

Providing Long-term Measurements of 5-50 MeV/nucleon Proton and Helium Intensities

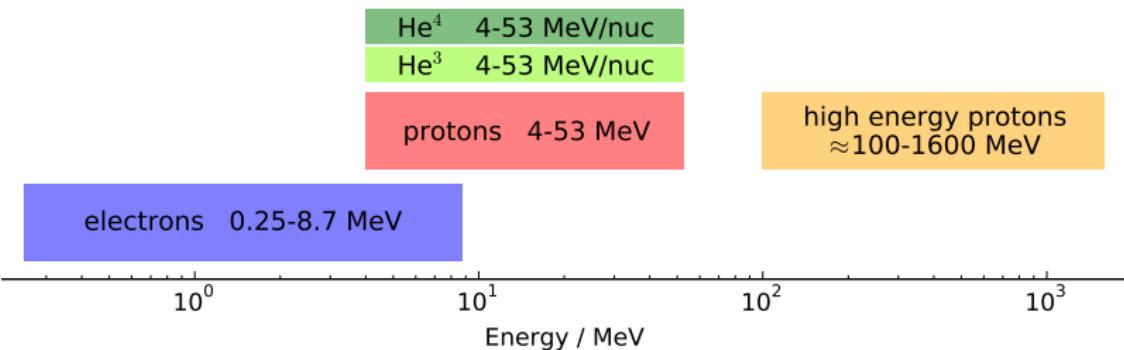
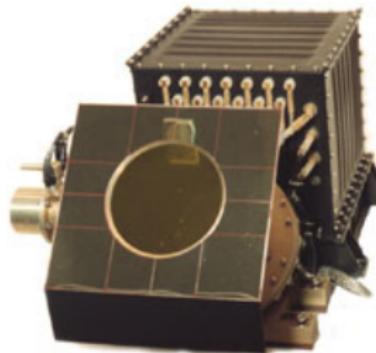
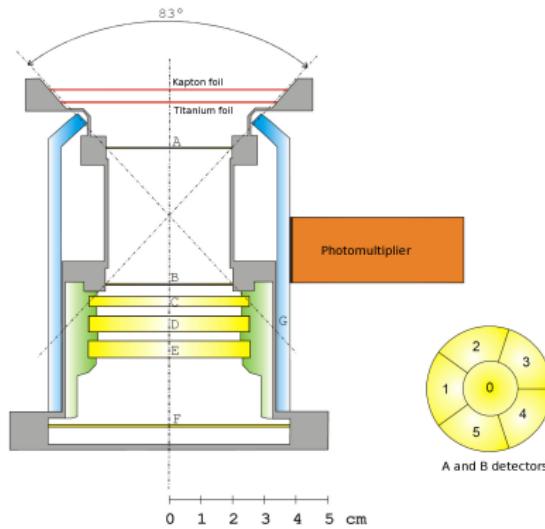
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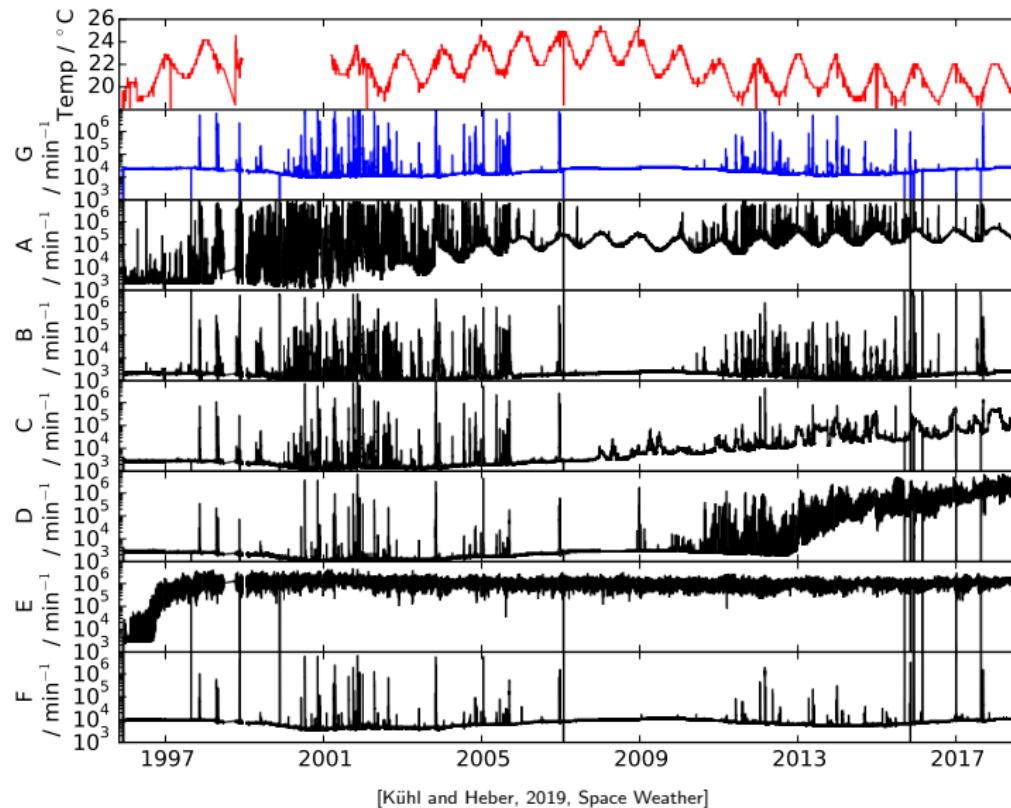
A new Data Product for SOHO/EHPIN

