

Mission Status Report

INTEGRAL User's Group meeting #20, February 21, 2018

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INTEGRAL Mission Manager [SCI-OOG]

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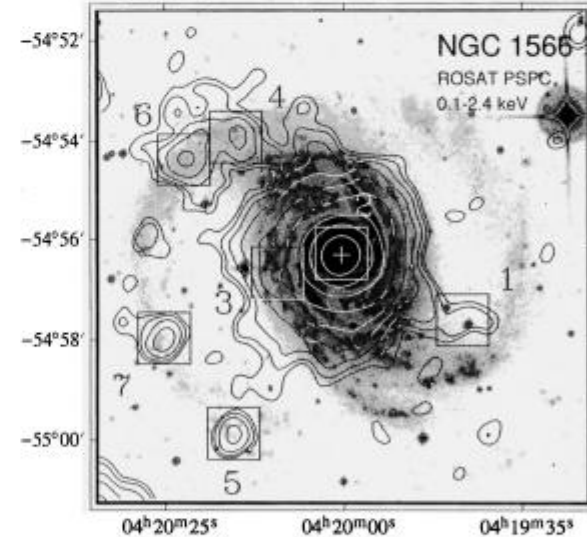
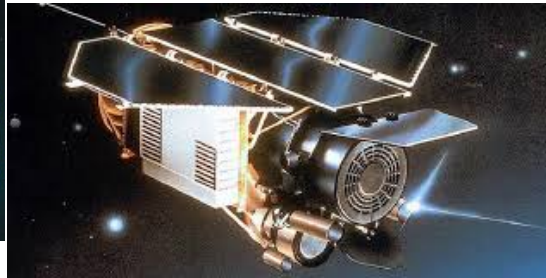
Some info about myself (1/2)



Educational/Research Background:

- Studied Physics in Cologne & Bonn: **Diploma** 1991
- **PhD** (1995) at MPI for Radioastronomy, links to MPE Garching (ROSAT)

Cosmic B-fields; Hot gas; ISM energy balance



Some info about myself (2/2)



Educational/Research Background:

- **PostDoc** (RF DFG) at Australia Telescope National Facility, Sydney (1996/7)
- **Research Assistant** MPE Garching (X-ray astronomy group, XMM-Newton SSC)

Joining ESA (Feb 2000)

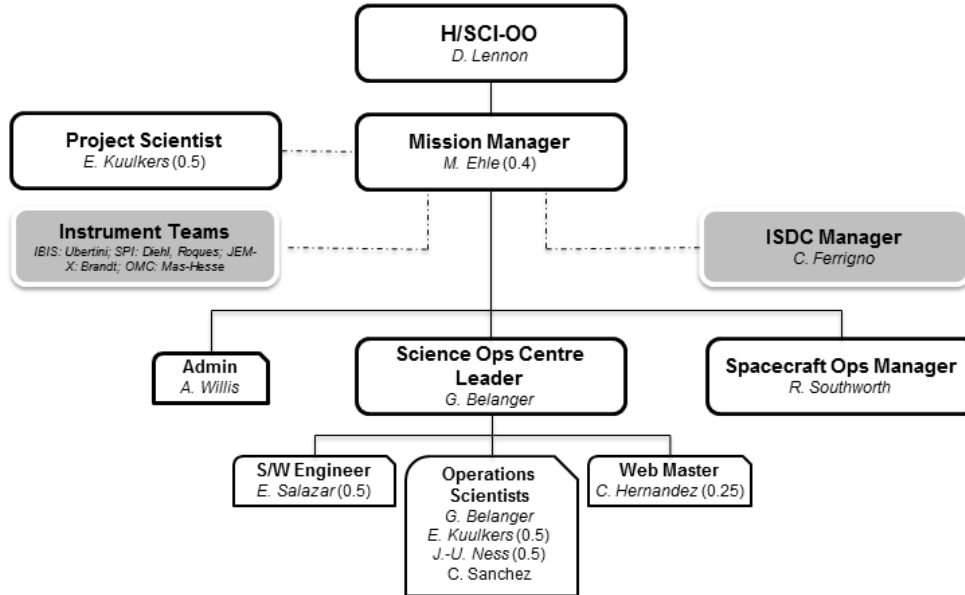
- **Scientist in XMM-Newton SOC:** User Support & Mission Planning (USG), EPIC Instrument Dedicated Team, Background-Working Group
- **USG team leader** since 2007 **~40%**
- **Science Operations Study Manager:** Exoplanet Characterization Observatory (EChO, 2011-4, M3 candidate, not selected)
- **Science Operations Study Leader:** Advanced Telescope for High Energy Astrophysics (Athena, since 2014) **~20%**

