

National Aeronautics and  
Space Administration

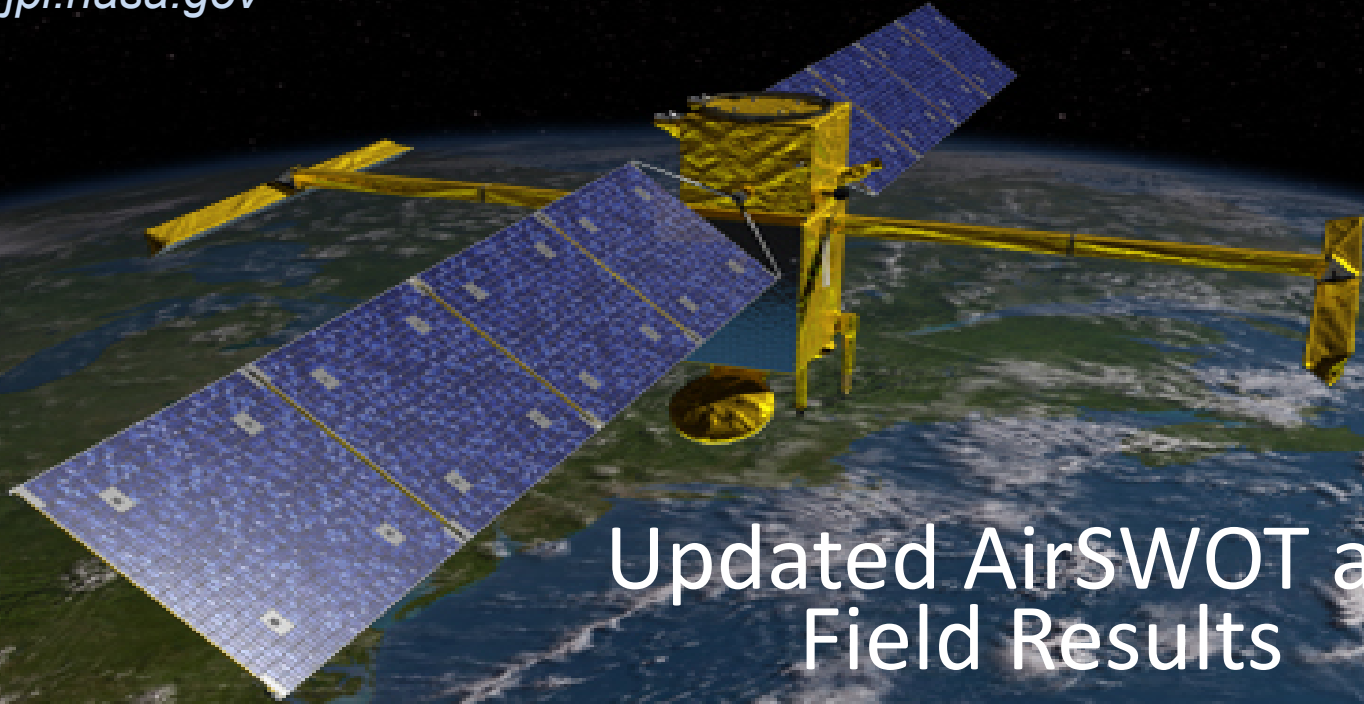
Jet Propulsion Laboratory  
California Institute of Technology  
Pasadena, California



# Surface Water and Ocean Topography (SWOT) Mission

June 26-29, 2017

<http://swot.jpl.nasa.gov>



## Updated AirSWOT and Field Results

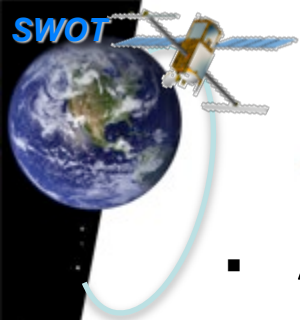
J. Toby Minear



# Outline



- Past AirSWOT flights and results
- AirSWOT flights this summer (2017)
  - NASA ABoVE and AirSWOT
- Future AirSWOT flights (2018)



