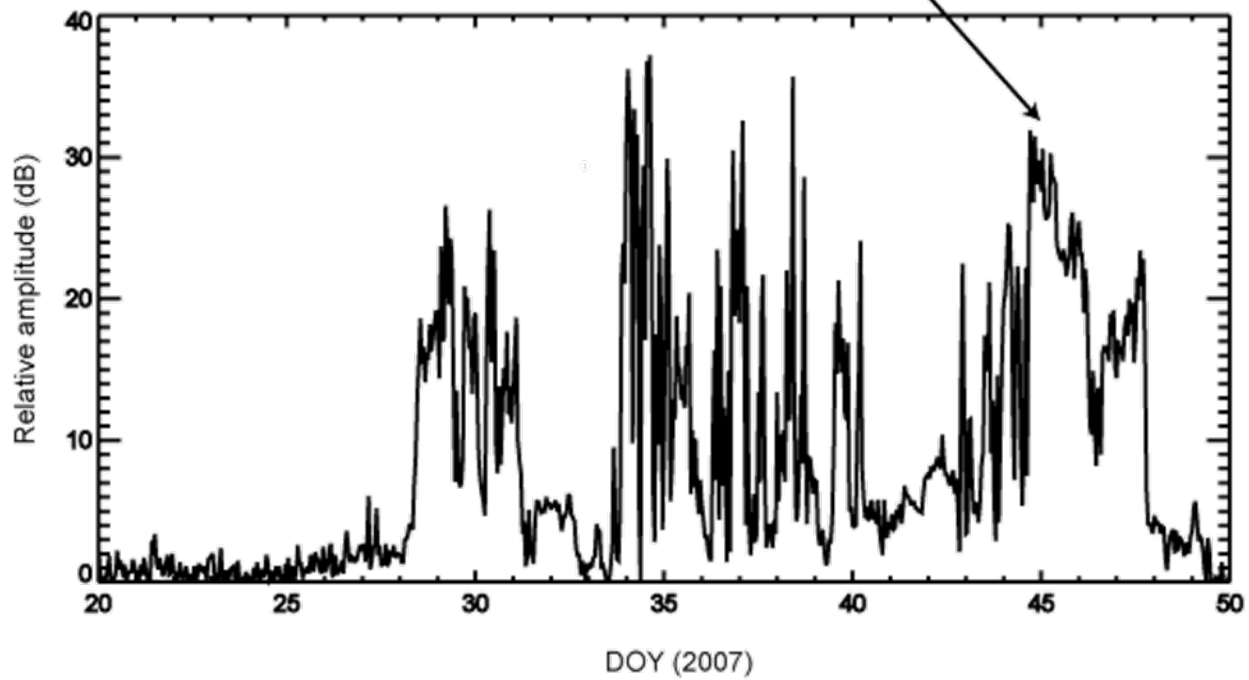
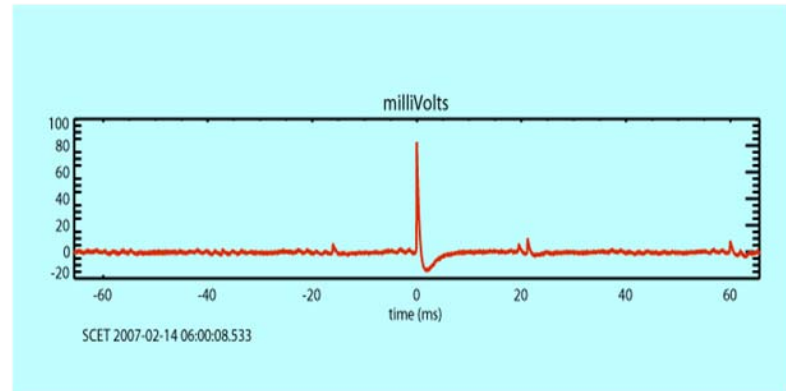


