

Joint Sessions “Magnetotail Dipolarization and Its Effects on the Inner Magnetosphere” and “Testing Proposed Links between Mesoscale Auroral and Polar Cap Dynamics and Substorms”

- Substorm/Injection Challenge events
 - How does the tail and inner-magnetosphere respond to different tail modes?
 - Compare and contrast in-situ, ground, and model output of isolated substorms, steady magnetospheric convection and storm-time substorms

Challenge Events

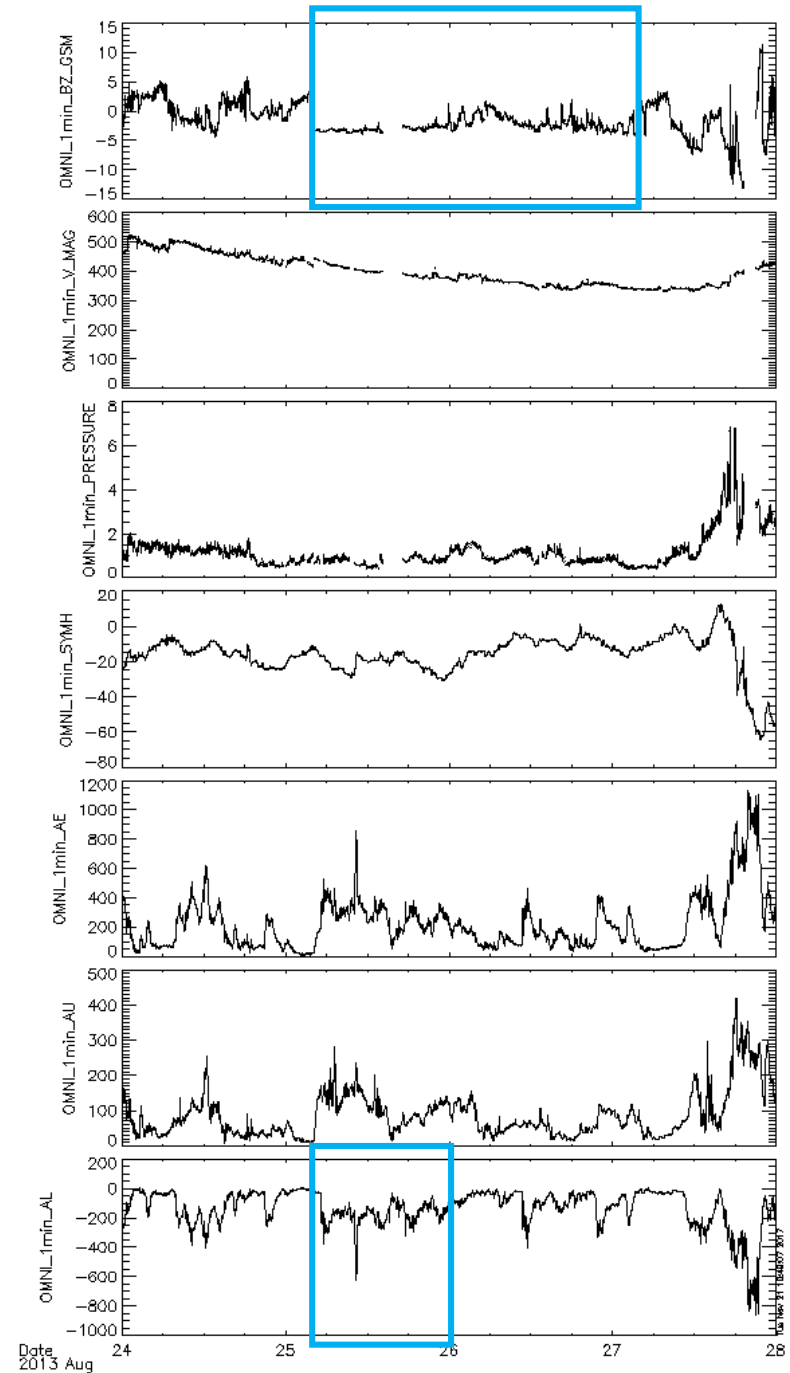
- Compare and contrast tail dynamics and response of the inner-magnetosphere during different tail modes
- Are there any distinct similarities and/or differences between individual injections that occur during the following periods: SMC, non-storm, and storm main/recovery phase?
 - How does the tail and inner-magnetosphere evolve during these events?
 - Intensity and depth of injections – why are SMCs necessary for radiation belt enhancements [Kissinger et al, 2014]? How does the effect the generation of VLF chorus?
 - Auroral activity – are streamers observed during active periods (SMC and storm-time substorms)?
 - How do these modes differ in models?
 - How does the strength of convection affect how the inner-magnetosphere responds to these modes?
 - Do substorm generated ULF waves contribute to inner-magnetosphere dynamics?

