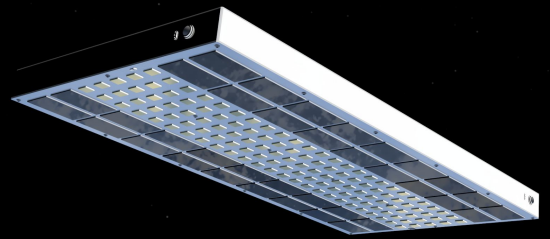
CAREWEATHER

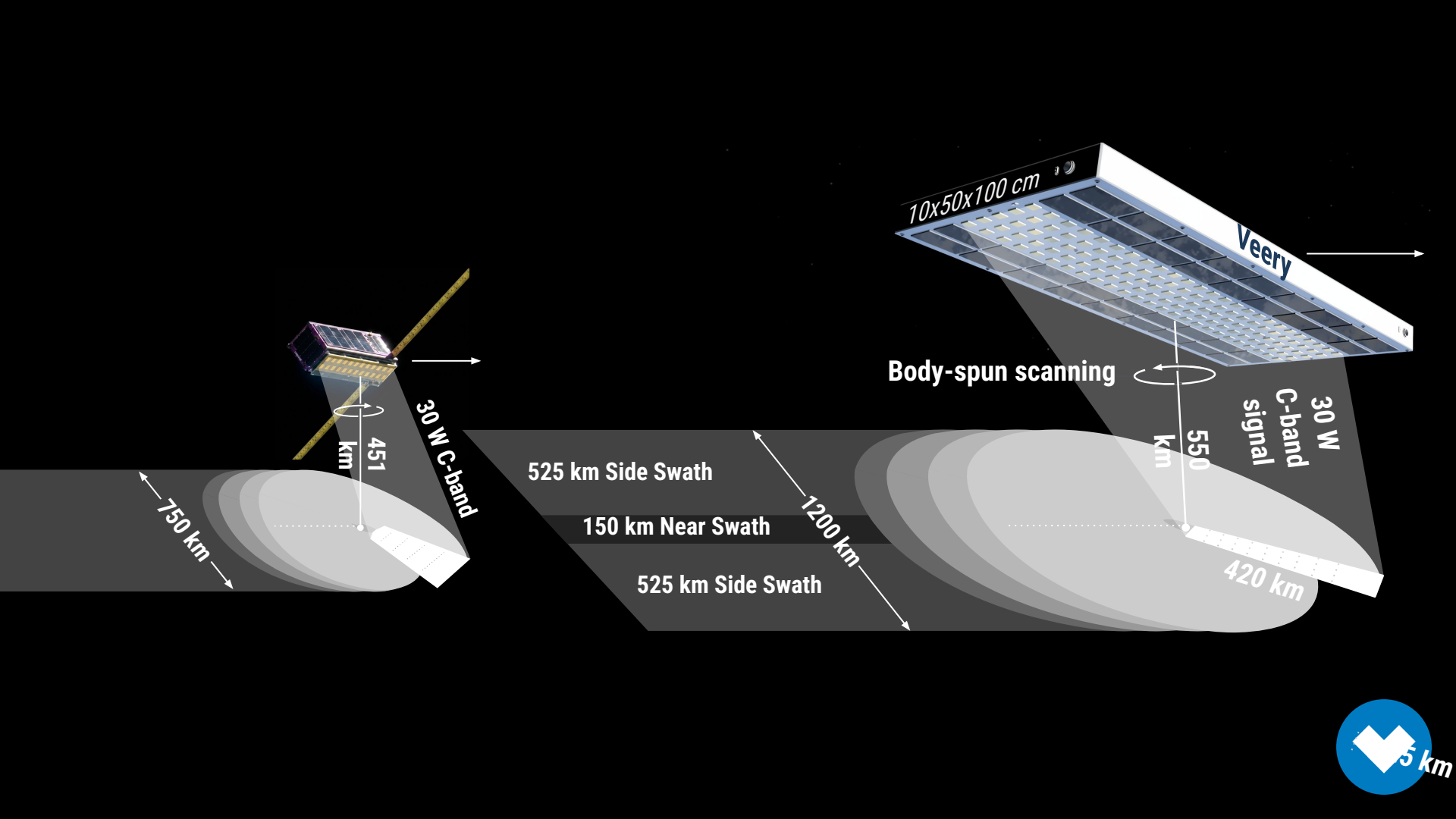
IOVWST 2026

Updates on the Veery Scatterometer Development Program

Patrick Walton

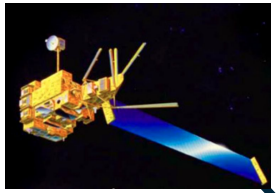
Care Weather Technologies, Inc.




10x50x100 cm
Veery
Body-spun scanning
30 W C-band signal
550 km
420 km
30 W C-band
451 km
750 km
525 km Side Swath
150 km Near Swath