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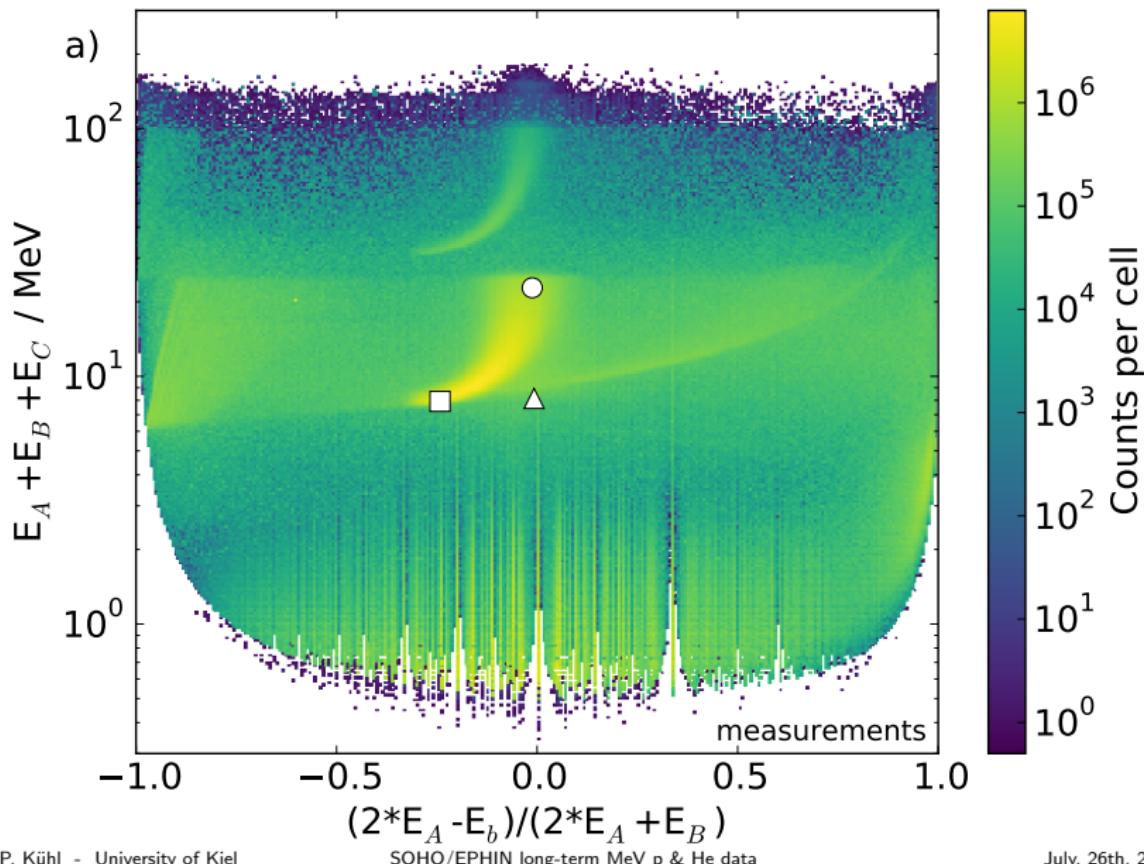


[Kühl and Heber, 2019, Space Weather]