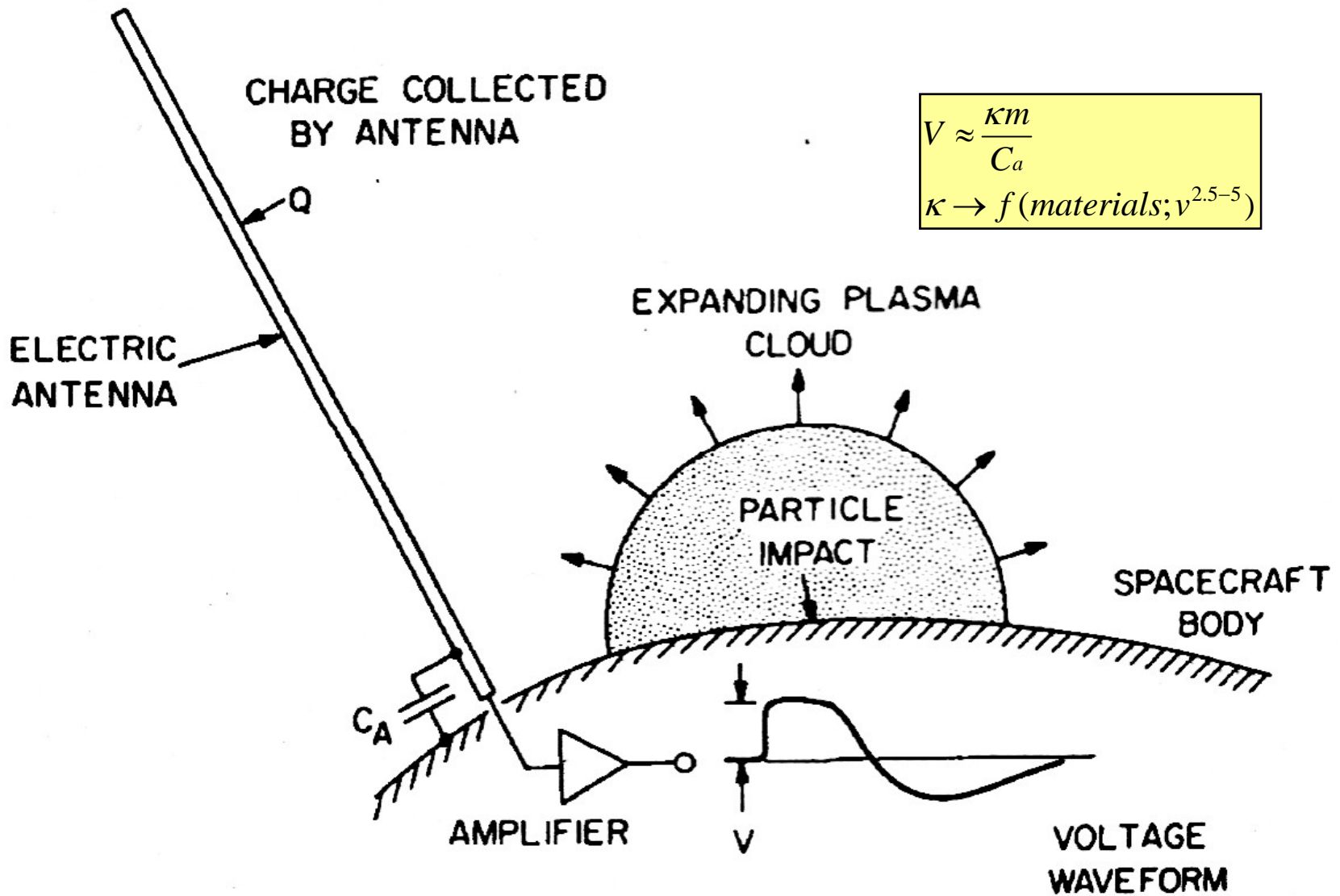
# Interplanetary Dust Clouds near 1 AU Detected by STEREO

