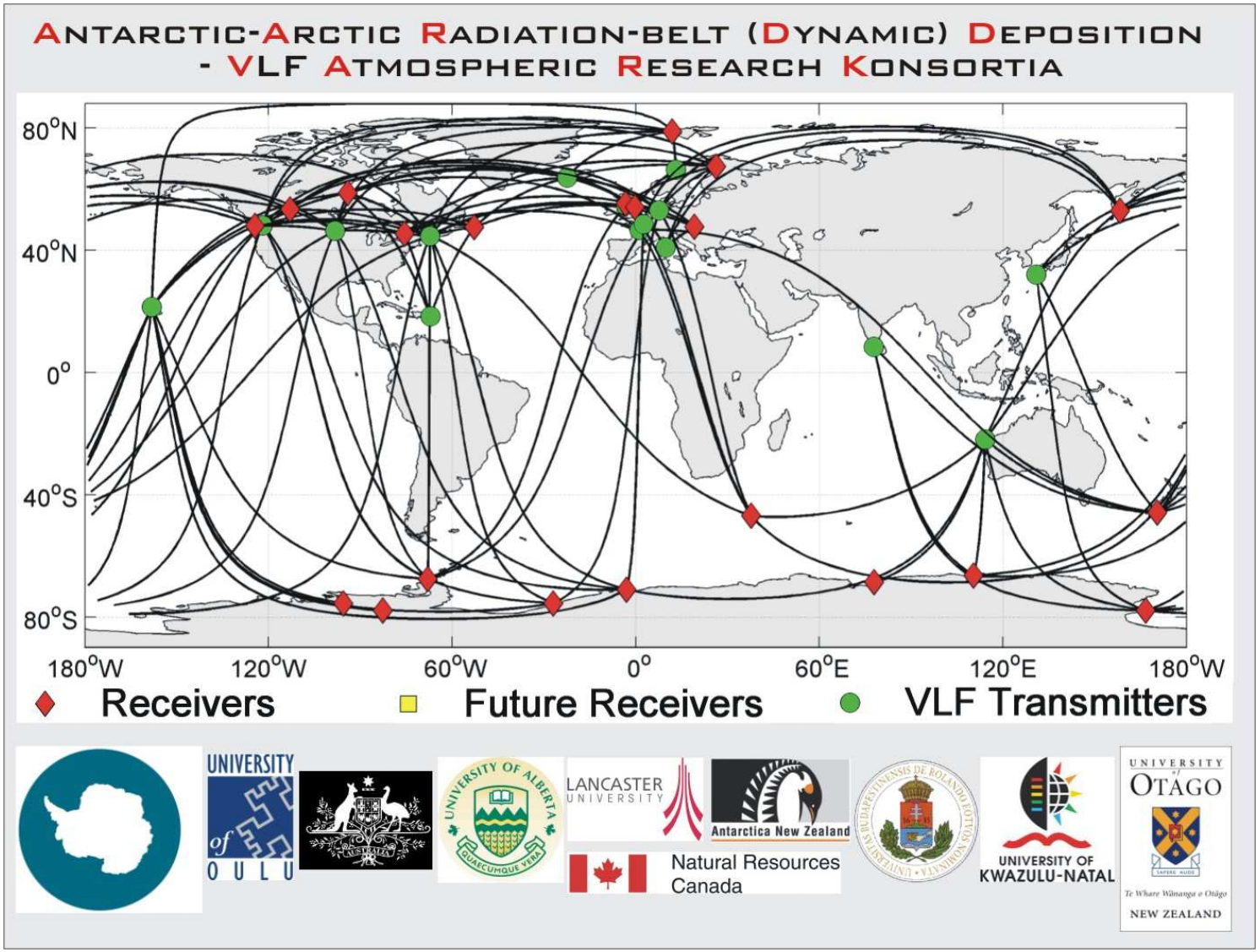
PLASMON 2nd annual meeting

Thursday Morning

WP4: (Mark Clilverd / Craig Rodger)

