Space Weather Session
GSICS Annual Meeting 2024

KMA/NMSC Review of
"Panel on Radiation Belt Environment Modeling (PRBEM)
Data analysis procedure"
with respect to GK2A Particle Detector (PD) data

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V.1 Inter-calibration based on trapped particle dynamics

L* <6.andΔL*<0.1

- The proposed standard for the magnetic field model is IGRF (decimal year + 0.5) plus Olson-Pfitzer quiet 1977.

1. $\Delta(B/B_{eq}) < 0.1$ and B/B_{eq} as close as possible to one

2. Magnetic Local Time (MLT) within 2 hours of 06 :00 and 18 :00

3. Magnetospheric activity quiet (Kp < 2) for two days before conjunction

4. $\Delta t < 3$ hours

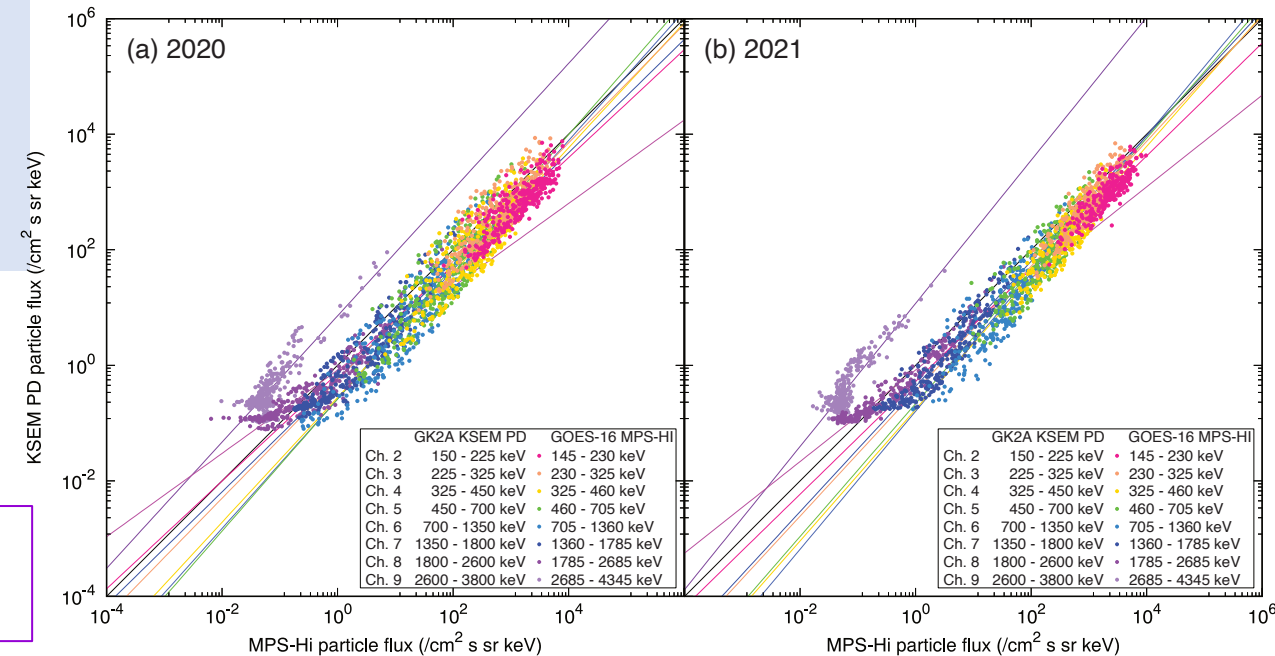5. Particle energy > 100 keV (particle must be trapped)

(GEO-GEO)

1. A long-time average comparisons has been used, since many missions are available in statistically the same orbits

GEO-GEO (GK2A vs. GOES-16)

