Spacecraft working group report

SuperDARN workshop 2014

Kevin Sterne, Rob Fear & Jim Wild

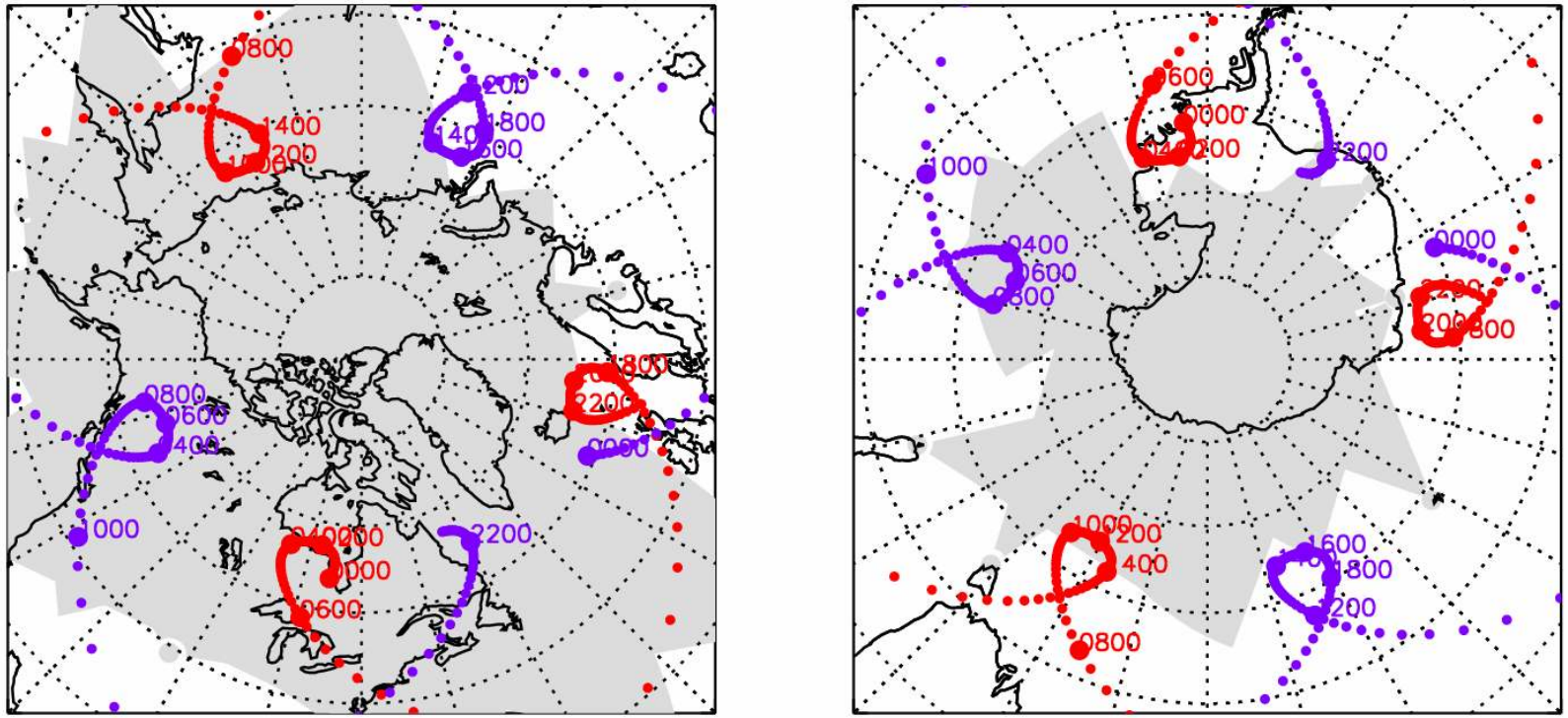
Working group membership

- Kevin Sterne (VT) is new chair – leads monthly coordination of conjunction requests
  - Reflects fact that US missions (particularly Van Allen probes) are main target for coordinated SuperDARN operations
- Rob Fear & Jim Wild remain members and contribute to this monthly effort
- Contributors always welcome!