Challenge Events

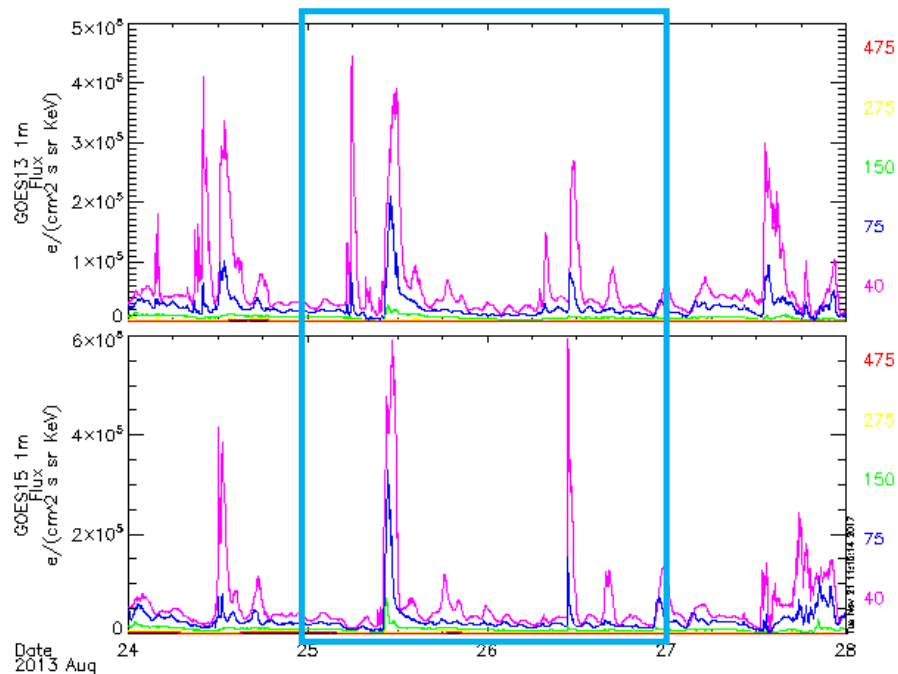
- 1 extended SMC interval
- 2 storm-time substorms
- 1 substorm

SMC Event

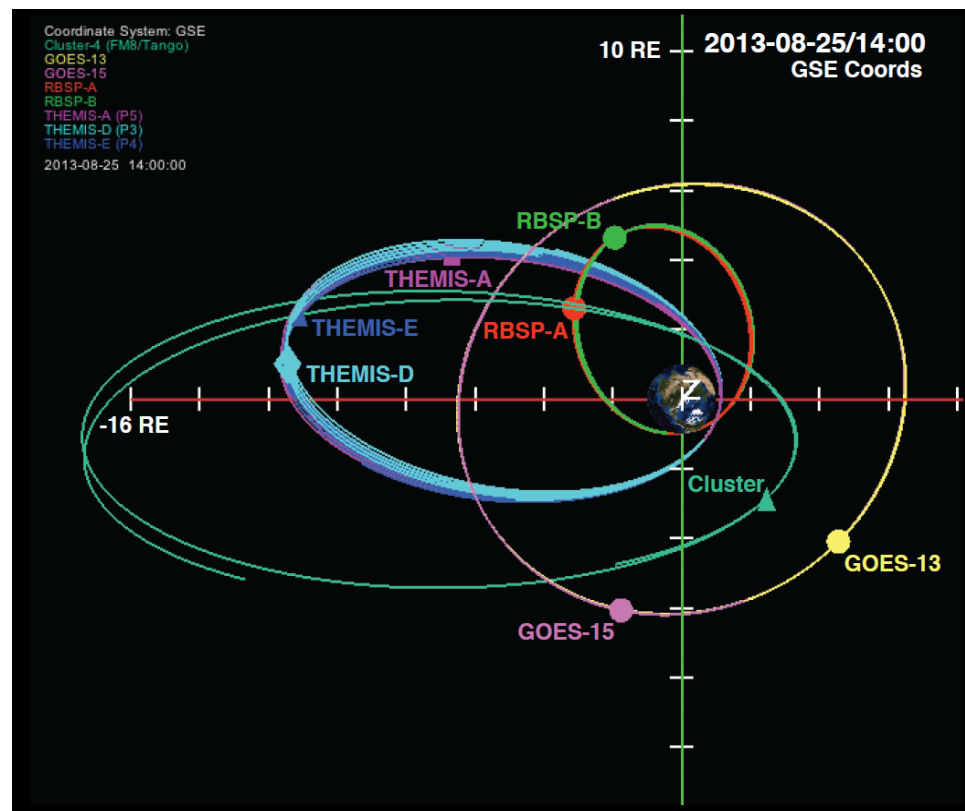
- 2013-08-24 to 2013-08-28
- Multiple intervals satisfying Kissinger et al. [2011]
- 2013-08-25
 - ideal interval
 - Extended period of negative Bz with small Sym-H
- Data
 - GOES, THEMIS, LANL, Van Allen
 - Ground-mags, riometers, and auroral



