LYRA/EPT Perturbations Project

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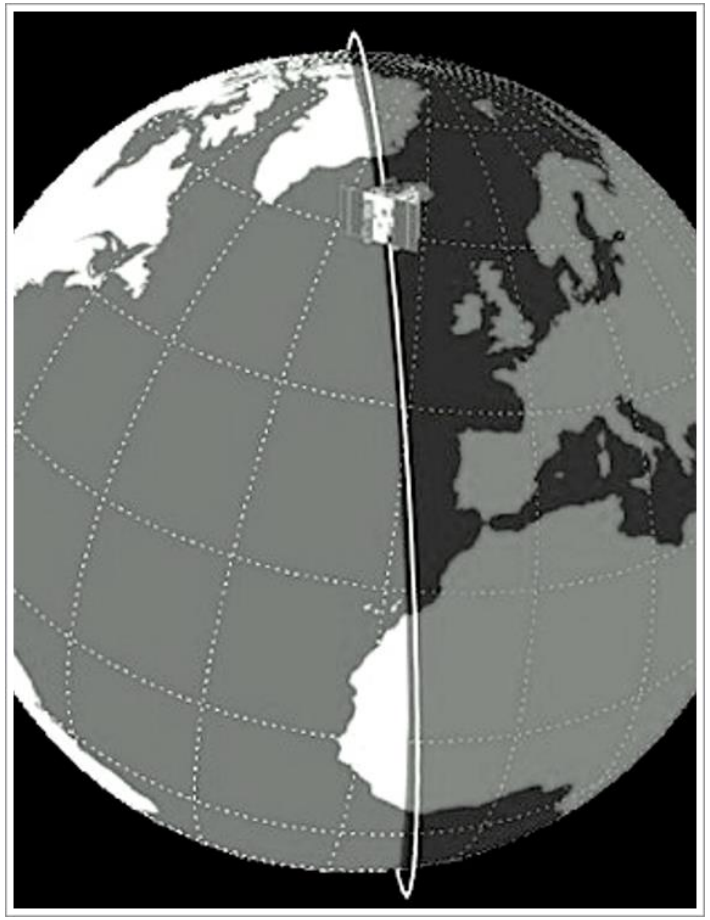
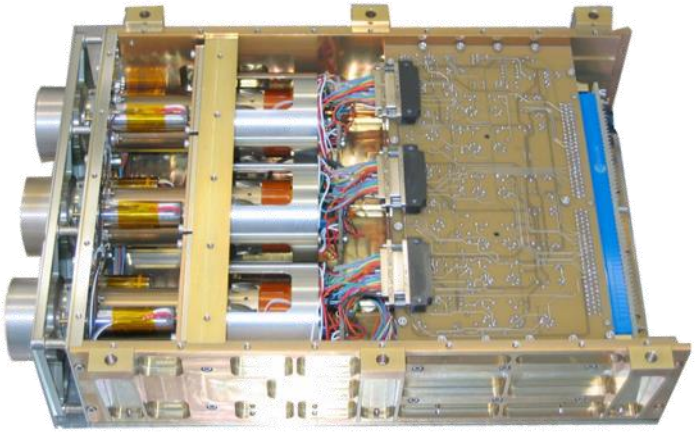
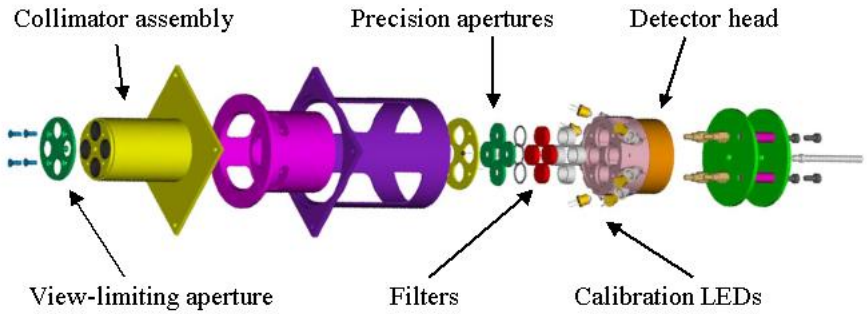
The PROBA-2 orbit

