# Quantitative forecasts and specifications of outer radiation belt electrons based on solar wind conditions

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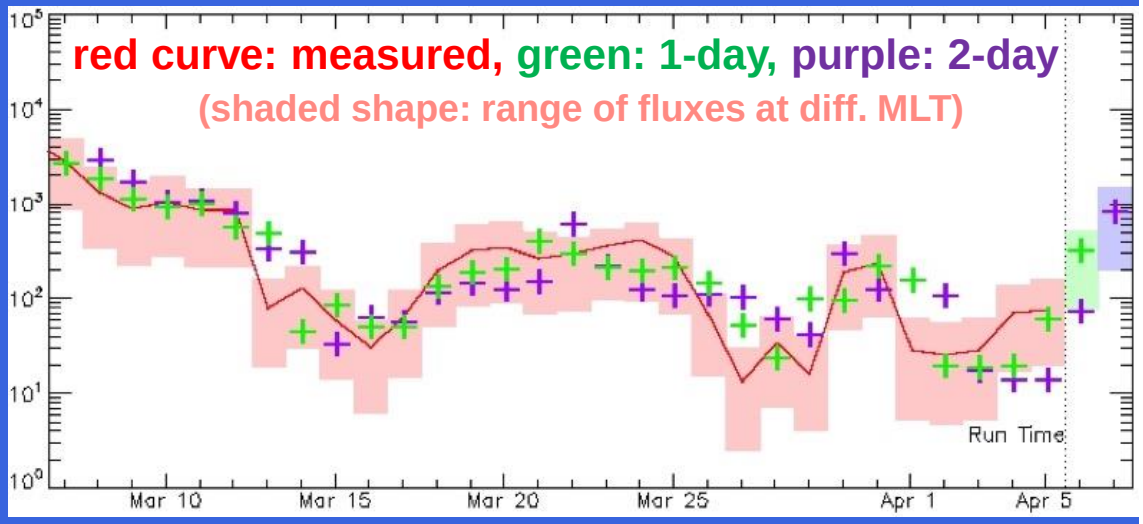
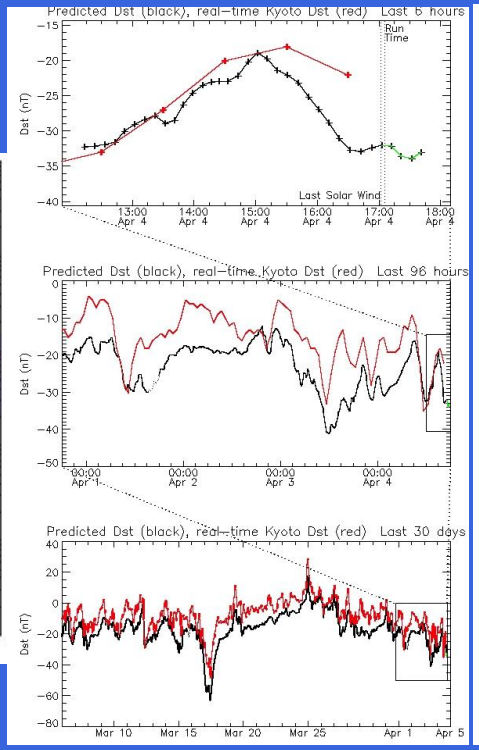
**Real-time forecasts based on solar wind conditions have been in operation for many years: http://lasp.colorado.edu/~lix/**

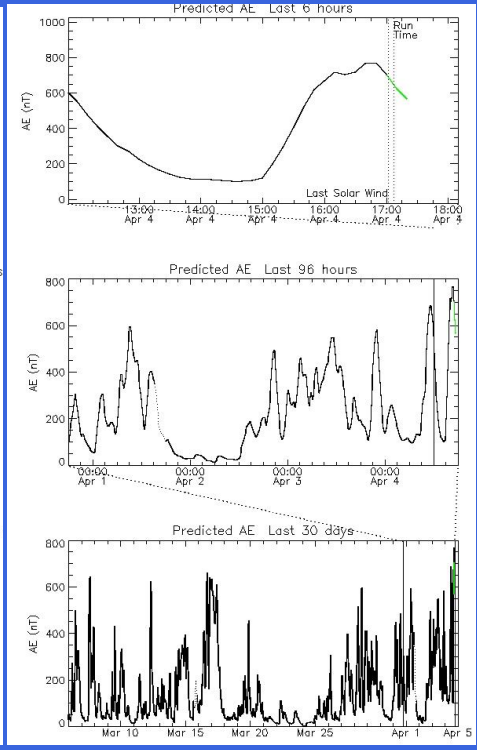
## Daily Averaged >2MeV electron flux at GEO



