

SAMPEX Status

Dosimetry Measurements from LEO



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SAMPEX

- Launched 3 July 1992 into 520x670 km polar orbit (82°)
- Science mission ended 30 June 2004
- NASA/GSFC has continued to operate the vehicle via the Bowie State Operations Center
- The Aerospace Corporation has been processing the science data (Level 0 to Level 2) since the end of the science mission



SAMPEX Payload Status

TABLE I
SAMPEX SCIENTIFIC INSTRUMENTS

Energy Range for:	LEICA	HILT	MAST	PET
Electrons	—	—	—	0.4–30 MeV
H	0.76–6.1	—	—	18–250 MeV
He	0.45–6.1	4.3–38	7–20	18–350 MeV/nuc
C	0.44–11.4	7.2–160	14–210	34–120 MeV/nuc
Si	0.33–5.5	9.6–177	21–330	54–195 MeV/nuc
Fe	0.21–3.1	11.0–90	27–450	70–270 MeV/nuc
Charge range				1–2
for elements	1–25	2–28	2–28	1–28*
Charge range				1–2
for isotopes	2–16	2	2–28	1–10*
Geometry factor (cm ² sr)	0.8	60	7–14	0.3–1.6
Field of View (deg, full angle)	24 × 20	68 × 68	101	58
Mass (kg)	7.4	22.8	8.8	(incl. with MAST)
Power (W)	4.9	5.6	5.3	(incl. with MAST)
Telemetry (kbps)	1.3	0.9	1.4	0.5

