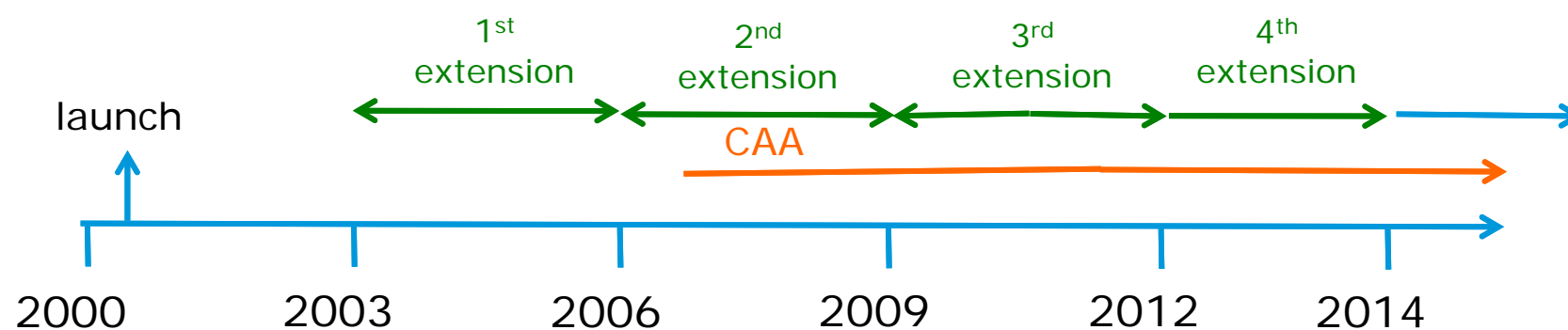


Cluster Mission update
Matt Taylor
THEMIS/ARTEMIS SWT
Fall 2011

- As mentioned last year, Cluster was granted an extension up to the end of 2014. This is subject to a mid-term review on its technical capability in Summer 2012.
- Spacecraft went through lowest altitude since launch – 250 km spacecraft 2
- Current operations focus on continued auroral acceleration region activities and implementation of the Cluster guest investigator GI programme.
- Cluster team is preparing a proposal for a further extension to 2016 which will be submitted and considered in autumn 2012.