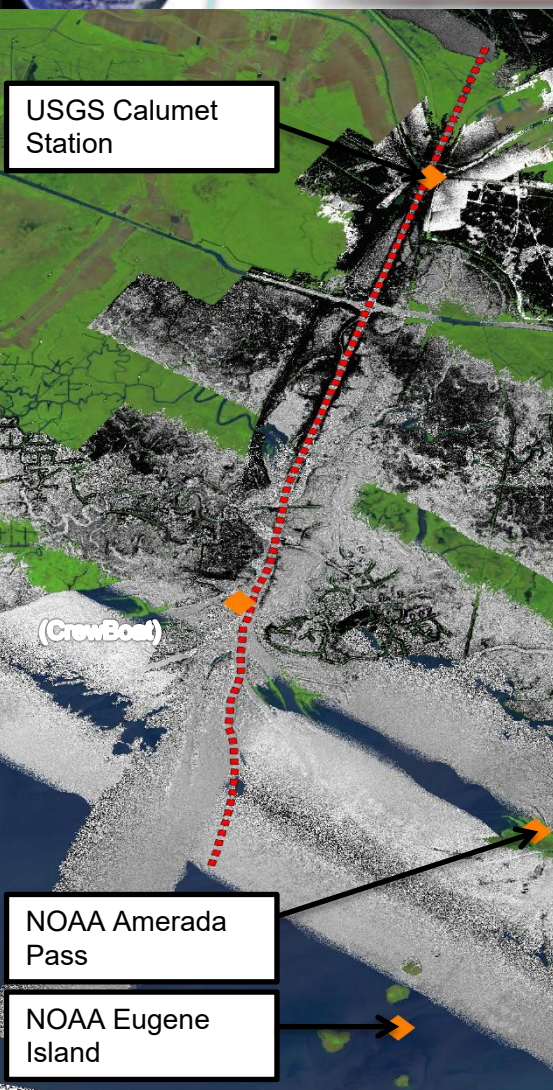
# Past AirSWOT flights



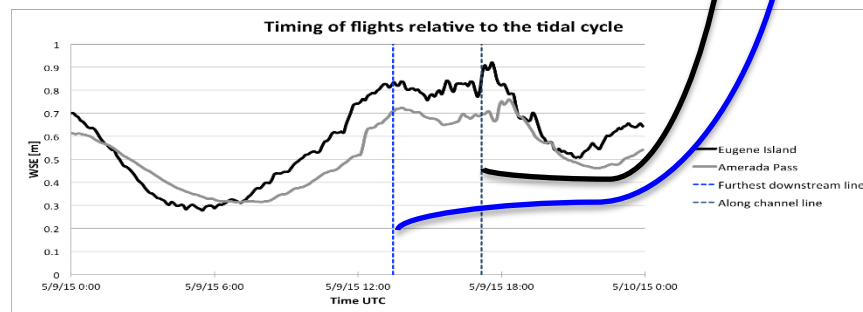
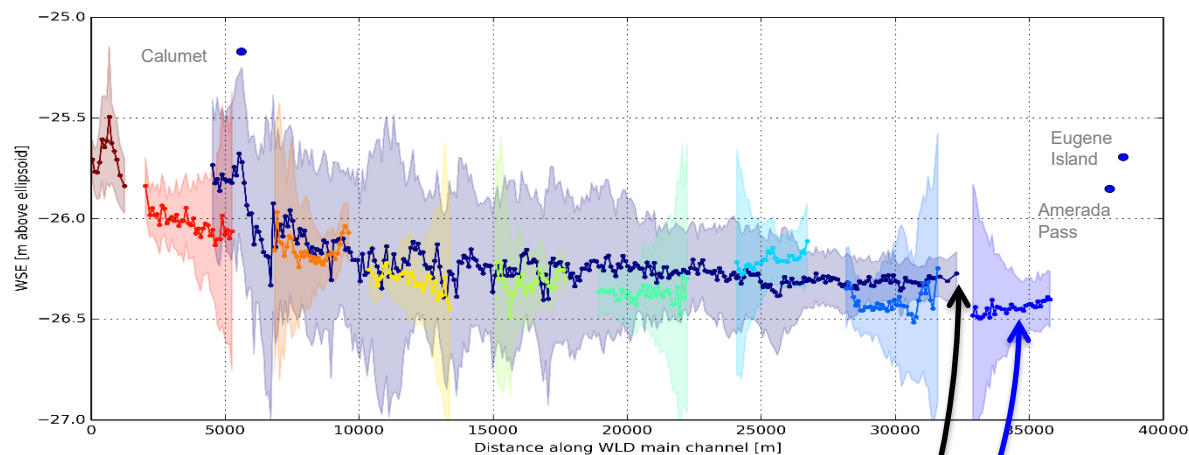
- Atchafalaya Delta :: May 2015
- Sacramento/Willamette Rivers :: March 2015
- Tanana River :: June 2015
- Recent data available for Yukon Flats :: June 2015
  