SMC Event

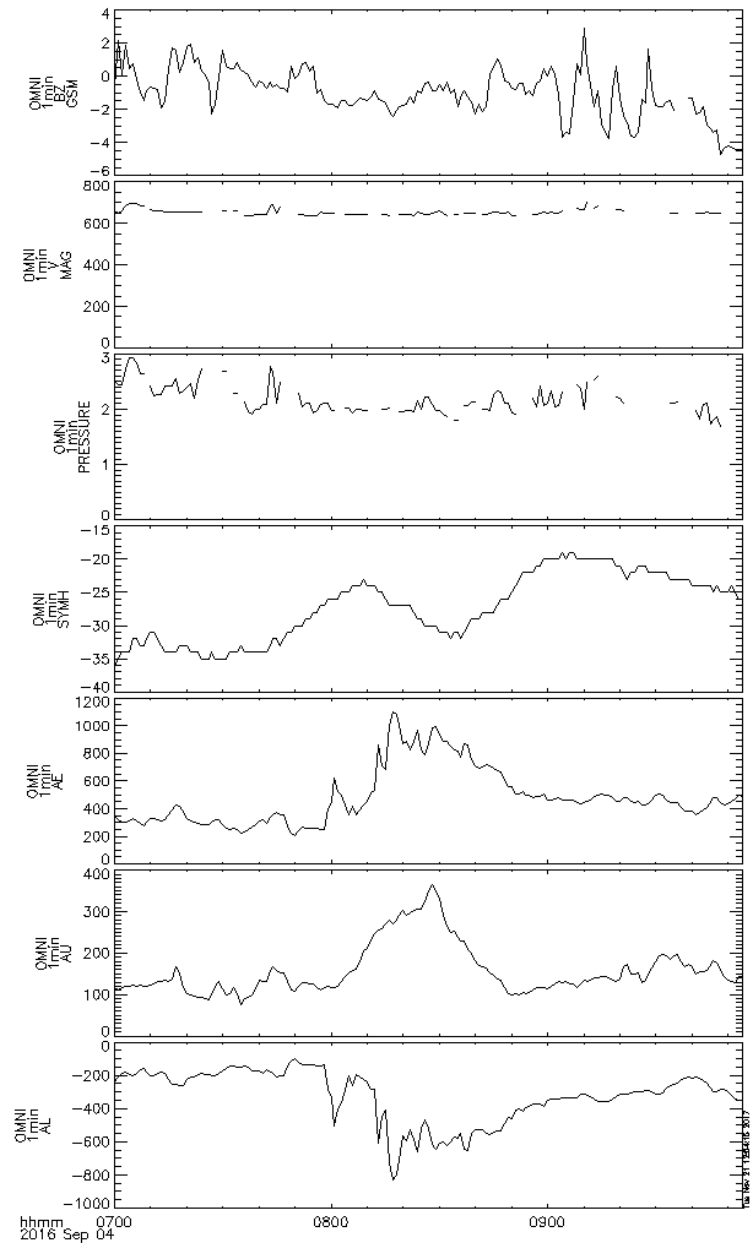


- Several injections at THEMIS and GOES
- Van Allen injections observed to low L

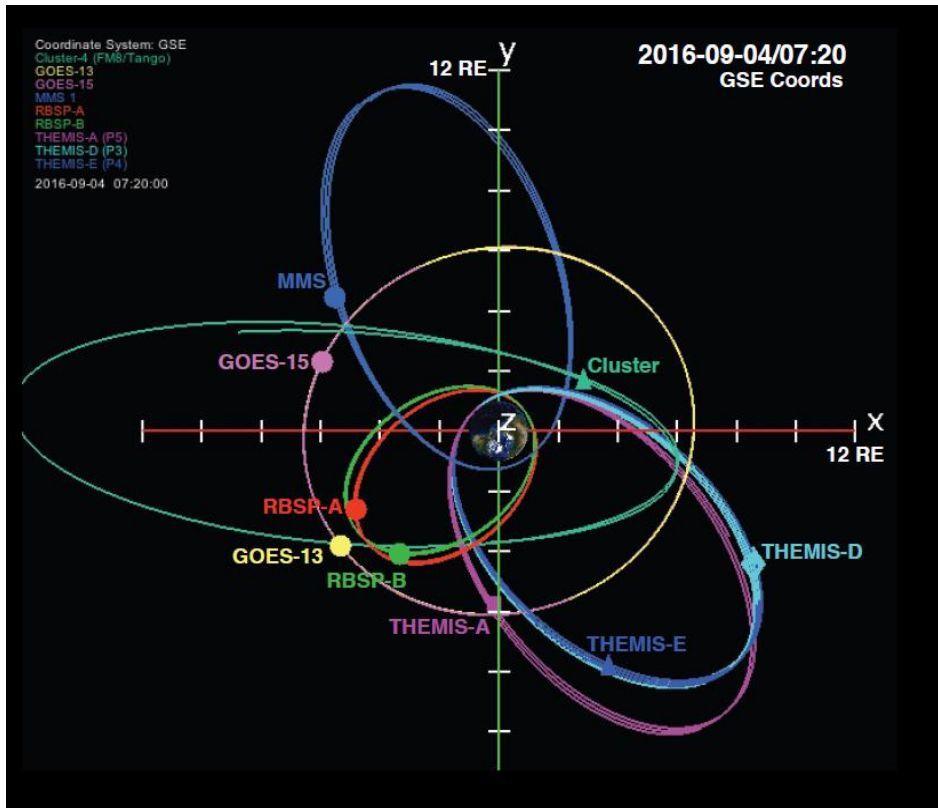


