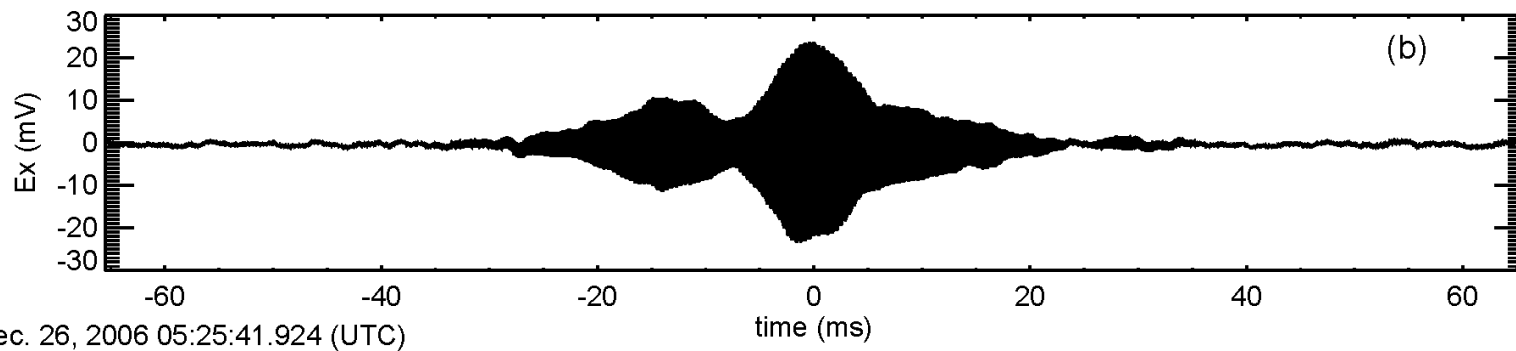
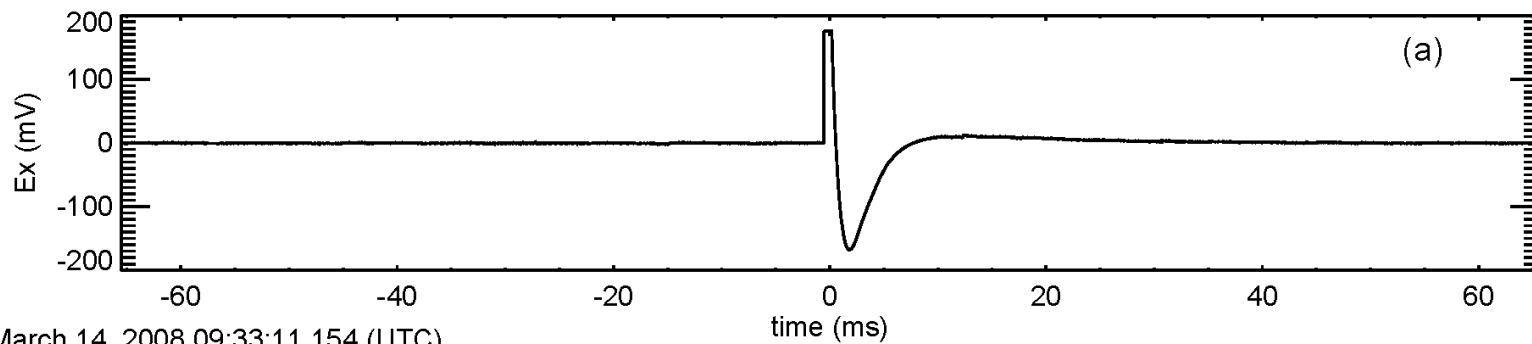