M. L. Kaiser, K. Goetz, C. St. Cyr, R. Howard

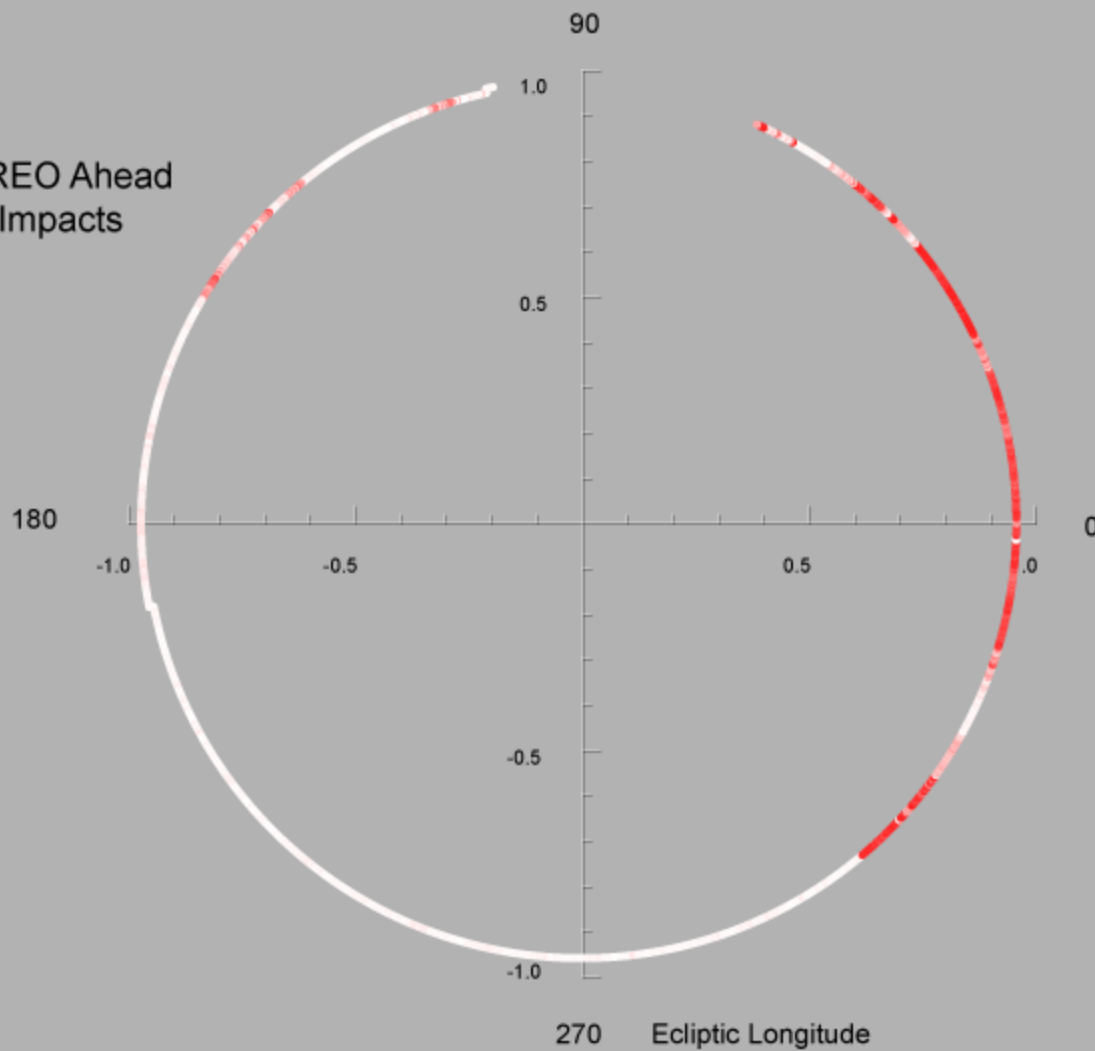
Impulsive noise  
