



**University of
Leicester**

Radio and Space Plasma Physics Group

Spacecraft working group report

SuperDARN workshop 2012

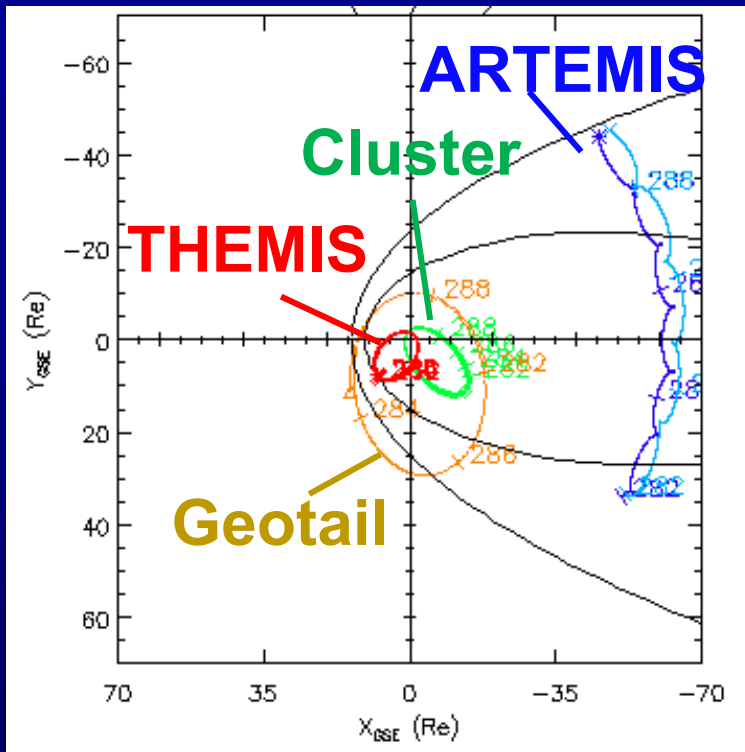
Rob Fear

SuperDARN coordination with spacecraft

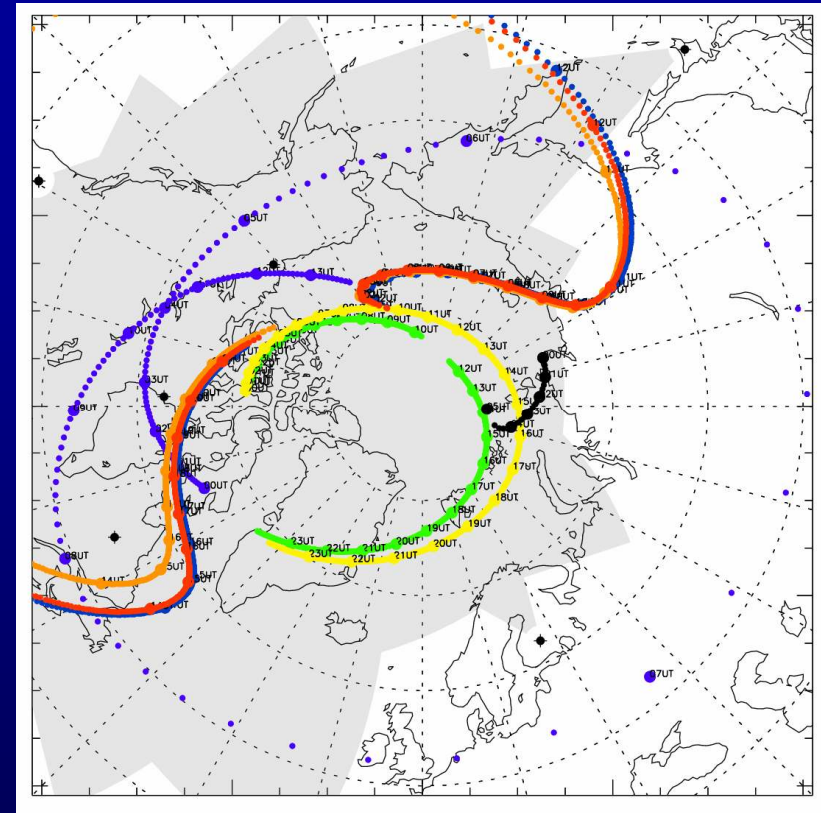
- Every month Jim downloads Cluster and THEMIS predicted orbit files and generates orbit and footprint plots
 - Available at <http://spears.lancs.ac.uk/~wildj/themis/>
- Spacecraft working group examines plots manually for favourable conjunctions between SuperDARN network and Cluster (2001-), Double Star (2004-2007), THEMIS (2007-) & Geotail
- We usually request 150-250 hours per month for a special “themisscan” mode
 - One beam sounding at 3s cadence allows high-resolution timing for THEMIS studies
 - Interlaced within normal two-minute scan of full FOV