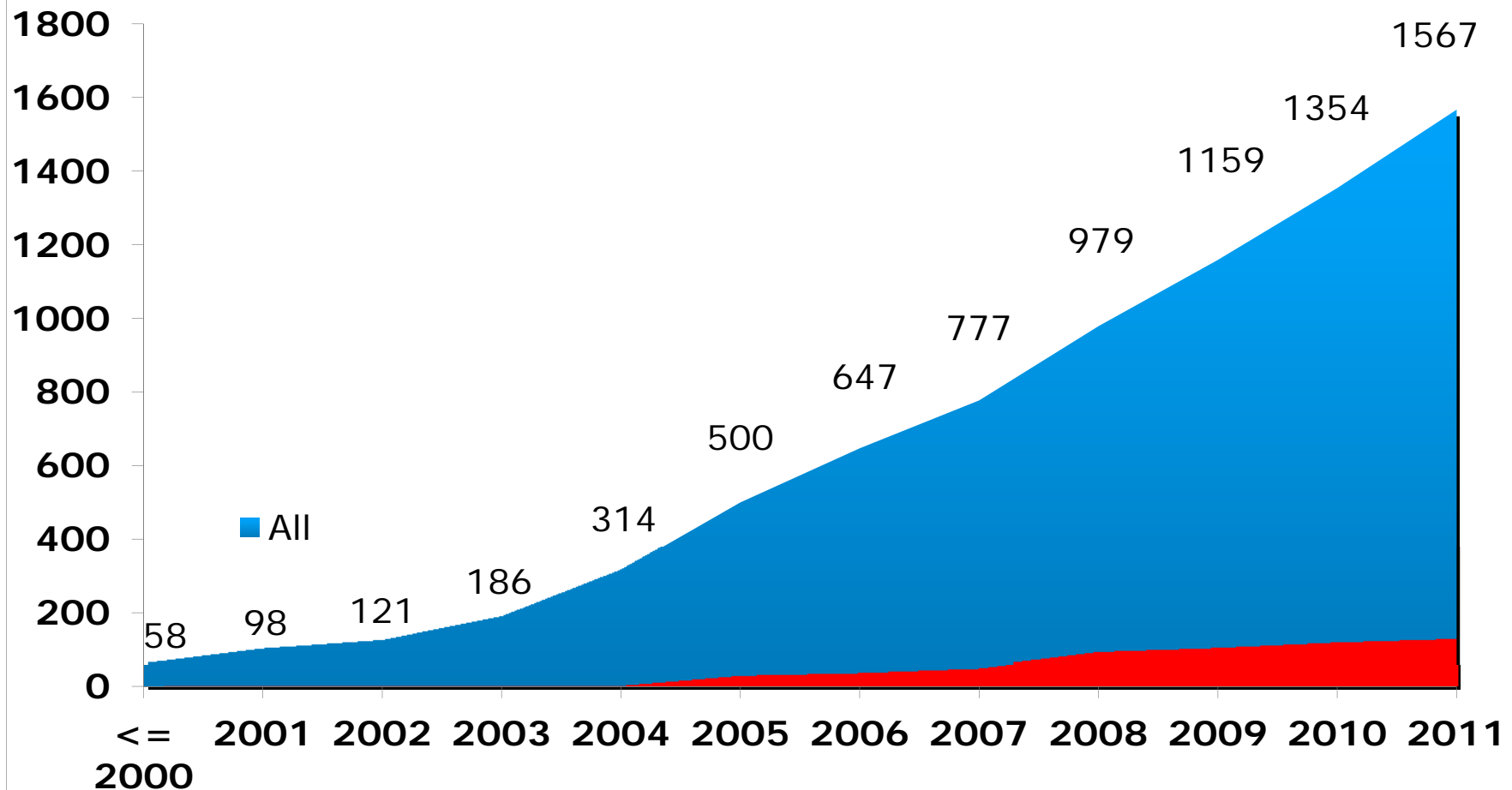
Cluster mission timeline

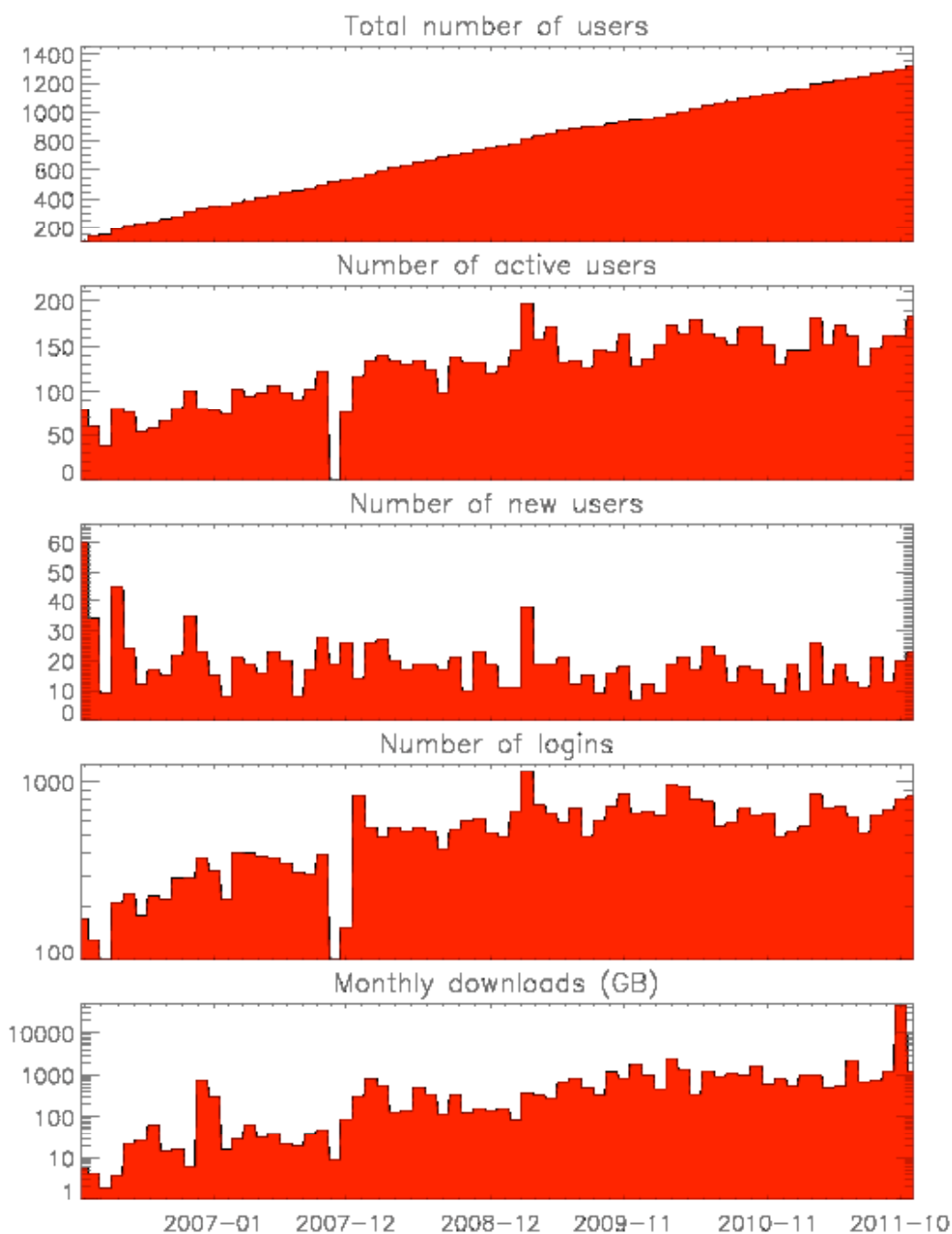
Our refereed publication rate is healthier than ever with **1567**, with **58** PhDs based on Cluster data.



2011 is best year for Cluster publications, with at least 213 this year

Cluster and Double Star refereed publications up to November 2011





Harri's baby- Cluster Active Archive CAA

- OVER 1300 USERS
- All high res best quality Cluster data
- ~ one Terabyte download per month
- Implementation of final archive in Madrid ongoing
- Will roll out new user interface in next 12-24 months
- <http://caa.estec.esa.int>


AO called for new operations based on spacecraft separation and instrument mode to carry specific science investigations.

6 successful GI's selected, one already implemented (as reported by Brian Walsh yesterday)

- A. Retinò - multi-scale reconnection studies
- C. Foullon – flank waves etc
- E. Yordanova –small scale turbulence
- B. Walsh – energetic electrons at m/pause
- F. Pitout –particle acceleration in cusp
- Z. Pu – comparative reconnection studies

First time such an astronomy concept has been implemented in our area.

Considering a repeat call for 2015-2016 extension.

	Cluster	Ref:	SRE-SM-2010-001-MGGTT
	AO for Cluster	Issue	Version 1.1
	Special Science Operations Programme	Date	10 February 2010
		Page	1

