Filename: **1 – SD-RBSP web site – READ ME**

The purpose of this site is to locate in one place items that bear on the planning of SuperDARN operations in support of RBSP.

The files are numbered to indicate their immediacy to the planning imperative. e.g.,

1- Calls for decisions by SD PIs on the design of SD-RBSP modes, high level science justification, vital info on dates, meetings, and people
2- Recent resource material such as the GEM Focus Group Report on Radiation Belt and Waves
3- Older resource material, related activities

Guide to older items on the SD-RBSP Coordination web site:

Mike R: 'Tim's original presentation expanded with planning info and discussion'

SD_RBSP_Coord_Jul2012_Mike.pptx (15 slides)

Rob Fear: 'Spacecraft working group report' (SD Workshop 2012, Shanghai)

SDW_Jun2012_SWG_Report_Fear.pptx (7 slides)

Jim Wild: 'SuperDARN: Looking ahead to RBSP'(SD Workshop 2011, Dartmouth College)

youtube link: can see it at http://www.youtube.com/watch?v=yGOhD6ivff4

SDW_Jun2011_RBSP_Wild.pptx (21 slides)

Tim Yeoman: 'The SuperDARN Radar network and the RBSP mission – ULF waves'

(RBSP meeting, May 2011)

RBSP_May2011_ULF_Yeoman.pptx (8 slides)

David Sibeck ‘SWG Meeting (20-21 August 2012), Cocoa Beach’

RBSP_SWG_Aug2012_agenda_vw.pptx (2 slides)

Mona Kessel ‘Science of NASA’s Radiation Belt Storm Probes’

RBSP_SWG_May2012_Korea_science_Kessel.pdf (22 slides)

David Sibeck ‘Opportunities for Cooperation: THEMIS and RBSP’

THEMIS-RBSP_Feb2012_Sibeck.pdf (33 slides)

RBSP_track_01_JUL-2012.jpg Sample tracks of RBSP satellites

SuperDARN fields-of-view.png Default SD fields-of-view

>> The email thread so far (abridged, some emphasis added) >>

Hi Mike, all,

I've attached the presentation I gave at the SD2011 SuperDARN workshop in New Hampshire - this should be useful. The movie on slide 12 probably won't make it along with the email, so you can download it in a variety of flavours from https://www.dropbox.com/sh/4dylk5ekf8sa9l6/MxSeRWizy1/RBSP?lst

Just in case it's useful, I've done a very quick walk through of the slides. You can see it at http://www.youtube.com/watch?v=yGOhD6ivff4 The audio is not so great I'm afraid - we have some construction work going on in the building, (This video is public so I'll take it down in a couple of days).

Jim

Hello Rob,

And congratulations on heading the SWG during 'interesting' times!

After writing my previous email on the subject I sensed that we are not that expert on the RBSP science priorities, and that it was not right to ask the SWG to sort through our confusion. Last night I send Dave Sibeck an email asking for some concrete pointers on just what the instrument PIs will be looking at during the early-mission phase. We of course can provide large-scale electric field coverage routinely - what should be doing beyond that? Dave has been good about replying. I will forward his response to our ersatz SD-RBSP coordination group when I get it.

In the meantime, I added a few leading pages to the PP presentation with the wikipedia

specifications of the mission science objectives and information on the instruments (attached).

I propose that we adopt Tim's idea of a 3-beam camping mode as a test RBSP mode, with triggering, as a test of our coordination. Resolution of higher-m ULF pulsations is an interestingg scientific problem in itself (I think that we are seeing lots of these at mid-latitudes) and it can serve as a testbed. Call the mode SD/RBSP-1?

Can you SWG guys prepare plots showing how the satellites will move in a typical day or week or month around the globe? It would help to get a sense of how the satellites cycle in their orbits, how often North America is crossed favorably, etc. This doesn't nececesarily need an overlay of radar fields of view.

Here at VT we will work up a map indicating nominal camping modes for the NH radars. We should iterate on our results.

It will also help for us to put together interesting visuals from thios work to share with the RBSP team memebers and other collaborators.

Cheers,
Mike

Hi Mike,

I've had a look over Tim's presentation, and I'm not sure there's much I can add.

Neither Jim nor I have first-hand experience of the study of radiation belt processes or ULF waves, and so I guess we're not best placed to take decisions on the mode proposal or put it to the PIs - I think this would be better coming directly from those who are in direct liaison with the RBSP team and/or those who plan to use the data in joint RBSP/SD studies. I don't see the need to funnel this proposal through the Satellite Working Group, and doing so may just add a level of Chinese whispers!

Once the policy decision has been made on the mode, then I think the role of the Satellite Working Group depends upon whether the triggering mechanism is functioning. If it is, then no manual identification of conjunctions will be necessary, and so our role will probably be limited to the generation of footprint plots that can be used after data have been collected, by anyone wishing to do joint RBSP/SD studies.

If the triggering mechanism cannot be made to work by the end of the RBSP commissioning phase, then manual identification of interesting conjunctions will be necessary. We can certainly do this. However at present, Jim & I are the only active members of the working group, so if we were taking this path we would need to refresh the membership of the working group somewhat so that we can draw on the expertise of others.

Regarding Simon's comment about scientific benefit, I understood that themisscan was dropped because there was no longer a significant benefit to this mode (rather than because it had never had a benefit). I wouldn't see the use of Tim's mode as a straight trade of one low-benefit camping mode to another if the new mode provides a better opportunity to address some of the RBSP science topics. But of course, the PIs need to decide the balance of the trade-off between this and one minute resolution scans.

Rob

Quoting Robert Fear <rcf11@ion.le.ac.uk>:
Hi Mike,

As far as I'm aware, these details are still to be decided by the
SuperDARN PIs (so I've copied Mark into this reply).

My understanding following the SuperDARN workshop was that the RBSP mode would most likely involve three camping beams (to enable determination of ULF azimuthal wave numbers), but I think this might still be subject to final confirmation.

We have not scheduled any specific periods yet, as the final spacecraft orbits will be subject to a large degree of variation until launch. But I also understood from the workshop that rather than scheduling RBSP modes for conjunction intervals, the RBSP mode would probably be triggered entirely by a storm condition (regardless of the location of the spacecraft). But from a conversation with Tim (Yeoman) this morning, I'm not sure whether that is confirmed either.

If RBSP mode is to be based on the location of the spacecraft, then as Jim mentioned before, it would be helpful to have some dummy orbit data in the format in which it'll be finally produced (preferably a time series of positions rather than orbital elements), so he can adapt his existing software and we can hit the ground running after launch. Jim's on holiday at the moment, but I don't know whether or not he's received this.

All the best,

Rob (Fear)