525 km Side Swath
1200 km

SEASAT

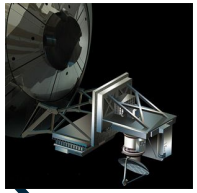
NSCAT



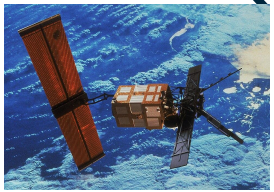
QuikSCAT

ADEOS-II

RapidSCAT



1980 1990 2000 2010 2020



ERS-1

ERS-2

MetOp-A, B, C

Performance State of the Art

Key

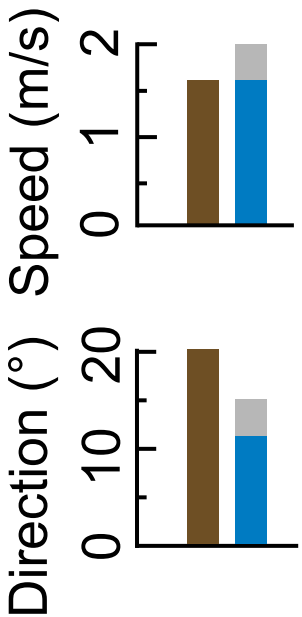
2 MetOps

36 Veeries* (v1.0)

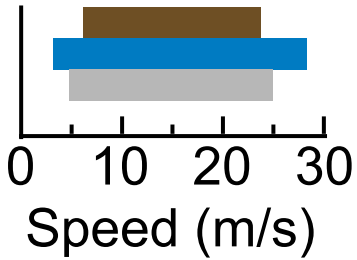
Pathfinders* (v0.7–0.8)