European Space Agency

Directorate of Science and Robotic
Exploration

Cluster

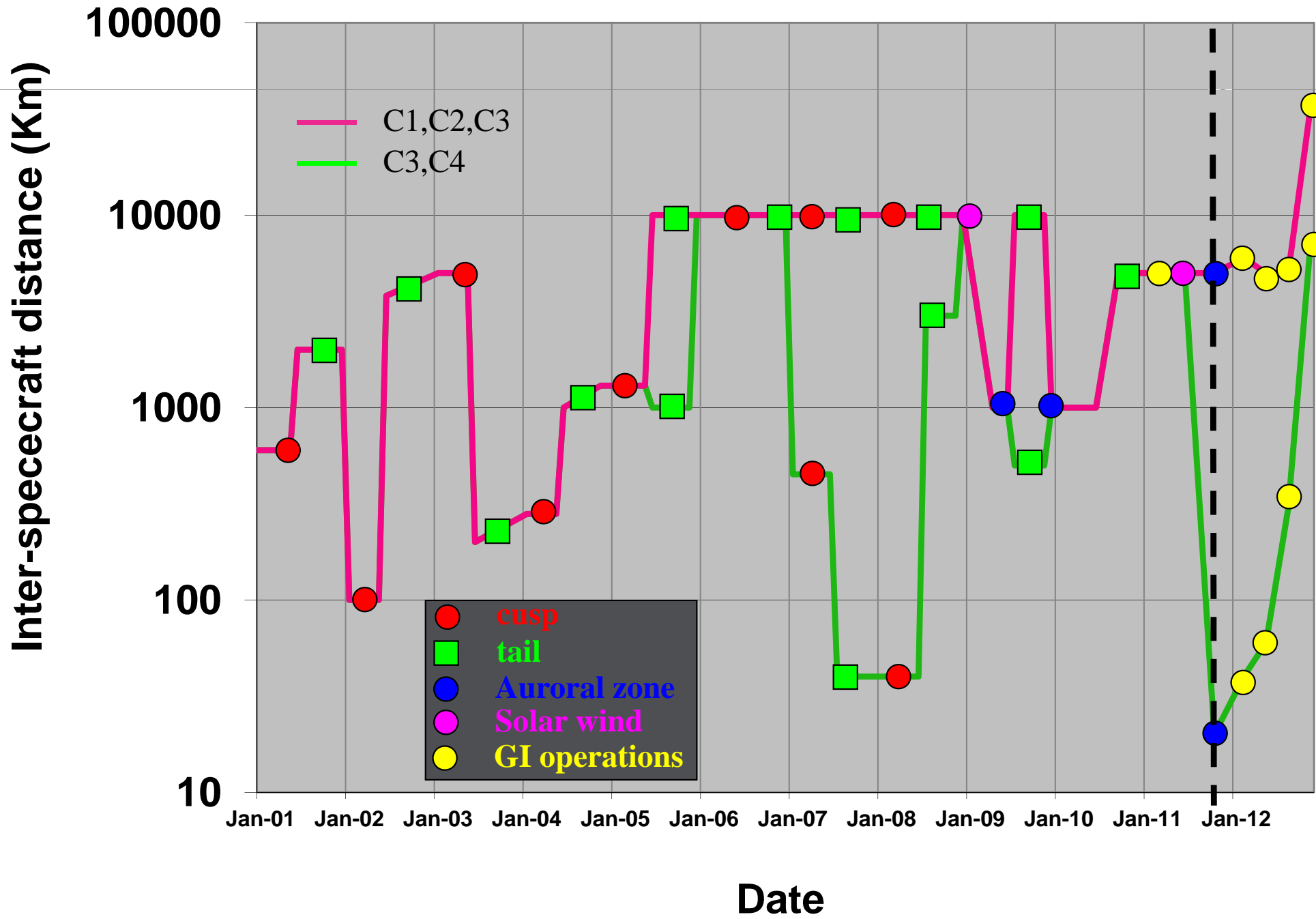
FIRST ANNOUNCEMENT OF OPPORTUNITY

Special Science Operations Programme

SRE-SM-2010-001-MGGTT

Version 1.1

10 February 2010

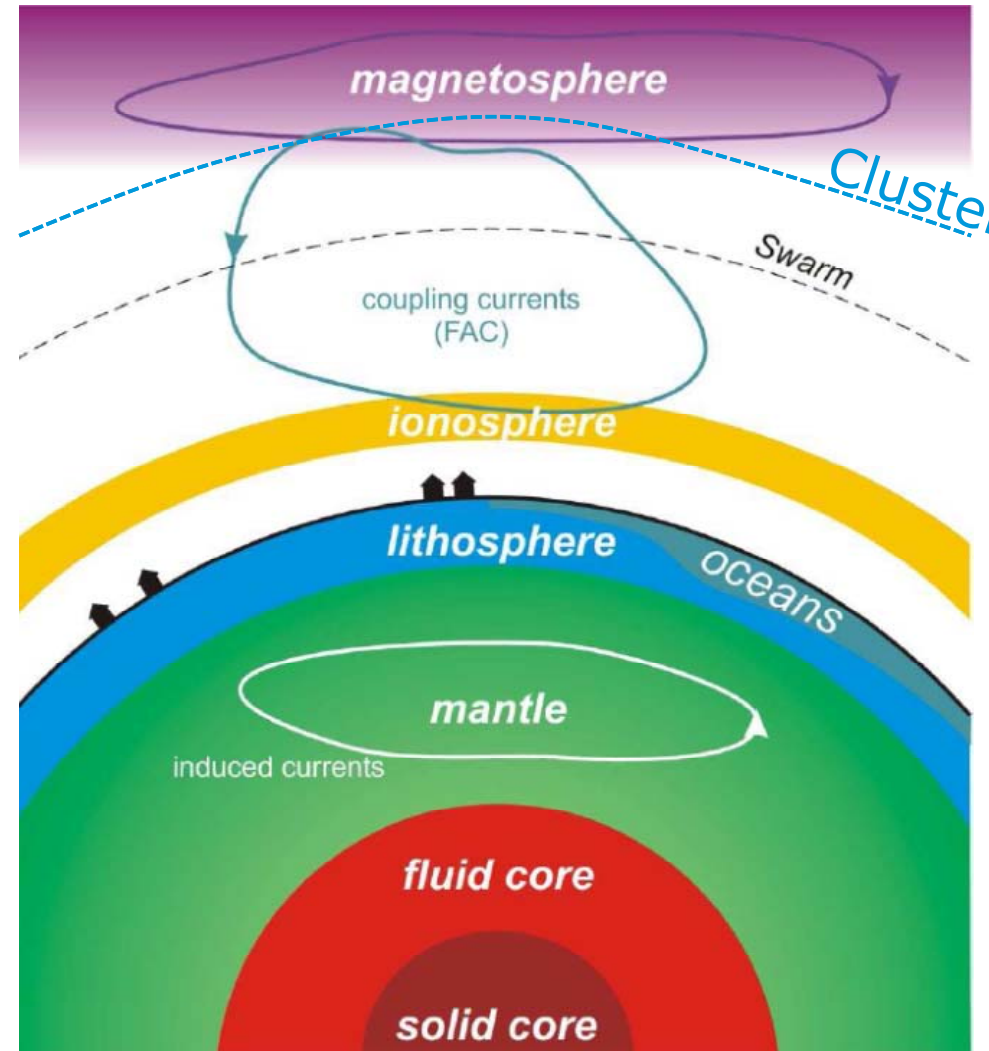
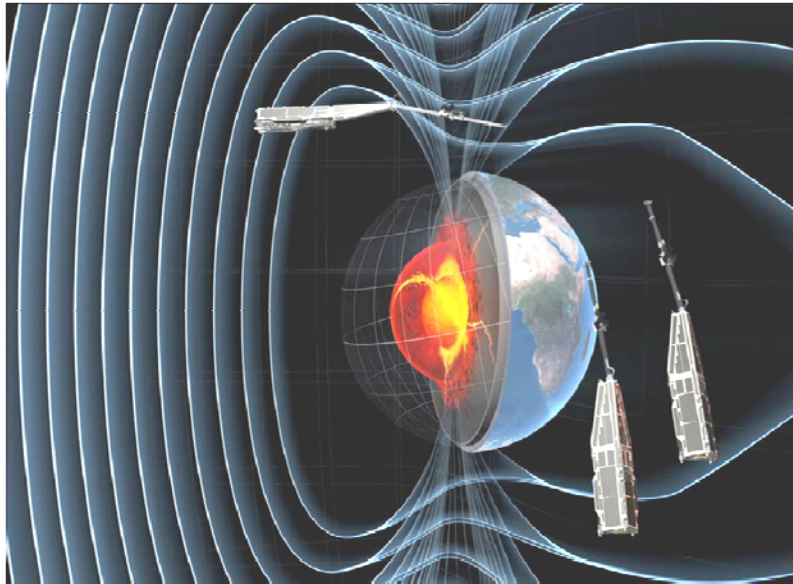


Cluster future:

Cluster - Swarm



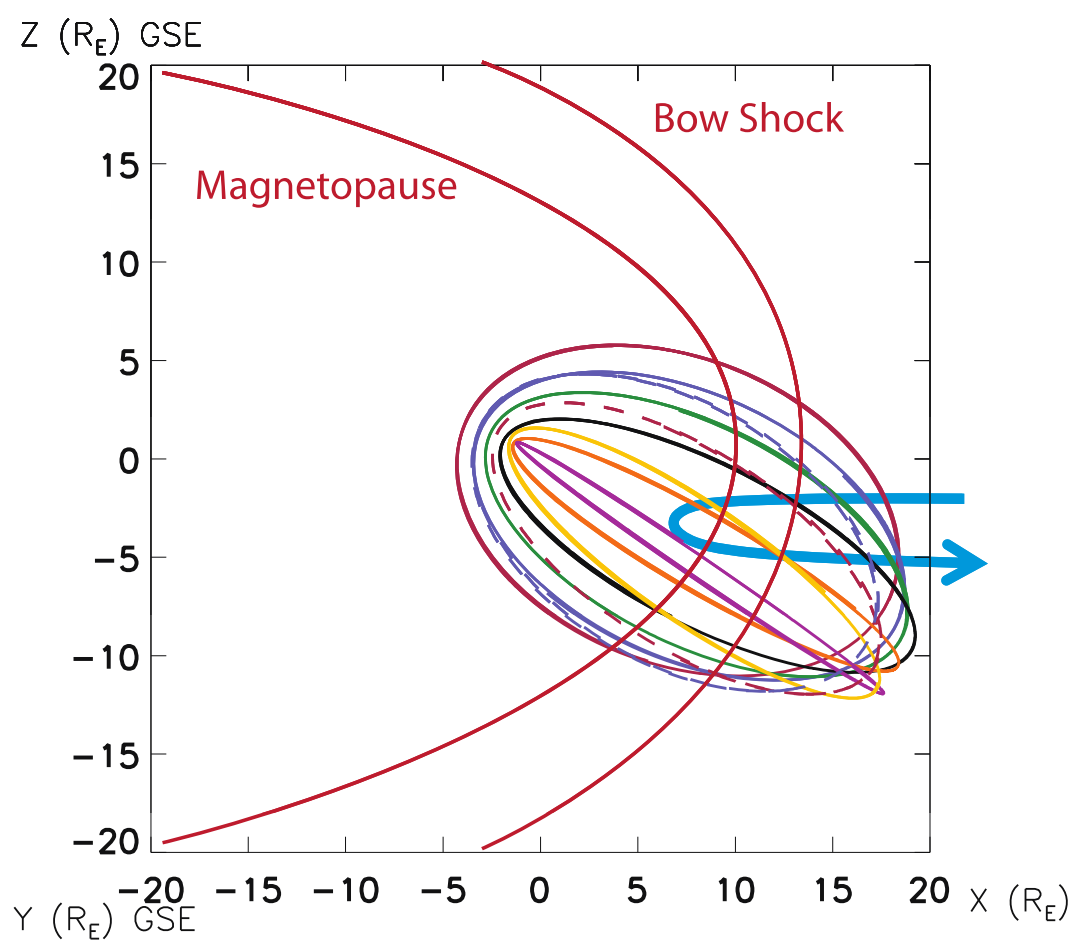
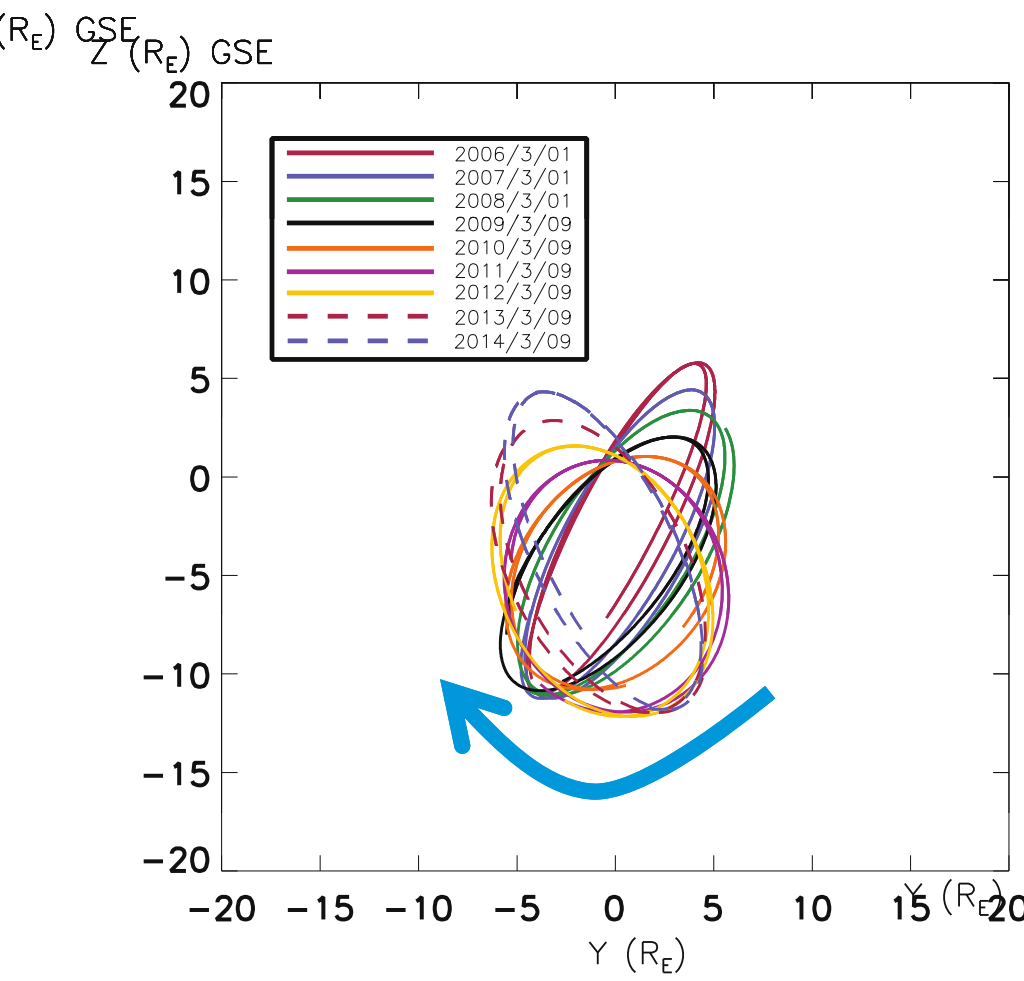
→ SWARM- ESA Earth observation mission – 3 spacecraft constellation to provide the best ever survey of the geomagnetic field and its temporal evolution



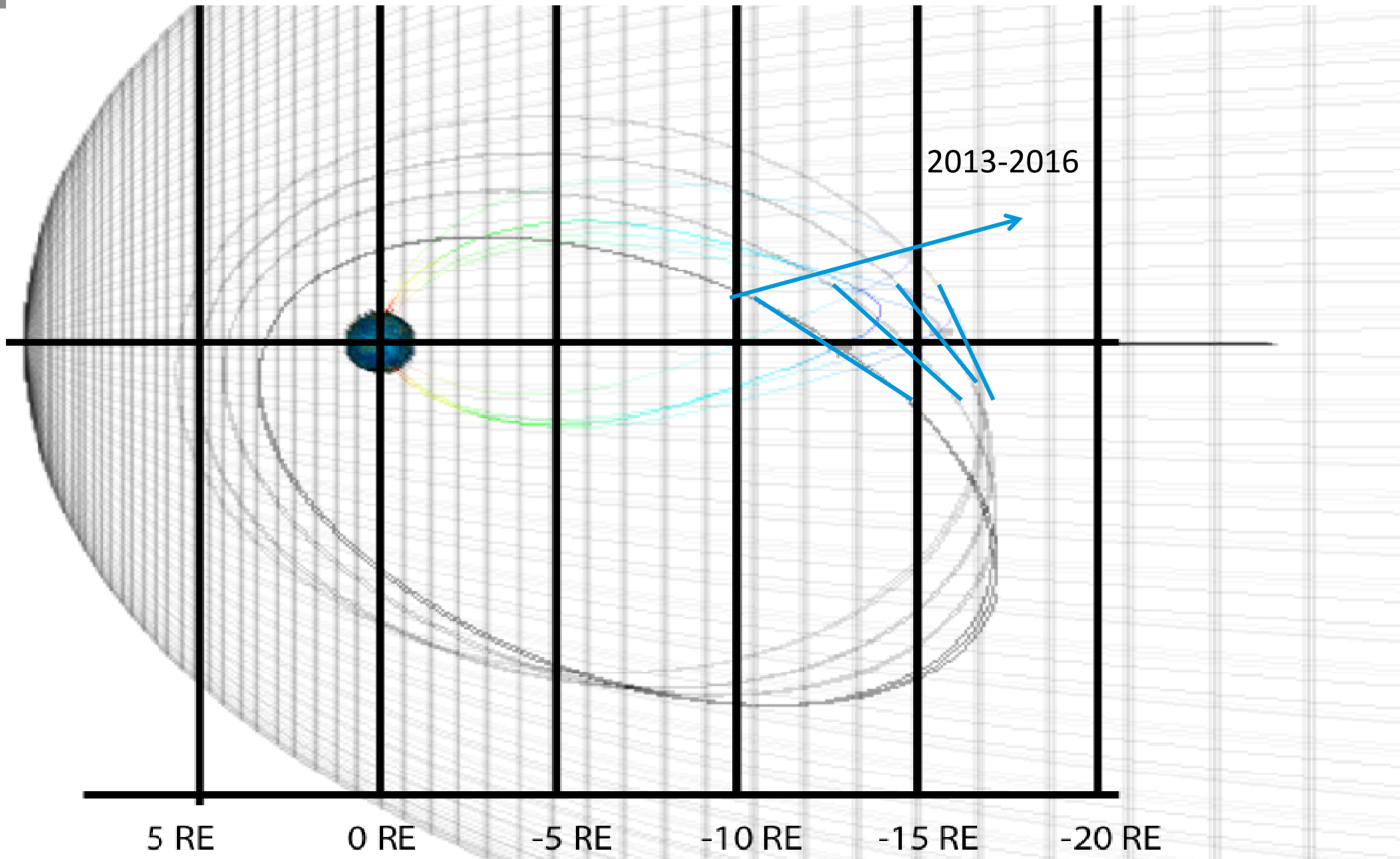
Launch mid-2012
3 month commissioning
48 month operational lifetime

490, 530 km altitude.