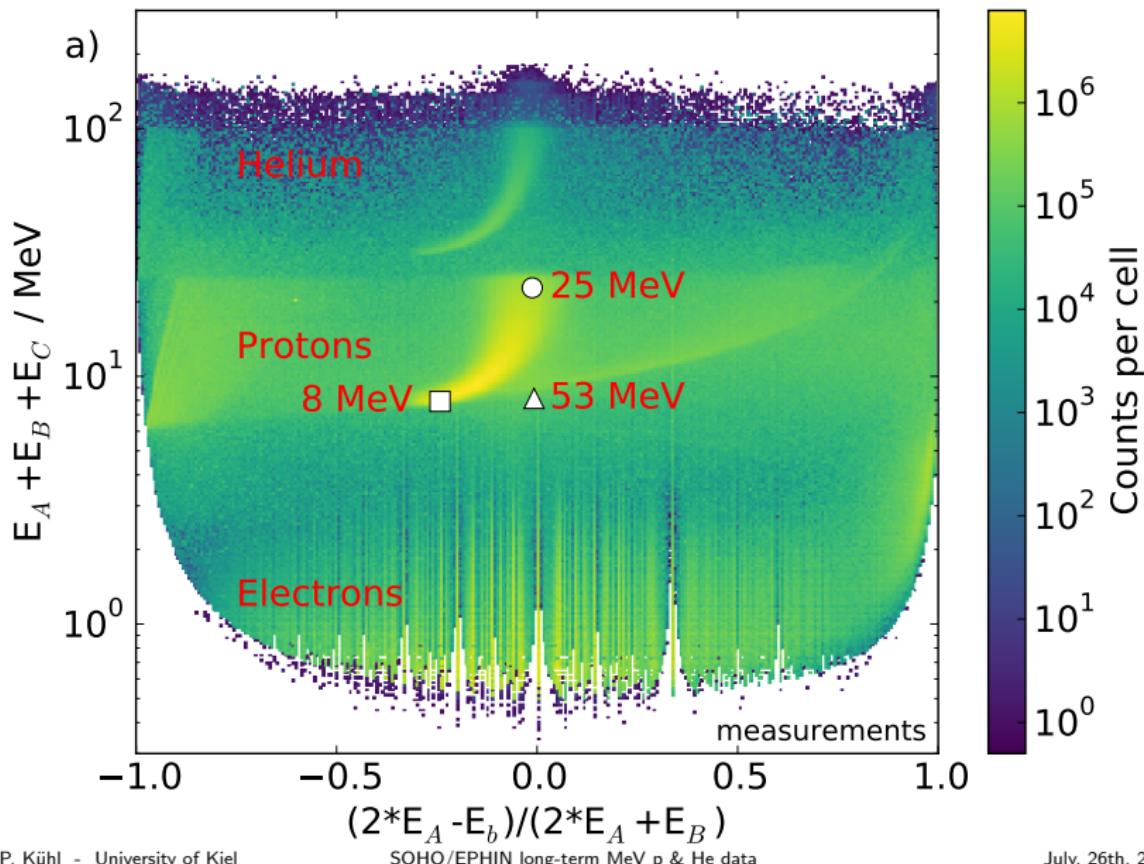
lvl3 data product

- ▶ reconstruct original energy channels based on PHA data, compensating for the loss of detector D and E
- ▶ only two coincidences:
 - ▶ AB \neg C \neg F \neg G : dE/dx -E method
 - ▶ ABC \neg F \neg G: dE/dx - dE/dx method (needs to be splitted in three energy channels)
- ▶ provide statistical and systematic uncertainties
- ▶ provide different time-resolutions (from 1 min up to daily averages)
- ▶ design philosophy: create an convenient, failsafe and consistent data product for the entire mission

