



# Mission Operations Working Group

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## CloudSat Long Range Plans

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Mona Witkowski  
Deb Vane



## **Operational longevity is most affected by declining end-of-eclipse voltages**

- The battery is slowly aging and the CPR stability heater action in eclipse is increasing
- The combination of these two factors – *mainly CPR heater action* – is resulting in the loss of ~0.3-0.4V/year end-of-eclipse voltage
- Current minimum end-of-eclipse bus voltage ~29.5V  
> UV2/UV3 fault protection set points are 26.50/23.75V
- New battery charging approaches, recently implemented, are increasing battery capacity
- Ball is also investigating a method to reduce the stability heater on time, via a modification to the current DO-Op mode

## **Cumulative rotations on the reaction wheels are also potentially life-limiting**

- Reaction wheels have recently been re-balanced to reduce total revolutions and balance wheel usage
- The reaction wheels have shown no sign of increased friction or degradation to date

## **Fuel is not a life-limiting concern at this time**

- CloudSat has sufficient remaining delta-v capacity for at least 5 more years of operational lifetime (~2021)



## **CloudSat will Continue to Formation Fly with CALIPSO**

- Maintain the overlap of CloudSat radar footprint with CALIPSO's lidar footprint within 4km ~90% of the time

## **Continue Incination Adjust Maneuvers (IAMs) with the A-Train**

- Support the 2017 IAM campaign

## **Possibly Forgo IAM Campaign in 2018 (with CALIPSO)**

- CALIPSO will forgo the IAM Campaign in 2018 to preserve fuel
- Mean Local Time of its Ascending Node (MLTAN) for both satellites will increase
- CloudSat & CALIPSO will continue to formation fly, drifting east together
- Both satellites will remain at the 705 km attitude, drifting east from the rest of the A-Train Constellation

## **Collision Avoidance Assessments will continue per nominal process**

## **A-Train Exit procedure would be invoked if necessary, to quickly and safely transfer CloudSat to a safe-exit orbit, 4 km below the A-Train**

- Pre-built maneuver sequences for A-Train Exit are stored onboard the S/C