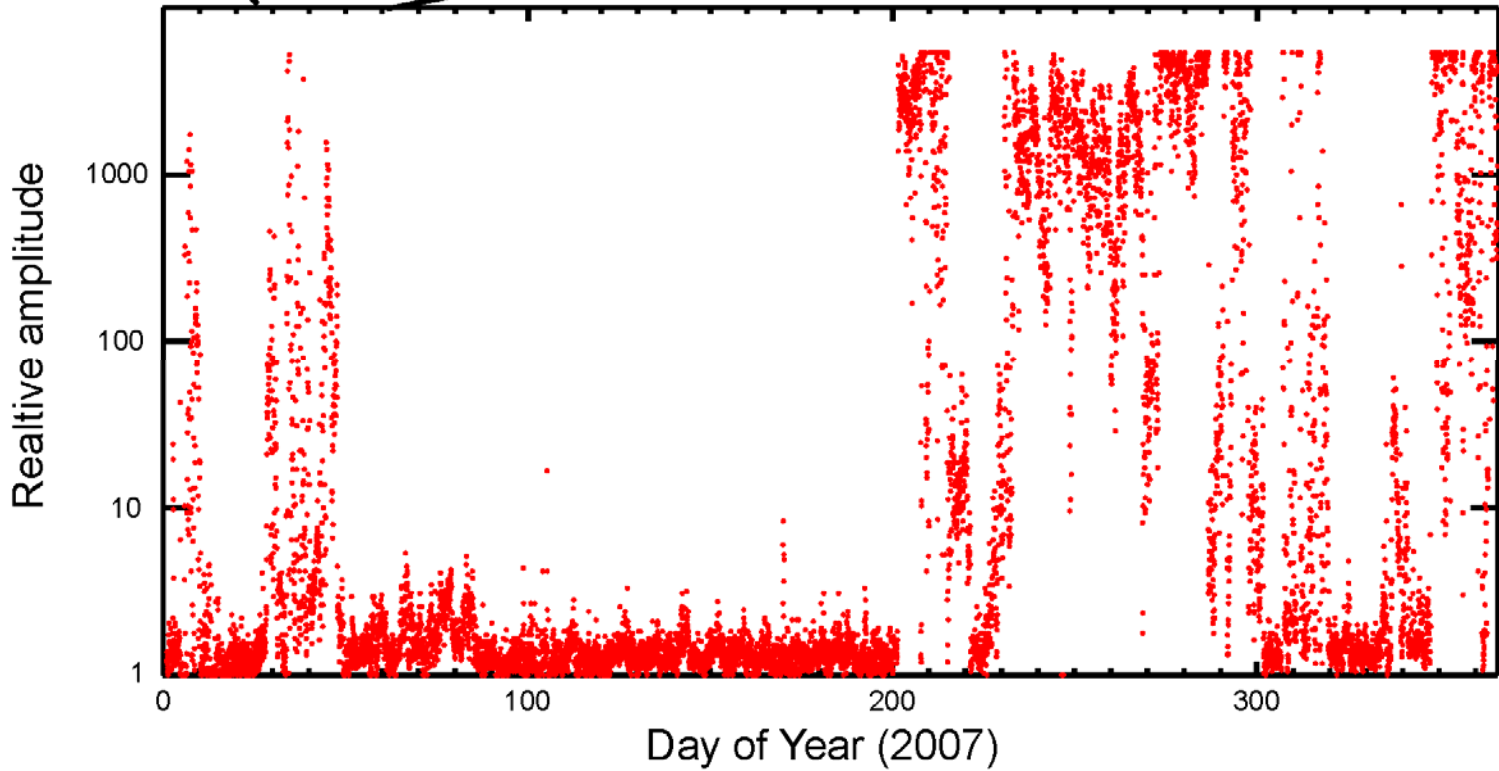
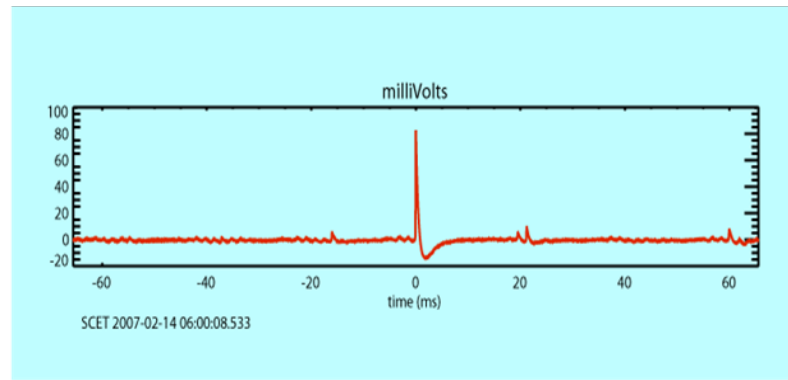
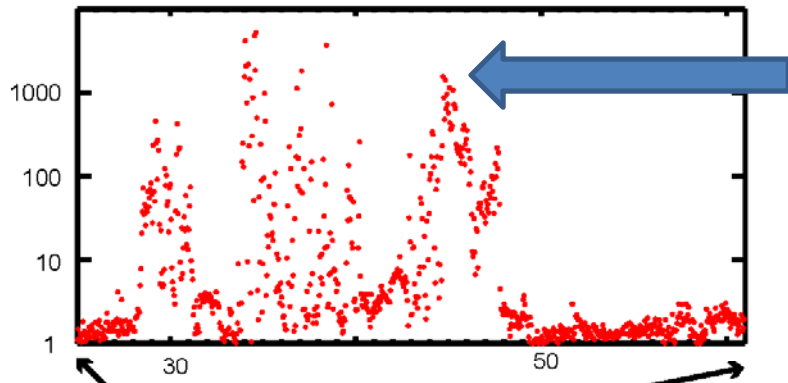