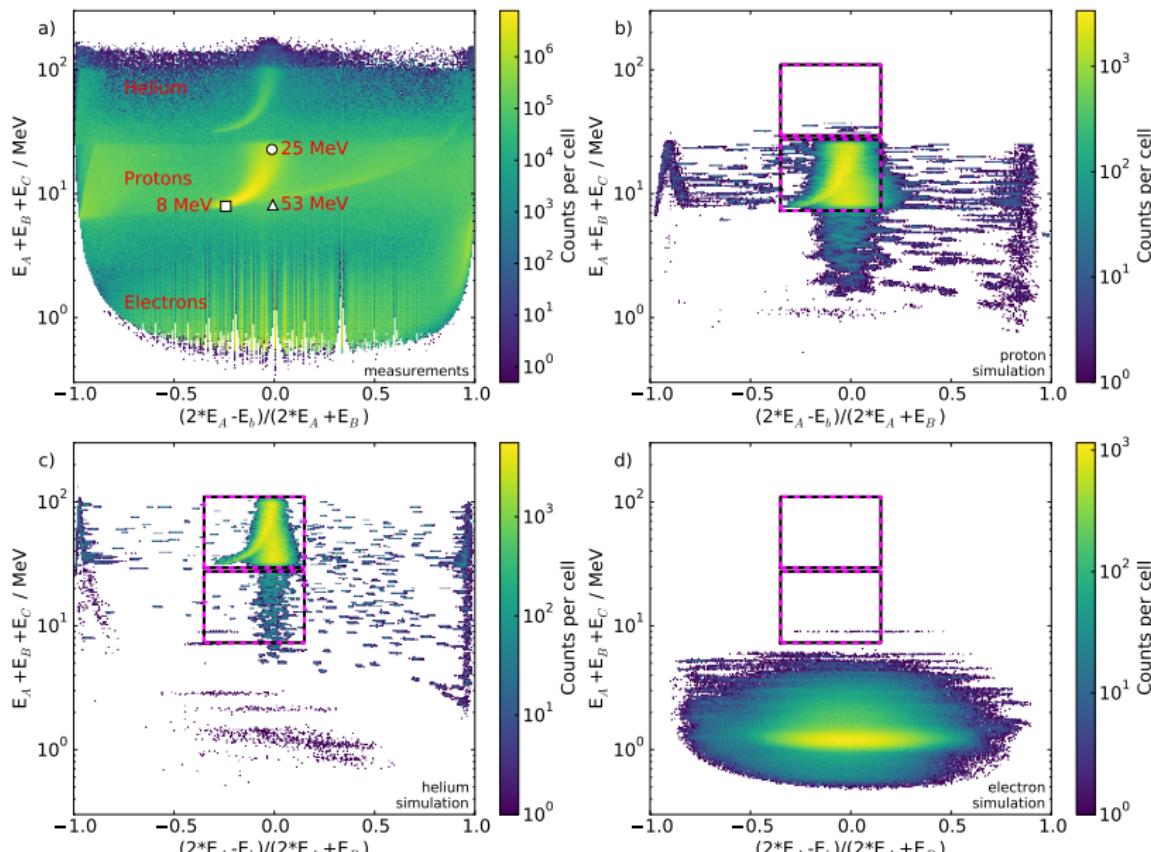
Particle Identification



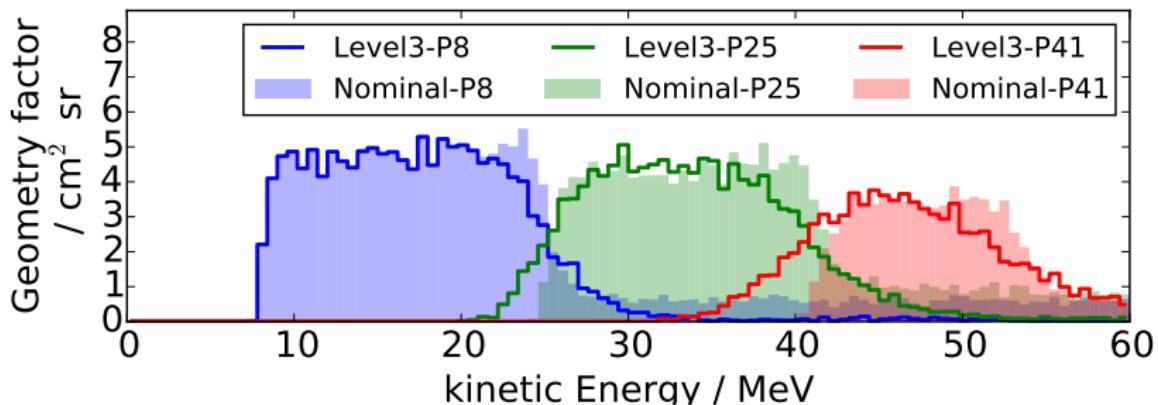
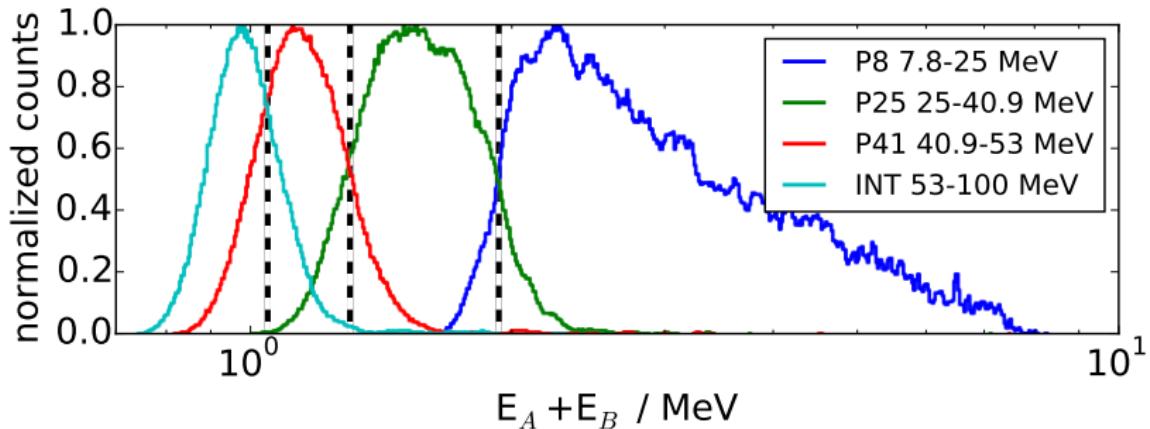
Particle Identification



Particle Identification

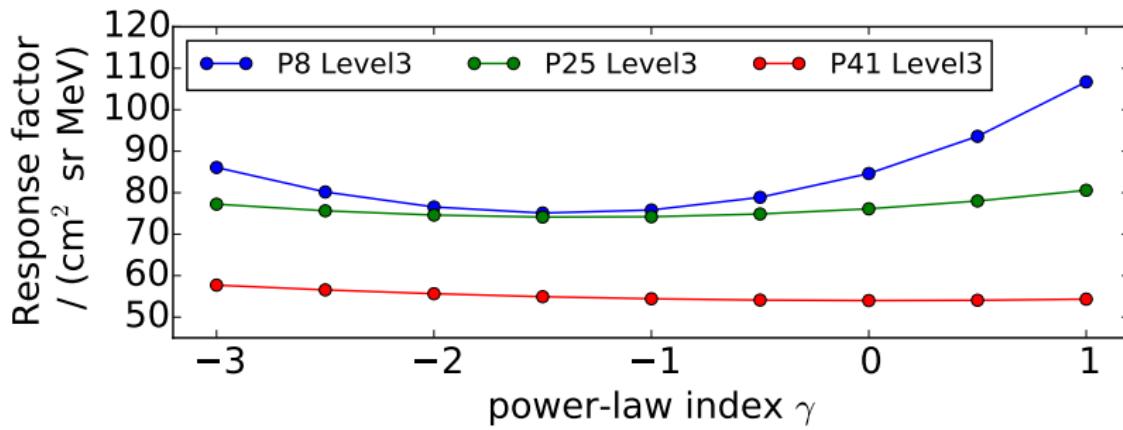


Energy Determination



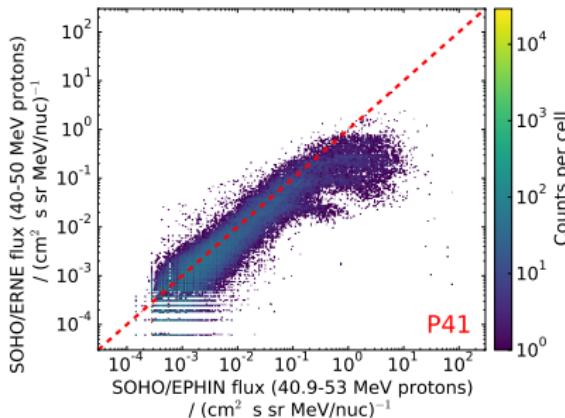
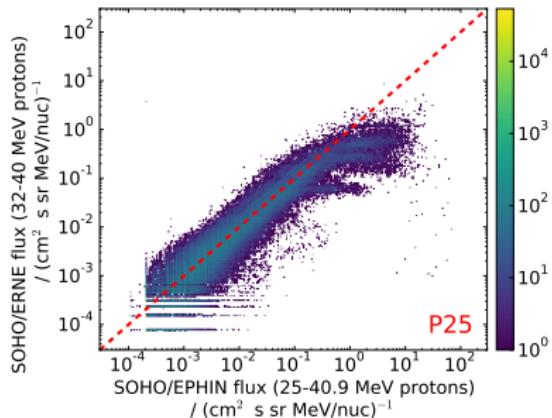
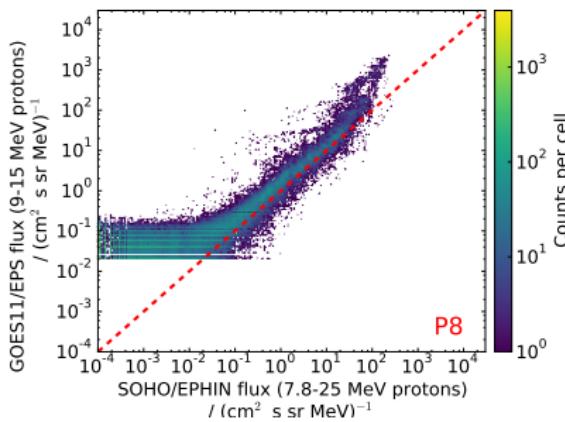
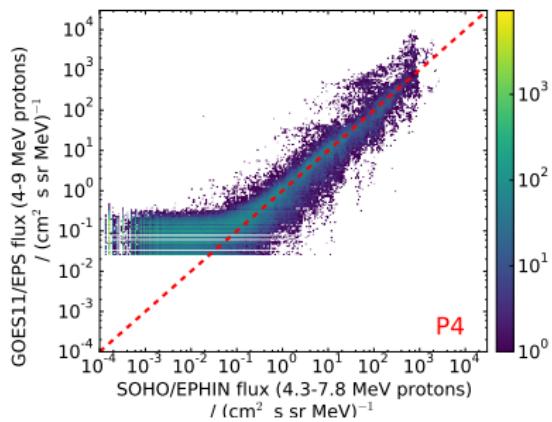
Response Factor