Major targets 2011-12



9-15 October 2011



10 October 2011

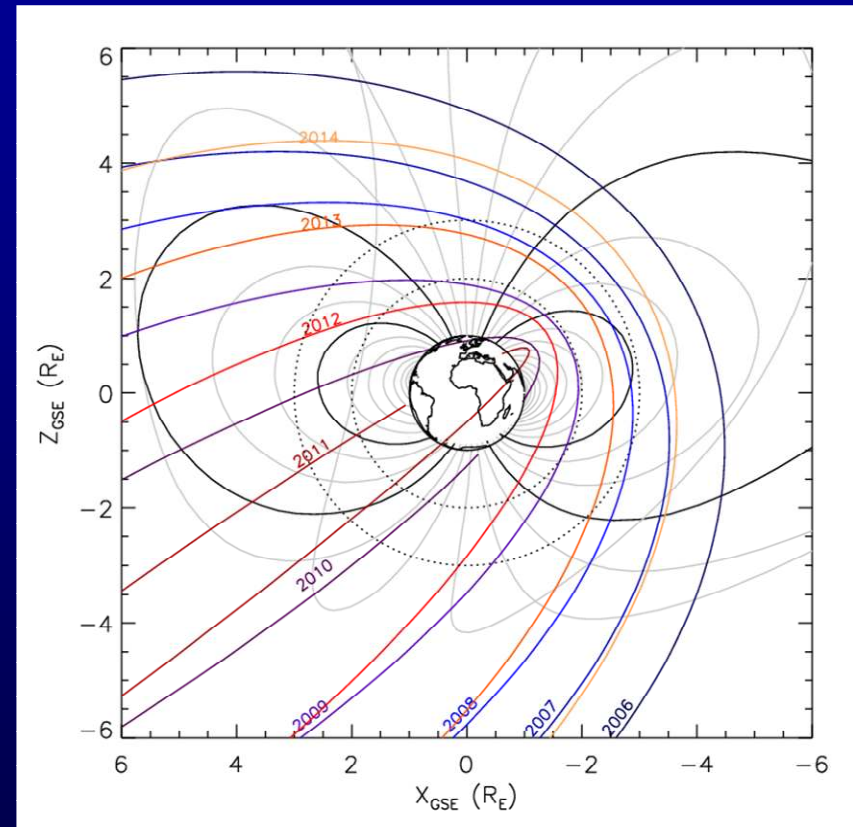
- Cluster Auroral Acceleration Region
- ARTEMIS monthly magnetopause and tail crossings (56 R_E downtail)
- Cluster Guest Investigator campaigns
- Supplemented by THEMIS/Cluster/Geotail magnetopause crossings & tail conjunctions