- Several papers submitted on the following results



# AirSWOT 2015 Results



## WSE along the Wax Lake Delta – Crossover lines

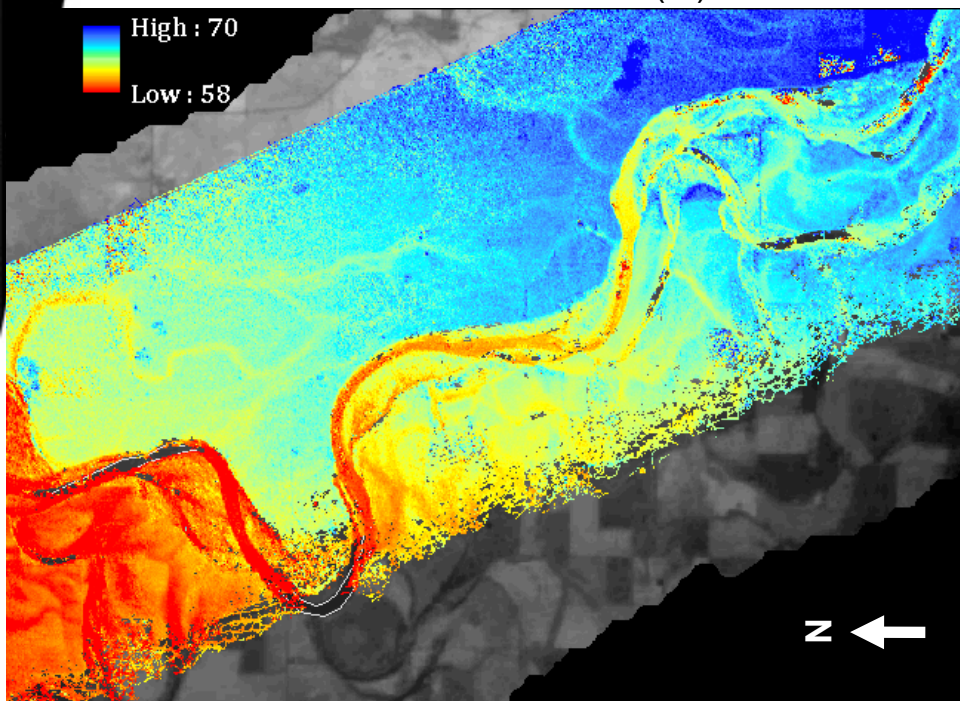




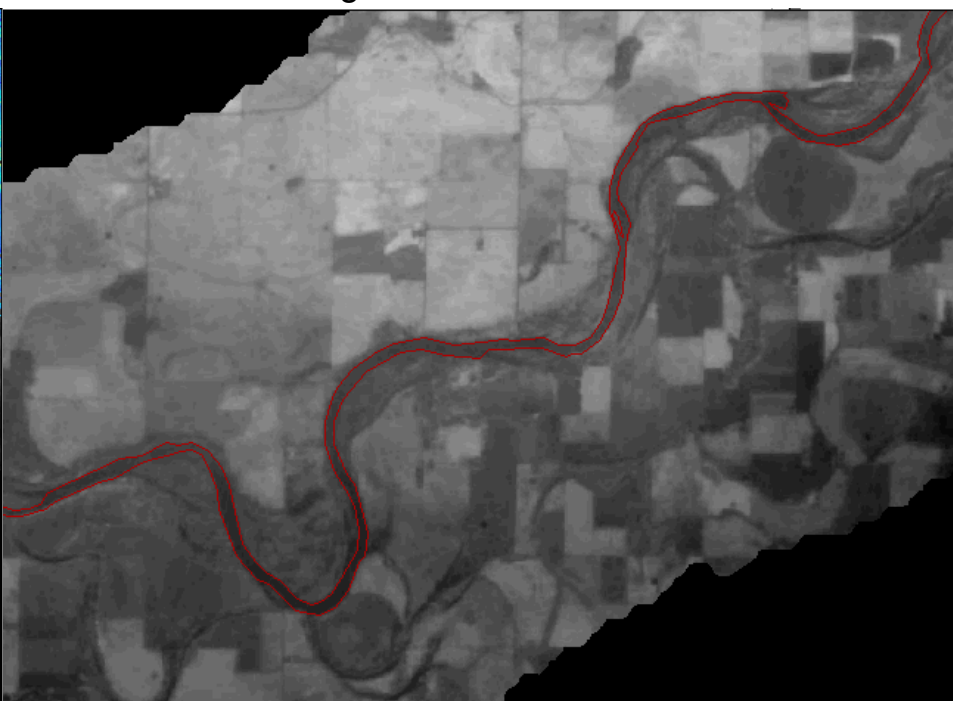


## Willamette River

AirSWOT elevation raster (m)



Orthoimage & river mask from NIR camera



Slides Courtesy S. Tuozzolo, Ohio State

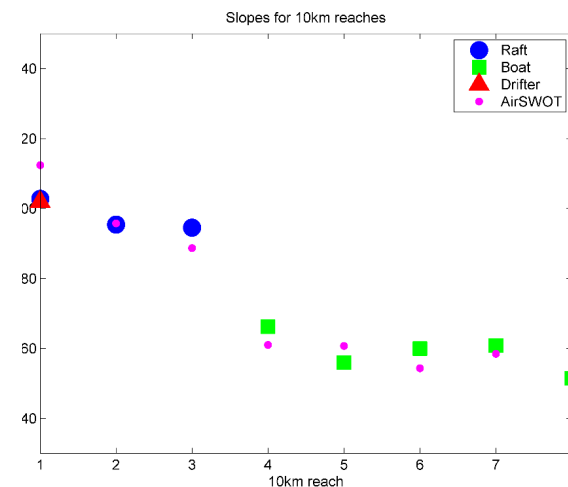
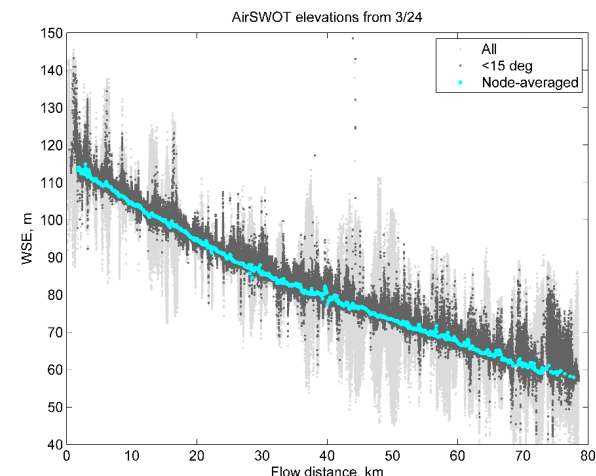
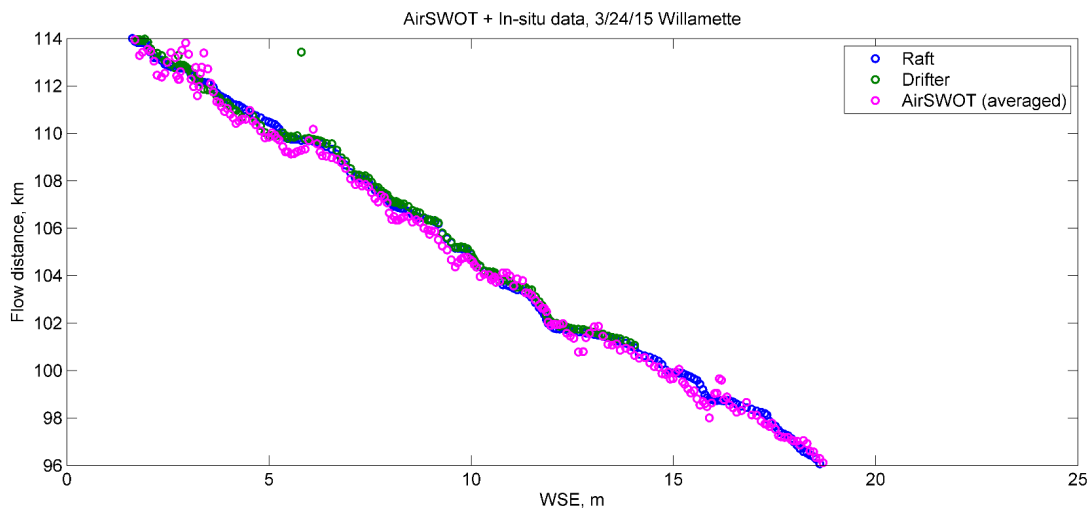