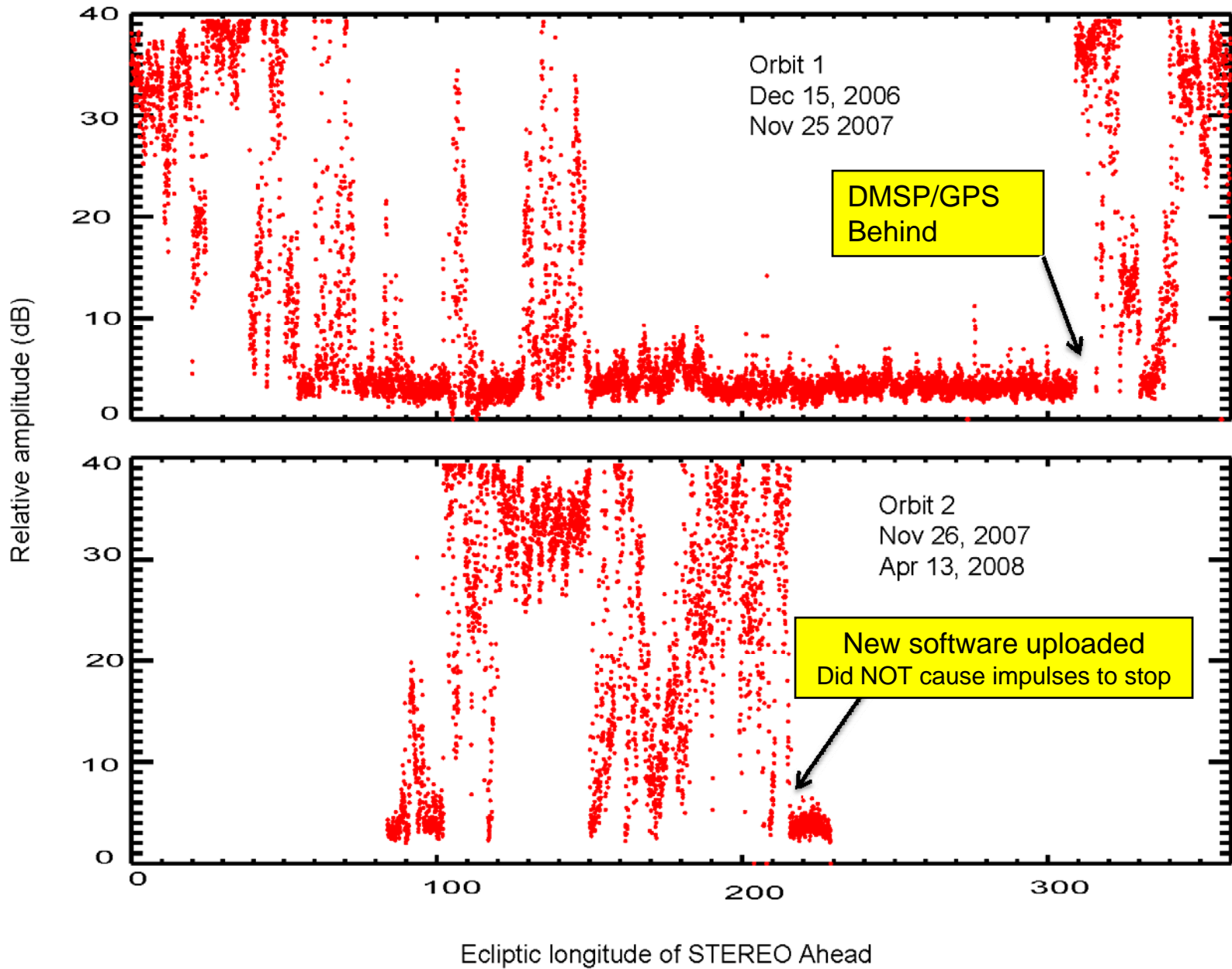
S/WAVES Impulsive Signals:
Possible Interplanetary Dust