Orbit Evolution 2006 - 2014



Spacecraft will progress back out to higher ecliptic altitudes on 2015-2016

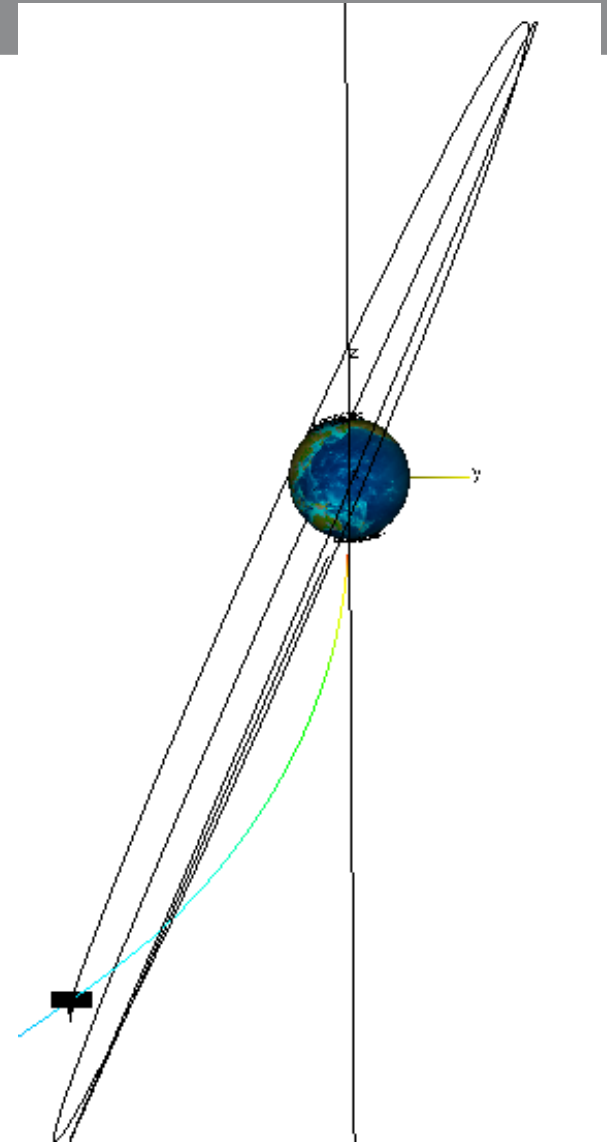
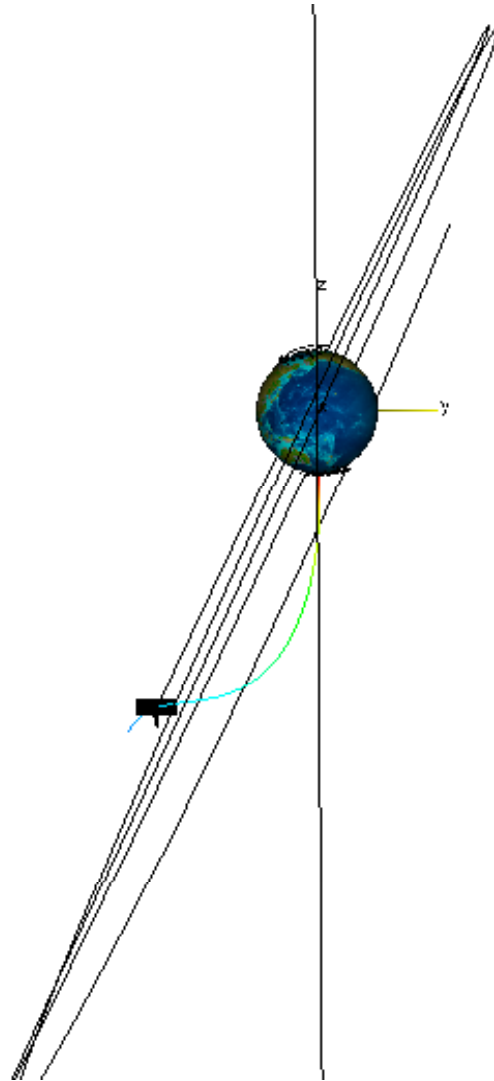
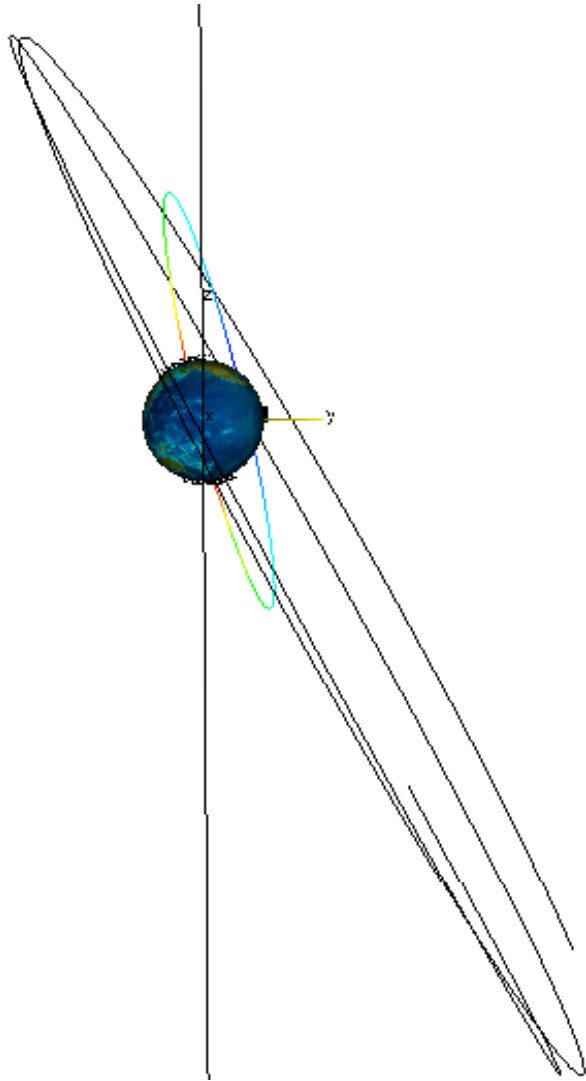


Different inclination – now cluster crosses XY plane near apogee from South to North

