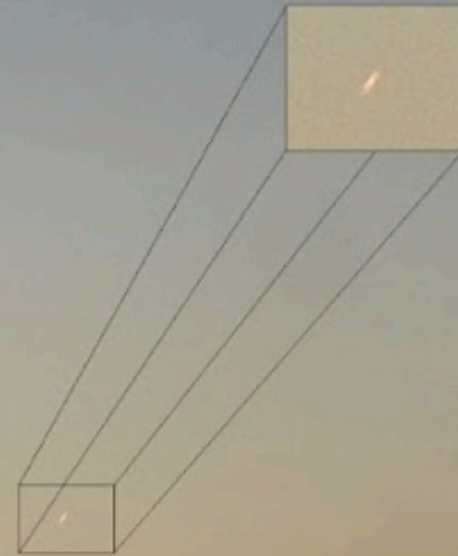
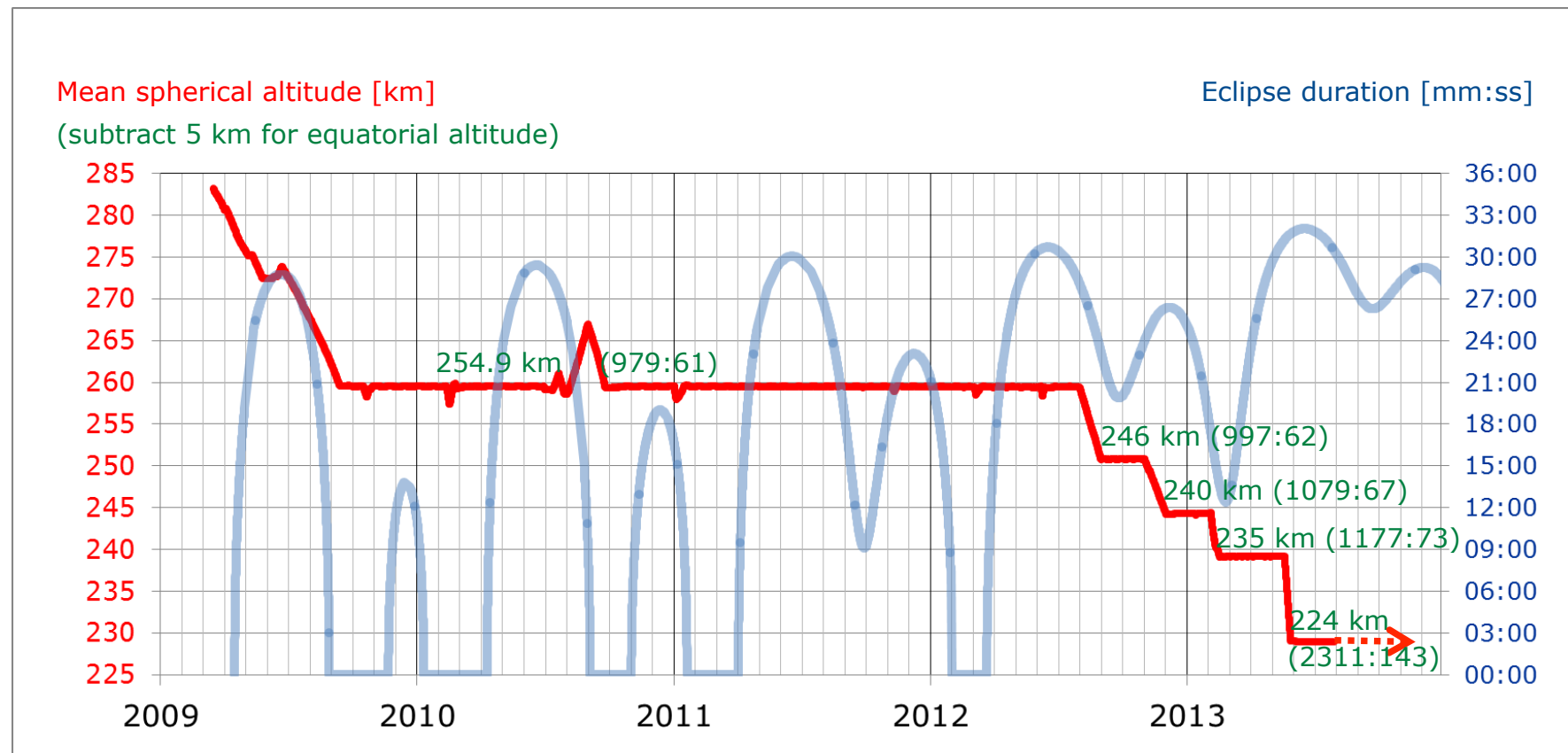


