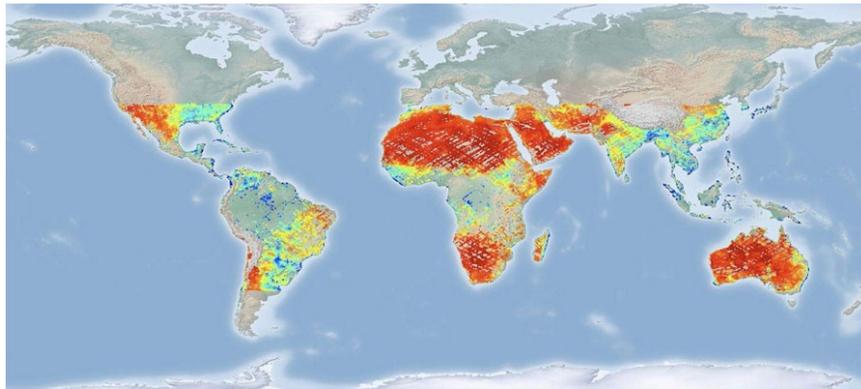
- CYGNSS consists of 8 microsatellites carrying radar receivers measuring GPS signals scattered from by surface
 - Retrieve ocean surface wind speed from roughening, similar to traditional radar scatterometry
 - Measure soil moisture from dielectric constant, similar to traditional microwave radiometry
 - Map inland water body extent from coherent reflections by calm water





Terrestrial Measurement Capabilities

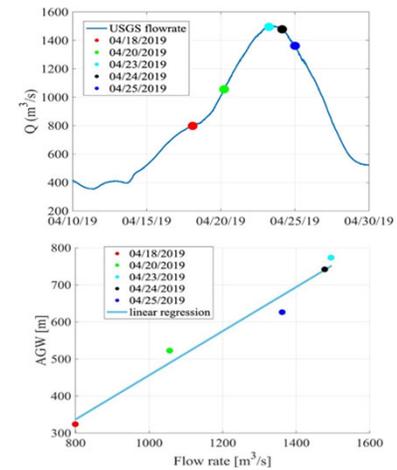
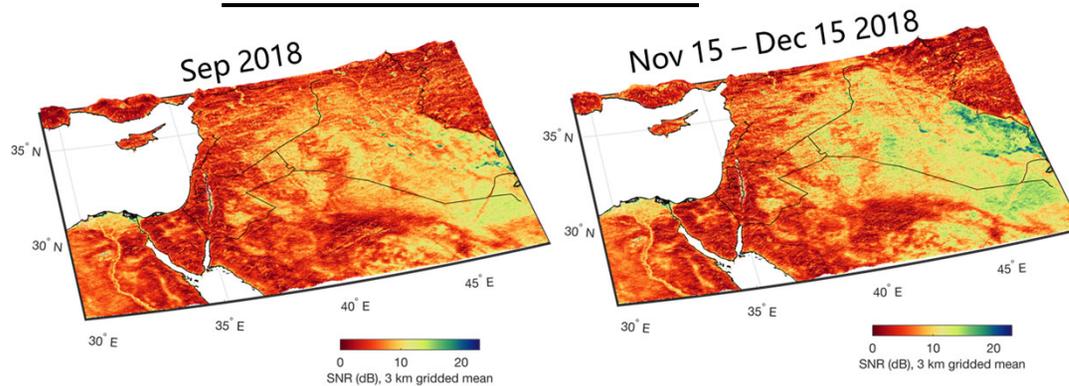
Soil Moisture



River Flow Rate



Flood Inundation





Summary

- CYGNSS was launched on 15 Dec 2016
 - All eight spacecraft and GNSS-R science payloads are performing nominally with global coverage between 38S and 38N latitude and typically 2-3 regional revisits per day
 - Measurements over land enable:
 - Soil moisture measurements
 - Inland water extend (e.g. flood inundation)
 - River flow rate (via river width)
 - For more information: Chris Ruf <cruf@umich.edu>
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