Van Allen support

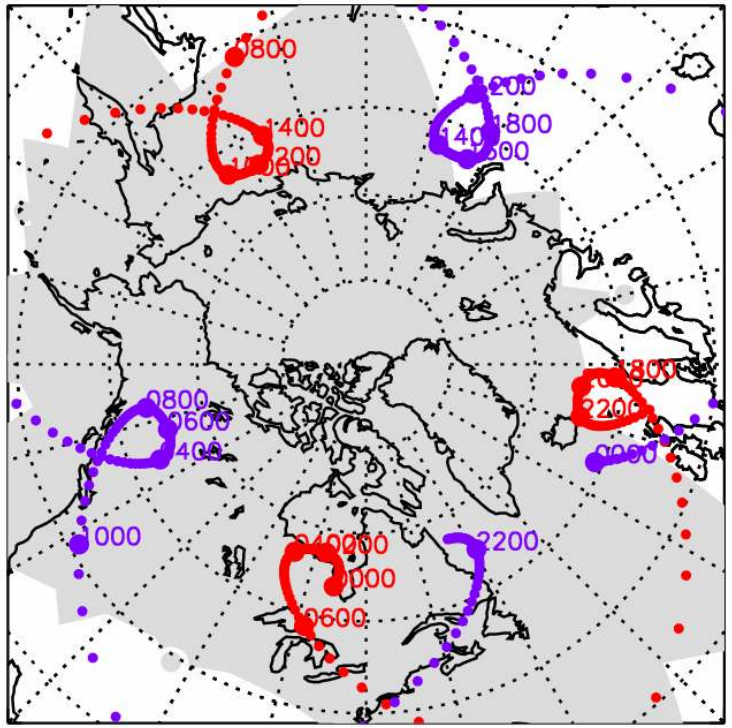
- Van Allen probes (RBSP) are main factor in selected conjunctions
- 'Triggered' mode (CT-TRIG) for storm times
  - Ignores spacecraft location
  - Mode is Common Time
  - Automatically triggered when D_{ST} < -50 nT; ends when D_{ST} > -30 nT)
  - Overrides any other scheduled Common Time mode (e.g. normalscan)
- 'Apogee' mode (ST-APOG) for general studies
  - Scheduled for good conjunctions between Van Allen and SuperDARN (irrespective of D_{ST} conditions)
  - Counts as Special Time mode
  - Subject to Special Time cap (6 days/month – equates to 24 conjunctions)
- Footprint plots are publicly available – help yourself! http://www.ion.le.ac.uk/~rcf11/RBSP/

Example daily footprints: 1st July 2013



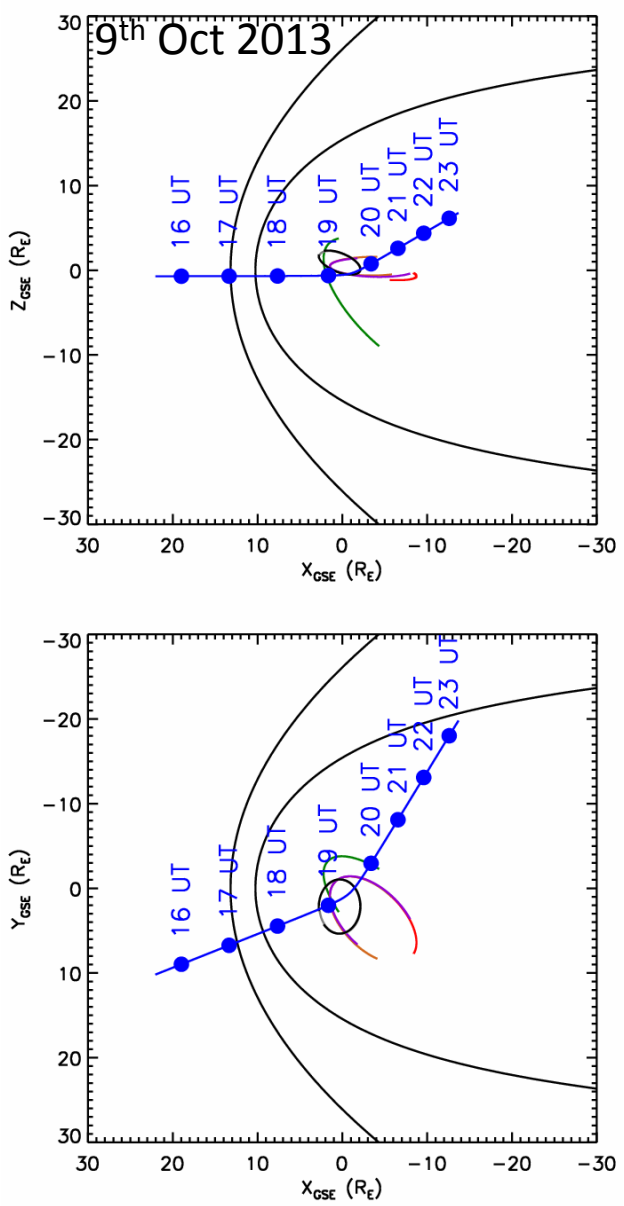
- Nearly 3 orbits per day
- Phasing between spacecraft varies from month to month
- Leads to various possible separations for (e.g.) ULF wave studies
- Can't run radars continuously in RBSP mode, so pick out best 6h blocks on most days (to max of 144h per month)