The status of the GOCE mission



(Selection of slides from the living planet symposium)

altitude profile 2009-2013



The cycle at 224 km will be the last repeat cycle flown by GOCE. It will be kept until fuel depletion later this autumn

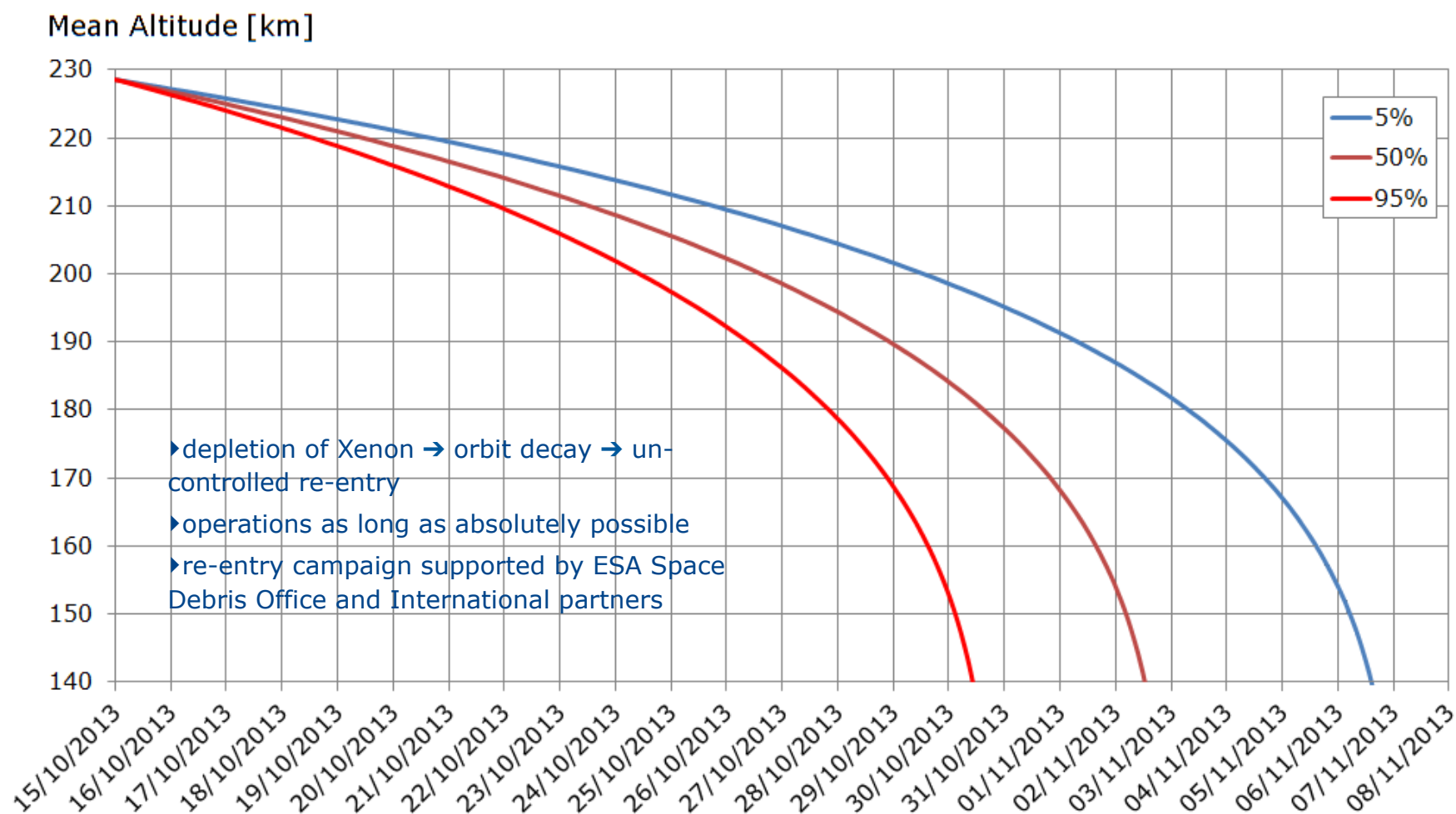
Timeline:

- ▶14 October: pressure below 5 bar. Ion propulsion is expected to stop after pressure drops below 2.5 bar (foreseen on 19 October).
- ▶18 October: pressure below 2.5 bar. This is the pressure needed to fire the ion engine according to specifications. It is estimated that there is about 350g of xenon left.
- ▶21 October 7am GMT: the fuel tank ran out of xenon (DFM to FPM), end of mission declared.

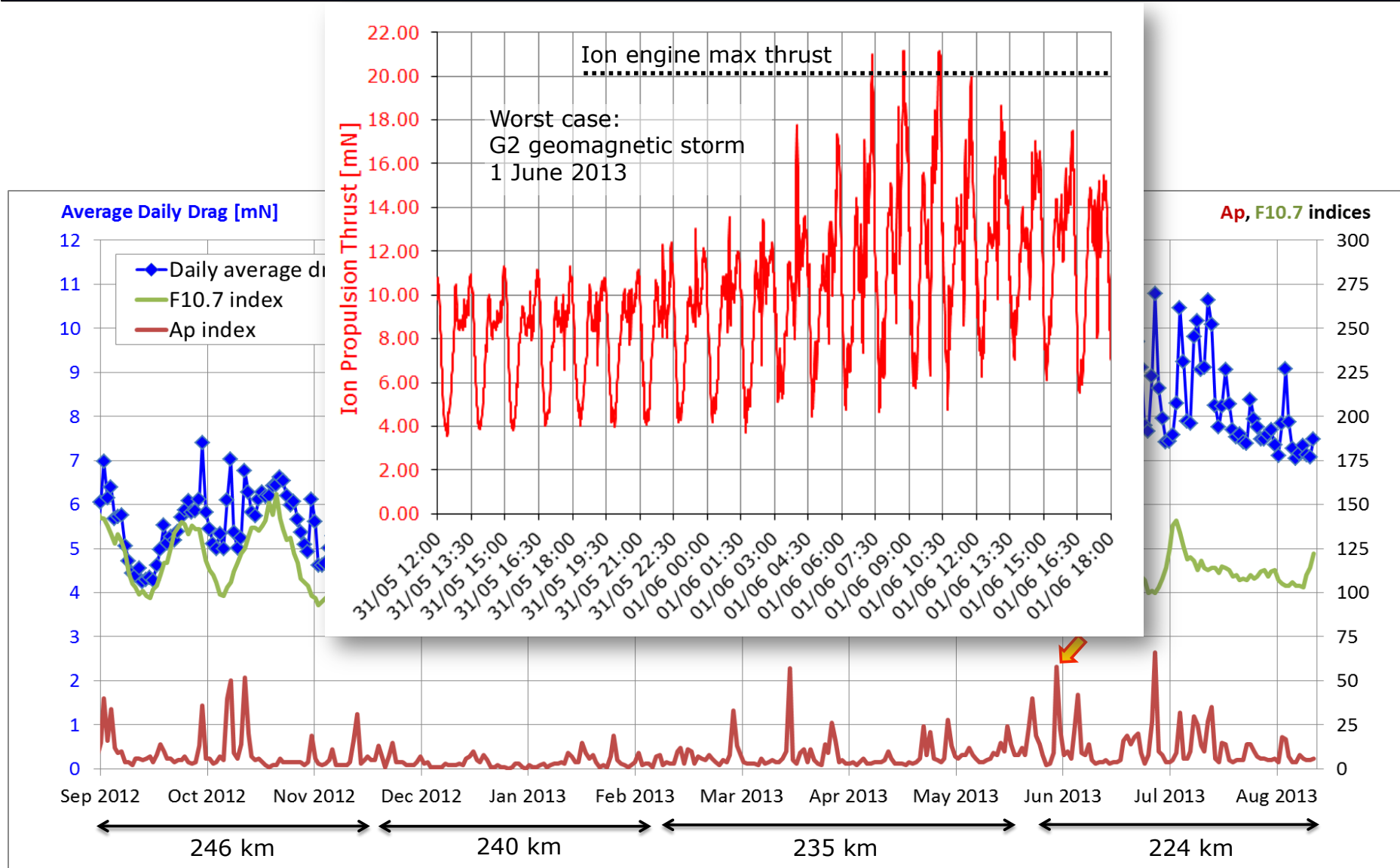
An international campaign is monitoring the descent, involving the Inter-Agency Space Debris Coordination Committee (IADC). The situation is being continuously watched by ESA's Space Debris Office, which will periodically issue reentry predictions.