Storm-time Substorm 1

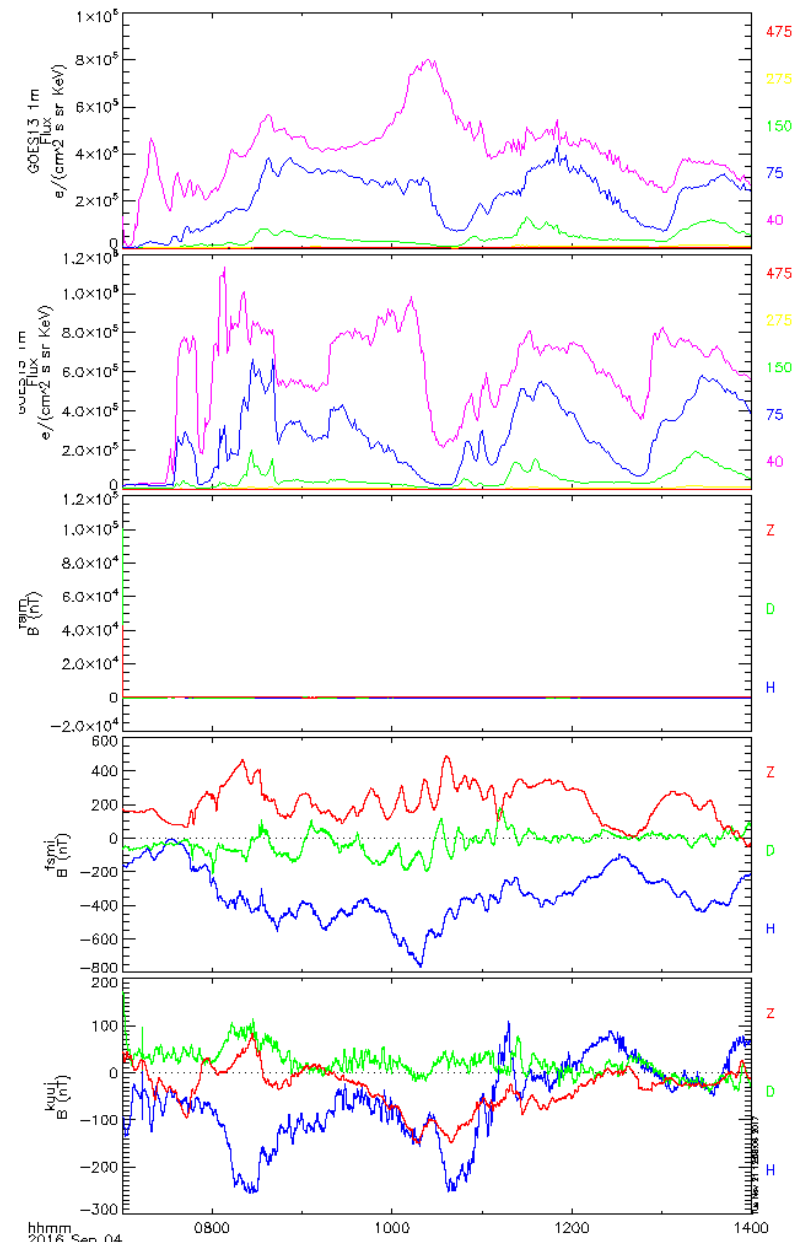
- Recovery Phase
- 2016-09-04
 - 7:20 UT
- Data
 - GOES, THEMIS, Van Allen, MMS (LANL?)