- Heliosynchronous
- Polar
- Dawn-Dusk
- 750 km altitude
- 100 min duration



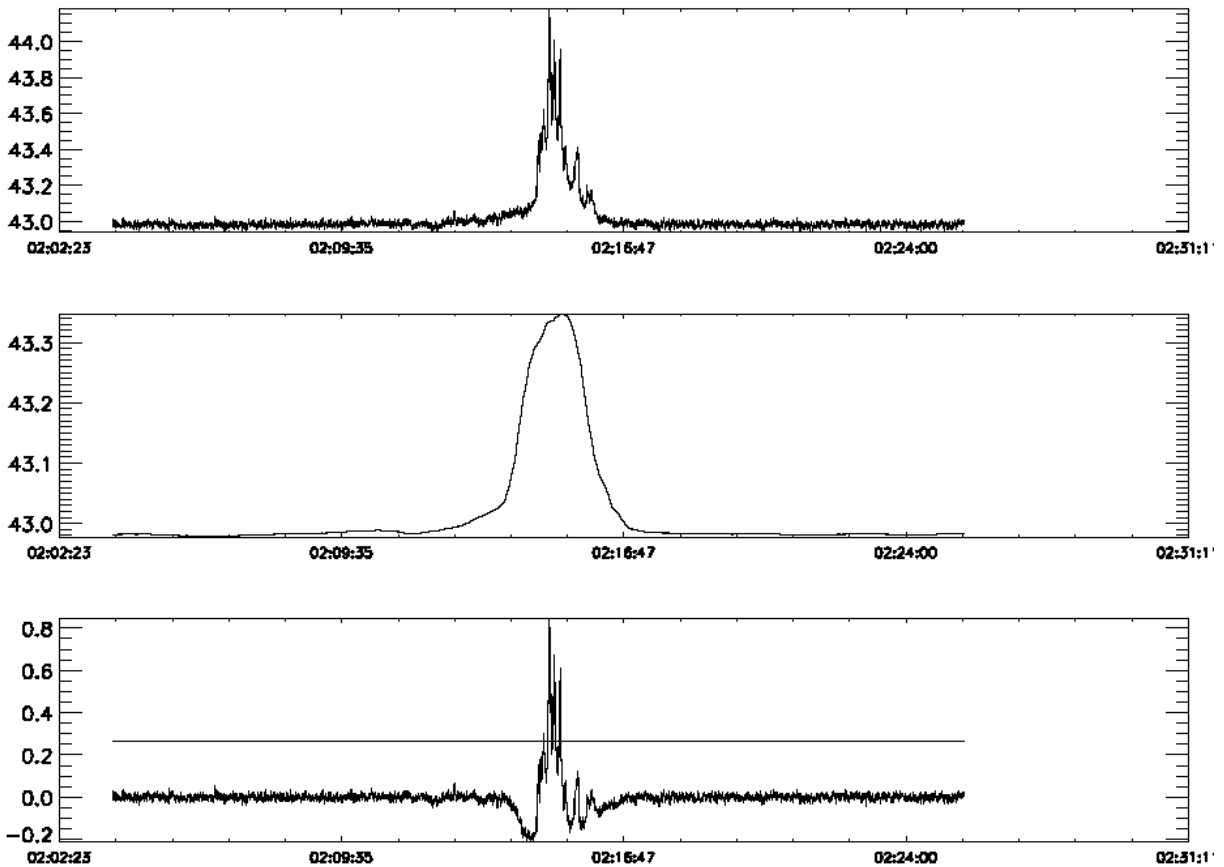
The LYRA instrument



