

AirSWOT: the SWOT Cal/Val Platform

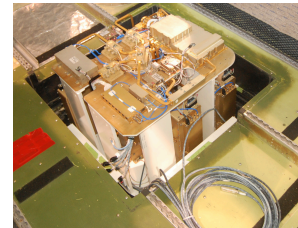
PI: Ernesto Rodriguez, JPL

Objective

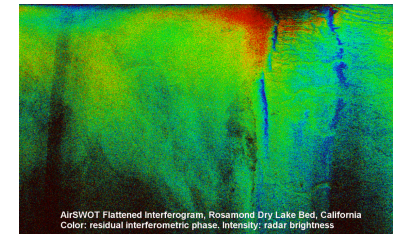
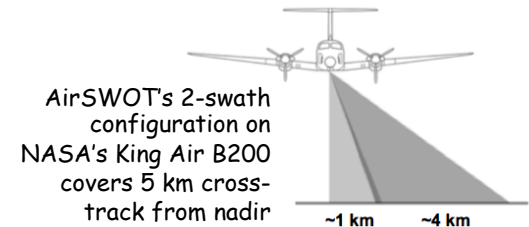
- Develop AirSWOT, the airborne Calibration/ Validation (Cal/Val) platform for the Surface Water and Ocean Topography (SWOT) mission, by building on subsystems developed previously under a NASA SBIR task
- Demonstrate the performance of AirSWOT by laboratory tests and deployment on a NASA aircraft



AirSWOT antenna subsystem mounted on King Air B200 aircraft.



AirSWOT electronics subsystem mounted on King Air B200 aircraft.



AirSWOT's interferometric image of Rosamond Dry Lake Bed, California.

Accomplishments

- Built a first-ever airborne Ka-band SAR interferometer for high accuracy surface elevation measurements of ocean and terrestrial water bodies for supporting the development of the NASA Decadal Survey SWOT Mission
- Developed loop-back calibration capabilities for sampling of each transmitted waveform on each of the 6 receive channels
- Demonstrated the capabilities of dual-swath interferometric data collection, data rate (100 MB/s) and data storage (350 GB per data hour); and verified the required phase error performance of < 0.5 deg
- Integrated AirSWOT onto NASA King Air aircraft and successfully carried out two engineering test flights over both the land and coastal ocean. The deduced surface elevation data after preliminary calibration demonstrated excellent agreements with widely used digital elevation map and in-situ measurements
- Poised to be the facility airborne instrument for providing the needed data for SWOT elevation retrieval algorithm development

Co-Is/Partners:

Delwyn Moller, Remote Sensing Solutions

TRL_{in} = 3

TRL_{out} = 6