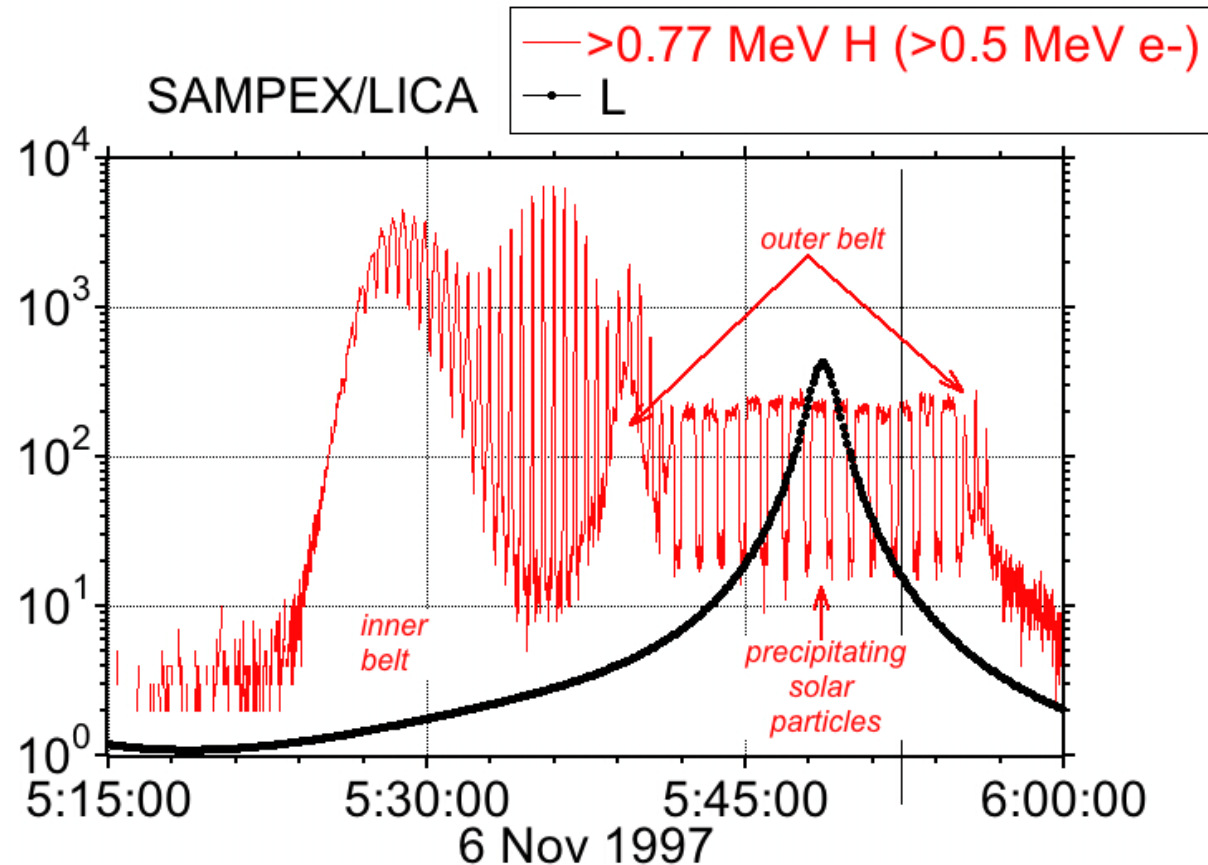
*commandable low-gain mode

Baker, D.N et al. Geoscience and Remote Sensing, IEEE Transactions on , vol.31, no.3, pp.531-541, May 1993

- HILT & LICA are operational
- MAST & PET are not operating due to the failure of a shared low-voltage power supply on 16 October 2009