1. Outline of WP4 activities in year 2 and summary of status
2. Report on WP4 deliverables and milestones for year 2
3. Report on planned WP4 deliverables and milestones for year 3
4. Science report, year 2
5. WP4 workplan for year 3

1. Outline of WP4 activities in year 2 and summary of status



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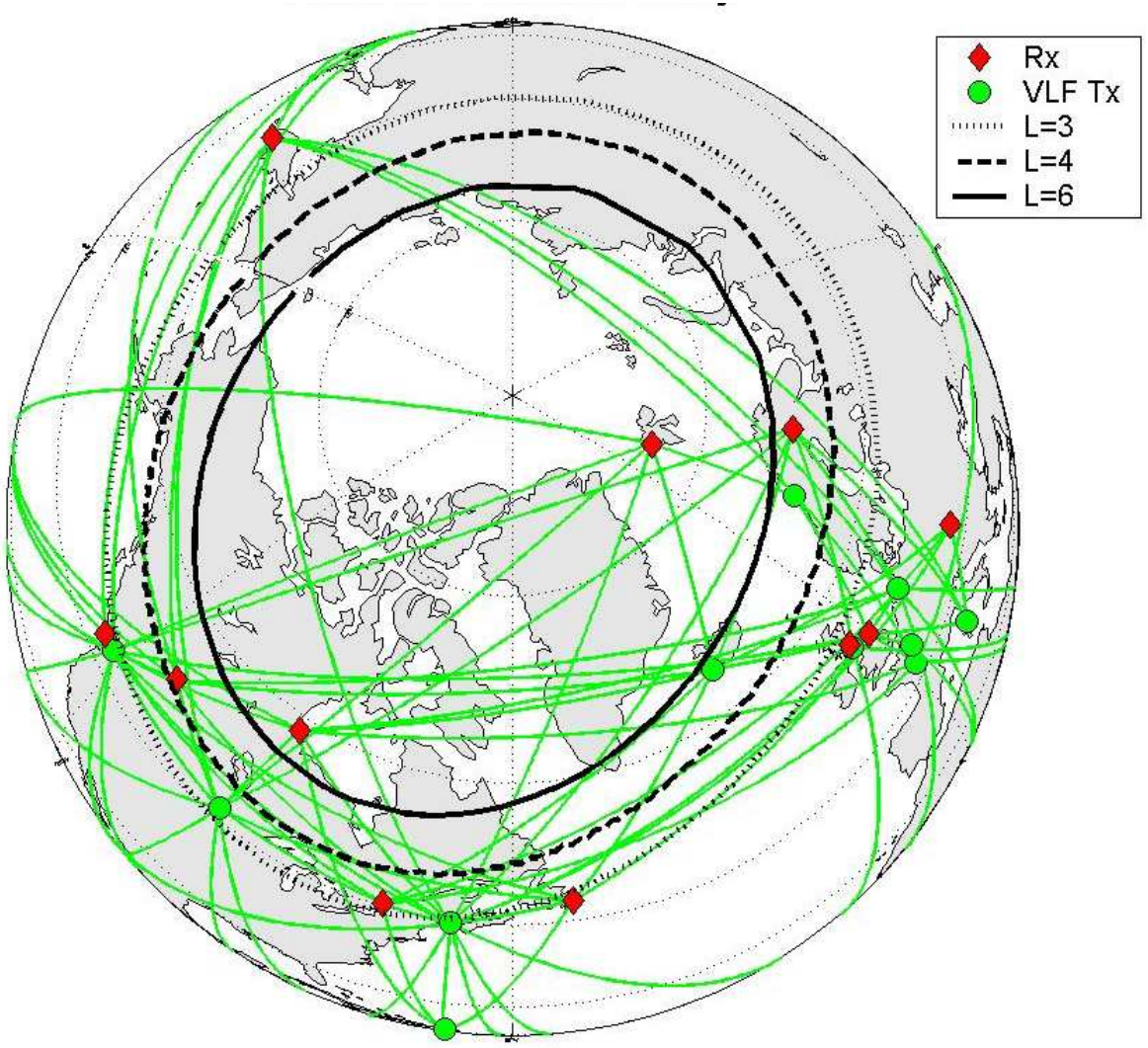