- Since July 1st 2017: **INTEGRAL Mission Manager ~40%**

People Matter(s)

Staff Changes at ISOC (no de-scoping, no reduction):

- Peter Kretschmar → Mission Manager for XMM-Newton
- Guillaume Belanger → ISOC Team leader/coordinator, IUG secretary
- Jan-Uwe Ness → Operations Scientist (50/50 INTEGRAL/XMM-Newton)



Sharing/moving people to foster synergies between (high-energy) missions.

INTEGRAL MOC (on behalf of R. Southworth, SOM)



Preparations for SPACON merger: Gaia joining INTEGRAL/XMM-Newton

- Gaia needs ~2 hours SPACON/day (window flexible) → reaction only to critical INTEGRAL/XMM anomalies
- Progressing well with validation testing: blacklisting alarms, database, procedures - on-going
- Readiness review early March, start of routine ops ~mid April
- Expected to be transparent to INTEGRAL

minor impact on recovery – mitigate by automation & add. shared Analyst; no impact on ToO reaction time

- Keeping SPACON team, knowledge & expertise

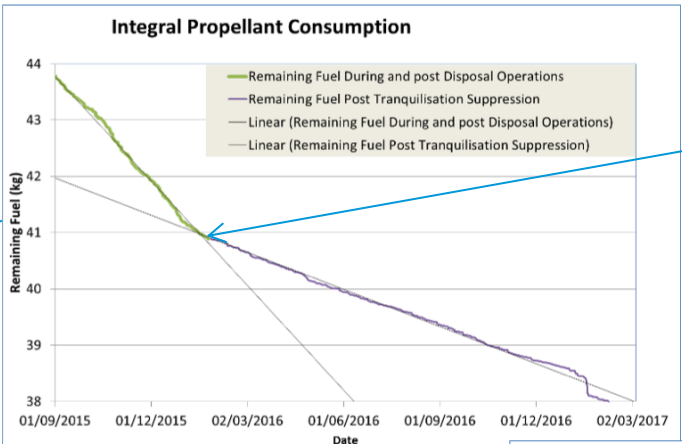
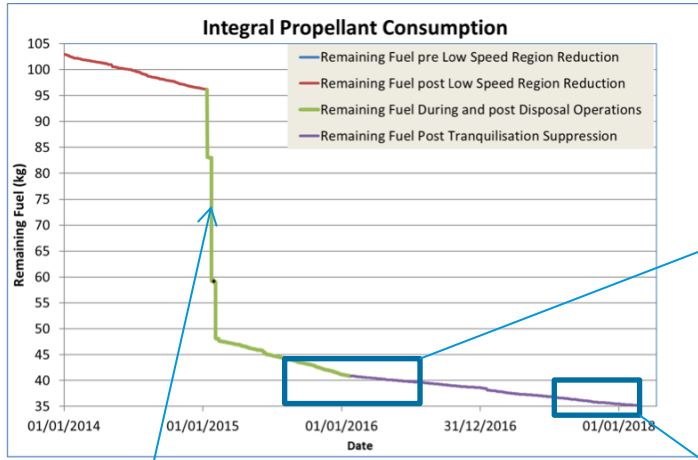
Meeting on SPI Future Operations (Oct):