Storm-time Substorm 1

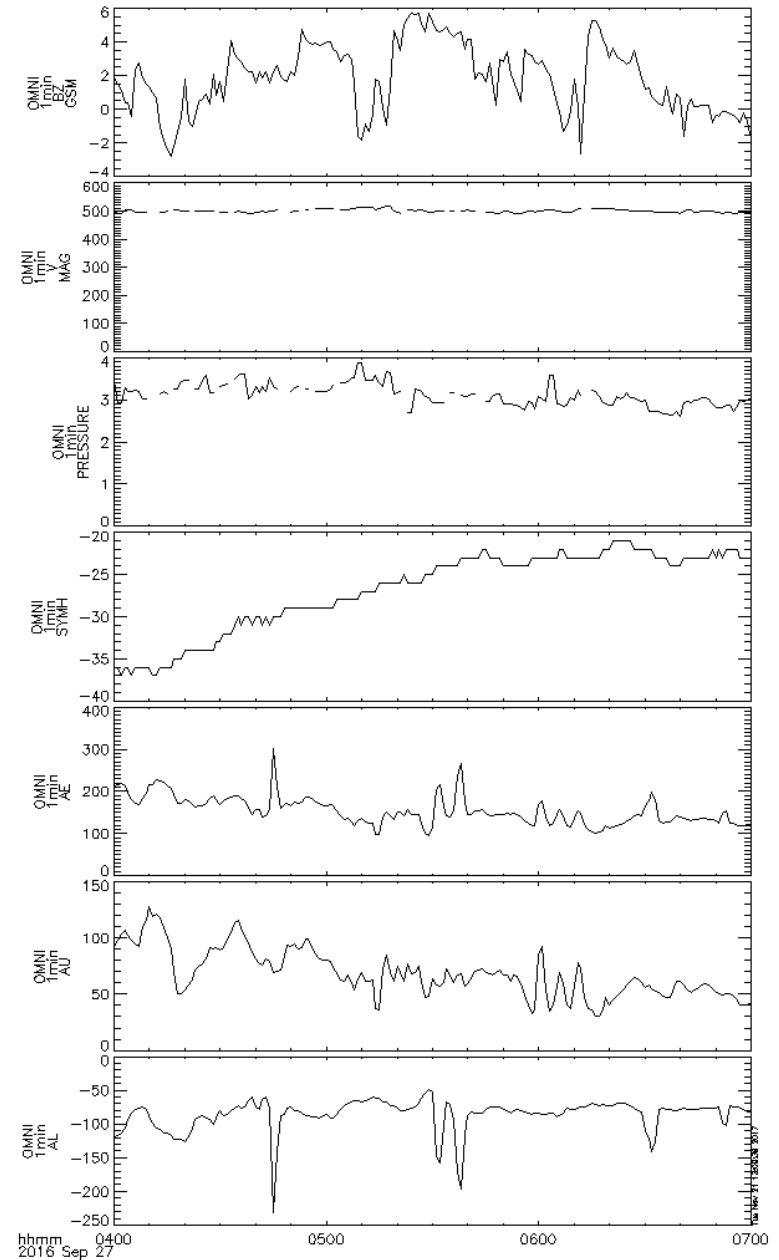


- Van Allen B injection \sim 7:20
- MMS sharp/distinct dipolarization around 07:30UT preceded by a series of smaller injections