* simulation

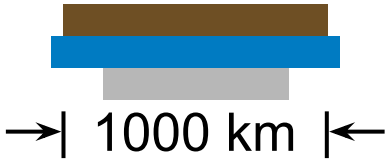
Errors



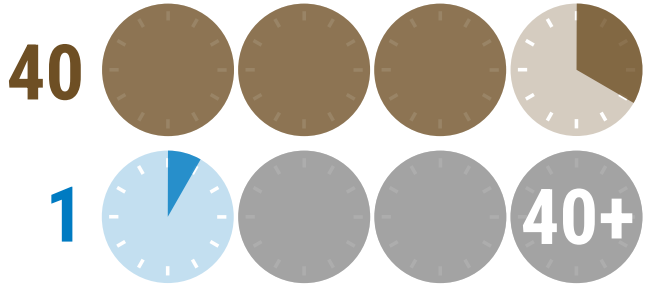
Range



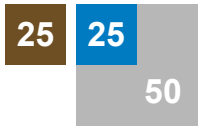
Swath Width



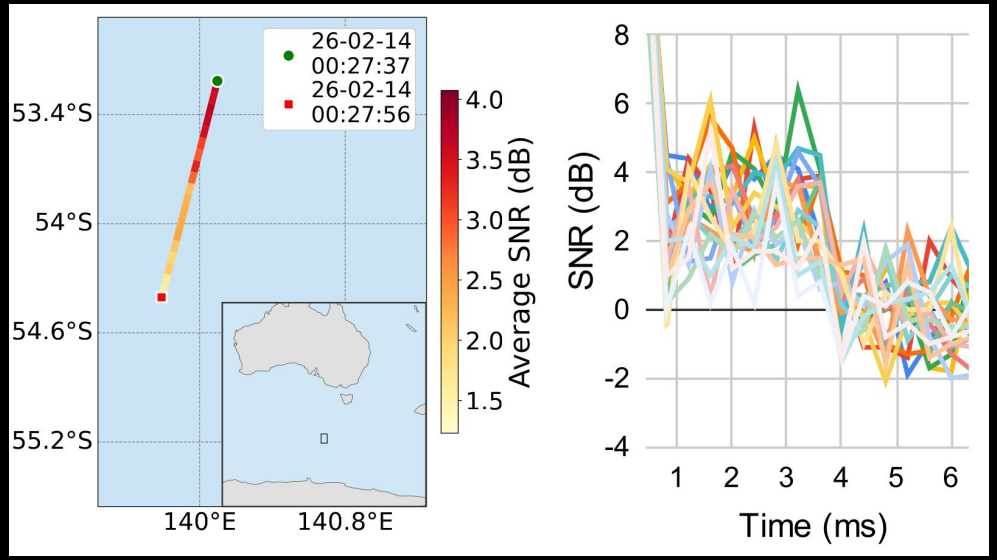
Refresh, worst case (hrs)

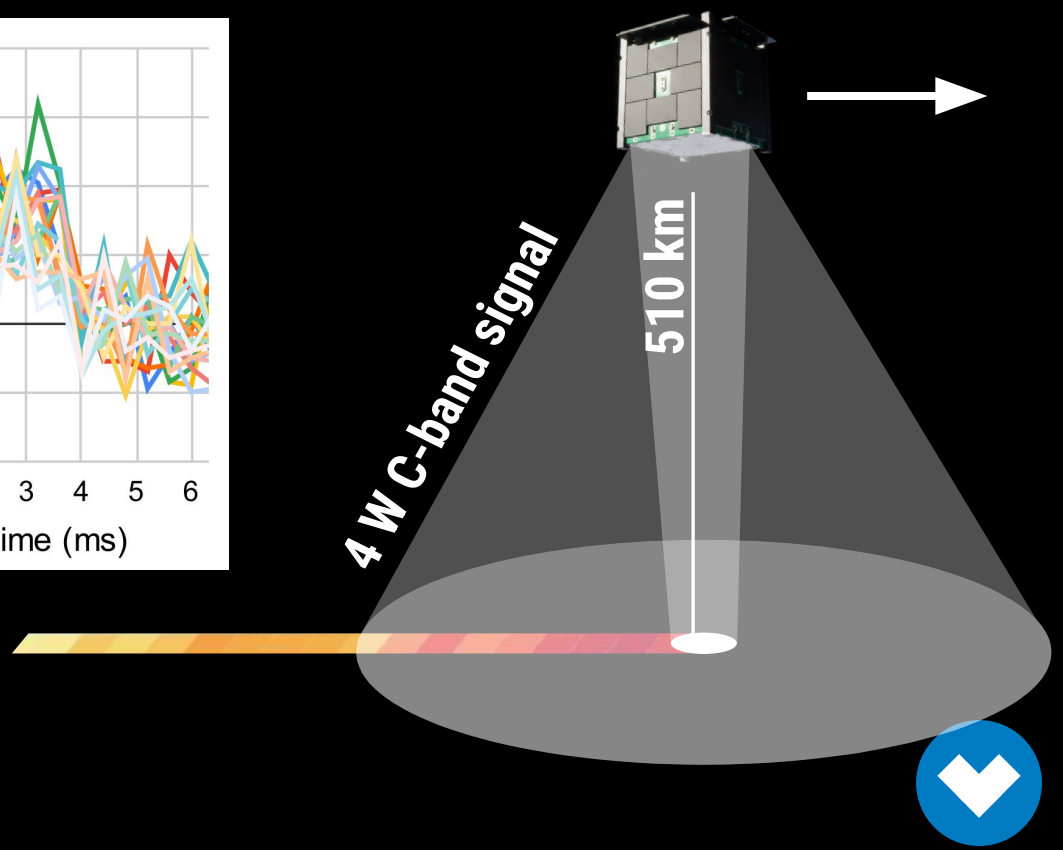


Raw Resolution (km)