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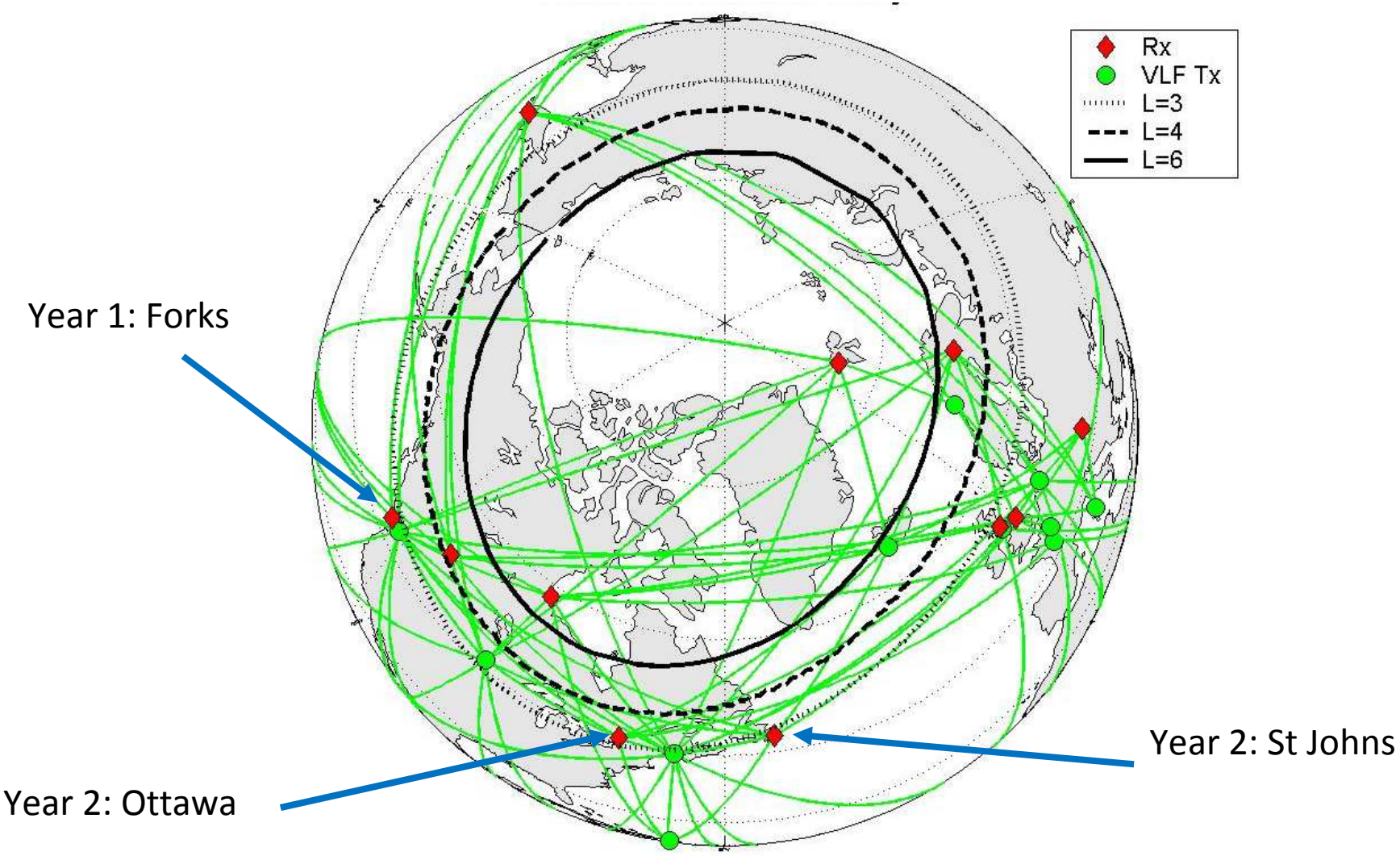
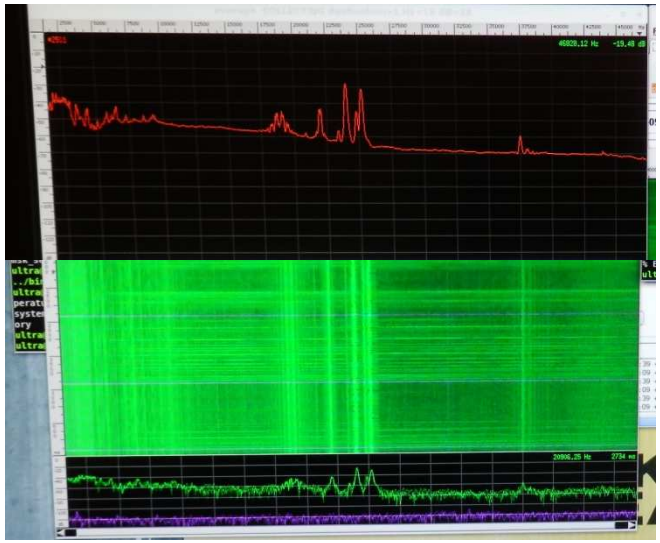