2005

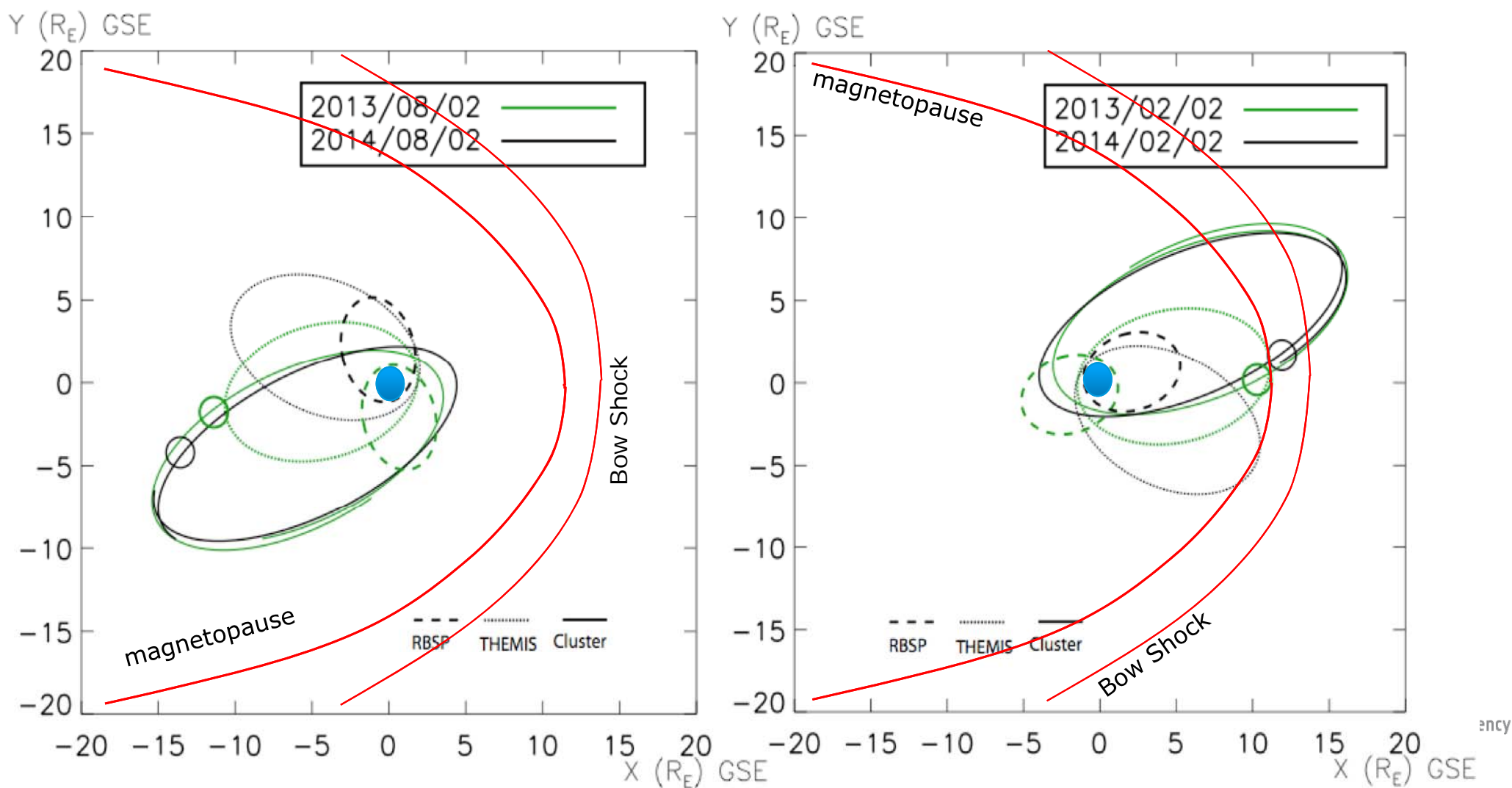
2015

2016



2013-2014 opportunities – TWINS not shown but obviously included

Cluster at high latitude and providing measurements at large radial distances

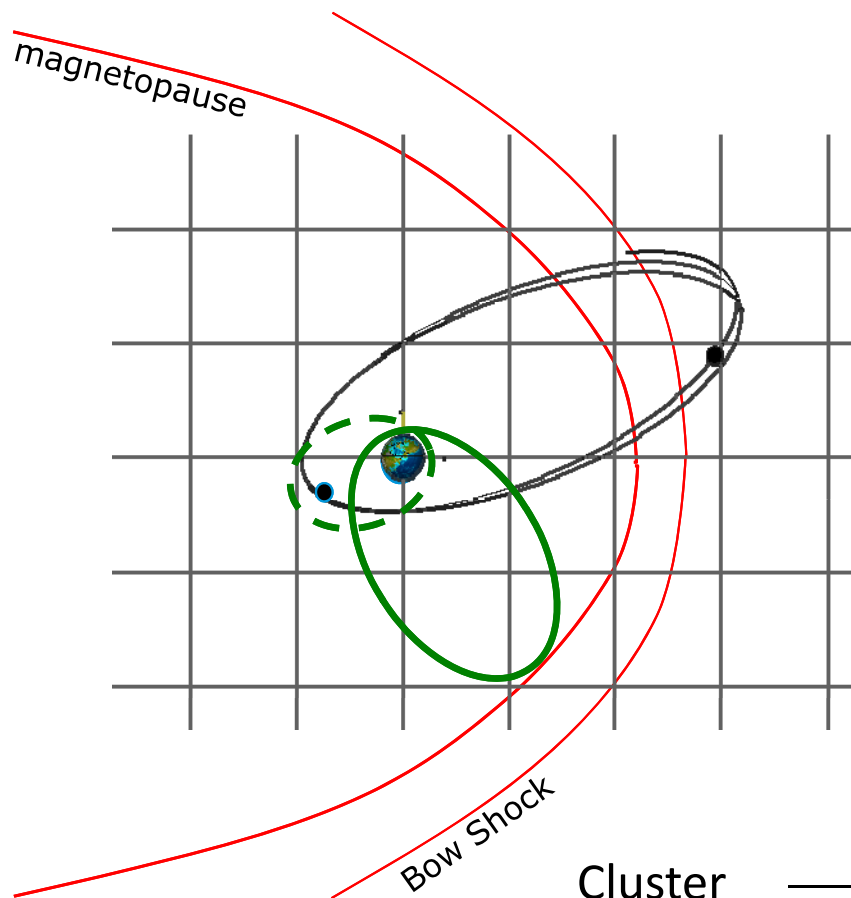


Cluster, THEMIS and RBSP Dayside , 2 February

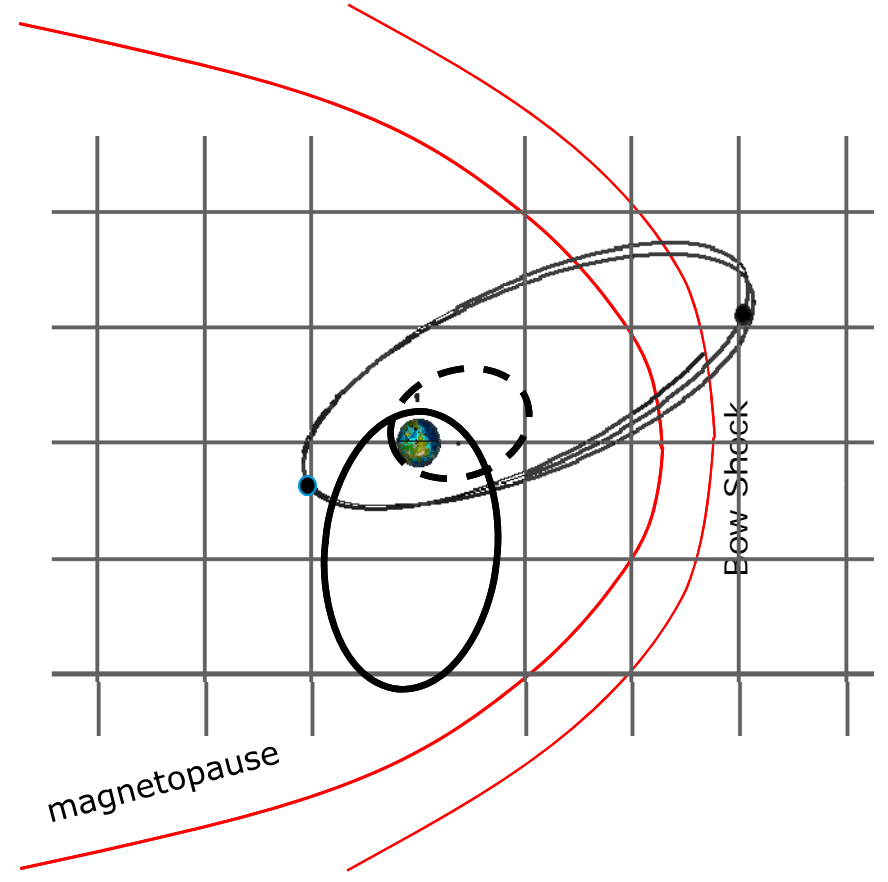


Cluster at z GSE=0