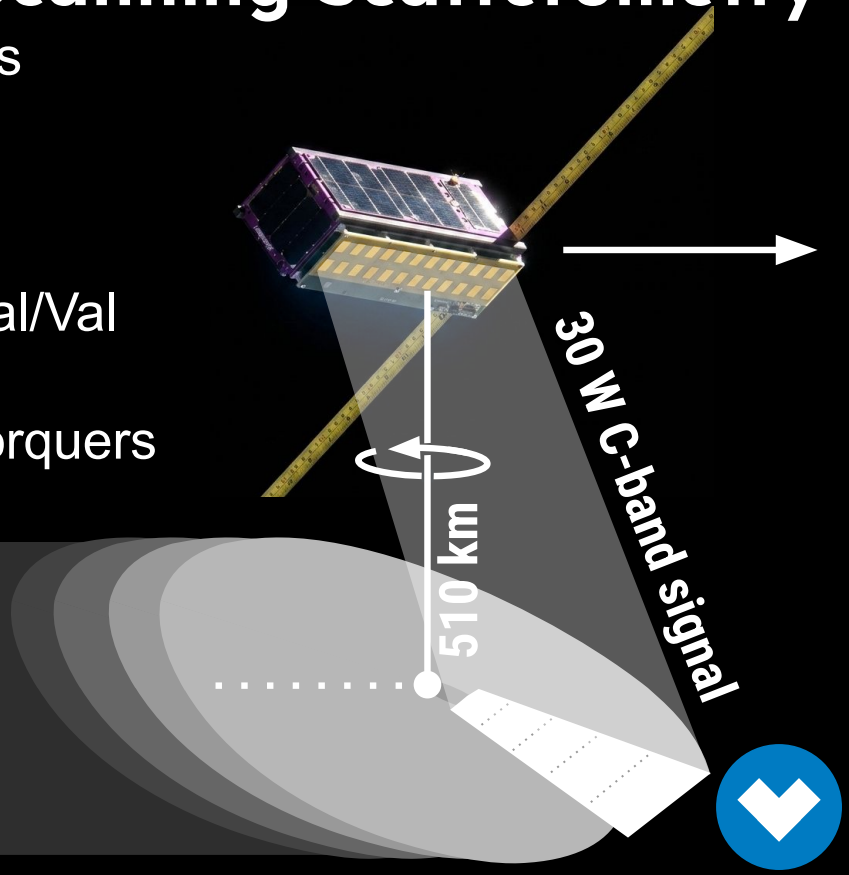
Veery v0.5 Radar First Light



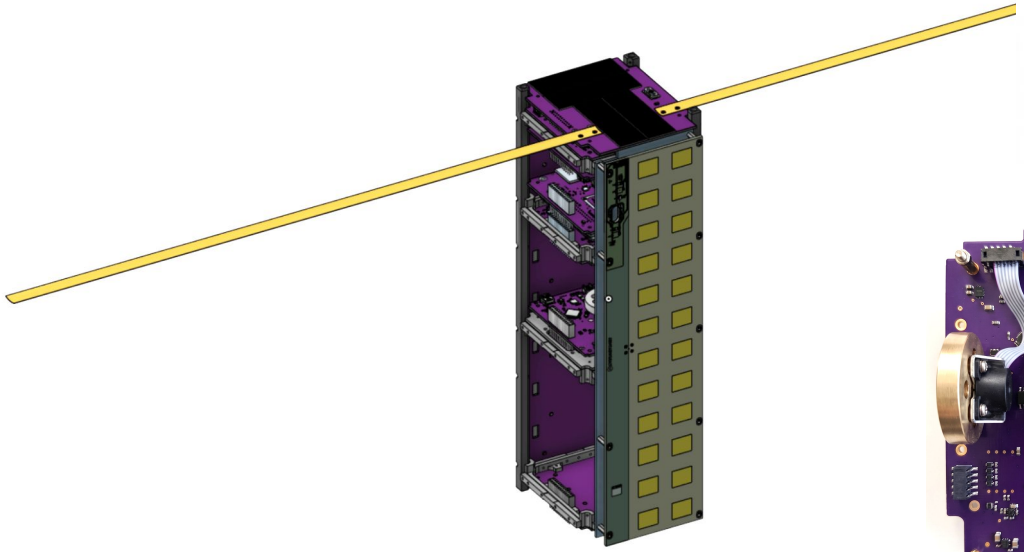


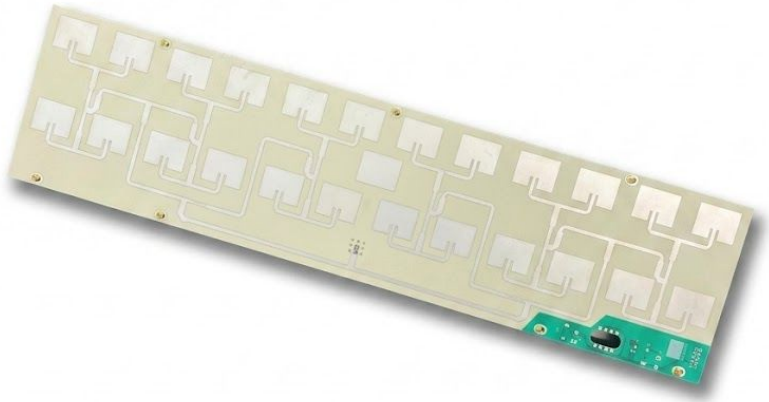
Veery v0.6-0.8 Pathfinder Scanning Scatterometry

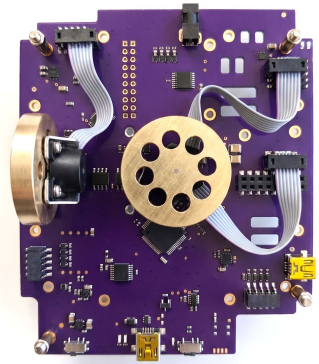
- 3 iterations on orbit in next 16 months
- Planned radar improvements
  - Radar calibration and loopback
  - Higher forward power (4⇒30 W)