S/WAVES Ahead



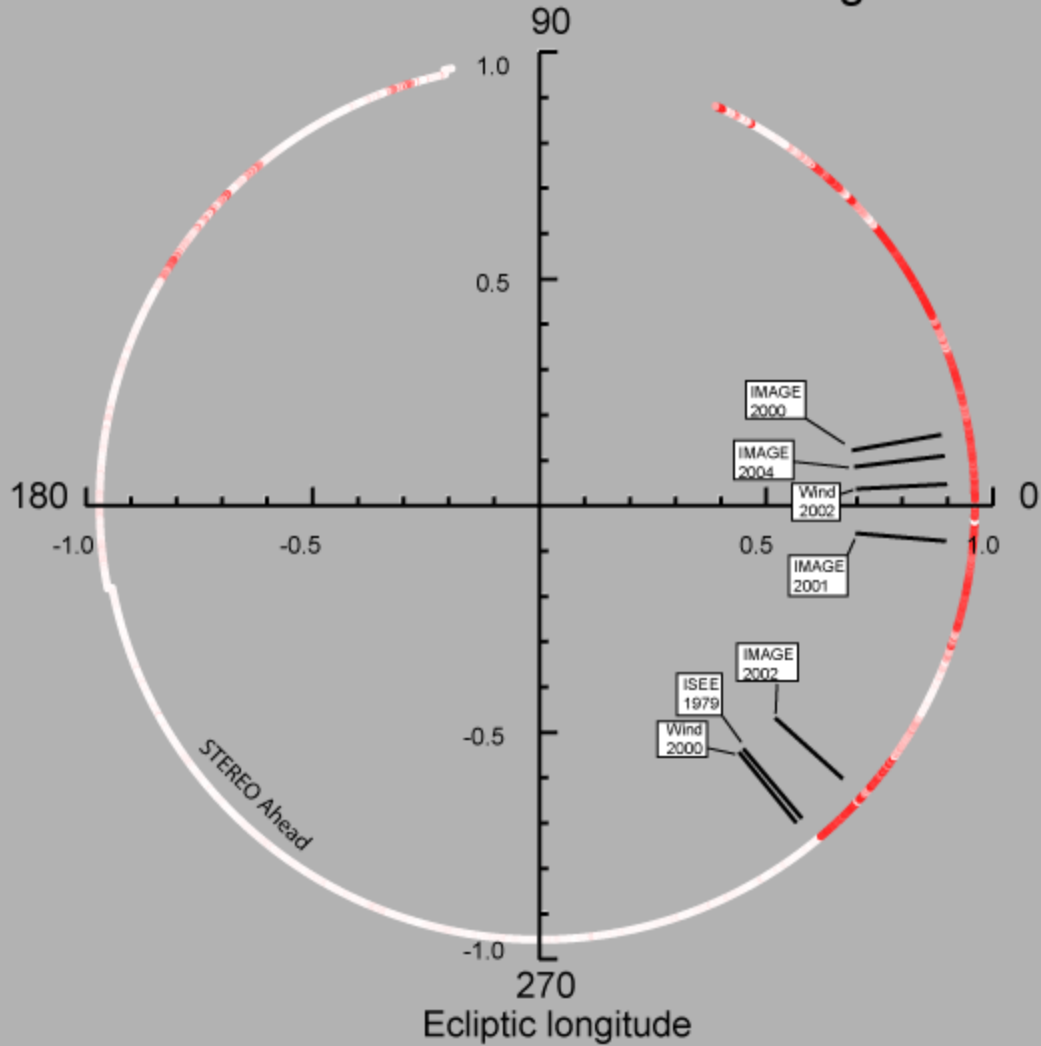
From Gurnett et al., *Icarus*, **53**, 236-254 (1983)