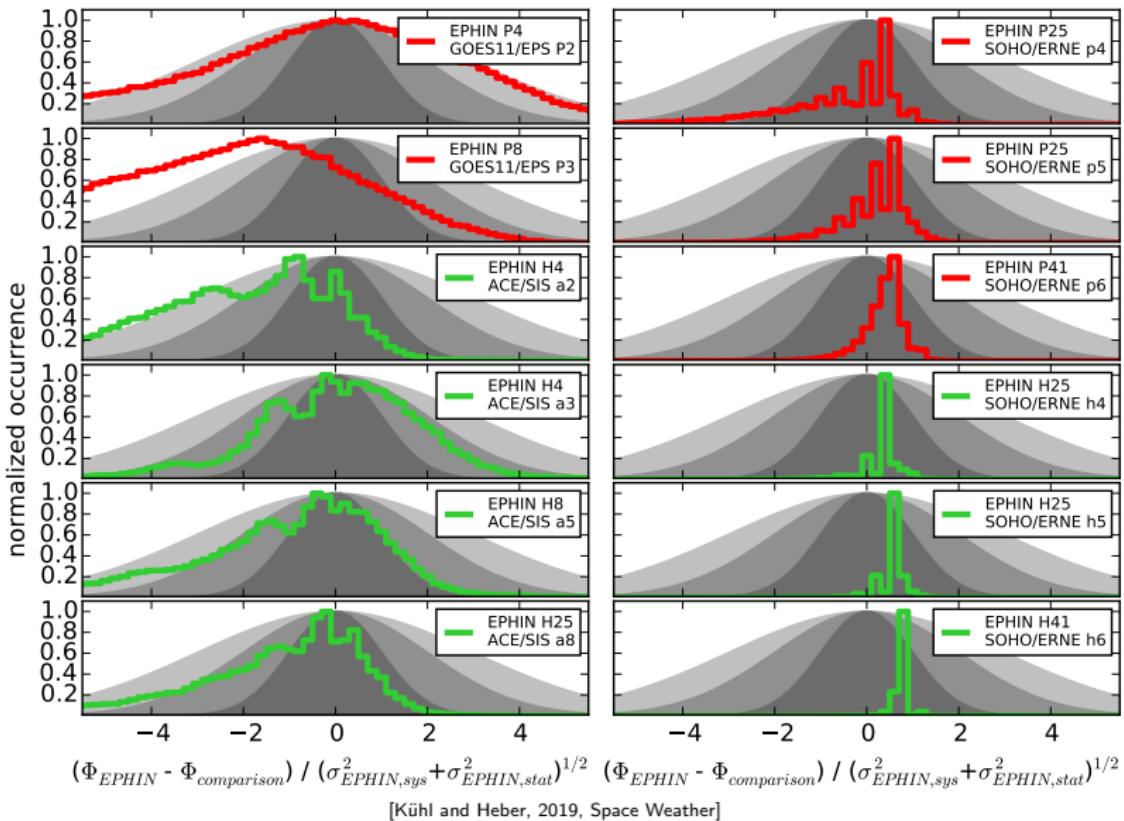
- ▶ calculate response factor that result in the correct flux based on simulation data
- ▶ average response factor for different power-laws
- ▶ standard deviation as systematic uncertainty