  - End-to-end data processing & Cal/Val
- Planned bus improvements
  - Larger reaction wheels, magnetorquers
  - High-accuracy GNC
  - Yaw spinning
  - Deployed solar ⇒ higher uptime
  - More comms channels
  - OTA programming
  - Passive thermal management

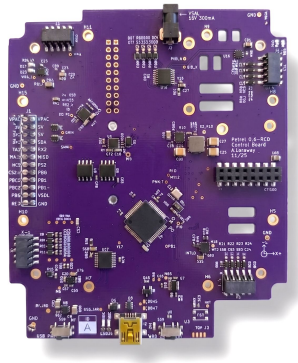


Veery v0.6 In Progress









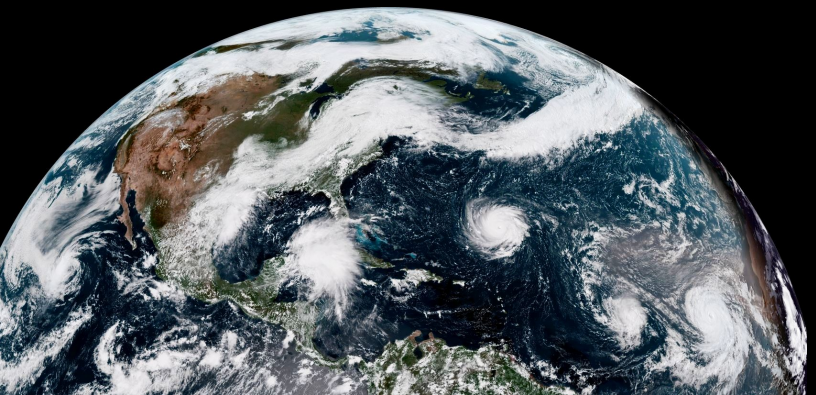
1yr: 2 ⇒ 10 FTE

2025: 1k⇒5k sqft

Thank you!