An update

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

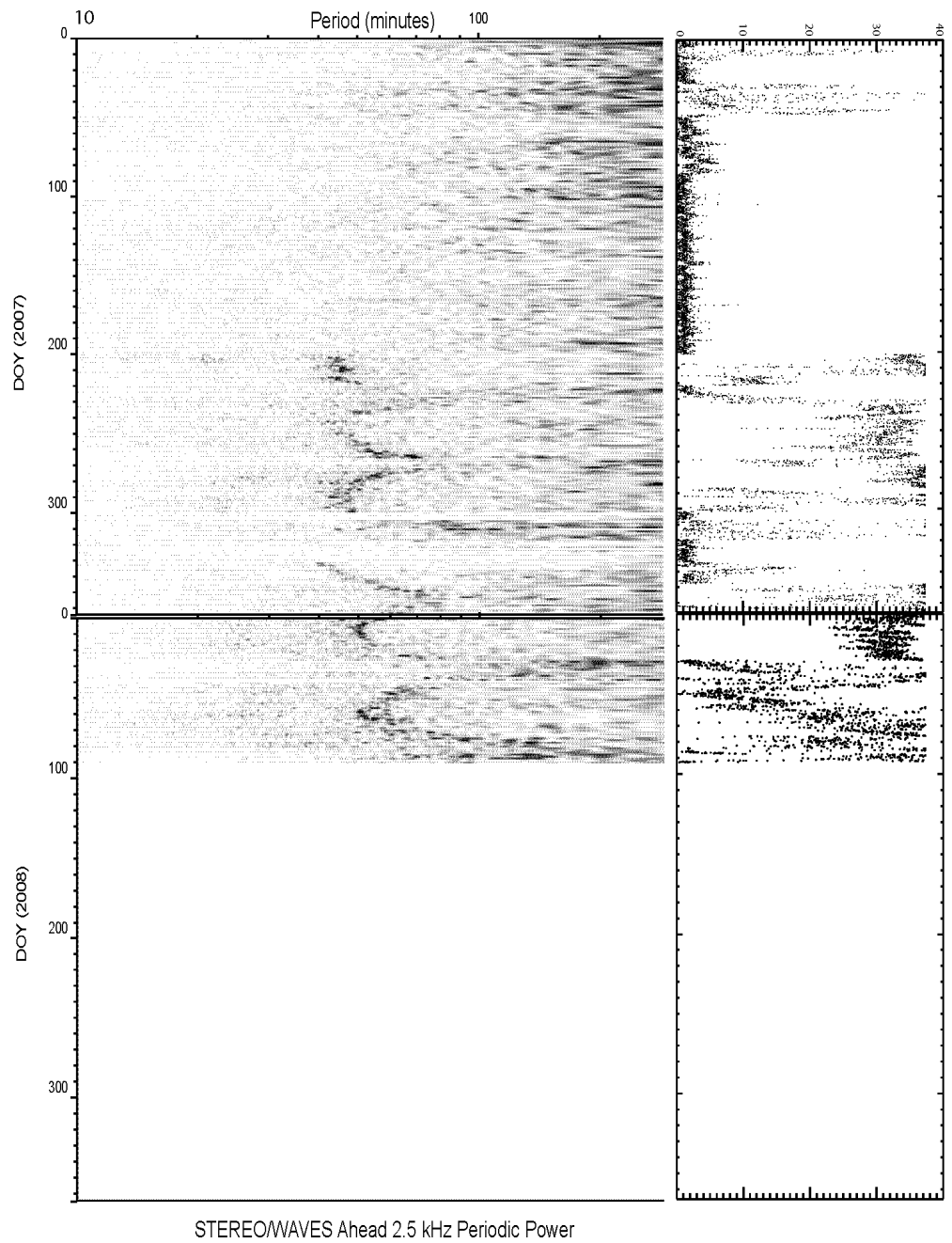