# AirSWOT 2015 Results



## In-situ and AirSWOT WSE data for Willamette

- In-situ WSE data from GPS drifter, GPS-mounted raft & motorboat, and surveyed level loggers
- Currently one day of processed AirSWOT data

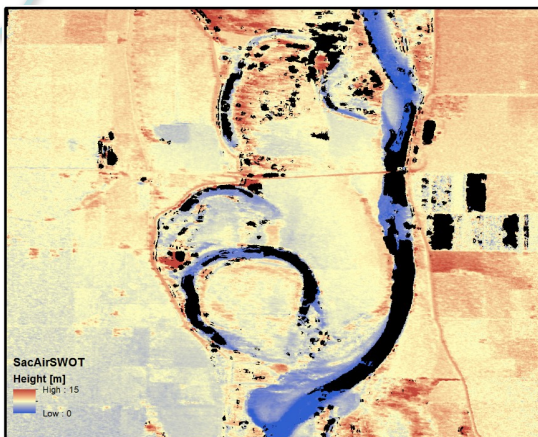




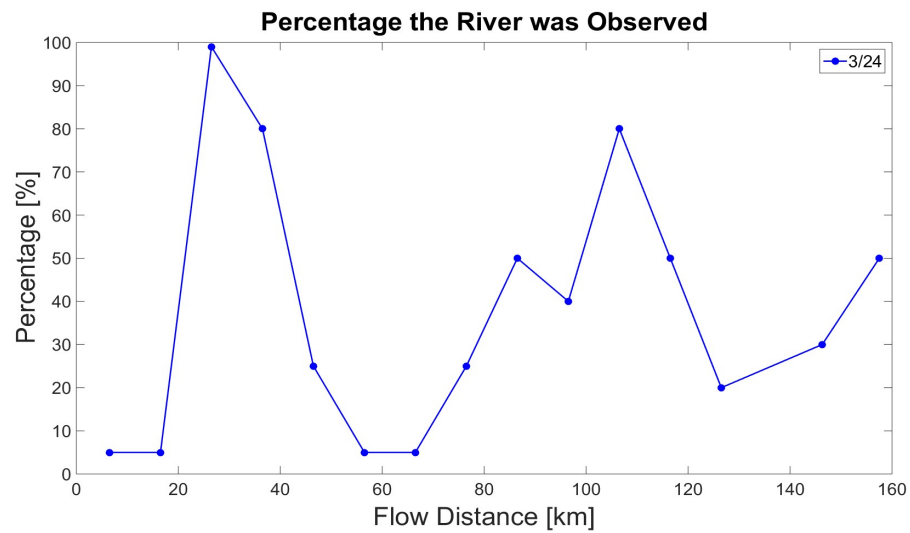
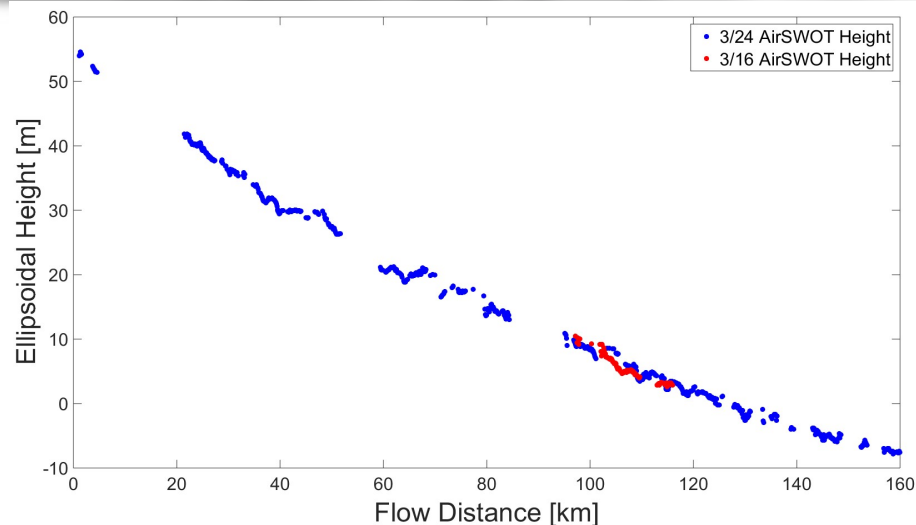
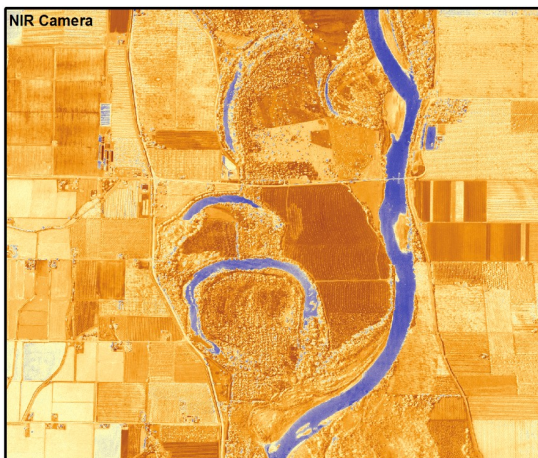
# AirSWOT 2015 Results