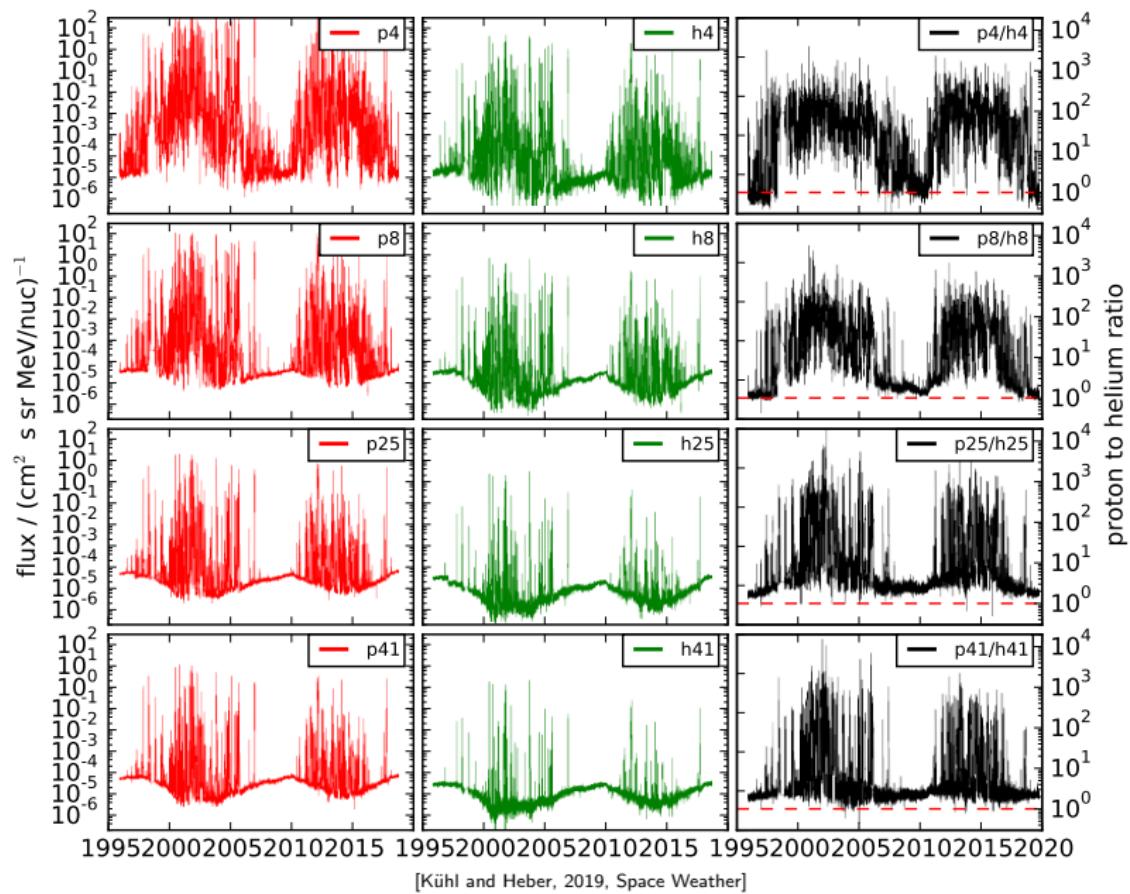


[Kühl and Heber, 2019, Space Weather]