STEREO/Ahead WAVES TDS







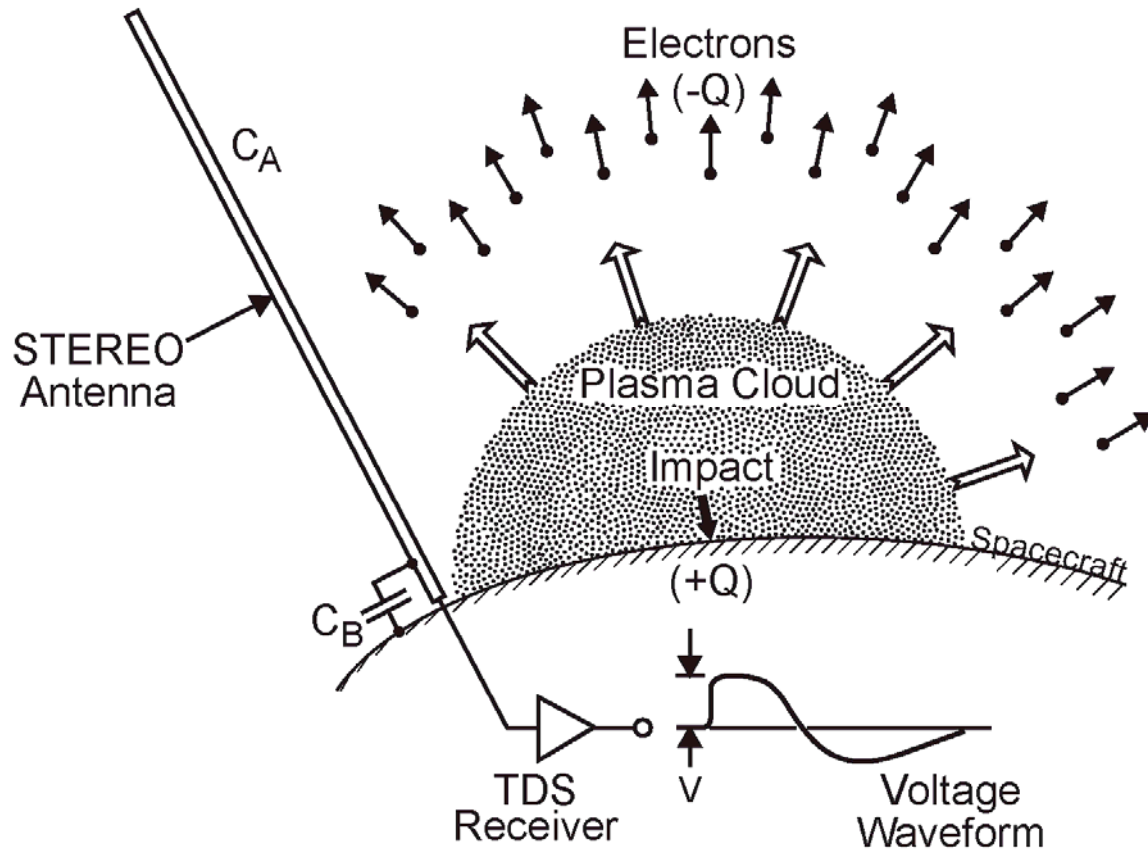
Periodic, too!