Sacramento River AirSWOT data with dark water



NIR Camera Data will be used for better dark water characterization



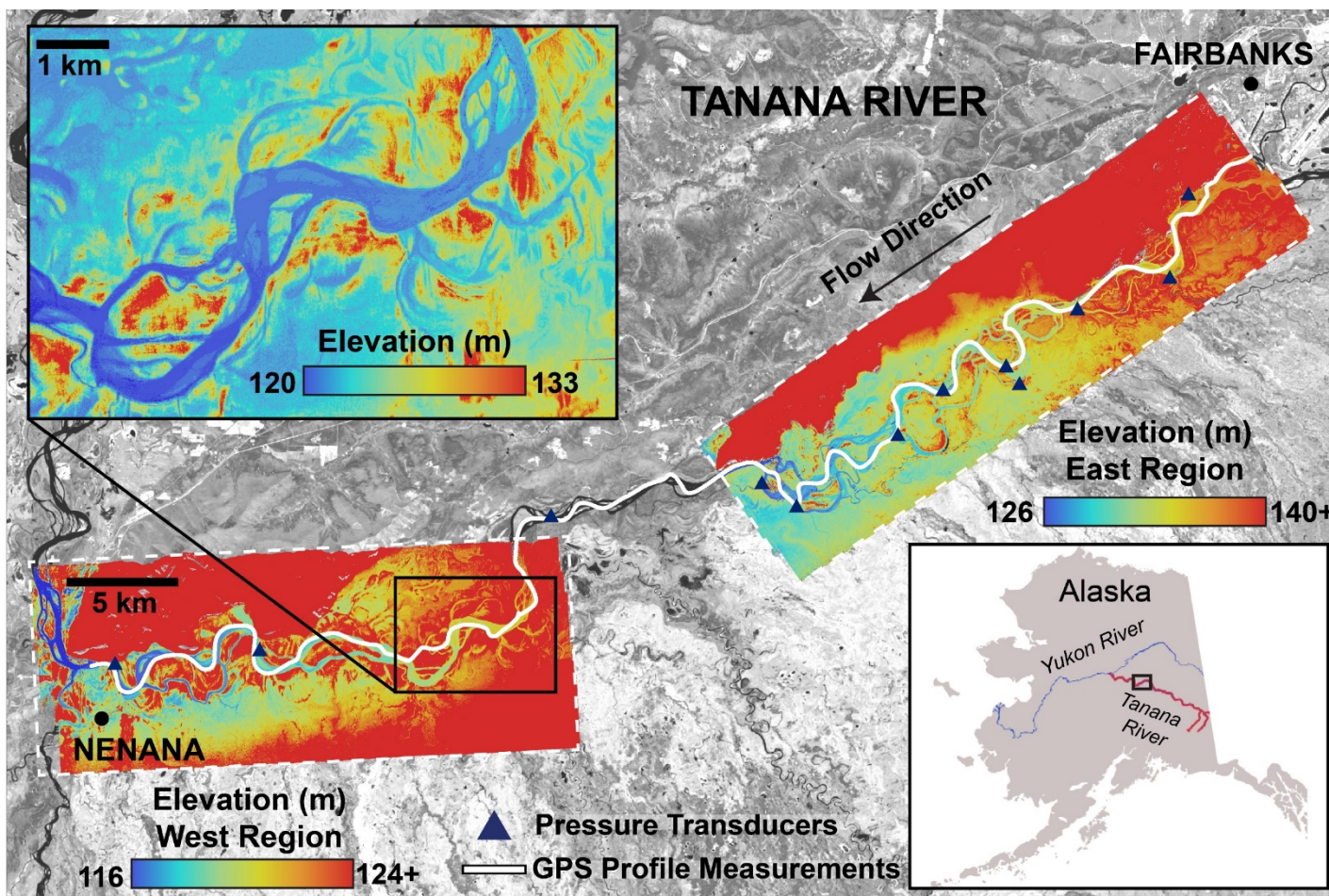




# AirSWOT 2015 Results



## AirSWOT Results: Tanana River, AK (June 9, 2015)



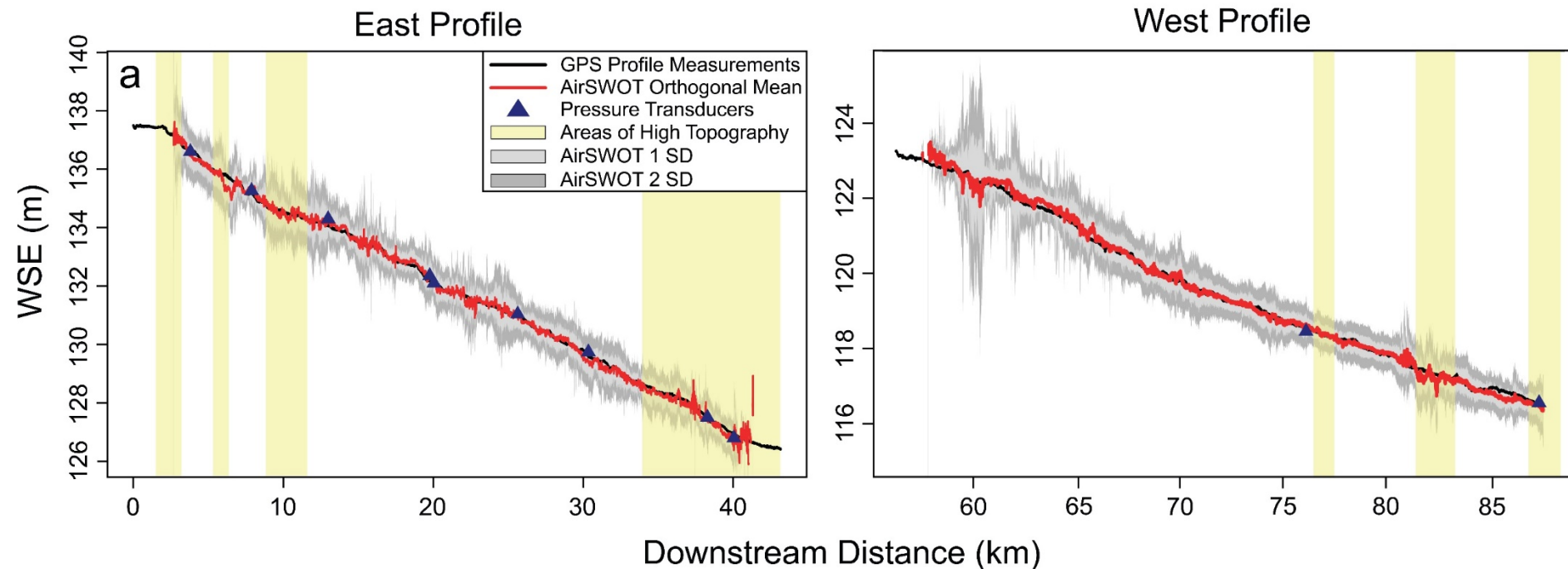




# AirSWOT 2015 Results



## Water Surface Elevation (WSE) Results: Tanana River, AK





# Conclusions from AirSWOT 2015



- Results on the Tanana and Willamette suggest that AirSWOT can, in some respects, do what it promised: provide SWOT-quality measurements of WSE and slope.
- AirSWOT can detect spatial variations in slope that are on the scale of 1 cm/km.
- We are still down in the weeds figuring out some aspects of AirSWOT error characteristics, and additional data will really help us out.
- Data from the 400 MHz inner swath will be required to do most of the phenomenology work that we want to do.



# AirSWOT 2017 Flights



- AirSWOT tacked on to NASA ABoVE experiments this summer
  - ~ nine aircraft with a multitude of sensors
  - Many ground teams
  - [above.nasa.gov](http://above.nasa.gov)

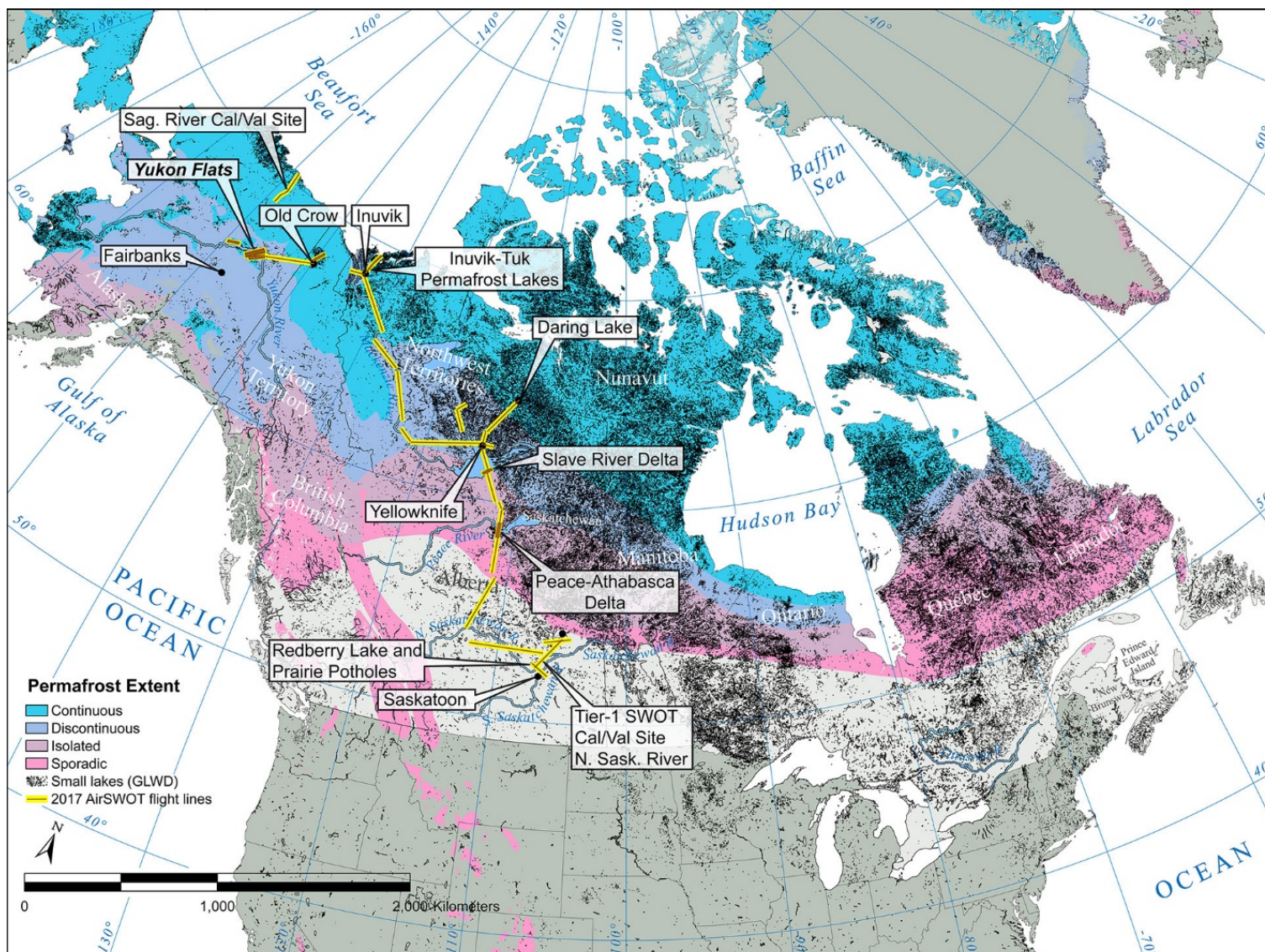
The screenshot shows the NASA ABoVE (Arctic-Boreal Vulnerability Experiment) website. The header features the NASA logo, the text 'National Aeronautics and Space Administration', and links to 'Visit NASA.gov' and 'Visit NASA's Terrestrial Ecology Website'. The main banner displays the 'ABOVE' logo over a landscape image, with the text 'ARCTIC - BOREAL VULNERABILITY EXPERIMENT' below it. A navigation bar includes 'Sign In', 'My Account', and 'Sign Out'. A left sidebar contains a search bar and a list of links: Home, For the Media, About, Implementation Plan, Science Team, Airborne Planning, Meetings & Events, Publications, Data, and Safety & Logistics. The main content area is divided into three columns. The first column has tiles for 'PLANNING TOOL', 'ABOVE Implementation Plan' (dated June 15, 2016), and 'Announcements' (listing AGU Sessions of Interest and NEW Publications). The second column has tiles for 'NEWSLETTERS' and 'Airborne Planning'. The third column has a 'FACT SHEET' tile and a 'Quicklinks' section with links to New Projects, Publications, Project Data, and Data in Science Cloud. At the bottom right, there is a 'Tweets by @NASA\_ABoVE' section showing a tweet from NASA\_ABoVE.