- Both Co-PIs, SOM, SOE, PS, MM: annealing #29 results confirmed, support continues with minimal funding and on best-effort basis, ... engineering support fine now again for standard ops

Use of Reaction Wheels low-speed region (was forbidden, change of ops since Oct)

- observed ~15% reduction in propellant consumption (early result, TBC)

MOC: Propellant Evolution



Thruster
Tranquilisation
(2016)

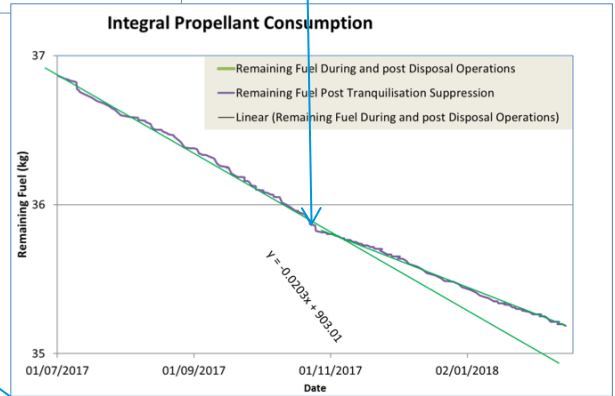
Wheel biasing
strategy

Disposal manoeuvres used half remaining propellant

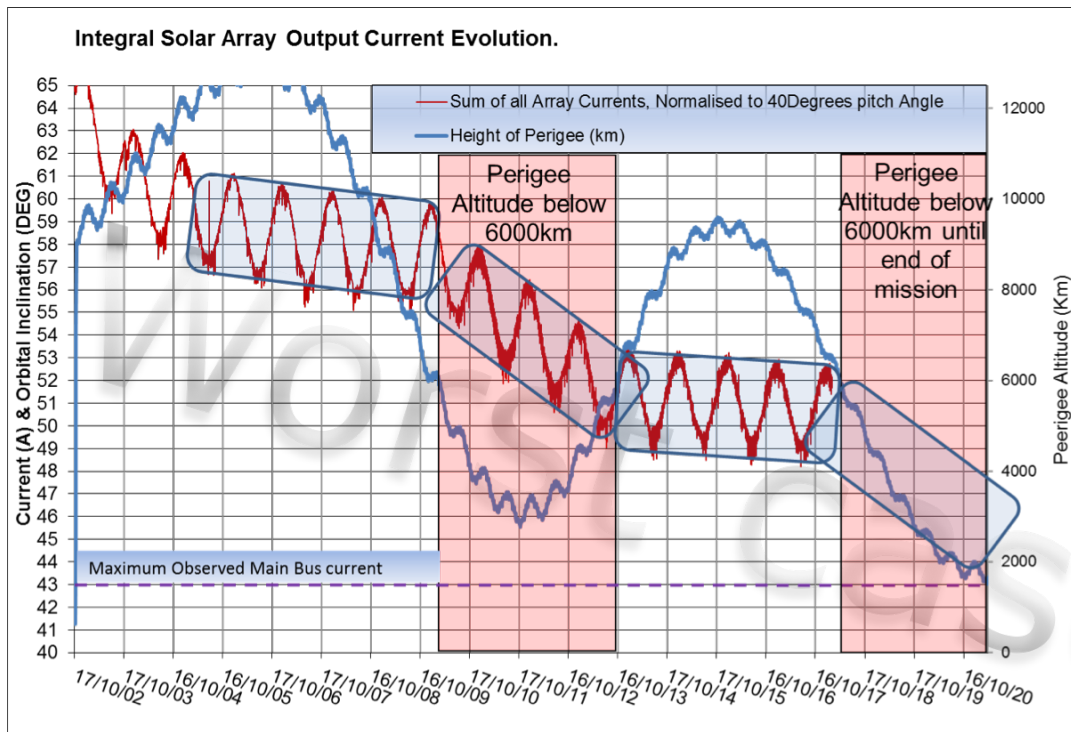
FCT investigated ways of mitigating this...