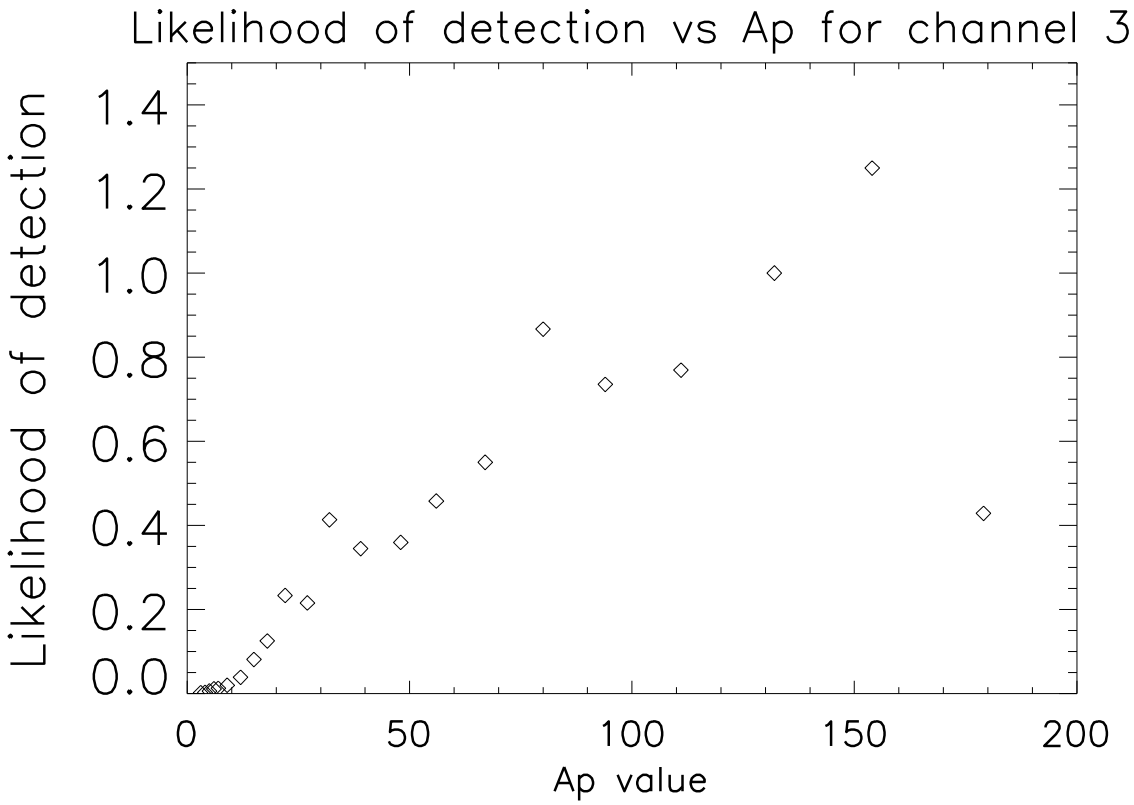


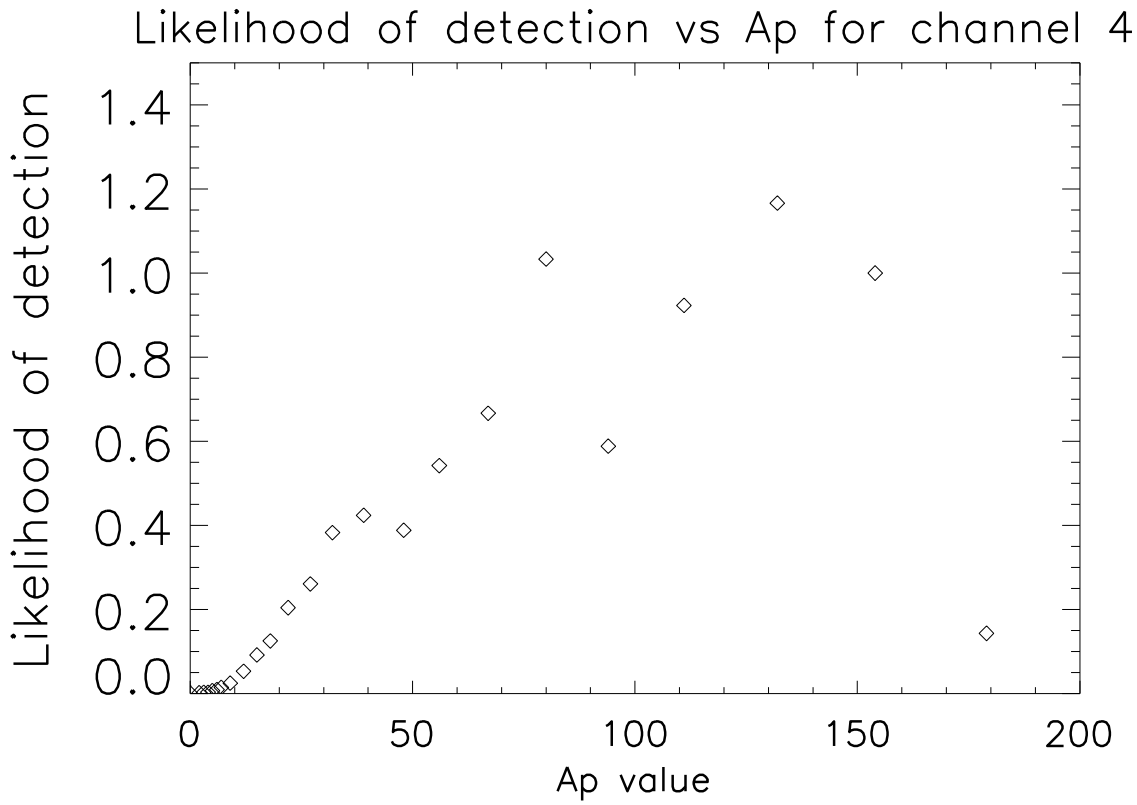
	Ly	Hz	Al	Zr
	120-123 nm	190-222 nm	17-80 nm + <5nm	6-20 nm + <2nm
Unit1	MSM - diamond	PIN- diamond	MSM- diamond	P-N Silicon
Unit2	MSM- diamond	PIN- diamond	MSM- diamond	MSM- diamond
Unit3	P-N Silicon	PIN- diamond	P-N Silicon	P-N Silicon