1. Outline of WP4 activities in year 2 and summary of status

Ottawa:

From - September 2012
Running – Ultra
Host – Natural Resources Canada

Strengths – trans US to Seattle (NLK) and Dakota (NDK), L~3-4

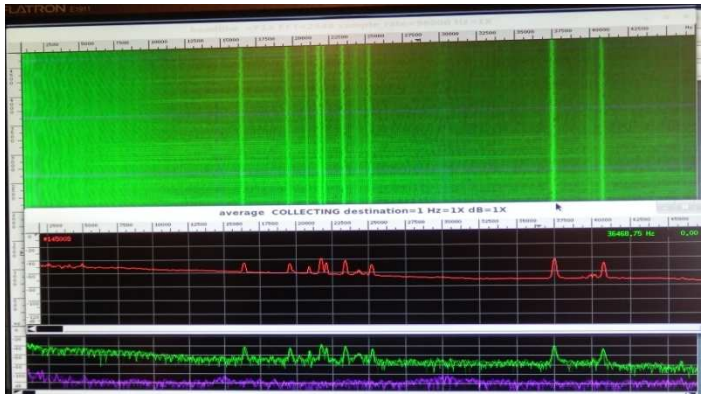


1. Outline of WP4 activities in year 2 and summary of status

St Johns:

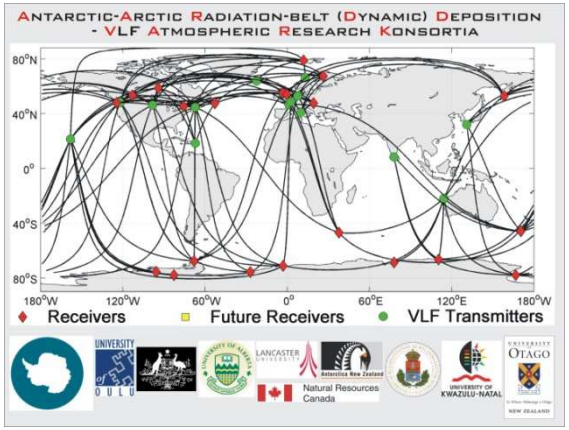
From - October 2012
Running – Ultra
Host – Natural Resources Canada

Strengths – trans Atlantic to Iceland (NRK) and Europe (DHO), L~3 & 3-6



1. Outline of WP4 activities in year 2 and summary of status

At present all AARDDVARK systems are running and producing good data quality



Below are listed details of the last data files successfully transferred for each experiment.