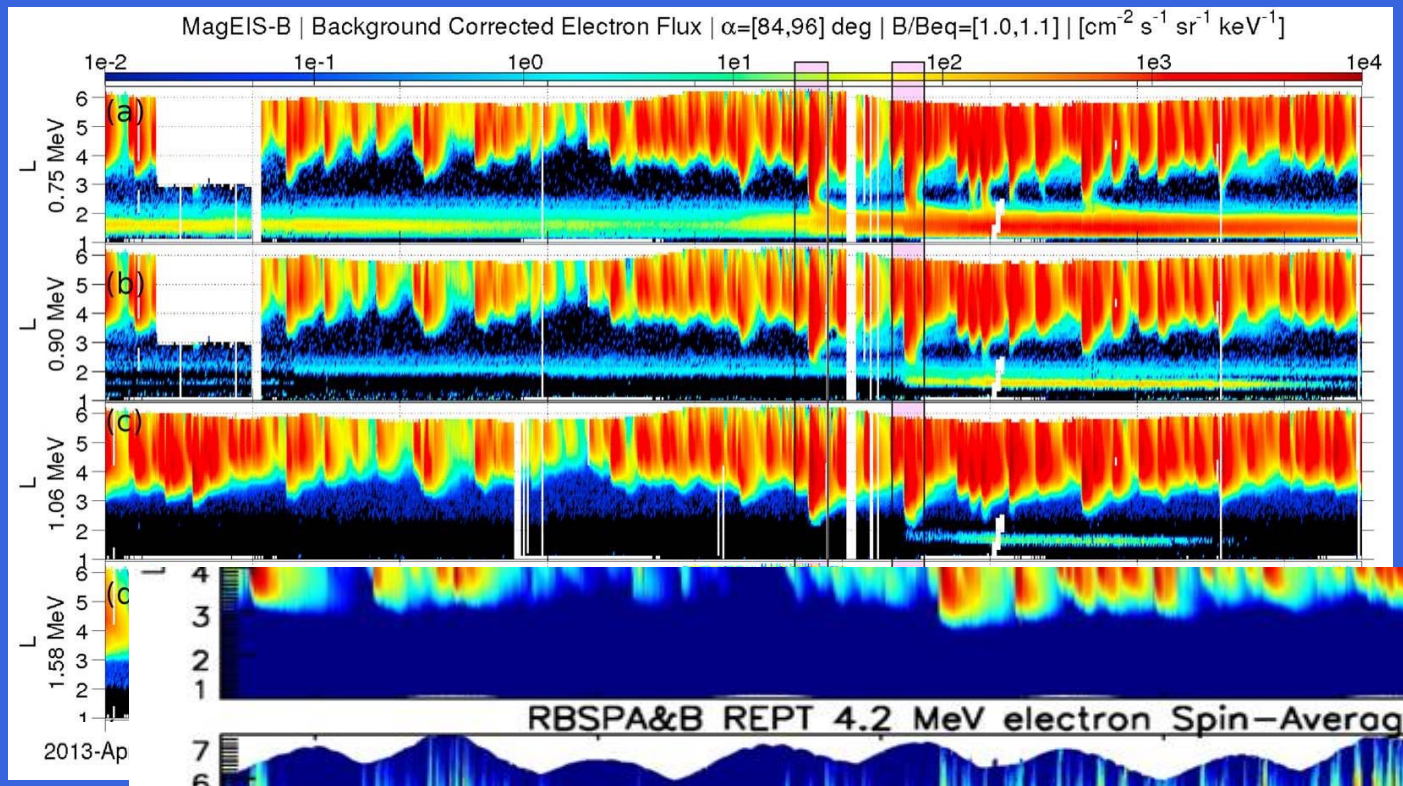

## Dst Index




## AE Index

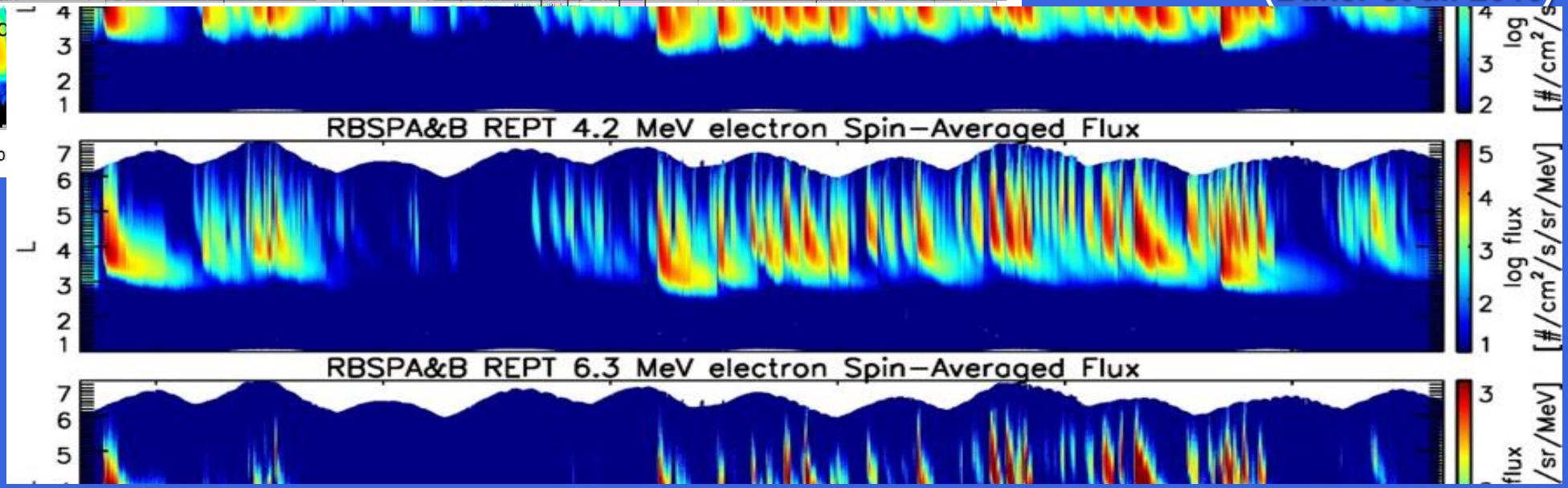


# Van Allen Probes Have Provided Relativistic Electron Measurements Inside GEO for over 6.5 years → time to extend our forecast and specification




(Claudepierre et al., 2017)

(Baker et al. 2019)



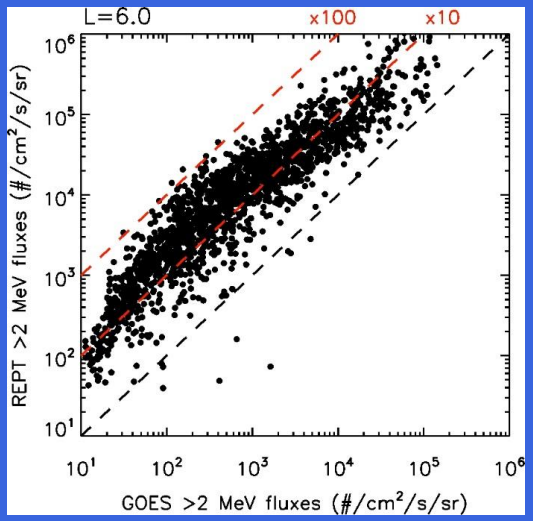

9/1/2012

9/1/2018

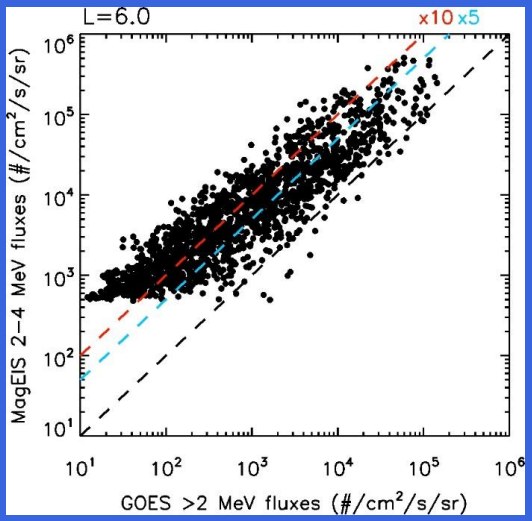