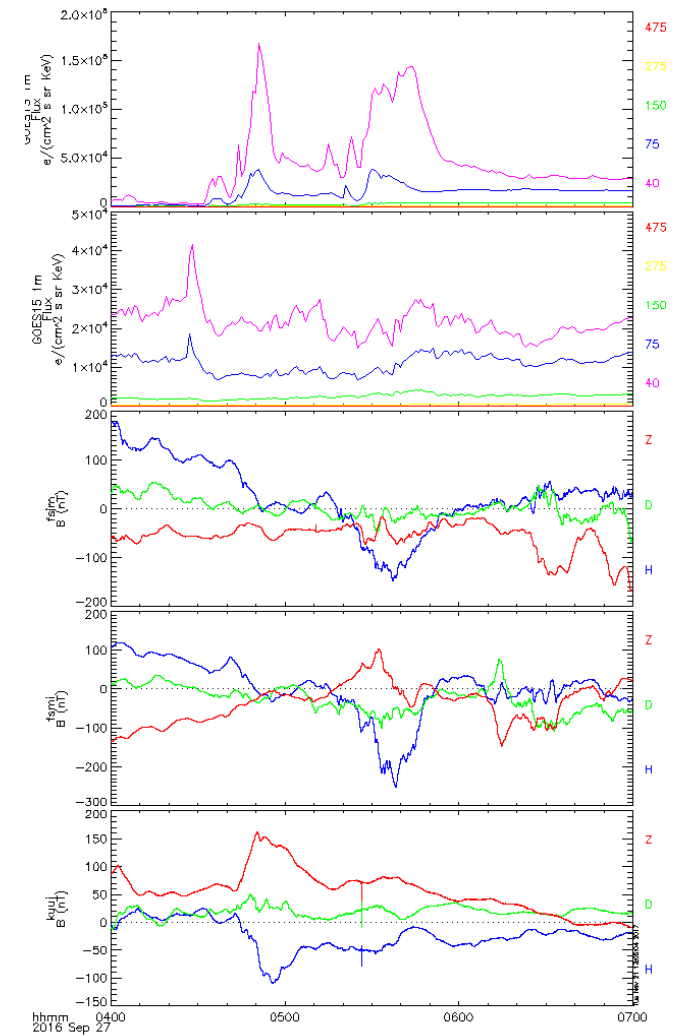
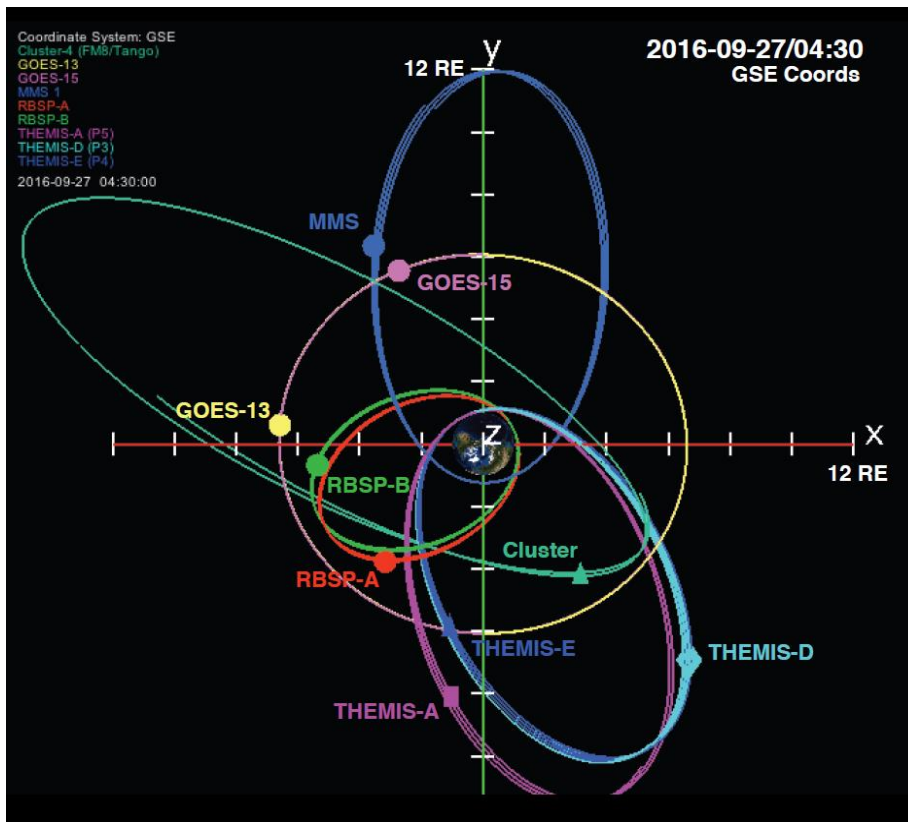
Storm-time Substorm 2