Support from:

NSF#2304609,
NOAA#NA24OARX021G0030-T1-01,
USSF#FA254125CB017,
NASA#80NSSC26C0070
NAVY#N6833526C0043



Contact

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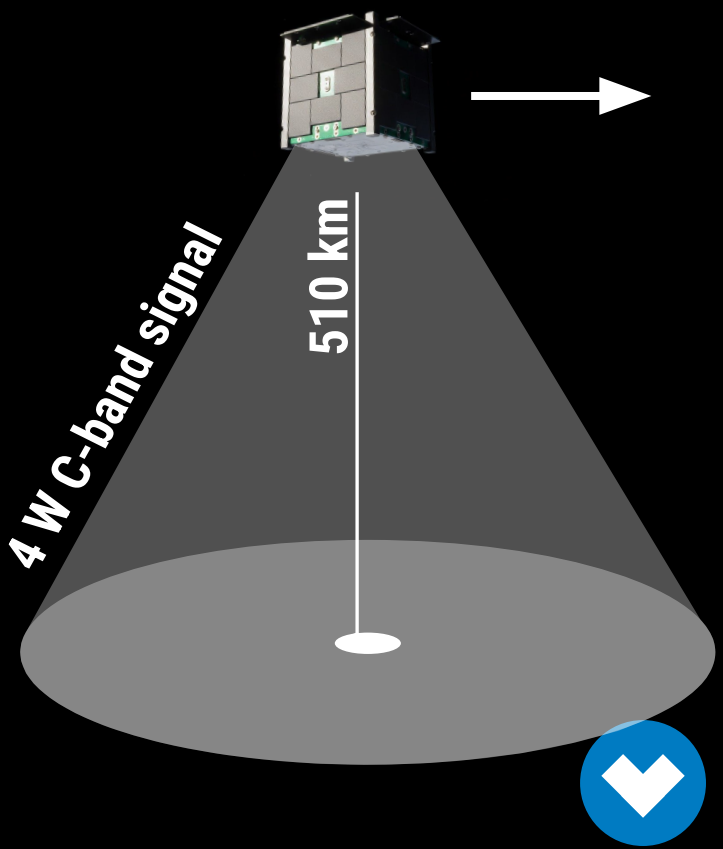
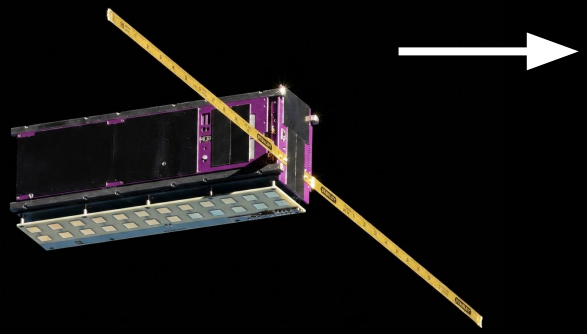
Veery v0.5 Changelog

- Added
  - Magnetorquer despin
  - Overhaul of reaction wheel firmware
  - ISAC test
  - Precision IMU/magnetometer
  - (Stretch goal) nadir scatterometry
- Learned
  - Iridium comms bottleneck
  - (Stretch goal) different GNC architecture required for nadir scatterometry
  - …other tests ongoing

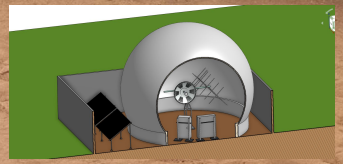


Veery v0.6 Plans

- Space-to-Earth direct comms
- New processing architecture
- Over-the-air programming
- Star tracker
- Simultaneous radar + GNC
- New GNC flight software architecture
- Other larger systems, stairway to microsat
  - Solar
  - Antenna



in-house ground station



30 km altitude test system