STEREO Ahead  
Dust Impacts



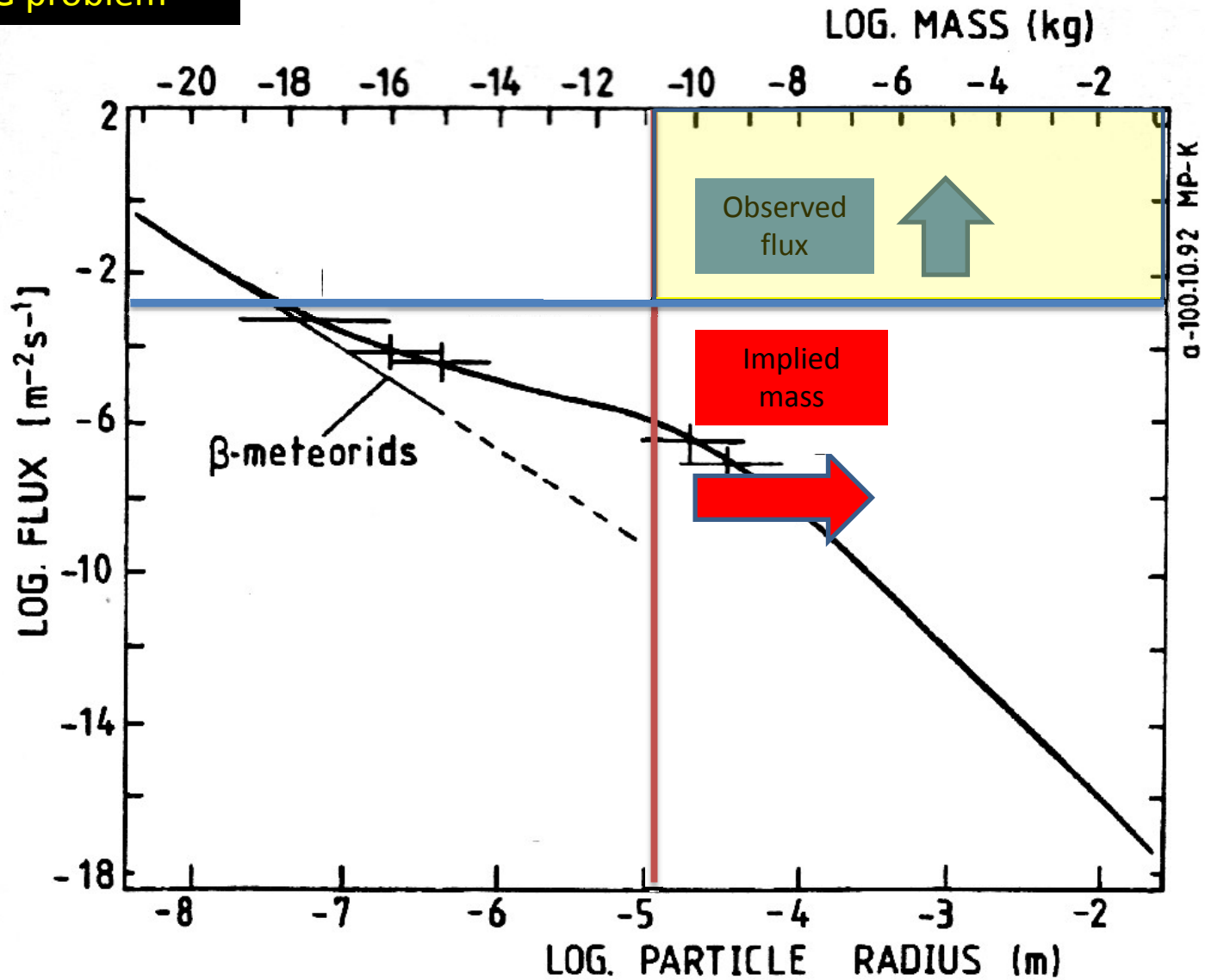
# Known wire antenna breakages



# Grün's Interplanetary Dust Distribution at 1 AU

Grün, E, et al., *Icarus*, 62, 244-272 (1985)