- Main Phase
- 2016-09-27
 - 4:30 UT
- Data
 - GOES, THEMIS, Van Allen, MMS (LANL?)



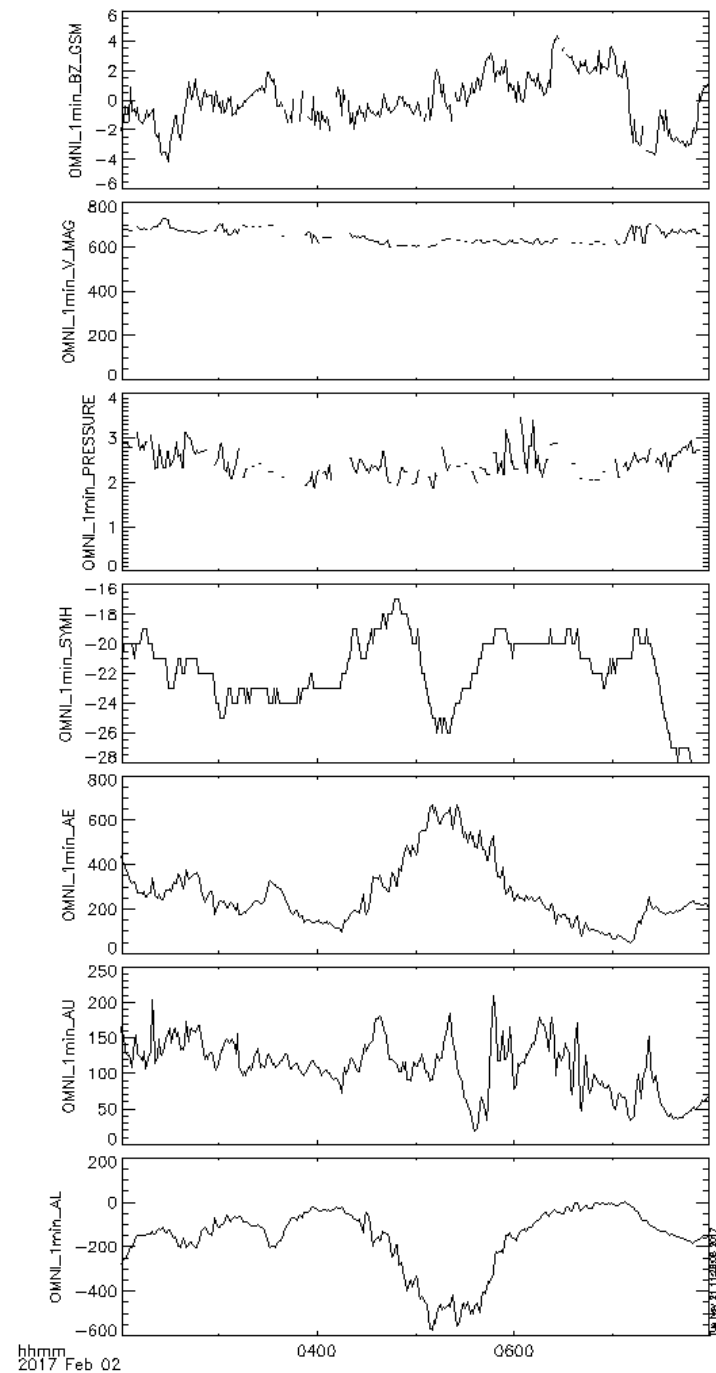
Storm-time Substorm 2

- RBSP-B saw a big, dispersionless electron and ion injection
- MMS series of injections
- THEMIS A outbound, field re-orientations