2015



2016



Cluster —
THEMIS —
RBSP - - -

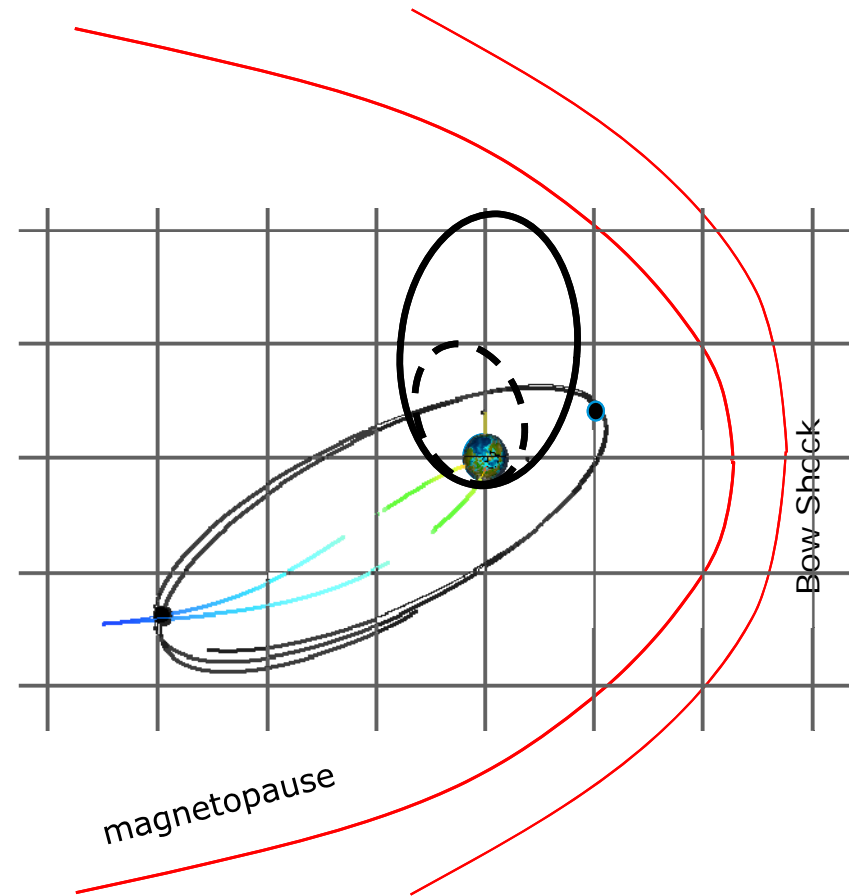
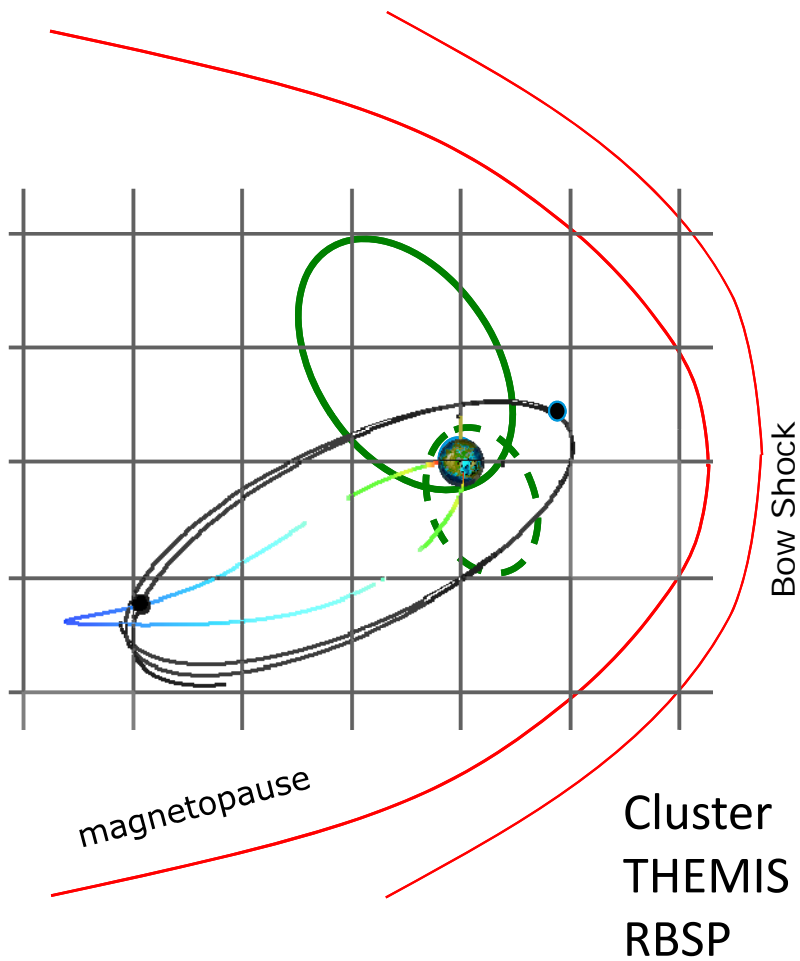
Cluster, THEMIS and RBSP Tail, 2 August



Cluster at z GSE=0

2015

2016



Cluster, THEMIS and RBSP
Tail , 2 August



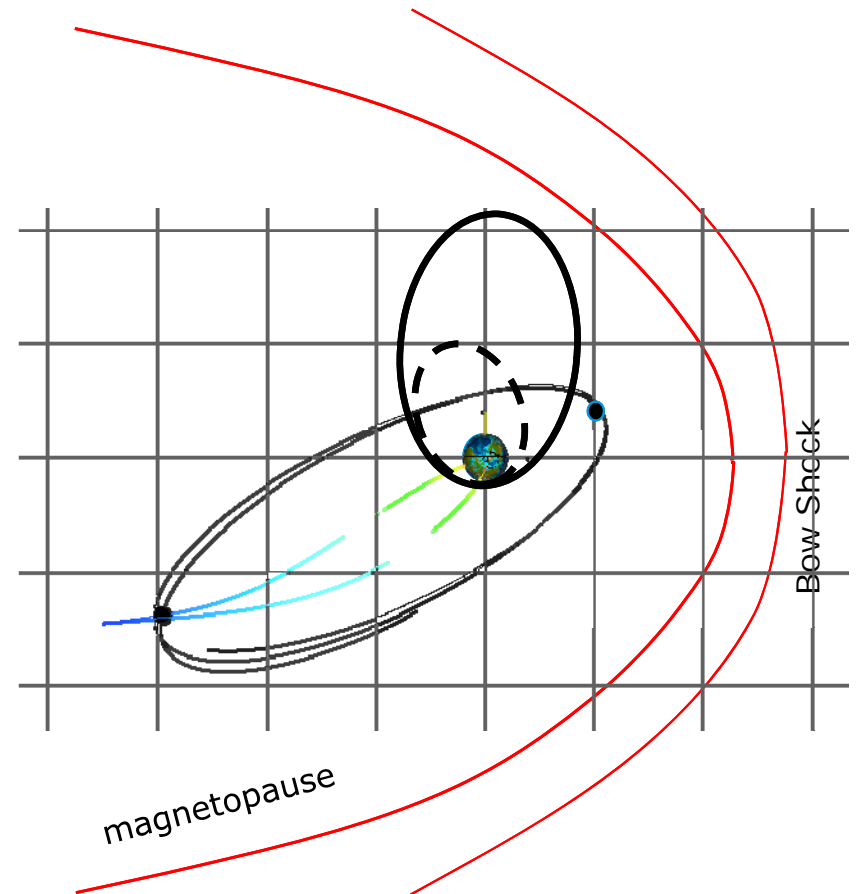
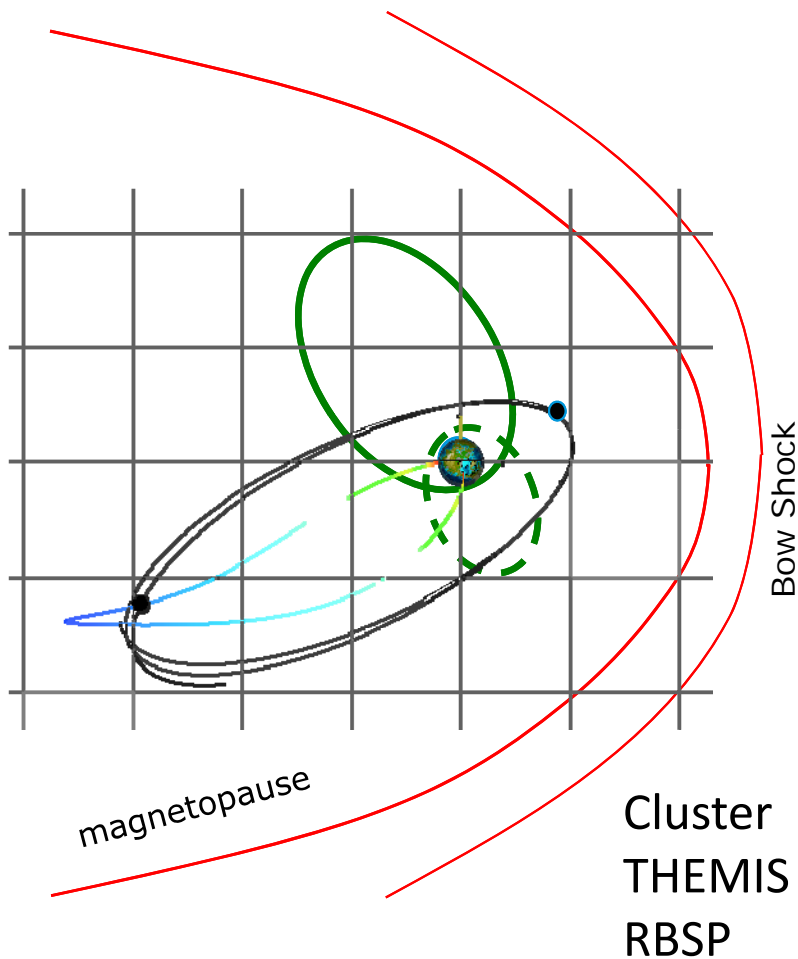
Cluster at z GSE=0