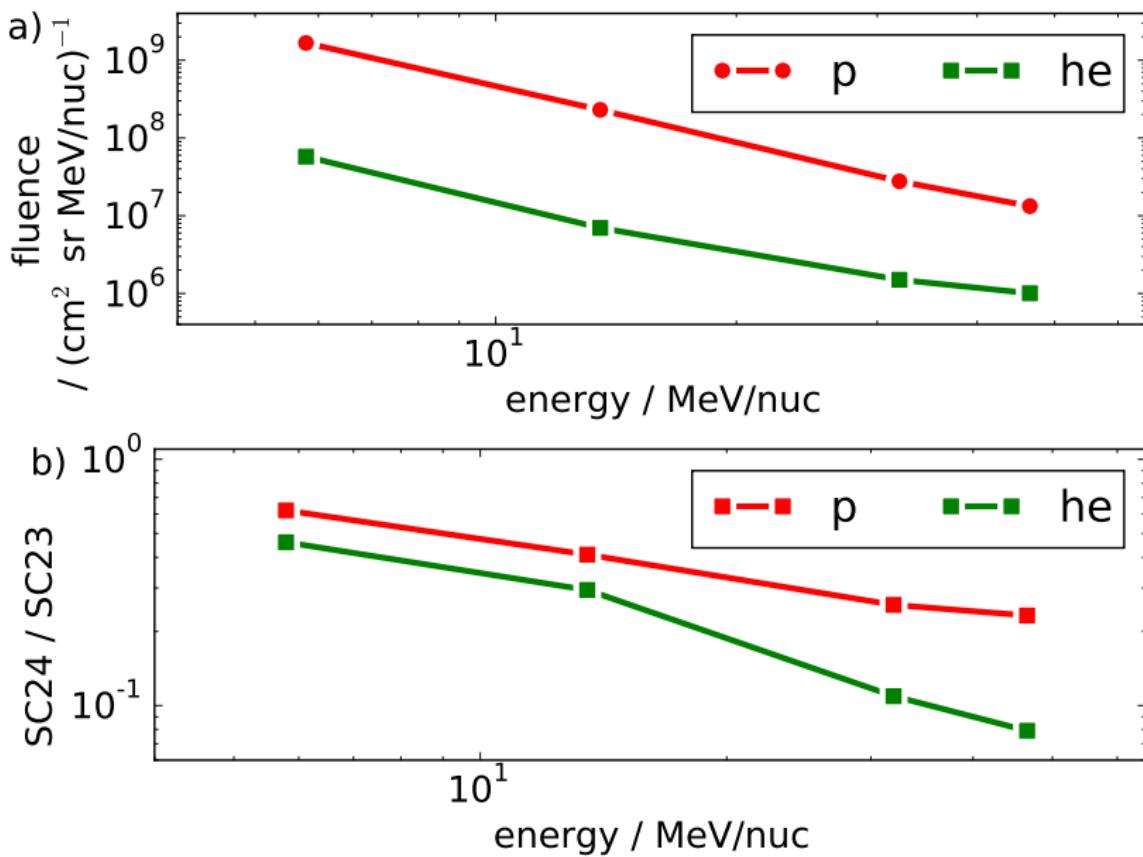
Comparison with other missions



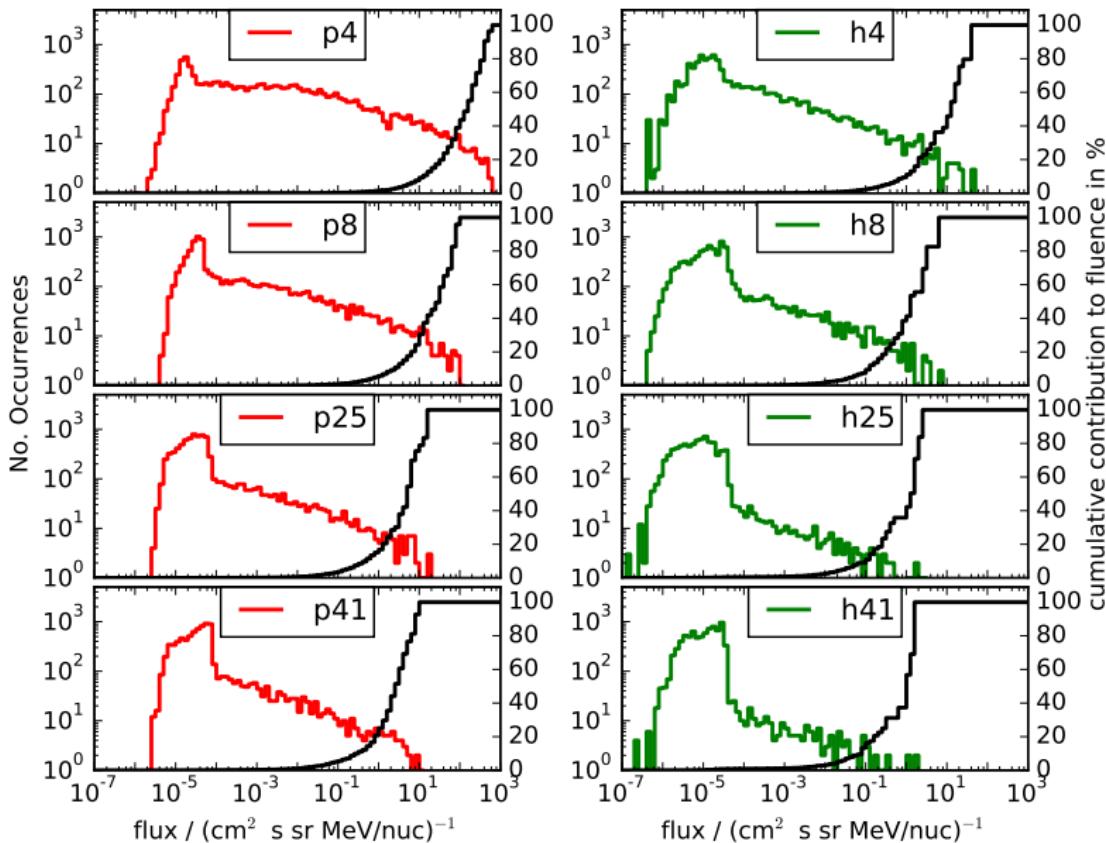




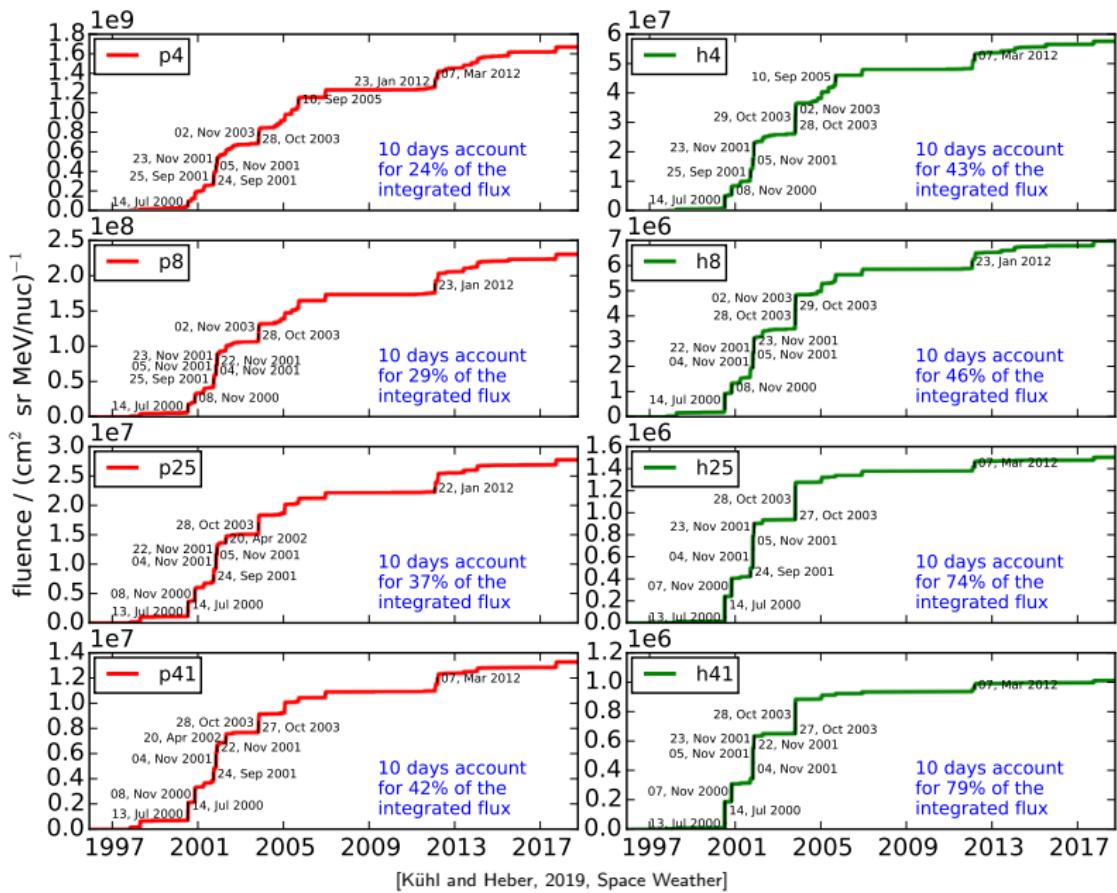
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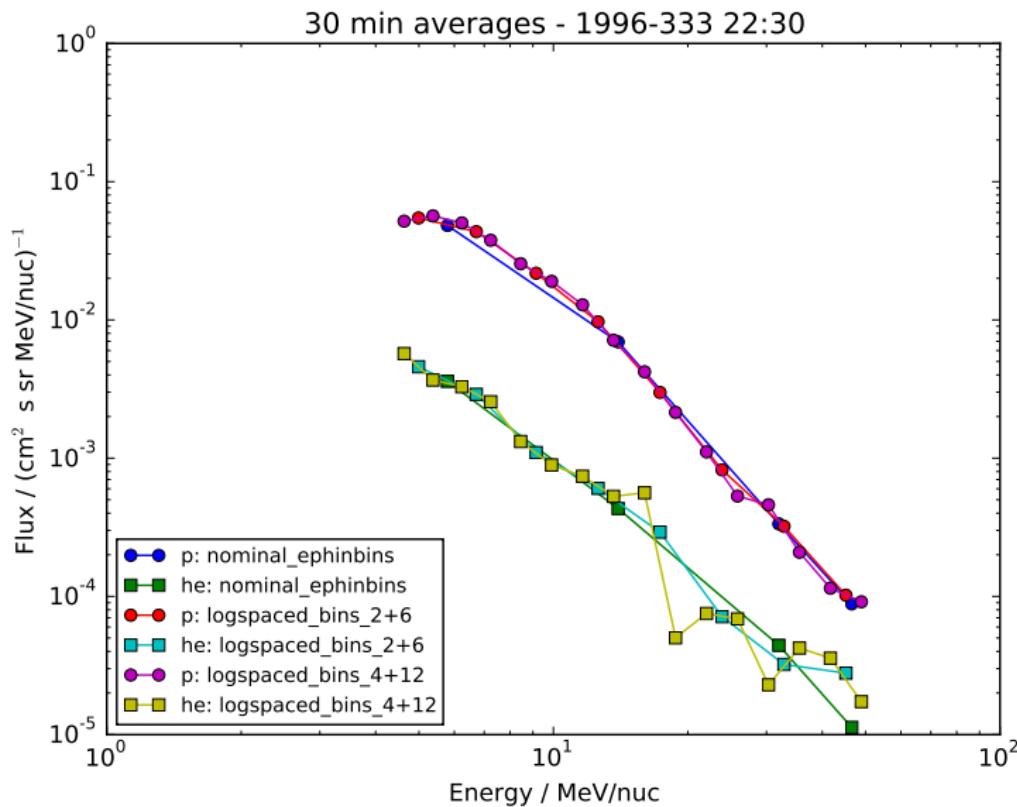