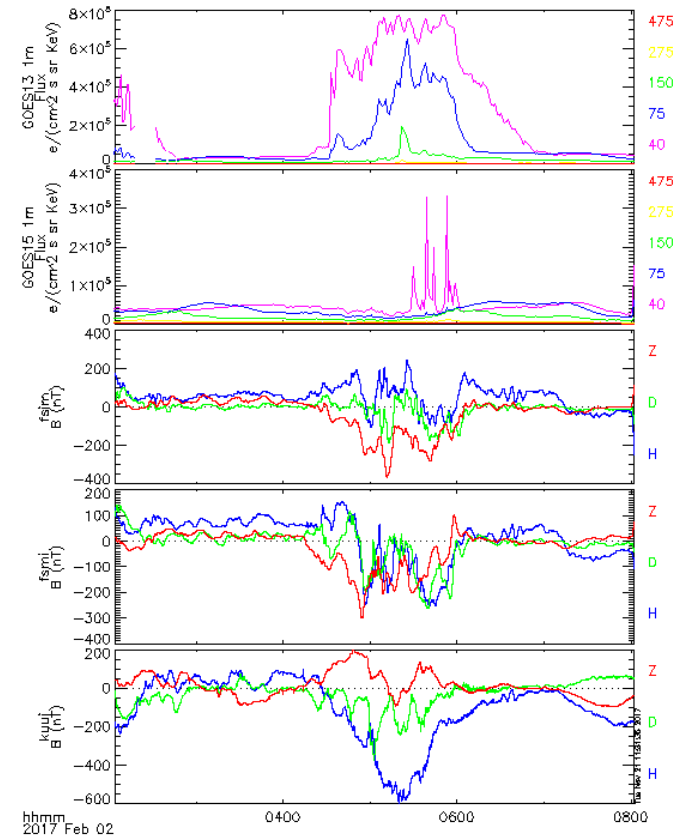
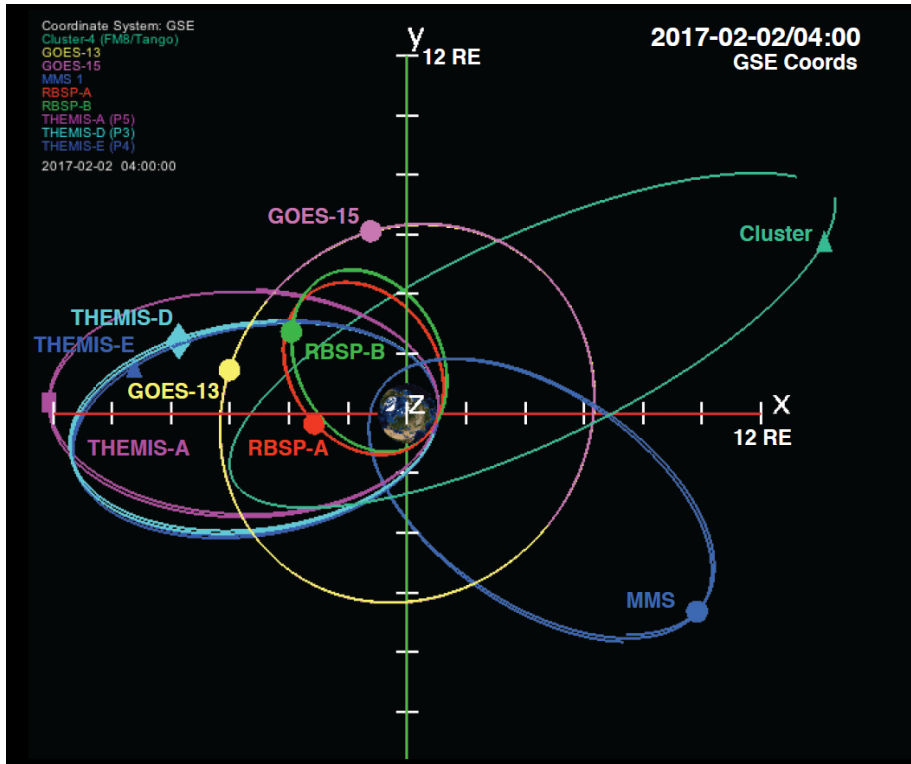


Substorm 1

- 2017-02-02
- Isolate substorm
 - 4 UT
- Excellent Auroral Data
- Data
 - GOES, THEMIS, Van Allen (LANL?)



Substorm 1



- Injections observed by THEMIS, GOES and Van Allen