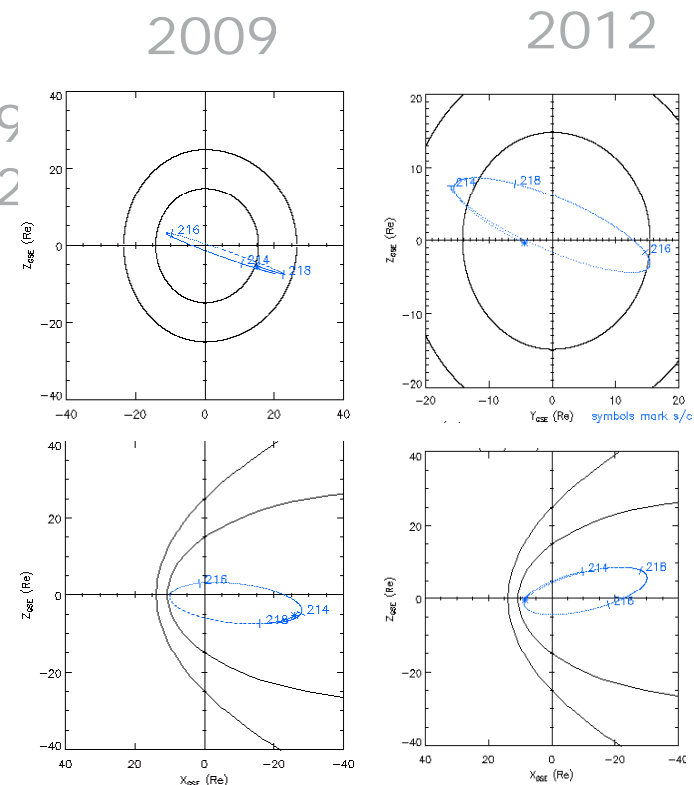
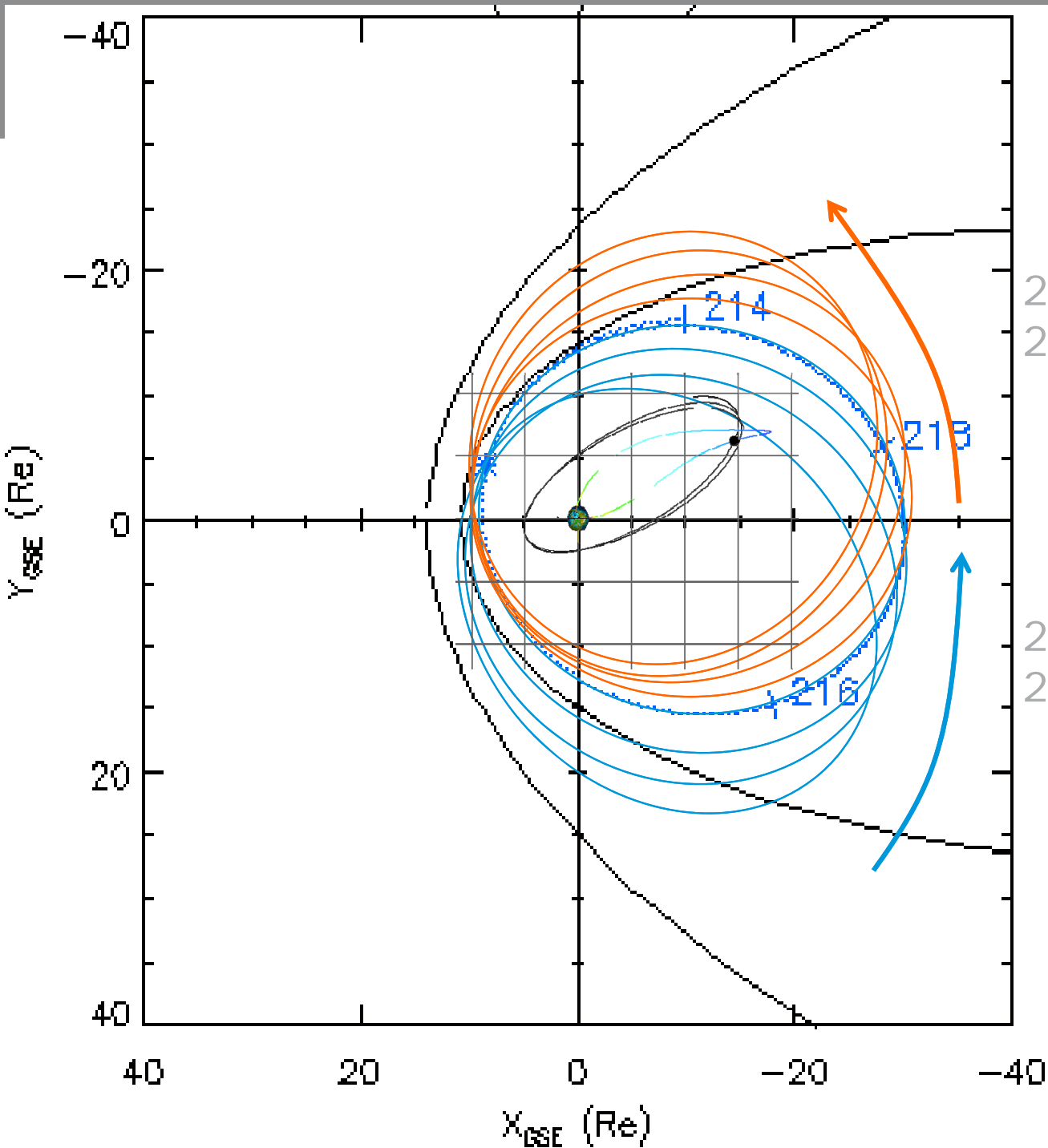
2015

MMS conjunctions

2016



GEOTAIL – HOPING TO
EXTEND UNTIL END OF 2015
FOR END OF THIS YEAR



For your 2012 schedule:

Cluster-Themis-Artemis workshop

1 October – 5 October 2012, Colorado

Organization just beginning with LASP colleagues
(Dan Baker and Xinlin Li)

Cycle 24 Sunspot Number Prediction (October 2011)