## The BIG problem

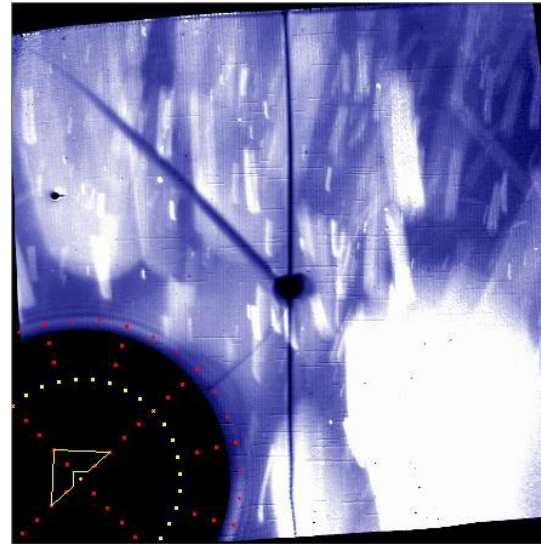


# Coronagraphs are sensitive to faint intensities and have detected debris in the past



**Skylab ATM S052**

**[water dumps]**

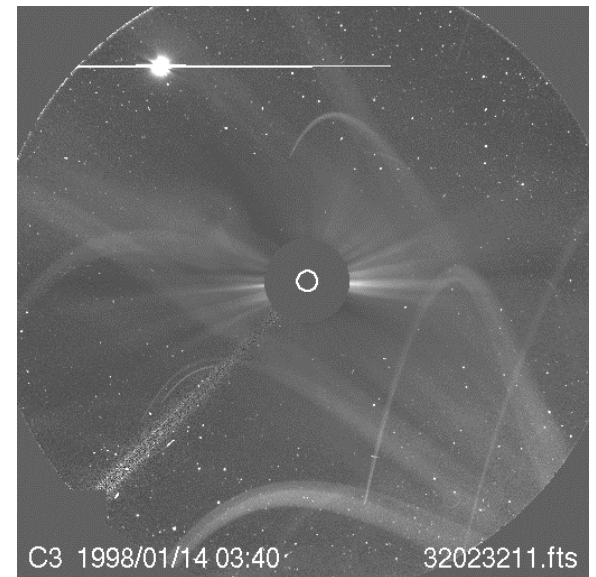


**SMM C/P**

**[believed to be MLI]**

**SOHO LASCO**

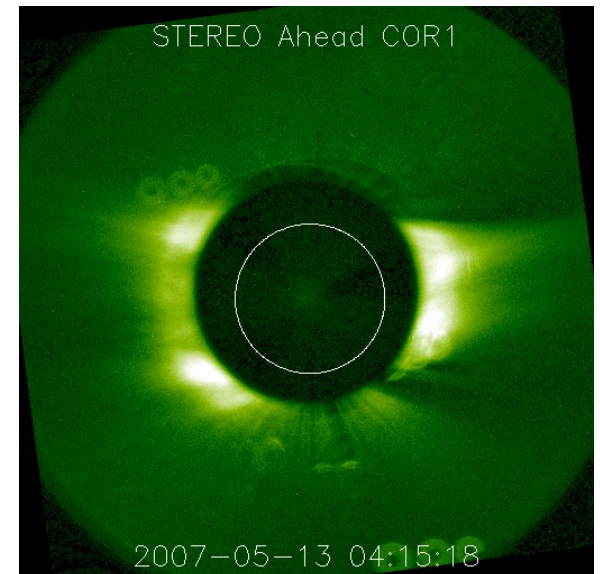
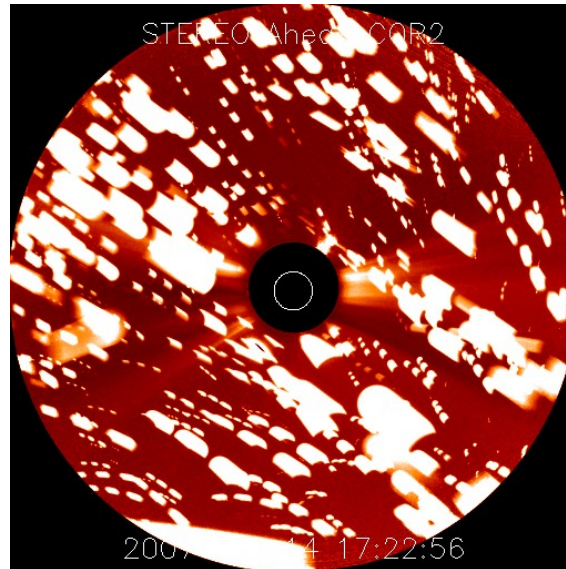
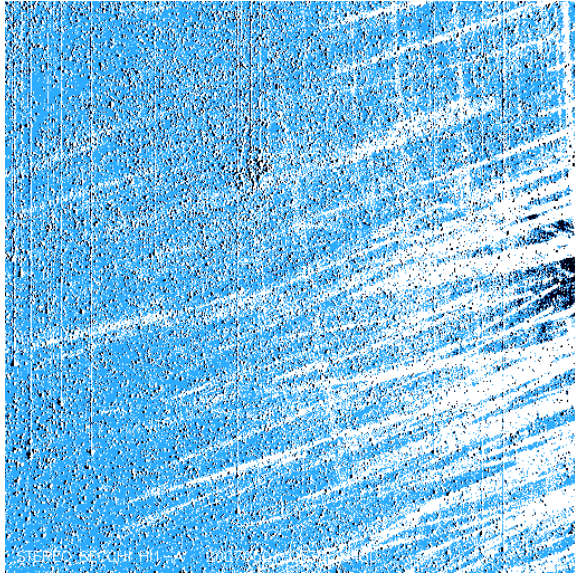
**[believed to be MLI]**