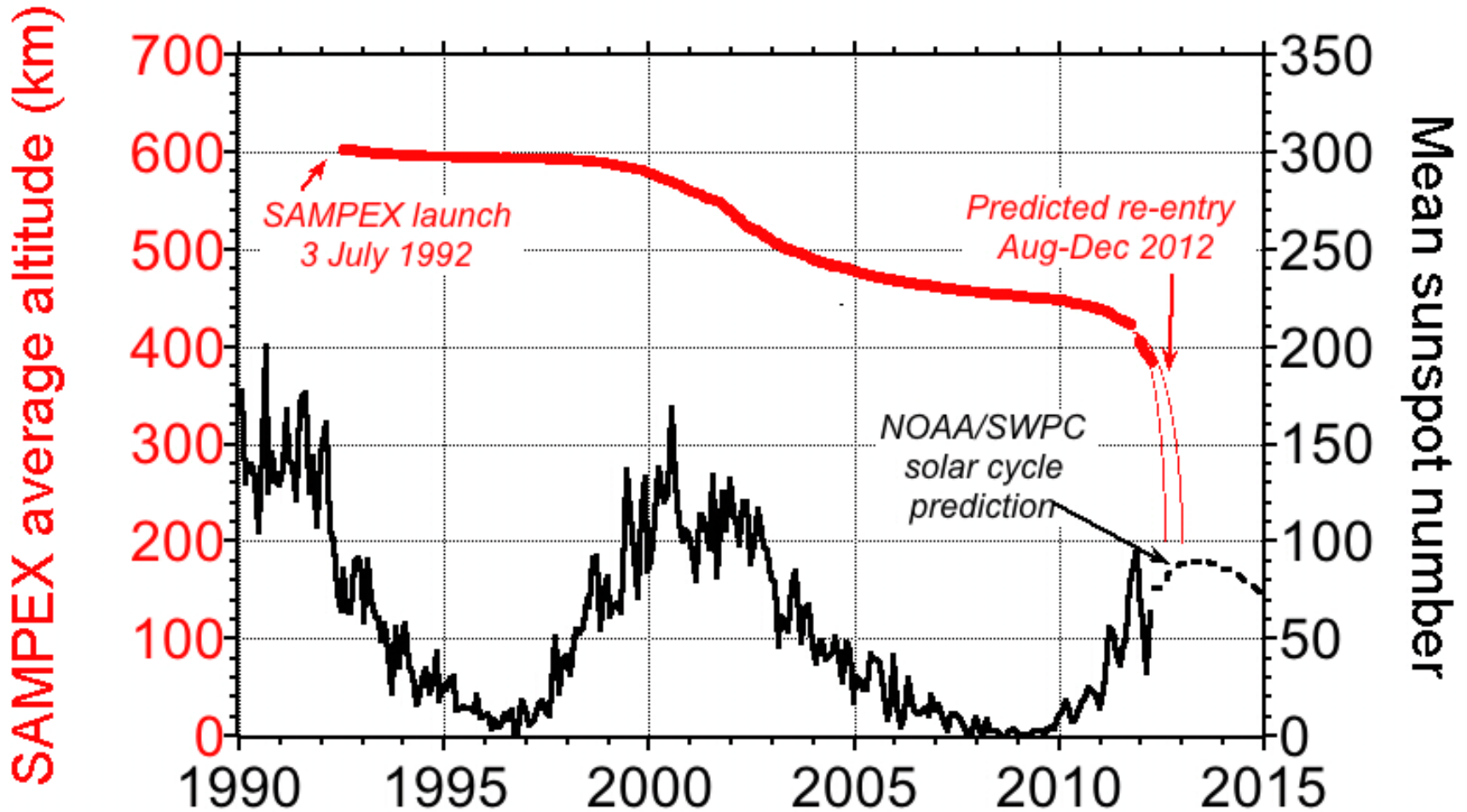
SAMPEX Mission Status

- Reaction wheel failed on 18 August 2007
- Momentum management required reverting to the 1 rpm “spin mode”; the vehicle has been spinning since 2007
- Otherwise the single-string spacecraft is healthy
- Ground system is healthy