# AirSWOT 2017 Flights

- AirSWOT flights as part of NASA ABoVE



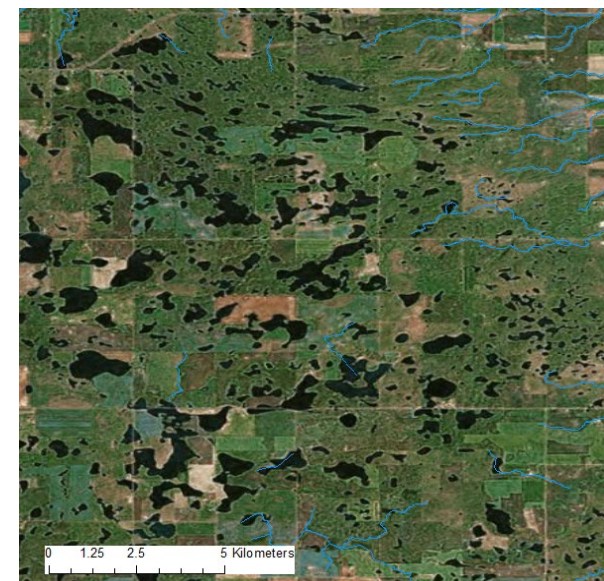
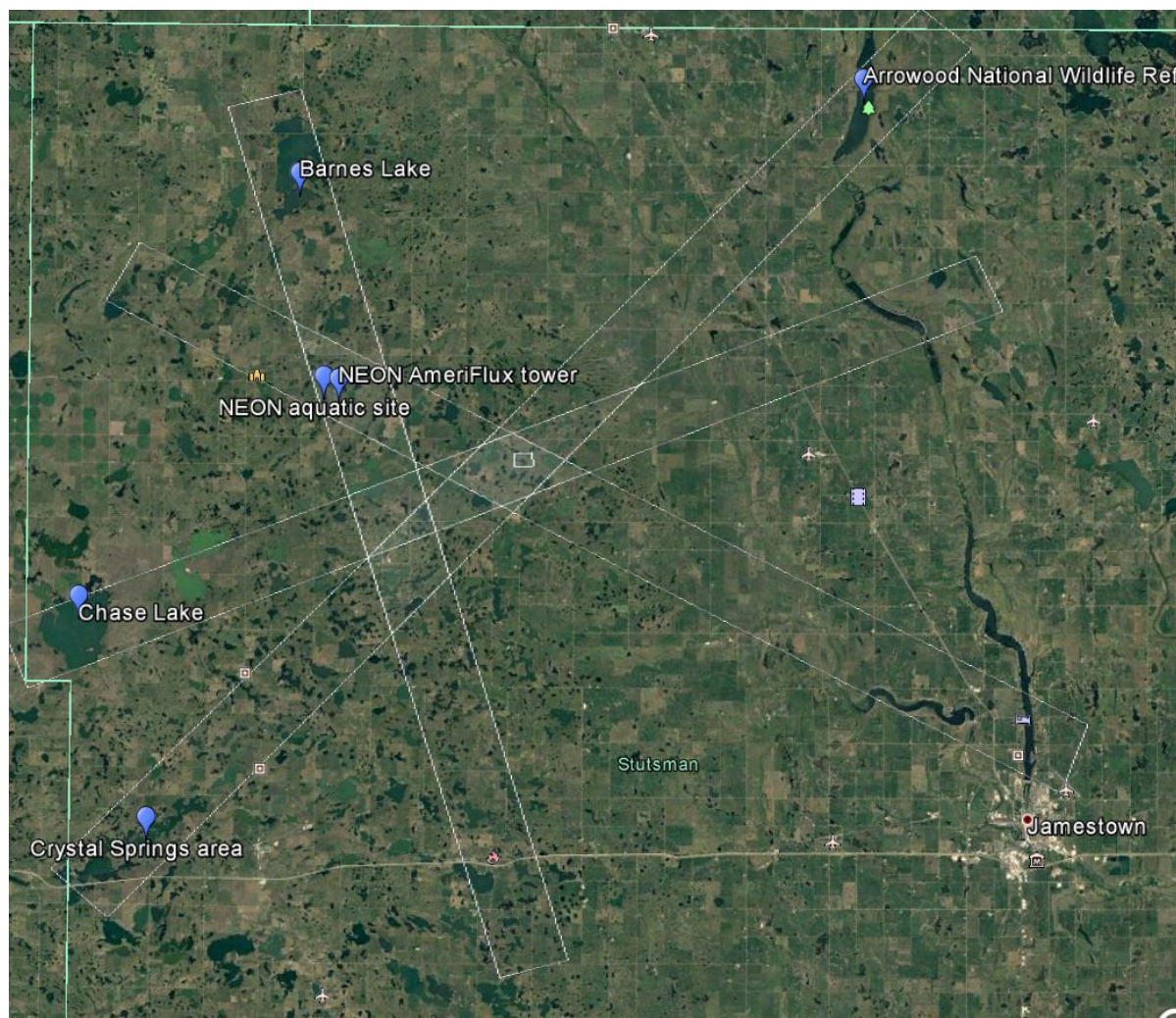