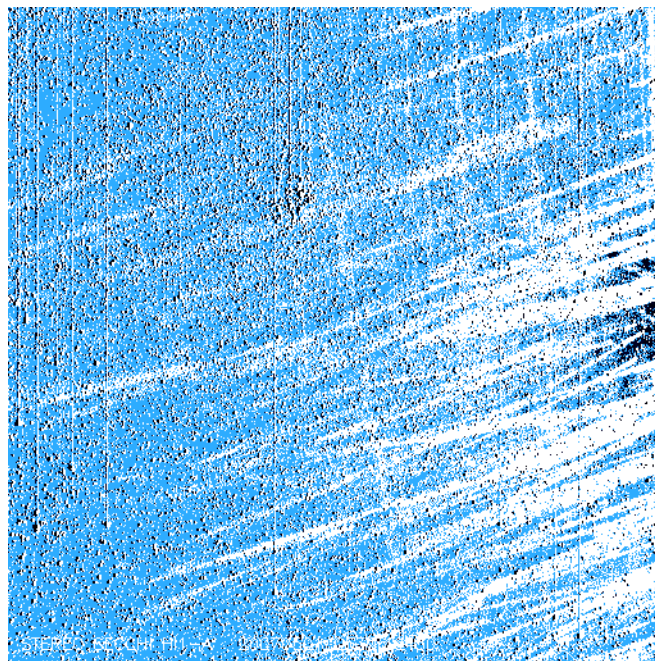
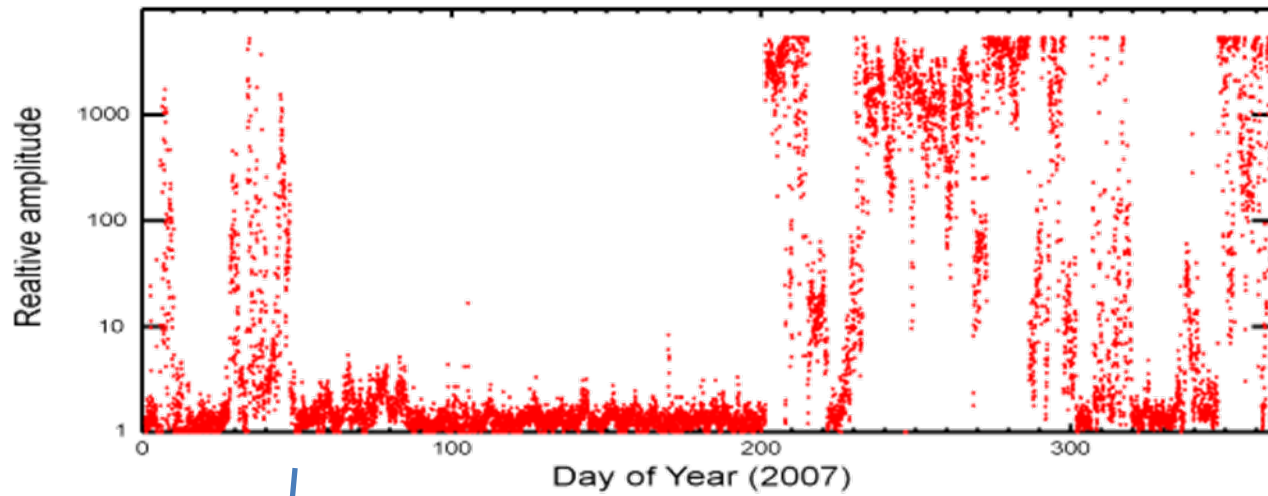


STEREO/WAVES Ahead 2.5 kHz Periodic Power

Adapted from Wang et al., *Plan & Spa. Sci.*, 54, 957-966, 2006.