The IADC member agencies include the following:

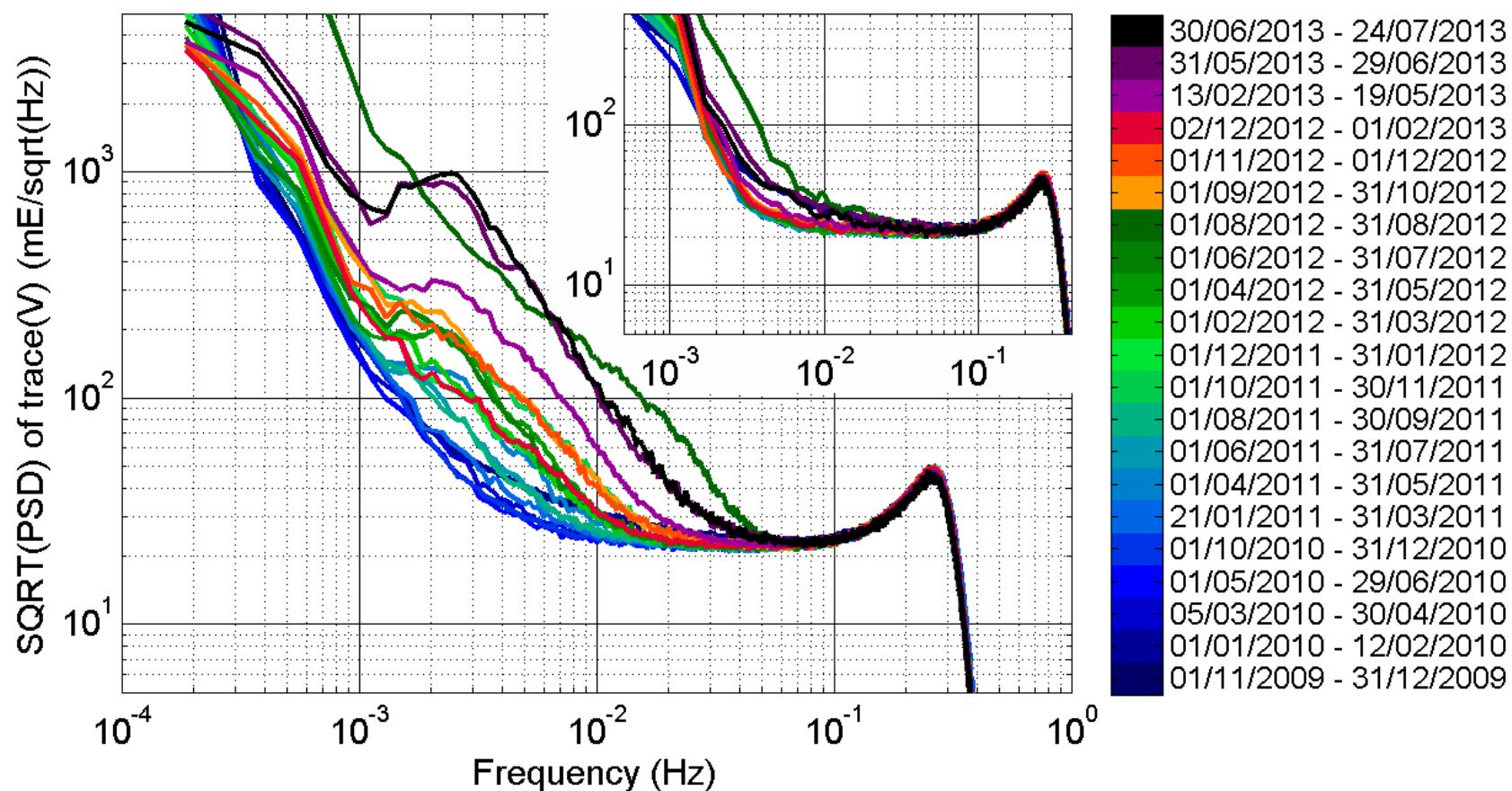
ASI (Agenzia Spaziale Italiana)
CNES (Centre National d'Etudes Spatiales)
CNSA (China National Space Administration)
CSA (Canadian Space Agency)
DLR (German Aerospace Center)
ESA (European Space Agency)
ISRO (Indian Space Research Organisation)
JAXA (Japan Aerospace Exploration Agency)
NASA (National Aeronautics and Space Administration) ROSCOSMOS (Russian Federal Space Agency)
SSAU (State Space Agency of Ukraine)
UKSpace (UK Space Agency)