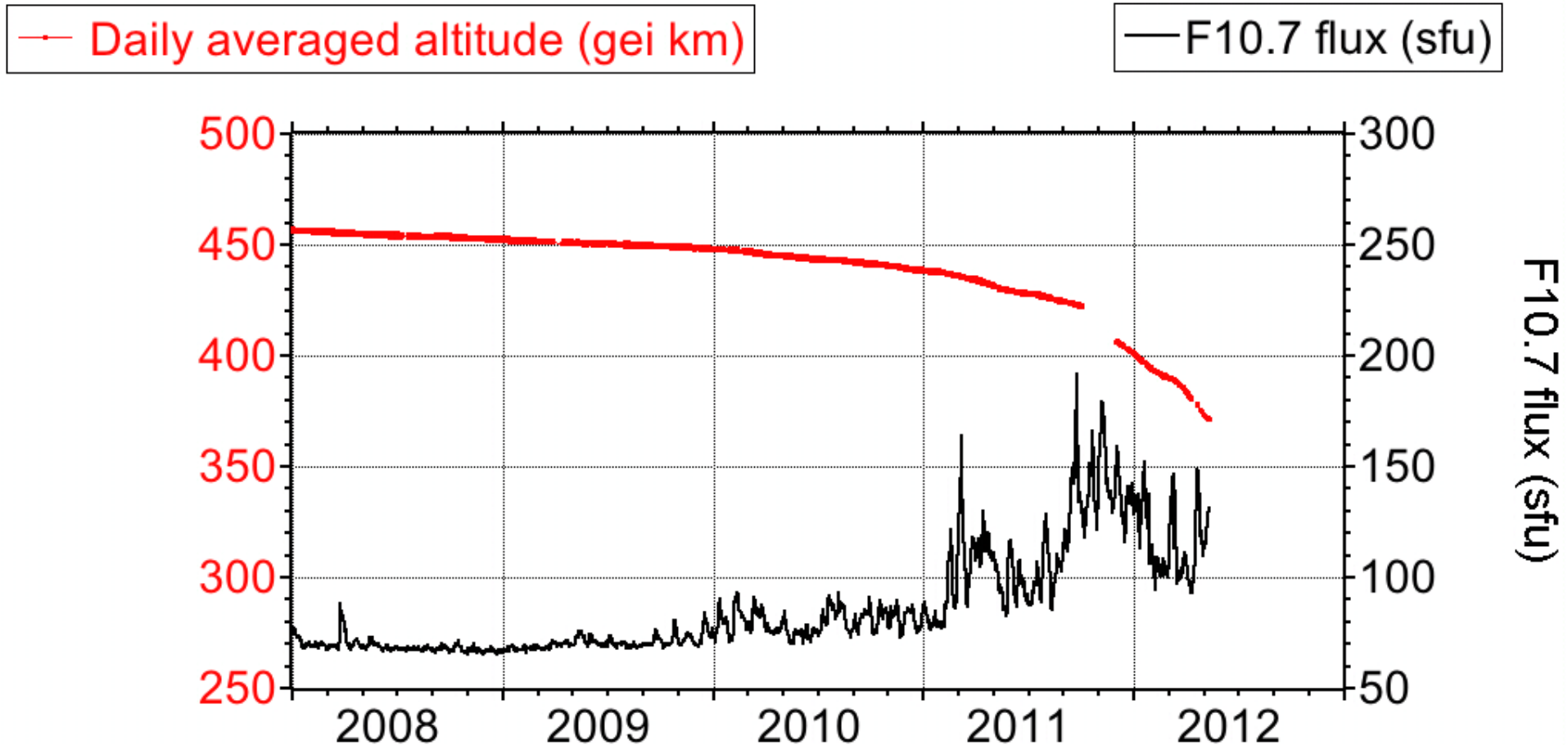
Example of 1-rpm spin mode

SAMPEX Orbit Status



Baker, Mazur, & Mason Space Weather, in press, 2012

SAMPEX Orbit Status



Latest data: 5/10/2012

<http://www.swpc.noaa.gov/ftpd/indices/DSD.txt>

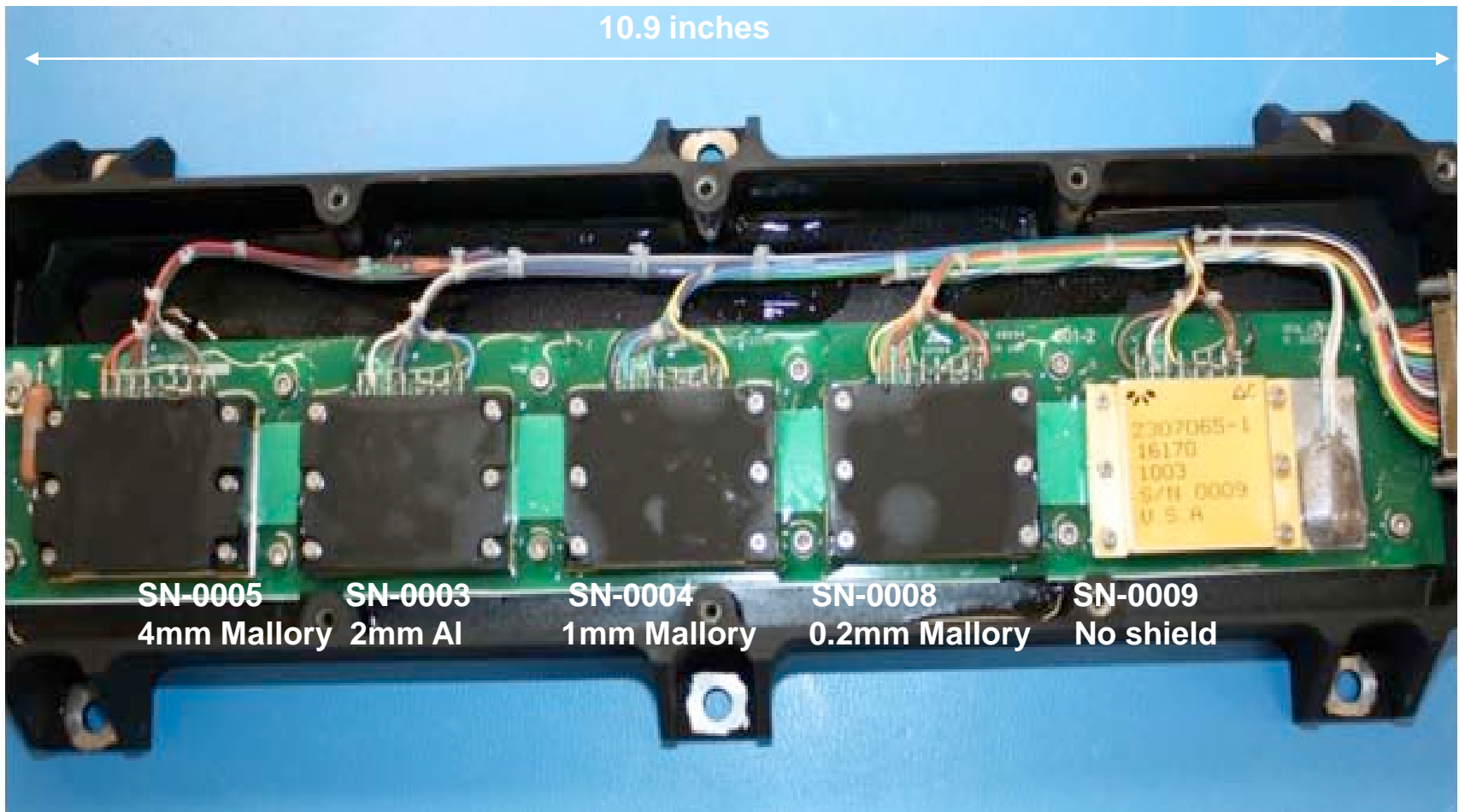


Image courtesy of Millennium Space Systems

Dose rate example

