



Aqua and AIRS Operations Status and Calibration Update

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Aqua status courtesy of the EOS Aqua FOT/FDT
L1B/L1C usage stats courtesy of GES DISC



AIRS/Aqua EOL (Summary c/o D.Tobin):

- Aqua celebrated 19 year anniversary on 5/4/2021
- Deep space calibration maneuvers planned for fall 2021.
- Nominal orbit exit plan has not changed and is scheduled for January 2022, with operations continuing through 9/2025.
- The Aqua spacecraft is in very good condition (expected subsystem life/reserve in parens).
- Fuel is the limiting factor for maintaining the position in the A-train orbit:
 - There is sufficient fuel to maintain the A-Train constellation orbit until early 2022 (maintain mean local time (MLT) at ascending node of 13:35:45 \pm 45 seconds).
 - After exit, the orbit drifts until power becomes the operating constraint.
 - From that point, sun synchronicity will not be maintained.
 - MLT will drift, reaching 15:00 by 1/1/2025 and 15:30 by 9/2025 (16:30 by 8/2025).
 - The Aqua spacecraft is expected to be able to support the science mission for several years beyond the orbit-lowering maneuver, with power being the limiting factor, ~9/2025 currently, perhaps 2026 (and beyond?) with TBD power management schemes.
 - Roughly 3.5 years post A-train exit currently projected



Aqua and AIRS Expected to Function Beyond 2022 A-Train Exit

- Post-2022 orbit will have a thermal impact on AIRS – specifically, the 2nd stage heater will need to draw more power to maintain the spectrometer temperature set point
- Safety and thermal/calibration impact being assessed with spacecraft and instrument models
- Current modeling efforts show a +20k impact to the sensor (initial modeling was +65K),
- FPA temperature expected to hold.



- A-Train exit (lowering) maneuvers to 680 km: Jan-Feb 2022

(Charts courtesy of EOS Flight Dynamics Team)