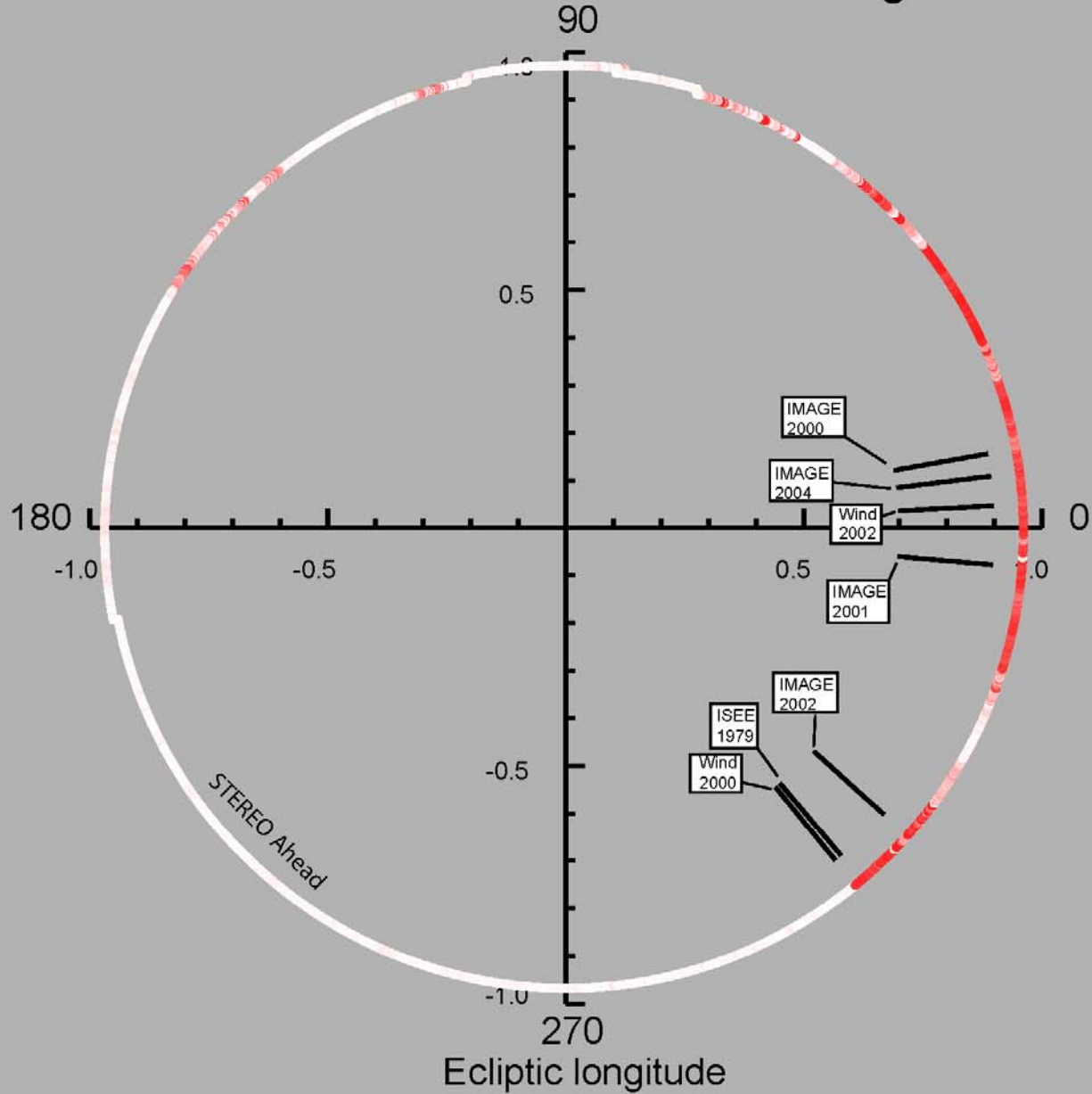
$$V = \frac{Q}{C} \approx \beta \frac{\kappa m}{C}$$
$$\beta = \frac{C_A}{(C_A + C_B)}$$
$$\kappa \rightarrow f(\text{materials}; v^{2.5-5})$$





- 17 SECCHI HI-1A compound debris events
- 100% correlation with S/WAVES impacts

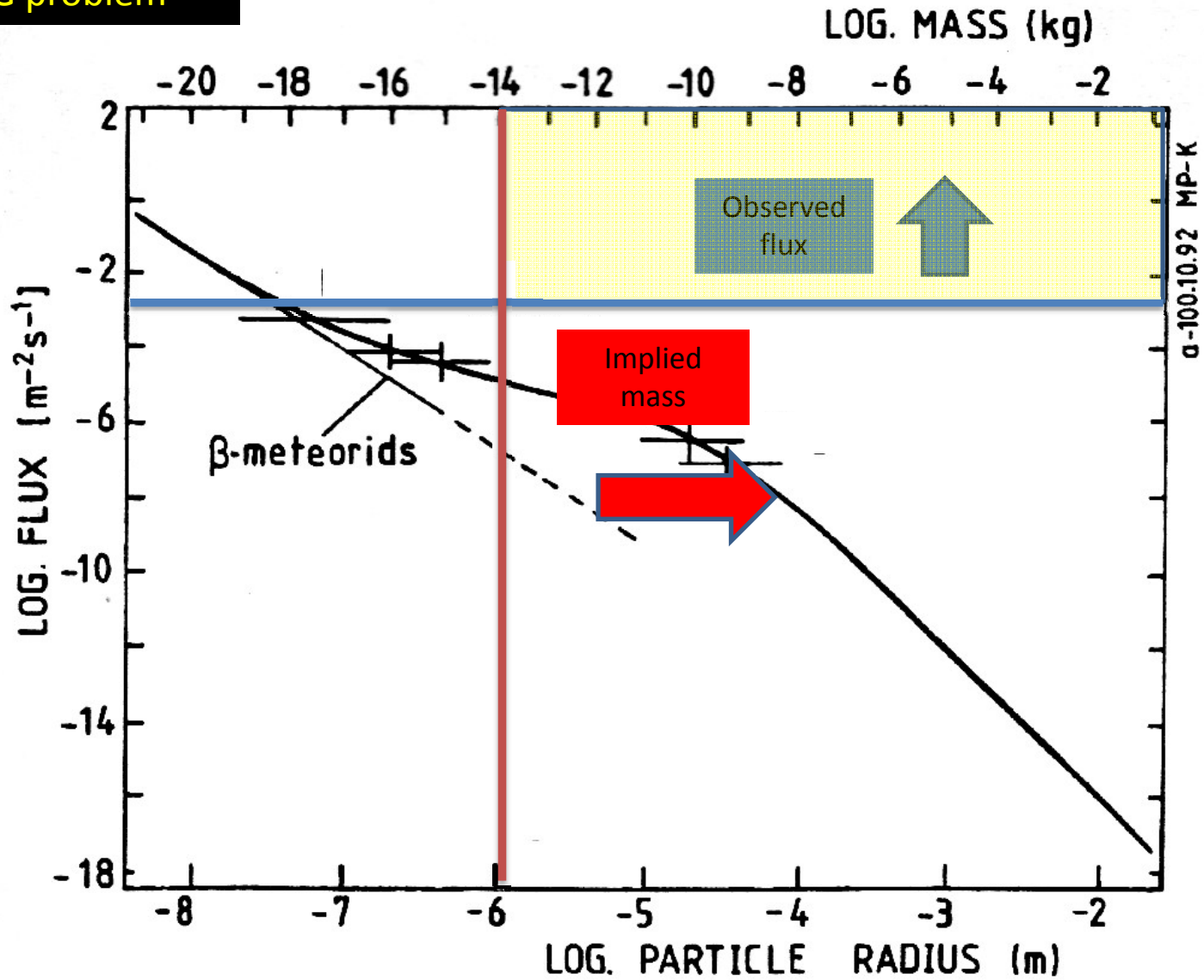
Known wire antenna breakages



Grün's Interplanetary Dust Distribution at 1 AU

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

The BIG problem



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 ~ 20 times as prevalent as on SOHO
 - Apparent 100% correlation with S/WAVES events
- Implied mass and flux during active sectors much higher than Grün distribution
 - In general agreement during inactive sectors