

XMM-Newton Overall Mission Status



xmm-newton

1999 - 2019+

ESA UNCLASSIFIED - For Official Use

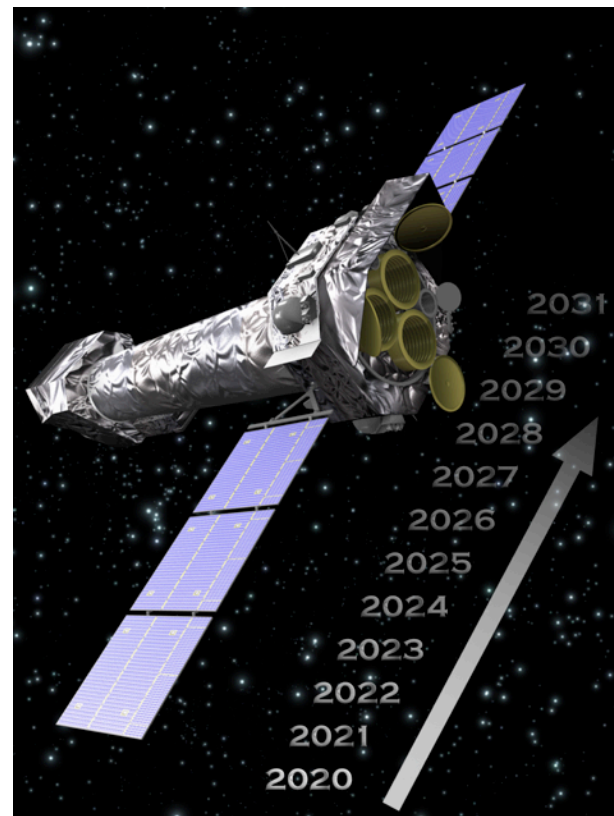
Peter Kretschmar, Mission Manager
XUG Meeting #22
9 June 2021, Virtual Meeting



European Space Agency

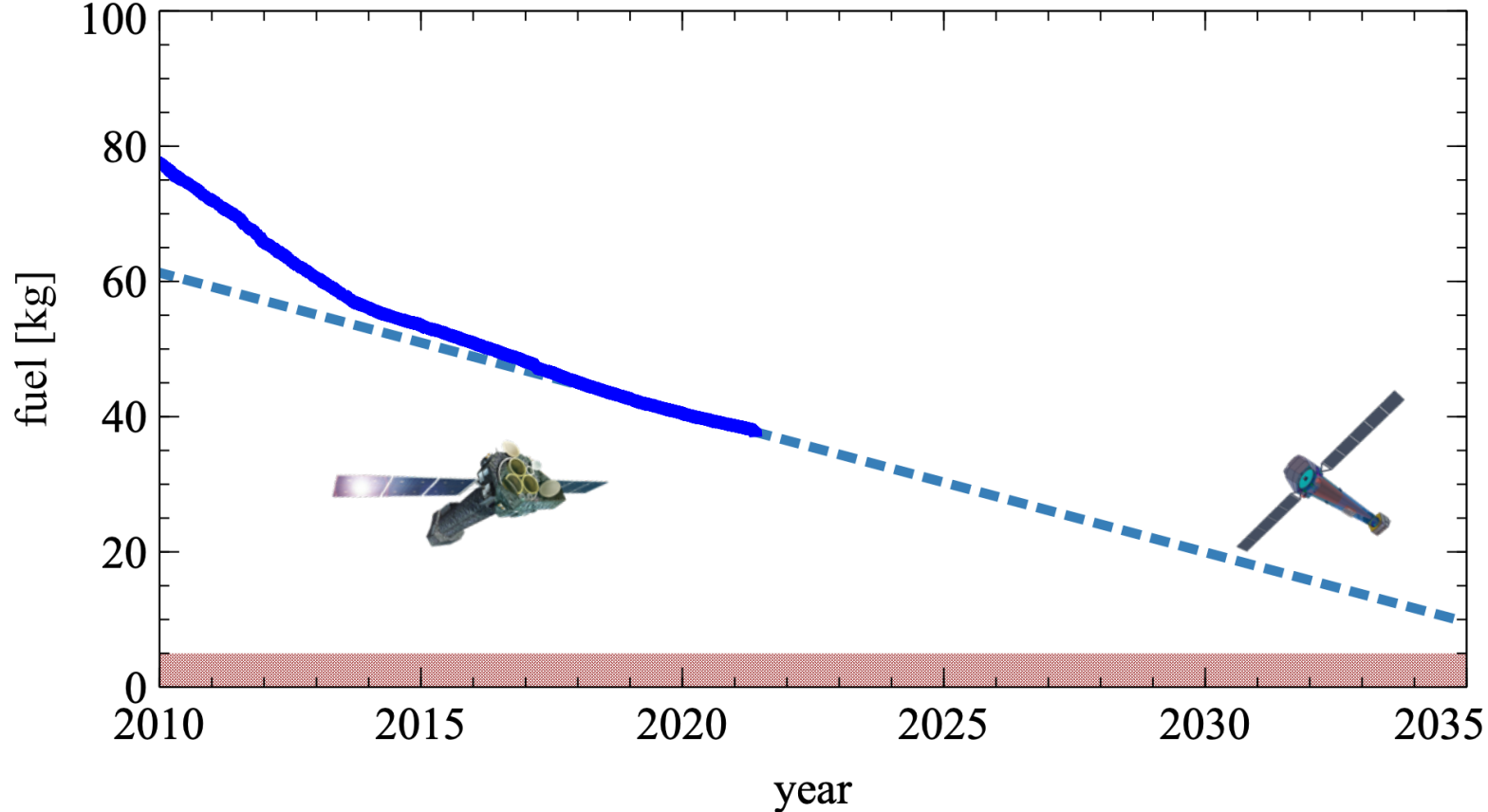
A spacecraft in great shape, but needing attention

- ✓ All instruments in same general shape as last year. No major incidents.
- ✓ Successful fuel replenishment in 2020. No activities required in 2021.
- ⚠ Crossings of geo-stationary orbit zone require awareness. Collision avoidance operations prepared, in case required.
- ⚠ Degradation of Coarse Attitude Anomaly Detector could lead to false ESAM triggers in future.
- ➡ Continuing to look ahead to more than another decade of science operations, but need to keep an eye on long-term issues.