Detection Algorithm

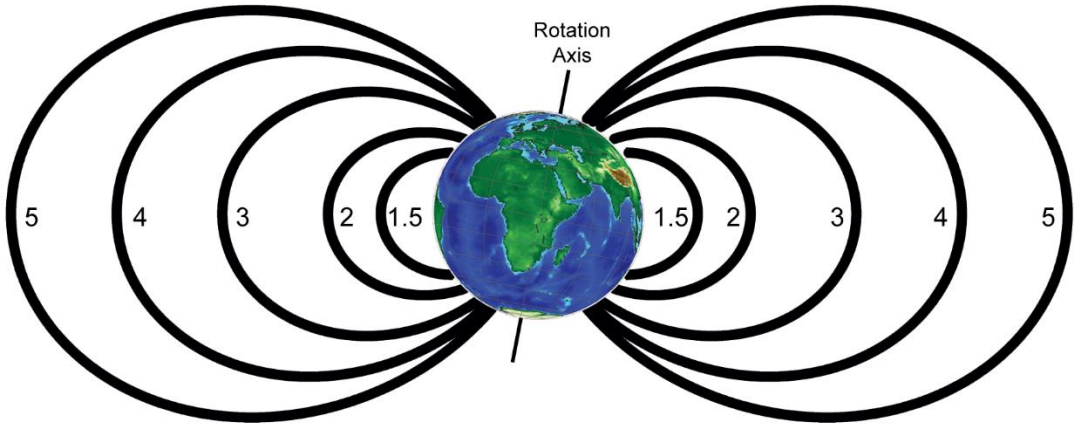


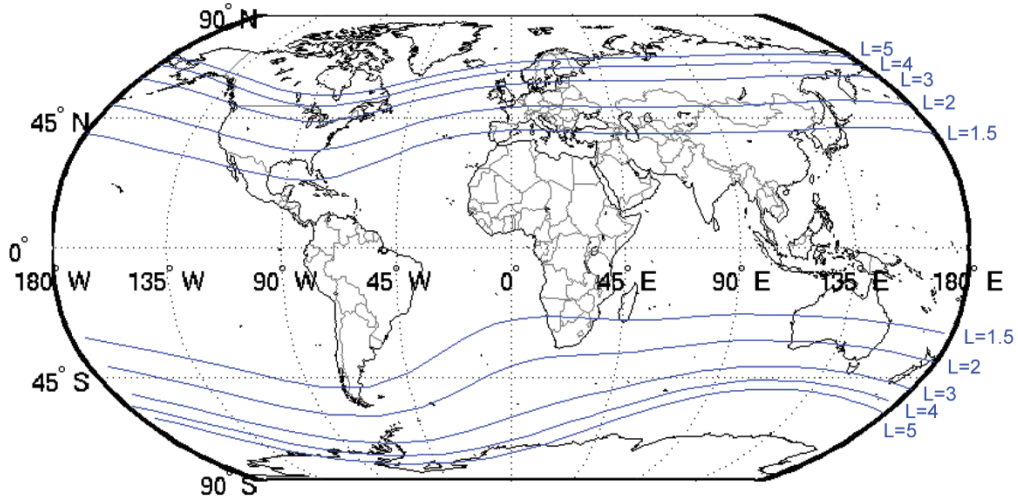
Likelihood of detection VS Geomagnetic disturbance