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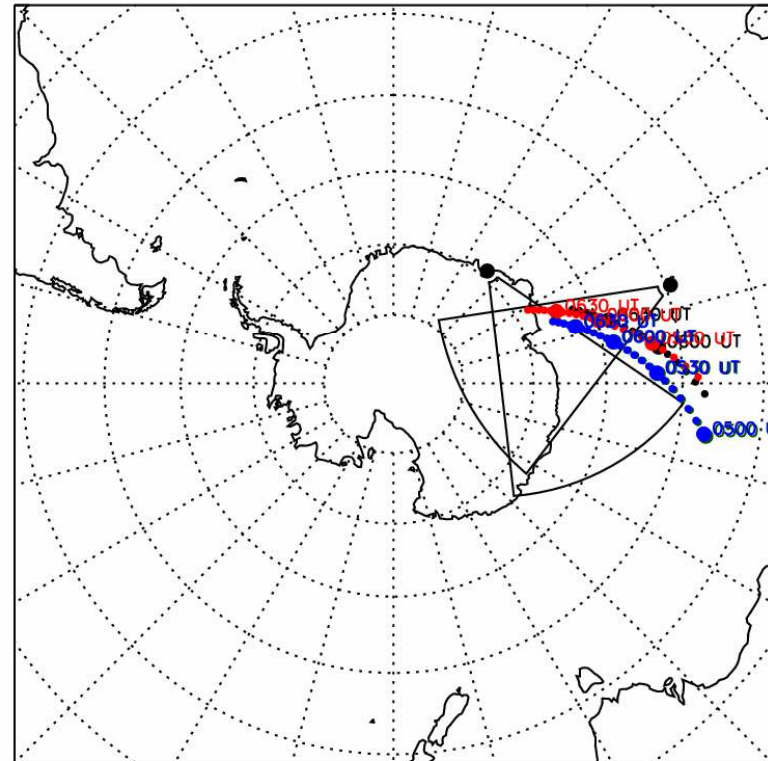
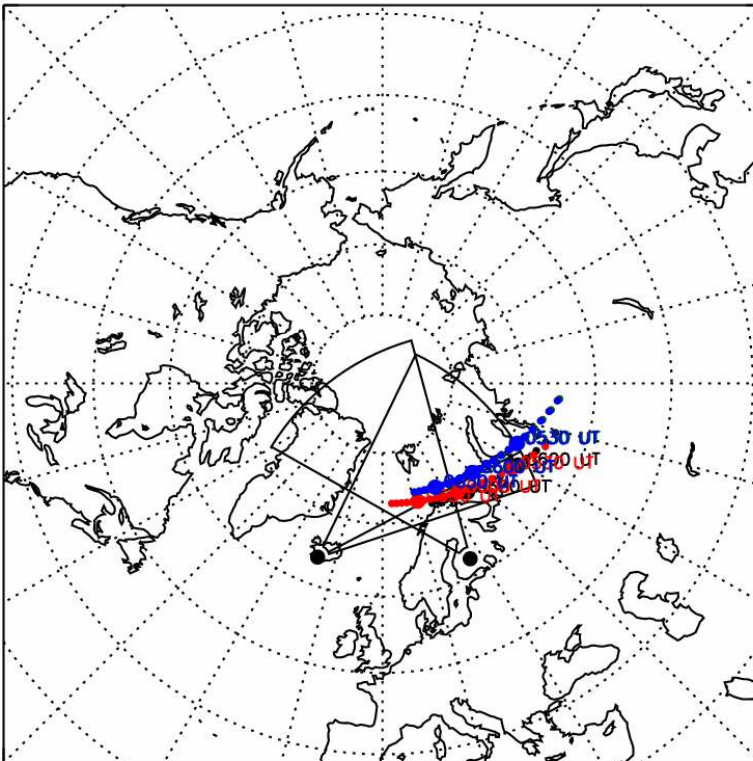
Cluster AAR campaign

- Coordinated with Cluster PI teams
 - Operating Cluster in Burst Mode and SuperDARN in favourable modes simultaneously
- Targeting all MLT sectors, except when Cluster is in eclipse at perigee
- Mixture of modes requested:
 - themisscan
 - normalscan with some radars running 15km range gates