C3 1998/01/14 03:40

32023211.fts

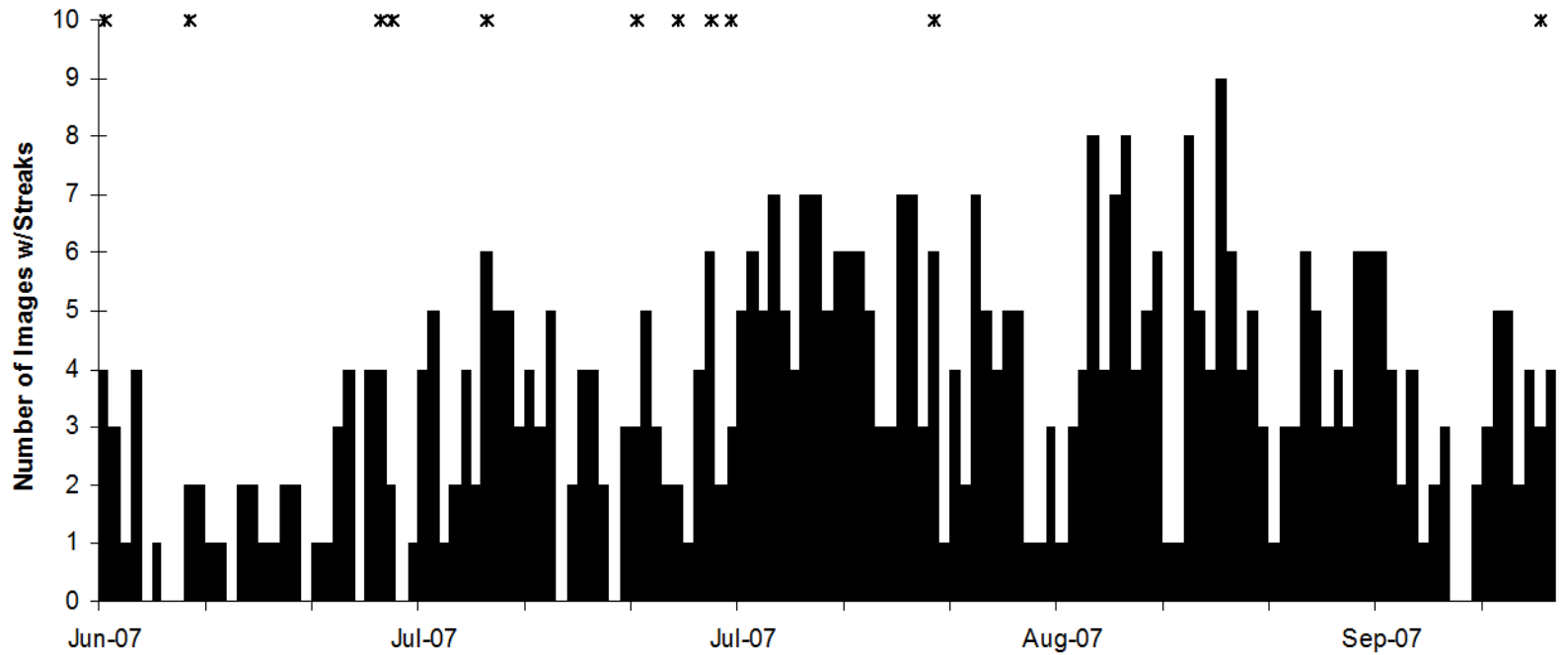
# SECCHI Debris Examples



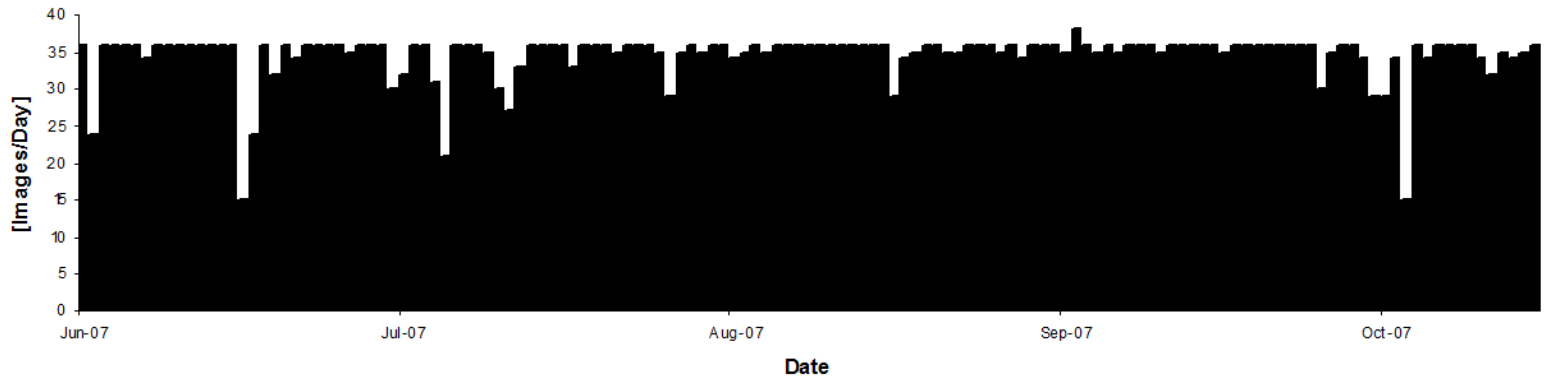
- **Examples from Ahead, but also seen in Behind**
- **Not detected in HI2-A or -B(?)**
- **Coincident with S/WAVES impulse**



HI1-A (Jun1-Oct15, 2007 [137 days--471 images w/streaks])



HI1-A Duty Cycle (Jun1-Oct15, 2007 [137 days])



# Summary

- S/WAVES observes impulse-like signatures consistent with dust impacts
  - Most prominent on Ahead
  - Weaker and less frequent on Behind
  - Most prominent on antenna closest to 'ram' direction (X on Ahead, Z on Behind)
  - Most events consistent with 1-10 micron sized particles
- Occurrence in ecliptic longitude consistent with known wire antenna breaks
- Sharp onset at  $\sim 309^\circ$  observed by Ahead, GPS/DMSP, and Behind
- S/WAVES impulse signatures coincident with 'debris' observed by SECCHI
  - SECCHI debris  $\sim 20$  times as prevalent as on SOHO
  - Limited number of events compared
- Implied mass and flux during active sectors much higher than Grün distribution
  - In general agreement during inactive sectors