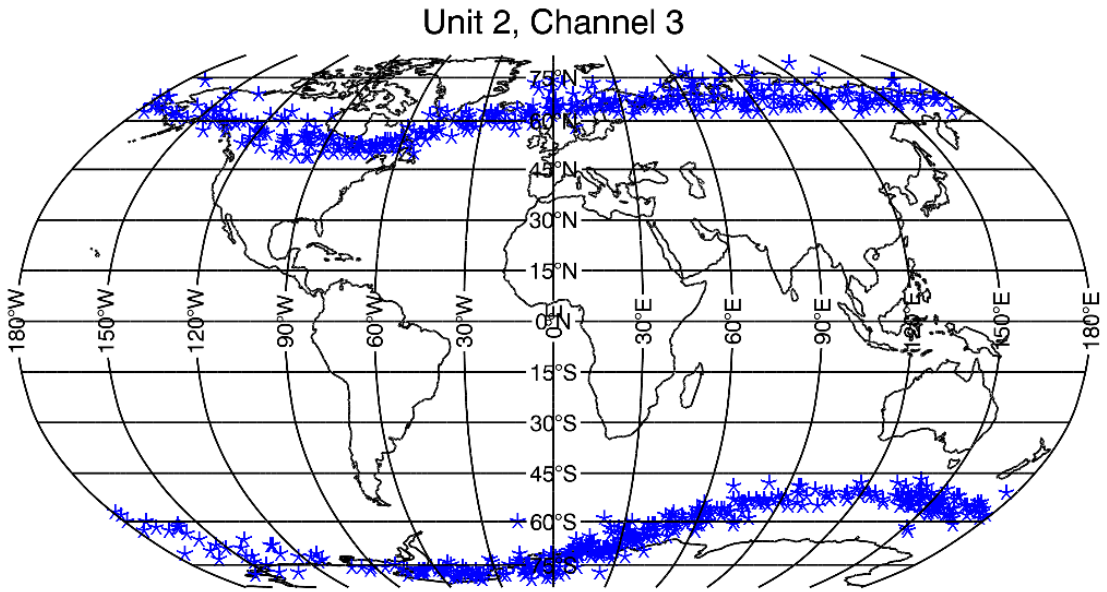


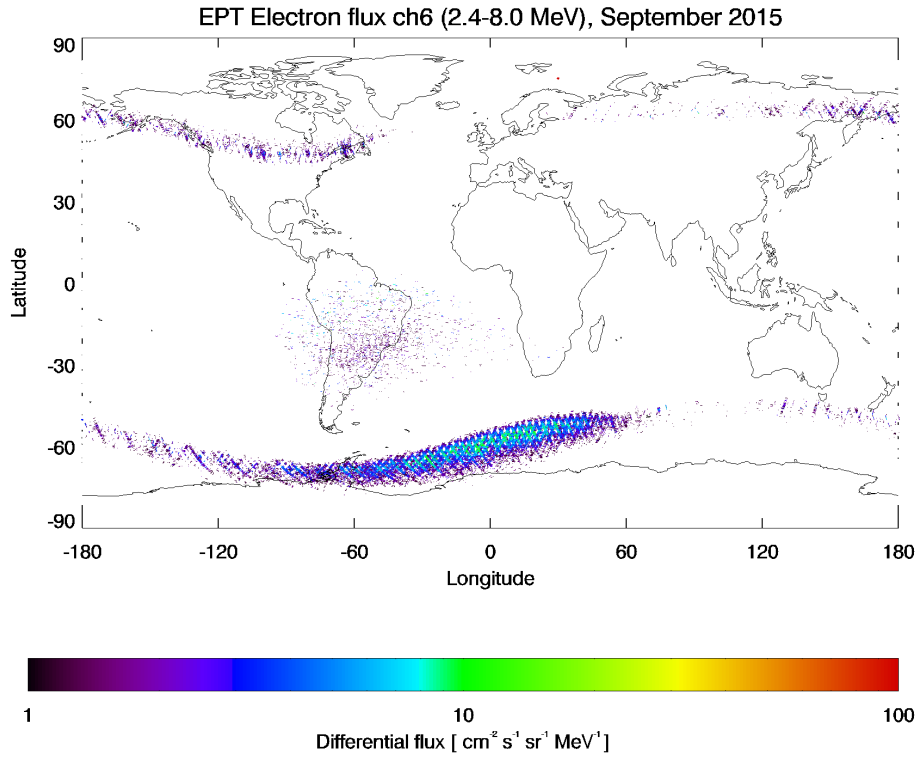
McIlwain L-Shells



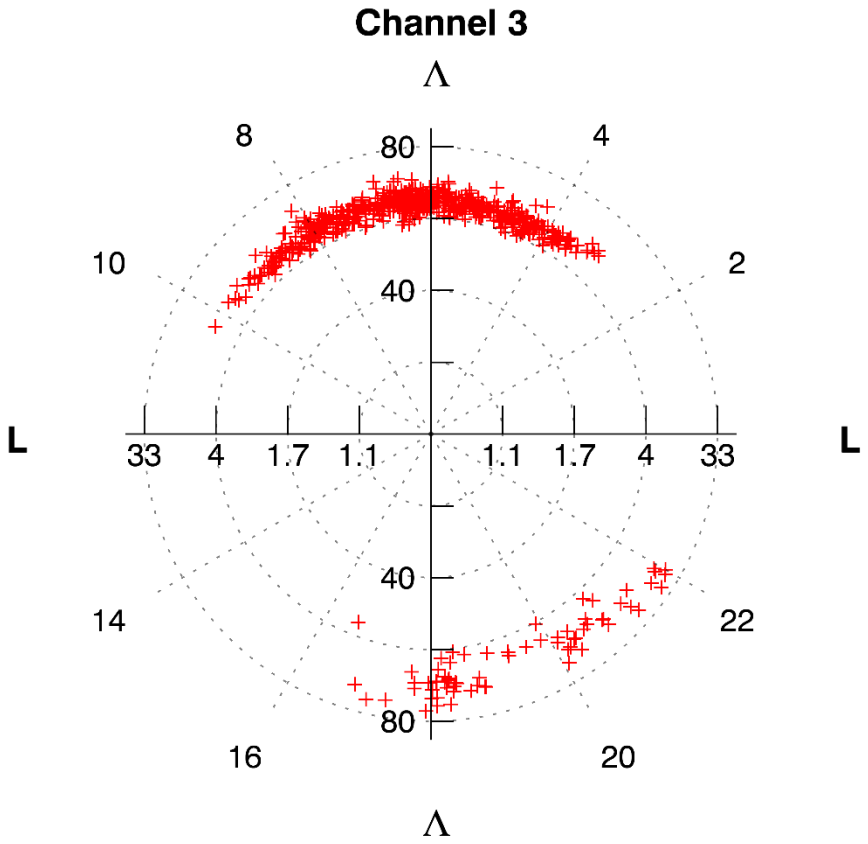


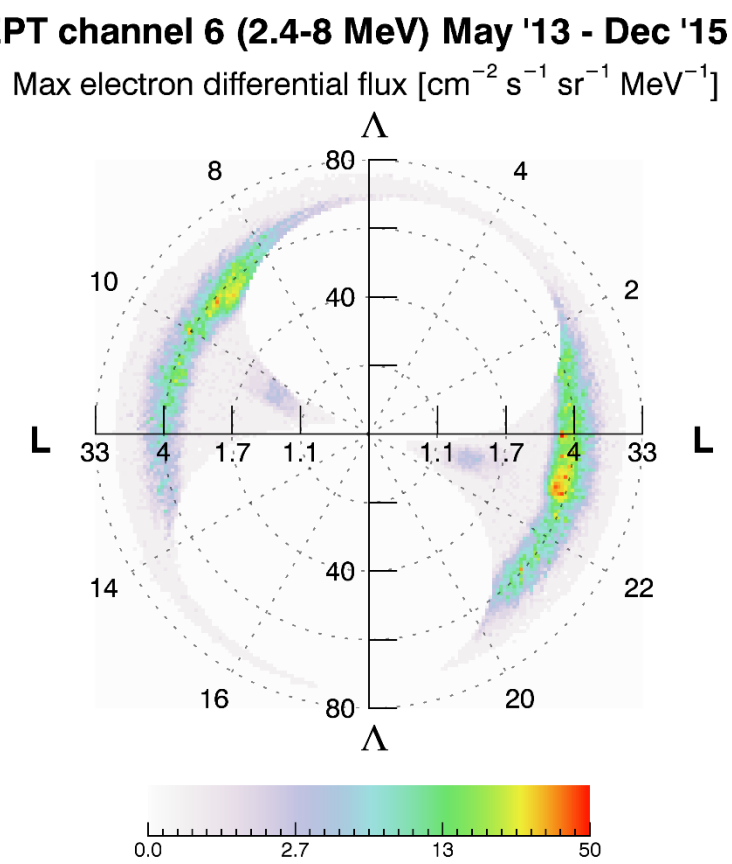
Detection Maps for LYRA and EPT





Differences between LYRA and EPT detections





LYRA as in-situ electron detector

- Although not designed as such, LYRA is clearly capable of detecting highly relativistic electrons in situ
- Whereas the electrons of the same energies can be detected by other instruments, LYRA has the highest cadence
- Even if LYRA had no advantage on the observation of electrons, being able to detect in situ particles in an additional orbit is very useful
- Radiometers with thin metal filters will never replace dedicated in-situ instruments, but they are a cost effective way to complement them