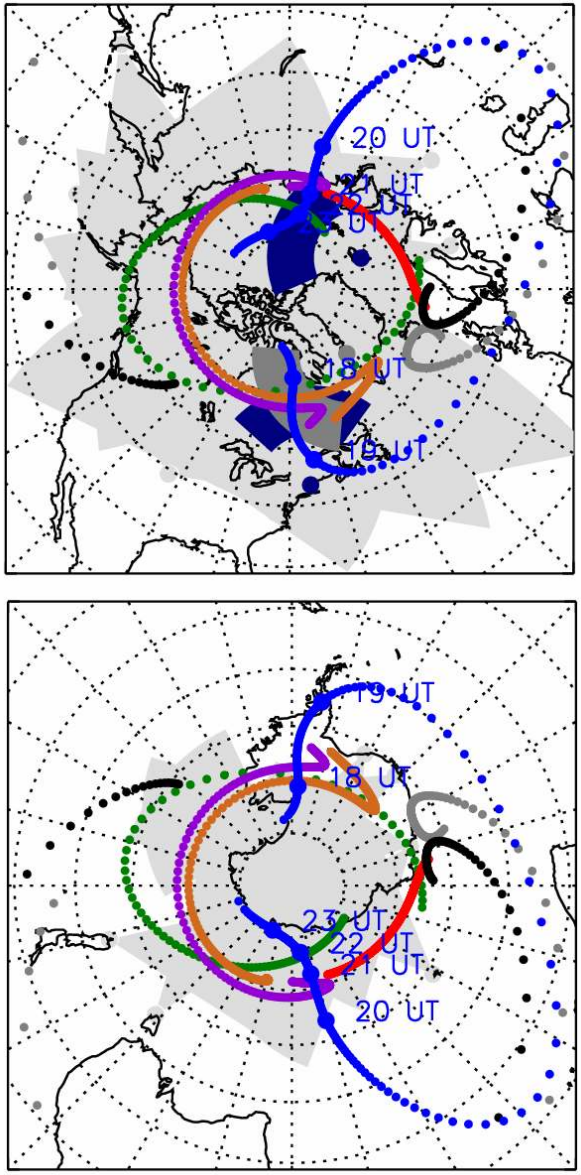
Example daily footprints: 1st July 2013



- NB Recent change:
- We used to start all our requested 6h blocks at 00, 06, 12 or 18UT
- Now they start on any even hour (but are still all 6h long)
- Allows more efficient use of (limited) special time
- Assume this is not a problem for scheduling teams, but let us know if it is!