Casey Ultra : -rw-r--r-- 1 psdadmin psd 2246600 Feb 5 00:00 GQD20130204.txt

Churchill Ultra : -rw-rw-r-- 1 psdadmin psd 8510426 Feb 5 09:05 BAC20130205.txt

Ny Alesund Ultra : -rw-rw-r-- 1 psdadmin psd 5780426 Feb 5 06:10 BAC20130205.txt

Ottawa Ultra : -rw-rw-r-- 1 psdadmin psd 4777924 Feb 5 05:05 BAC20130205.txt

Seattle Ultra : -rw-r--r-- 1 psdadmin psd 7496422 Feb 5 07:59 BAC20130205.txt

St Johns : -rw-rw-r-- 1 psdadmin psd 6197526 Feb 5 06:36 BAC20130205.txt

Sodankyla Omnipal : -rw-r--r-- 2 psdadmin psd 20884766 Feb 5 00:30 o04feb13a.SGO

Sodankyla Ultra : -rw-r--r-- 1 psdadmin psd 2247208 Feb 5 00:00 NSE_SODE_20130204.txt

4. Science report, year 2

Precipitation + plasmapause + PLASMON acknowledgement:

POES Satellite Observations of EMIC-wave driven Relativistic Electron Precipitation during 1998-2010
Bonar R. Carson ,Craig J. Rodger, Mark A. Clilverd – *JGR Space Physics*

Rapid radiation belt losses occurring during high speed solar wind stream driven storms: importance of energetic electron precipitation
Aaron T. Hendry, Craig J. Rodger, Mark A. Clilverd, Neil R. Thomson, Steven K. Morley, Tero Raita – *Geophysical Monograph Series*

Energetic Particle injection, acceleration, and loss during the geomagnetic disturbances which upset Galaxy 15
Mark A. Clilverd, Craig J. Rodger, Donald Danskin, Maria E. Usanova, Tero Raita, Thomas Ulich, Emma L. Spanswick – *JGR Space Physics*

Contrasting the responses of three different ground-based instruments to energetic electron precipitation
Craig J. Rodger, Mark A. Clilverd, Andrew J. Kavanagh, Clare E. J. Watt
Pekka T. Verronen, Tero Raita – *Radio Science*

2. Report on WP4 deliverables and milestones for year 2

D4.2 Installation and setup of two new AARDDVARK sites

We plan to install three new sites and have identified southern Greenland, Boston, Fairbanks, Japan, and Kerguelen Islands as potential sites which are well placed to allow quasi constant L-shell data analysis, both inside and outside of the plasmaspause. Phase 2. [month **24**] **DONE**

D4.3 Build event database of characteristics of REP

Build event database of characteristics of REP: Analyse the characteristics of REP, case by case, and at different L-shells. We will make detailed modeling of the propagation conditions for each transmitter-receiver great circle path influenced. This detailed analysis will provide us with the time varying flux levels for each event, something that has not been achieved to date. [month **42**] **ONGOING**

D4.4 Development of REP model

Development of REP model: Develop a model which identifies the size, location, MLT zone, geomagnetic conditions, and flux characteristics of the REP. We will build up a model which identifies the size, location, MLT zone, geomagnetic conditions, and flux characteristics of the REP. We will add in the capability to estimate low earth orbit radiation dose due to the precipitation bursts. [month **42**] **NOT STARTED**

D4.5 Development of model of on/inside/outside plasmapause precipitation

Development of model of on/inside/outside plasmapause precipitation: Refine the REP model to describe on/inside/outside plasmapause precipitation using input from the WP3 model. When the work package 3 plasmaspheric model is able to provide some information on the structure of the plasmasphere, we will further develop our REP model to describe precipitation that occurs from inside the plasmapause and from regions on, inside the plasmapause, and from outside of the plasmapause respectively. The large differences in electron number density and gradients in these regions will drive very different wave-particle interactions, and hence different precipitation characteristics. [month **42**] **NOT STARTED**

2. Report on WP4 deliverables and milestones for year 2

MS10 Installation of new AARDDVARK sites. End month: 24.
Comment: Documentation available **DONE**

Installation reports written and available.