# Comparison of Van Allen Probes daily-averaged fluxes at L=6.0 versus GOES daily-averaged fluxes

(Presented at Fall AGU 2018 by Baker et al.)

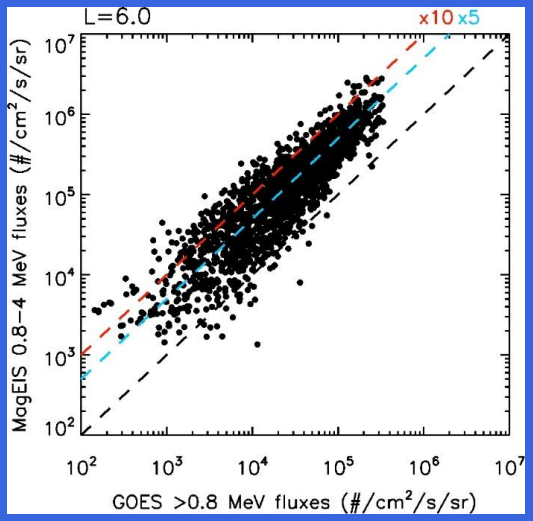
REPT vs. GOES: > 2 MeV




MagEIS 2 – 4 MeV vs. GOES > 2 MeV




MagEIS 0.8 – 4 MeV vs. GOES > 0.8 MeV




All data used in this slide are from RBSPA and GOES 15. L's are McIlwain L in T89D model