# AirSWOT 2017 Flights



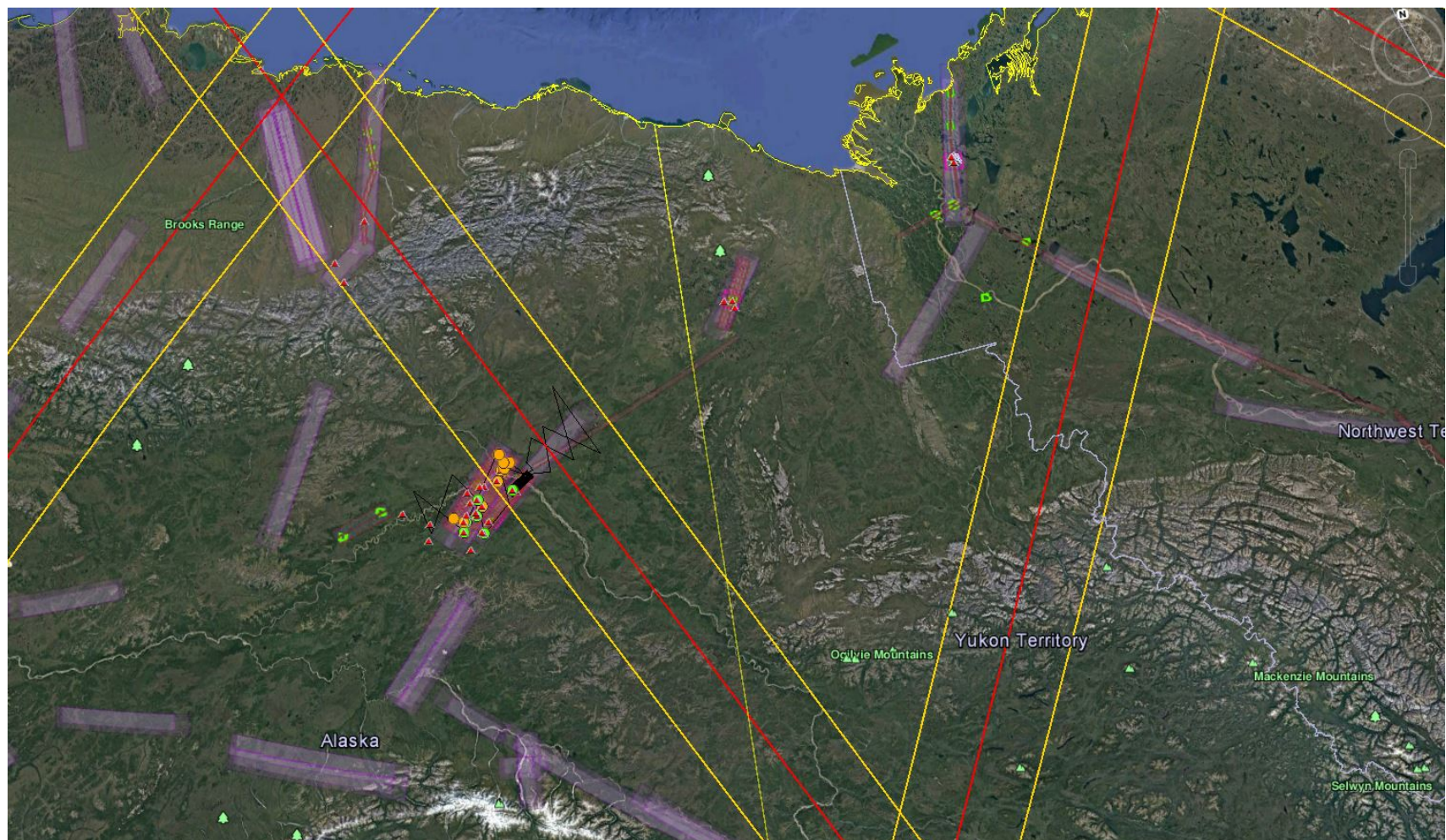
- Prairie Potholes Tier 1 Cal/Val site
  - Wind setup study







# AirSWOT 2017 Flights







# Future AirSWOT Flights



- Connecticut River (2018)
  - Tier 1 River and Tidal Site
  - Some tidal wetlands