End of month 24 stuff

3. Report on planned WP4 deliverables and milestones for year 3.5

i.e., Month 42 stuff.....

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MS11 Characterisation of precipitation signatures in AARDDVARK data. End month 42.
Comment: documentation available:. **5 papers from WP4 so far**

MS12 Model of precipitation developed. End month: 42.
Comment: Model code available. **To be done**

MS13 Refined model of precipitation completed using WP3 output. End month: 42.
Comment: WP3 model code integrated into precipitation code and code available. **To be done**

5. WP4 workplan for year 3

D4.3 Build event database of characteristics of REP

ONGOING, publish a couple more papers on events to get general idea of characteristics

EMIC events using POES and AARDDVARK data – Craig/OU to lead. [plasmapause]

AARDDVARK (Churchill) storm study from August 2010 – Mark to lead. [outside plasmapause]

Nov 2011 storm study with elevated inner plasmapshere fluxes – Mark to lead. Andrew?. [inside plasmapause]

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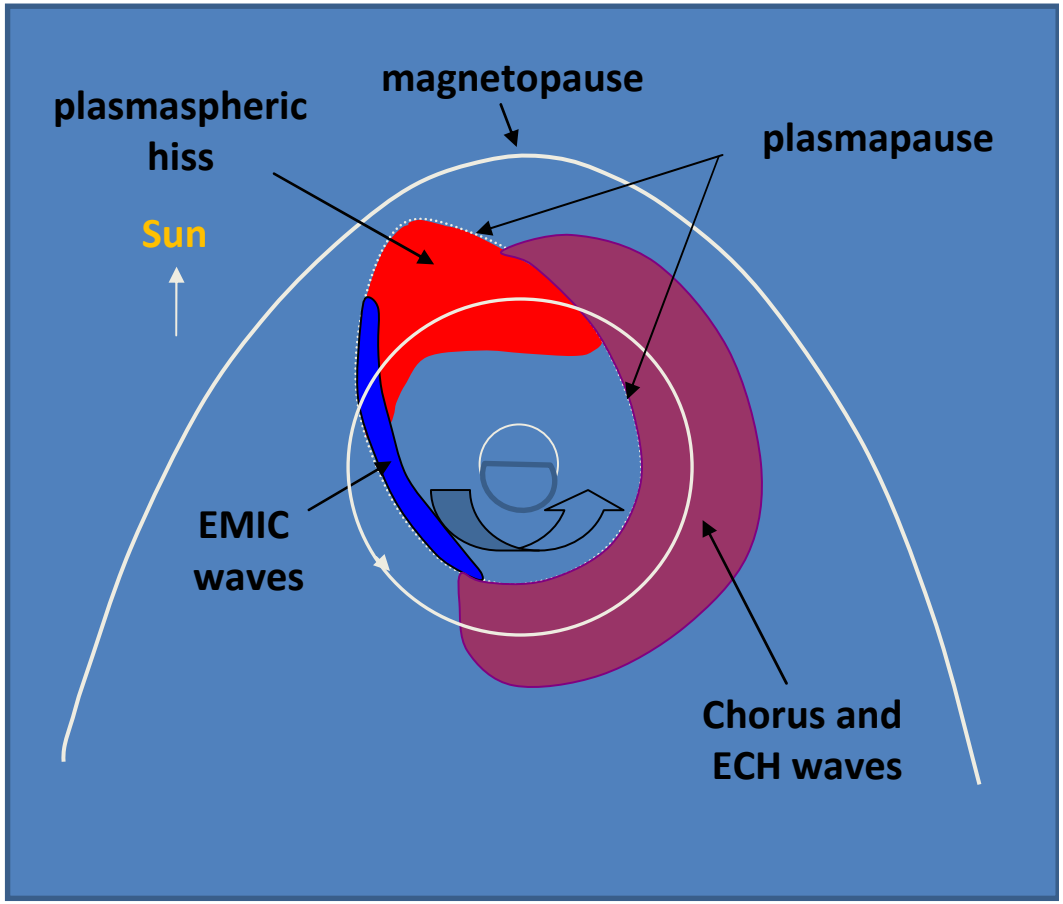
Begin model development based on MLT sector map w.r.t. plasmapause, and simple activity based variability (3 levels of geomagnetic activity). Blc only not dlc.