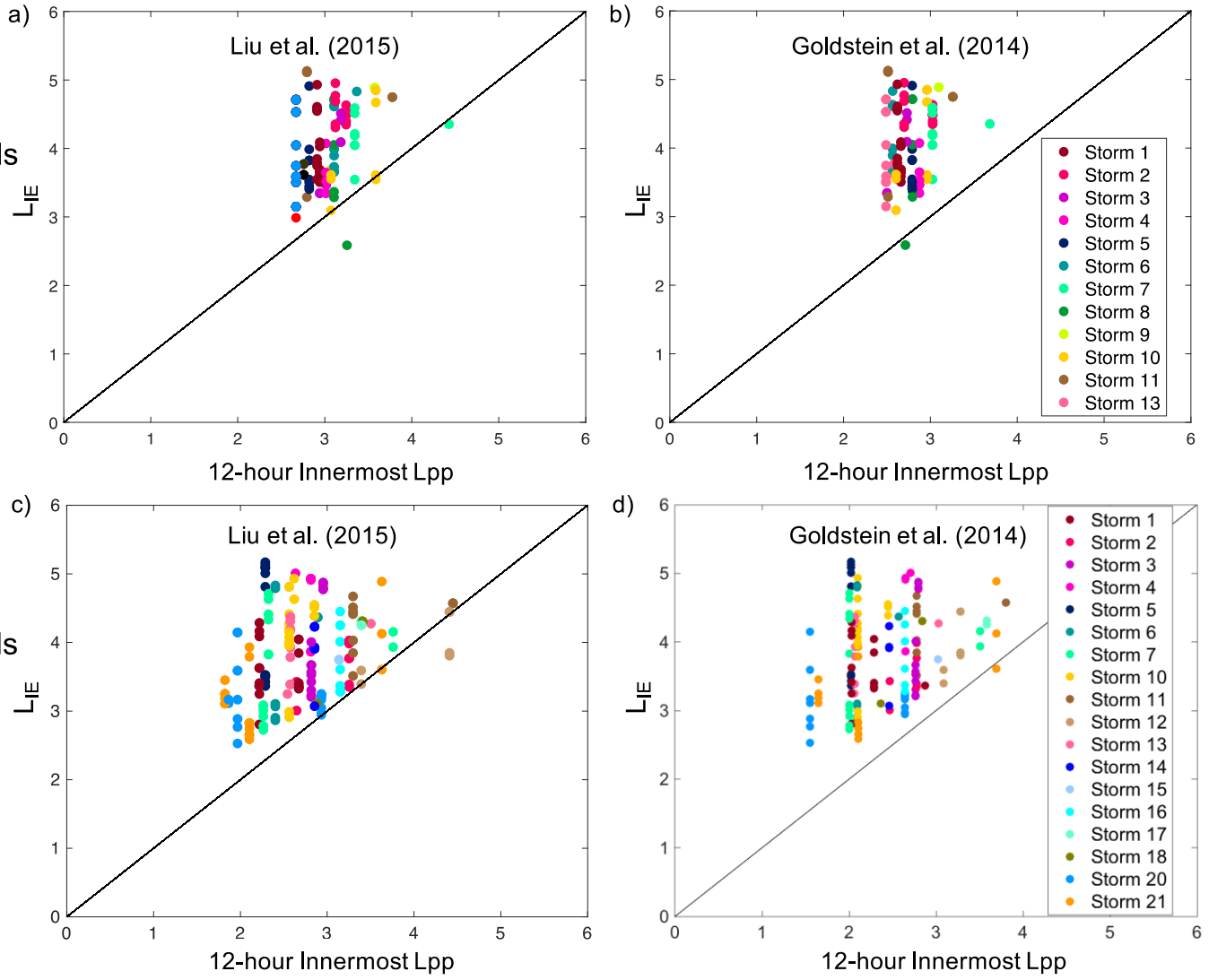
REPT and MagEIS data integration: used IDL internal function to interpolate and integrate fluxes

**Conclusion: the behavior of MeV electrons inside GEO is very different !!**

**We also understand better now about the behavior of the energetic electrons inside GEO, e.g., their initial enhancements are always outside the minimum plasmapause, which can be predicted based solar wind conditions.**

CIR-driven storm periods

CME-driven storm periods




**$L_{IE}$: L of initial enhancement of energetic electrons: ~30 keV – ~2 MeV**

**Lpp: L of plasmapause**

(Khoo et al., 2019)