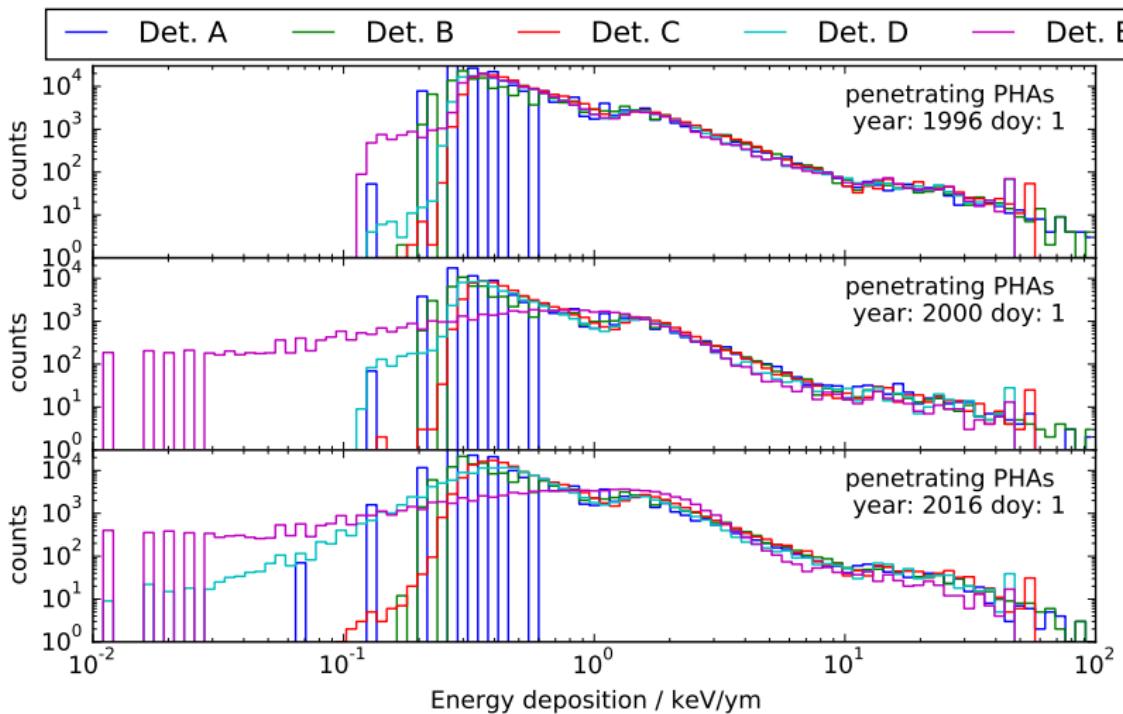
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- reduced energy resolution and particle identification due to FME/FMD in 1997/2017
- new analysis required to ensure consistent data quality