Dayside: plasmaspheric hiss characteristics, 3 levels, >30 keV flux, spectral gradient k

Evening: EMIC at plasmapause location, 3 levels, >1 MeV mono energetic

Night side: chorus outside plasmapause, 3 levels, >30 keV flux, spectral gradient k

Dawn side: chorus outside plasmapause, 3 levels, >30 keV flux, spectral gradient k



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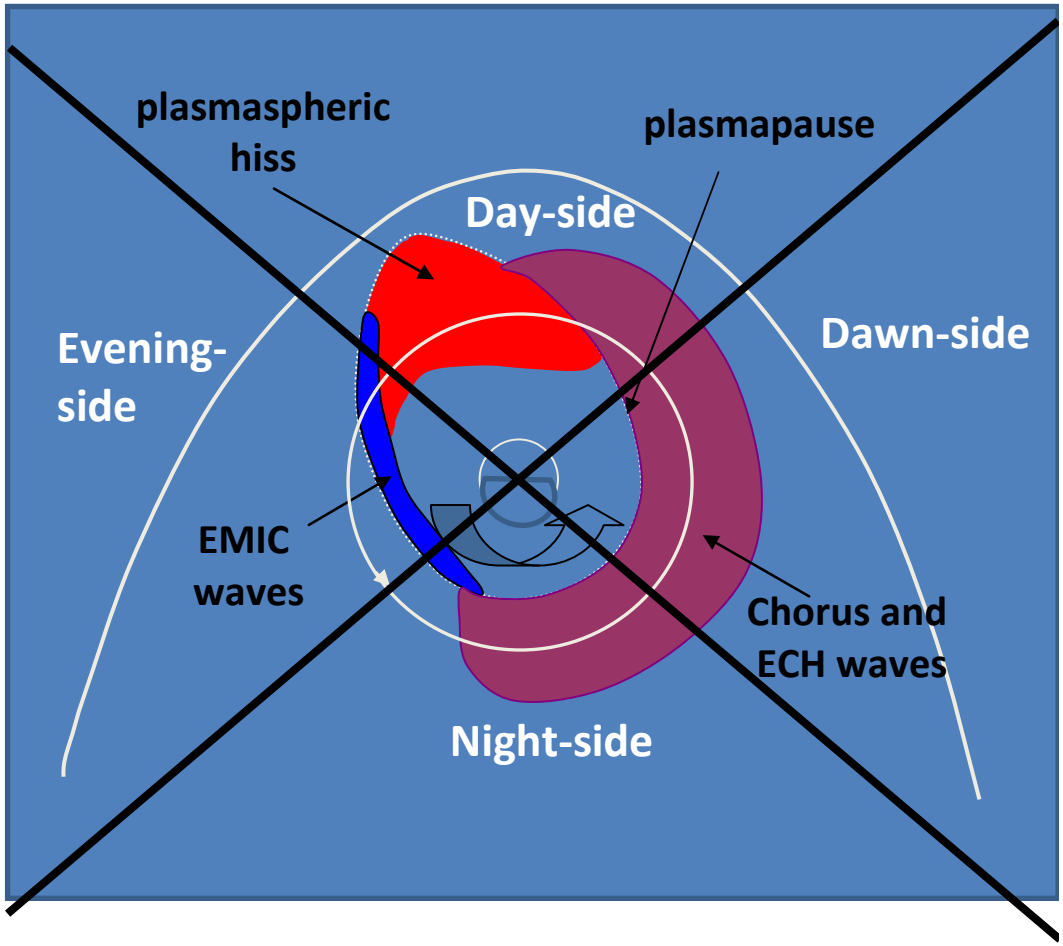

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Modify model in D4.4 but with WP3 derived location of plasmapause in MLT?