End of Propellant:

- Effect of disposal manoeuvres is entirely mitigated
- At rate of usage since October we will have ~13kg at re-entry (Feb 2029) → **controlled re-entry??**



S/C Power Budget Status and Evolution – Arrays



Update, no changes:

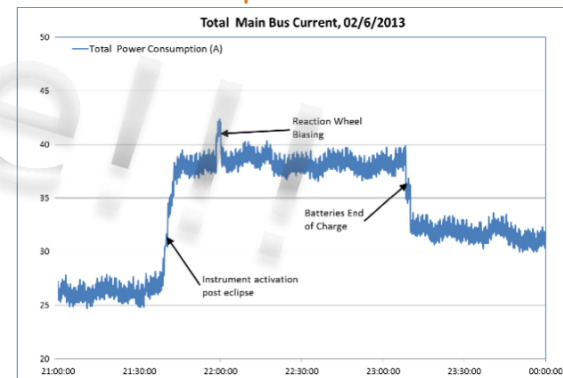
Perigee below 6000km from 2018 until end of mission

Typical peak power demand – limited duration

Batteries can be used to complement the arrays during such periods

Batteries still healthy

Issue with eclipse entry detection to be addressed – options exist



No limitation due to array degradation until well after 2020

Then only seasonally initially (eclipse...).

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INTEGRAL Legacy Archive



- To be Developed and Operated by the ESAC Science Data Centre
 - Note: most archives work on a 'per-observation' basis; INTEGRAL products may need to combine many observations...
- Preparatory work has been started now (cannot wait for PostOps Phase)
 - Kick-off: EXPRO contract with ISDC "Study on contents & technology"
1/2 year, started Jan
- Lead by PS & ISOCI, collaborating with ISDC & Instrument Teams
 - Define best possible products that can be used also by non-experts (multi-wavelength approach, keep ESASky (sky.esa.int) in mind)
 - Avoid need for INTEGRAL specific software & calibration
 - Plan for Legacy Catalogue (IBIS update – soon & final, combined INTEGRAL)?

Would it help to have milestones, checkpoints, supervising board, ...?

Why the delays? Lessons learned? How can we help?

Proposal to ask for support by community (expert testers looking at their pet sources) is under discussion.

Feedback on INTEGRAL services



SCI QMS Surveillance Audit April 2017:

- finding: INTEGRAL has no ways to systematically collect users feedback, e.g. through the HelpDesk and via the Users Group
- ESA management needs to address and fix this...

HelpDesk: Kayako allows to toggle feedback option: BUT we were spammed by replies to all our operational e-mails. On-going... likely pointing to a form, a la XMM-Newton.

IUG meeting: another way of a direct communication with representatives of INTEGRAL users. You will be asked: How is the INTEGRAL Project performing? Where are areas for improvement of services? etc.

Mission extension in 2018



Mission currently extended to 2019; in 2018 ensure that...

(Mar SPC): ... mission operations for 2019, and possibly 2020, are confirmed

(Jun MEOR): ... operations can continue (and science be delivered) for extension period

(Nov SPC): ... a new mission extension for 2021-2022 is indicatively approved.

For SPC:

- We are not asked to look into cost saving options
- Focus on an excellent Science Case: (PS leading, IUG inputs)

key targets, neutrino events, GW events: overlap with “Observation Run 3”,
Observatory-type mission (not PI only)

- What is lost if there is no INTEGRAL mission?
- Community to do the lobbying, not ESA

Summary



Most important:

Thank you, for all your excellent support, especially related to the GW events, and the binary NS merger in particular!

ESA Director General mentioned INTEGRAL measurement of GW170817 as the science highlight of 2017

Interview at: http://intranet.sso.esa.int/esiComm/Let_s_talk_about_space/SEMOS5ENCCJ_0.html