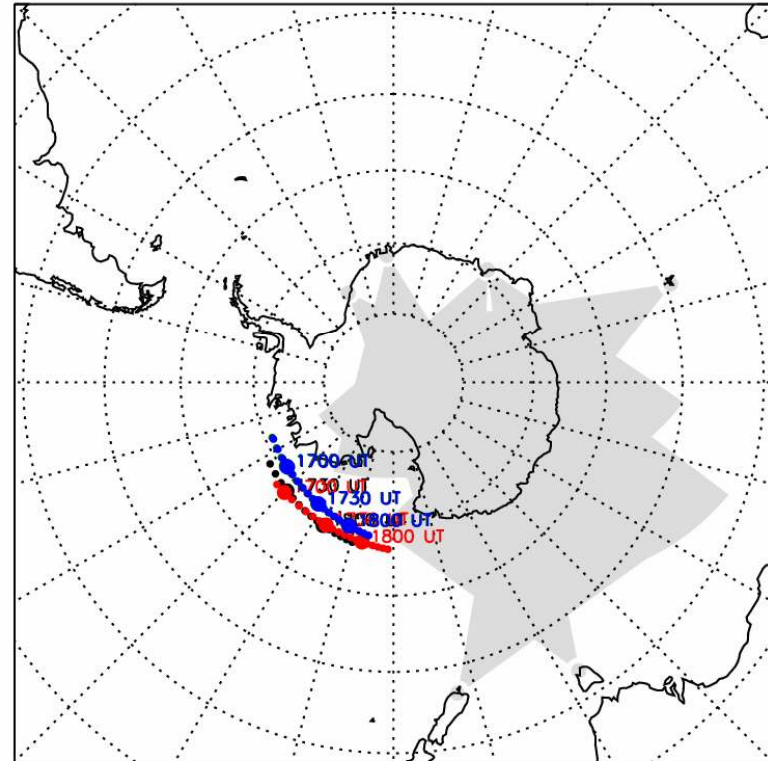
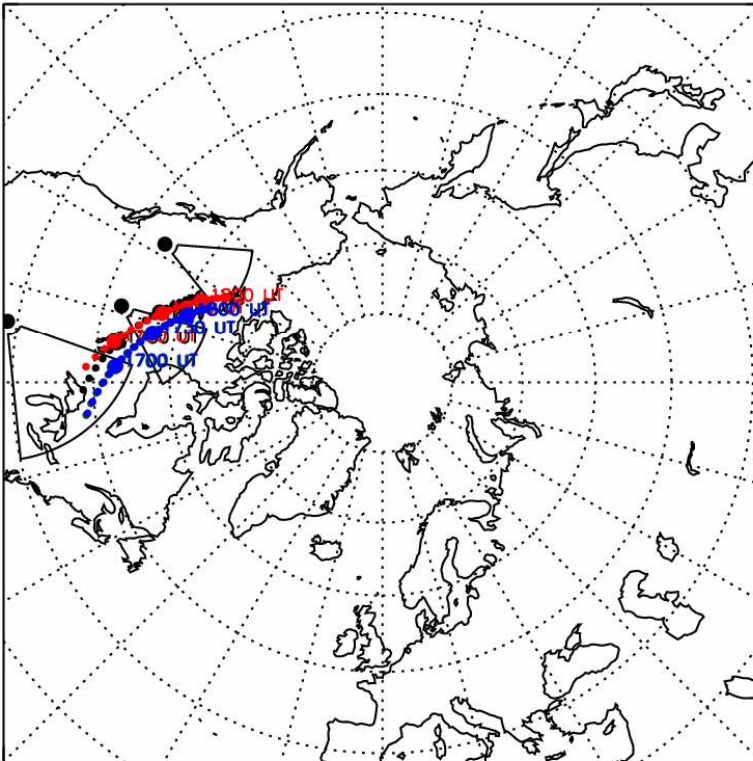
Cluster AAR: themisscan example

12-Jul-2012 05:00 to 12-Jul-2012 07:00
han, pyk (beam 12), ker, sye



Cluster AAR: normalscan example (15km range gates)

07-Jul-2012 16:00 to 07-Jul-2012 18:30
pgr (myopic), sas (myopic), fhe (myopic)



The near-term future

- RBSP scheduled for launch in August at the earliest
- SuperDARN will support RBSP conjunctions
- RBSP mode to be triggered by storm alerts
- themisscan will be discontinued
- We will continue to consider and propose normalscan other spacecraft conjunctions (e.g. Juno Earth Flyby in October 2013, Cluster AAR passes)
- Such conjunctions will be at a lower level, and will be overridden by any triggers for RBSP mode