drag vs. activity indices



Evolution of Level 1b gravity gradient measurements



- ▶ PSDs affected by stormy data (big picture)
- ▶ geomagnetic pole areas excluded (inset)

Courtesy of Christian Siemes

	DIR4	TIM4
Maximum D/O	260	250
GOCE Data Volume	01/11/2009 - 01/08/2012 ~2.3yrs (net)	01/11/2009 - 19/06/2012 ~2.2yrs (net)
Gravity Gradients	$V_{xx}, V_{yy}, V_{zz}, V_{xz}$ ~288 Mio. Obs.	$V_{xx}, V_{yy}, V_{zz}, V_{xz}$ ~279 Mio. Obs.
Gradient Filter	Band-pass filter	ARMA filter per segment
GOCE SST (GPS)	-	Short arc approach (d/o 130)
GRACE SST (K-Band)	2003-2012 GRGS RL02 (d/o 55), GFZ RL05 (d/o 56-180)	-
LAGEOS 1/2 (SLR)	1985-2010, ~25 yrs	-
Regularization	Iterative spherical cap (d/o 260) based on GRACE/LAGEOS. Kaula zero constraint (d/o > 200)	Kaula zero constraint (near zonals and for d/o > 180)

Release 5 coming mid-2014

- ▶ Process of maximising mission return has led to a further and final lowering of the GOCE orbit, 31 km below initial mapping orbit
- ▶ Higher signal content (amplitude and spatial detail) hugely benefits the gravity field retrieval as well as other applications
- ▶ Flawless mission operations at 224 km altitude, at the limit of the system capability.
- ▶ Drag-free control demonstrated during 4y+ of near-continuous operations (almost 40000 hours); no limiting factors identified for future long-duration missions
- ▶ Release 5 gravity field models expected around mid-2014
- ▶ 5th International GOCE User Workshop in late September/early October 2014 (date tbc)
- ▶ Core processing infrastructure and manpower will be kept to support great ideas for re-processing during phase F