1. $\Delta L^* < 0.1$

2. L* was calculated using Olson-Pfitzer quiet 1977 and IGRF in SpacePy 0.2.2

3. Daily average of Kp < 2

4. 150 keV – 3,800 KeV

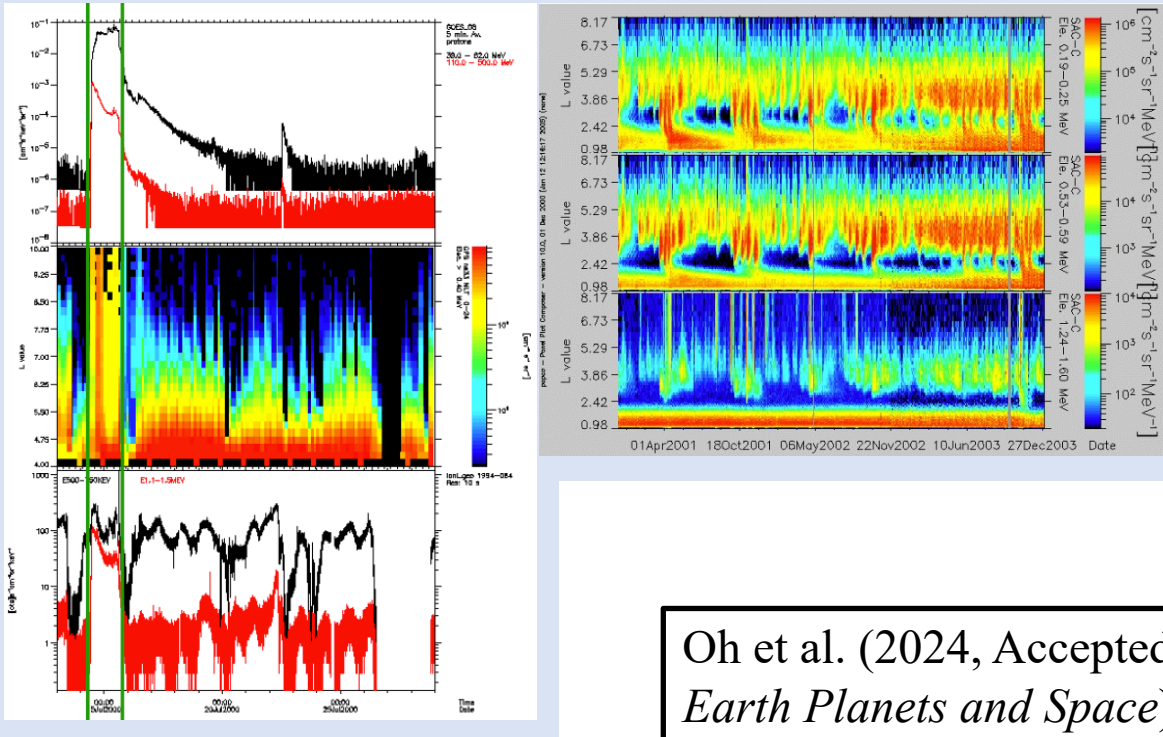Oh et al. (2024, Accepted in *Earth Planets and Space*)

Channel No.	KSEM PD energy (keV)	MPS-HI energy (keV)
1	100-150	90-145
2	150-225	145-230
3	225-325	230-325
4	325-450	325-460
5	450-700	460-705
6	700-1350	705-1360
7	1350-1800	1360-1785
8	1800-2600	1785-2685
9	2600-3800	2685-4345
10	2000-3800	>2000 (integral)

(a) 2020 (b) 2021 — KSEM PD particle flux (/cm² s sr keV) vs. MPS-Hi particle flux (/cm² s sr keV)

| GK2A KSEM PD		GOES-16 MPS-HI	
Ch. 2	150 - 225 keV	145 - 230 keV	
Ch. 3	225 - 325 keV	230 - 325 keV	
Ch. 4	325 - 450 keV	325 - 460 keV	
Ch. 5	450 - 700 keV	460 - 705 keV	
Ch. 6	700 - 1350 keV	705 - 1360 keV	
Ch. 7	1350 - 1800 keV	1360 - 1785 keV	
Ch. 8	1800 - 2600 keV	1785 - 2685 keV	
Ch. 9	2600 - 3800 keV	2685 - 4345 keV	

IV.1 Electron data contamination
IV.1.1 Contamination by proton

It is well known that during times of solar energetic proton events (SEPs) many of the detectors are contaminated with strong background counts. Figure 1 gives an example of a period of SEP contamination. The SEP event is clearly visible in the elevated flux levels of energetic protons measured at GOES 08.