Juno Earth Fly-by: 9th Oct 2013



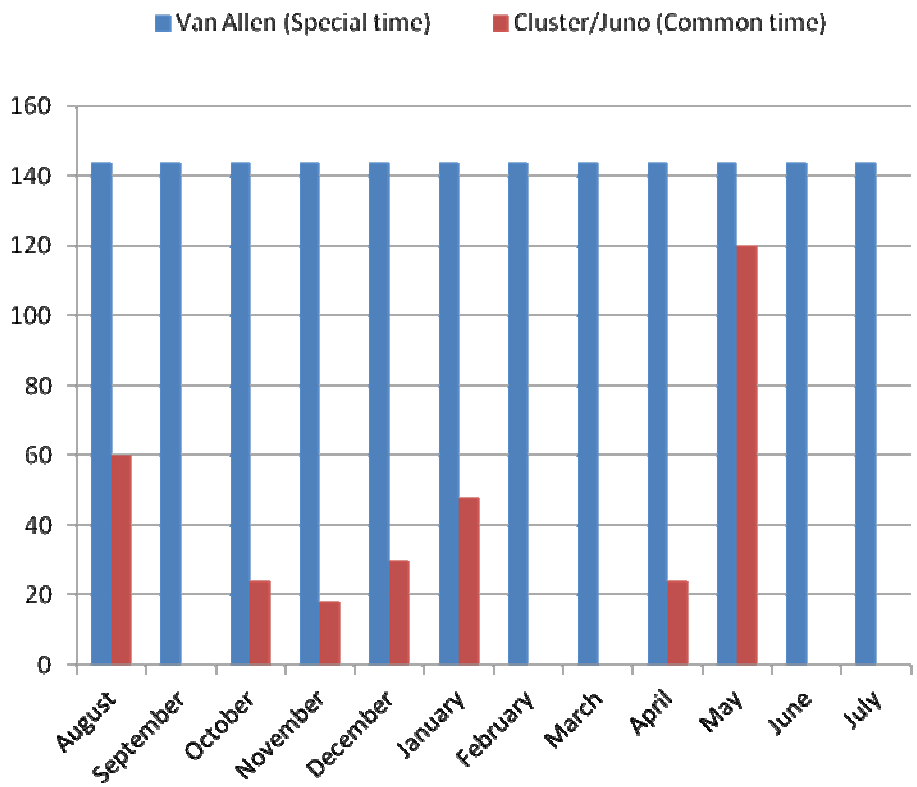


- Ran in common mode for 24 period in support of Juno's Earth Fly-by
- Coordinated operations with EISCAT, Sondrestrom and Millstone Hill ISRs
- Provided valuable context information for AGU Fall Meeting session "Snapshot of Earth from Juno and Earth-based Assets"

Hours requested 2013-4

- Smaller normalscan requests continue for Cluster support
  - Auroral Acceleration Region
  - Return to high altitude cusp (but with spacecraft at large separation)
  - Support for both targets requested by Cluster PIs

- Since last workshop:
  - 144h per month is requested in Special Time (Van Allen support)
  - Between 0h and 120h requested each month for Cluster or Juno (Common Time – normalscan)
    - Sporadic – mean of just 27h per month over last year



- Compares with 150-250 hours of “themiscan” mode each month before RBSP

- Query raised recently re: ST-APOG data availability
  - ST-APOG may technically be special time, but it is <u>not</u> proprietary

The near-term future

- Continued support for Van Allen probes (CT-TRIG and ST-APOG) if these intervals are proving useful
- Support for Cluster Auroral Acceleration Region campaign likely to be coming to an end (perigee is increasing again)
- MMS? (Due for launch in October)
- If you are involved in a mission which you would like to be supported, please join in!

Friday Summary

- Reported by Jim Wild:

  -- The scheduling of SP-APOG on any even 2-hour boundary was not thought to be a problem by the schedulers (at least no-one said so).

  -- Mike R suggested that VAP support modes might be re-considered to possibly include something that looks like the themisscan mode

  -- Tomo Hori (STEL, Nagoya) asked that ERG satellite ops - due for launch in 2016 - be included in SuperDARN scheduling. Perhaps this would be someone to bring into the group?