Oh et al. (2024, Accepted in *Earth Planets and Space*)
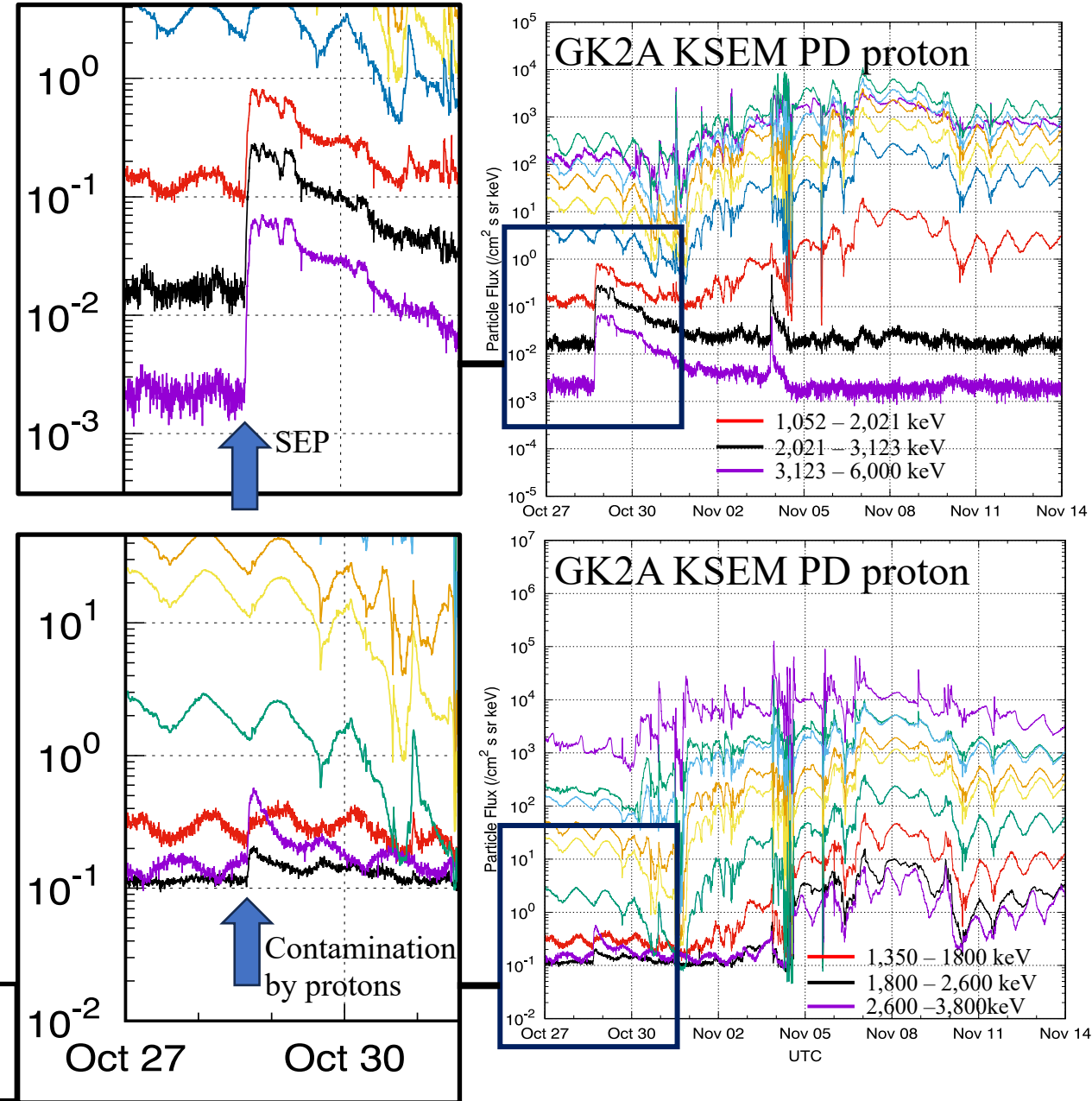
1. KMA (Oh et al., 2024) conducted an intercomparison under conditions partially similar to the approach proposed in PRBEM, but in the case of GEO-GEO.

2. It appears feasible to compare the recent intercomparison results with those obtained using the method mentioned in PRBEM.

3. We are wondering if it would be possible to use the proton data from the Himawari satellites (in addition to the GOES-16 proton data) to remove contamination by protons (SEPs) from the electronic data of the GK2A KSEM PD, because GK2A is positioned very closely to that of the Himawari satellites.