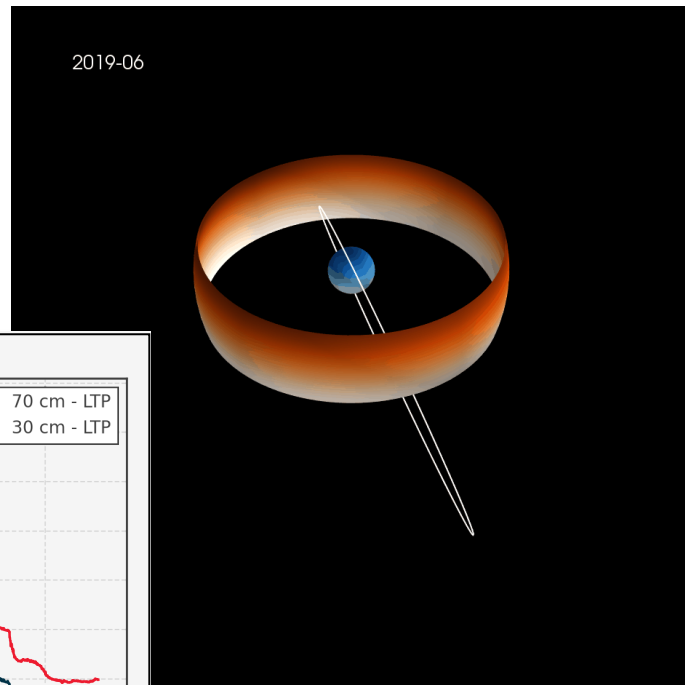
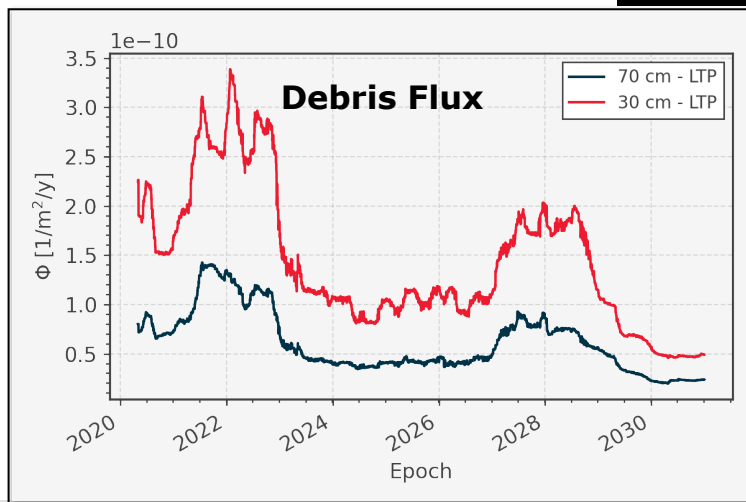
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Fuel predictions stable, predicting **life time > 2030**



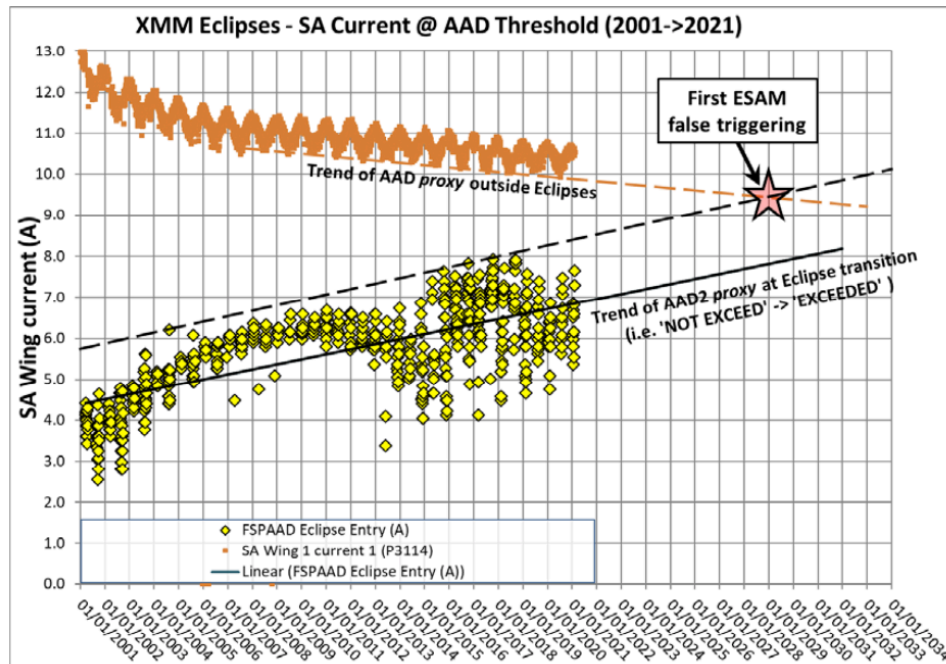
Keeping safe spatial distance ...

- Orbit evolution means XMM-Newton is crossing geostationary zone since May 2020 and **will continue to do so for years**, currently 2–3% of orbital period in this range.
- Since April 2021 in active collision avoidance. Manoeuvres have been trained.



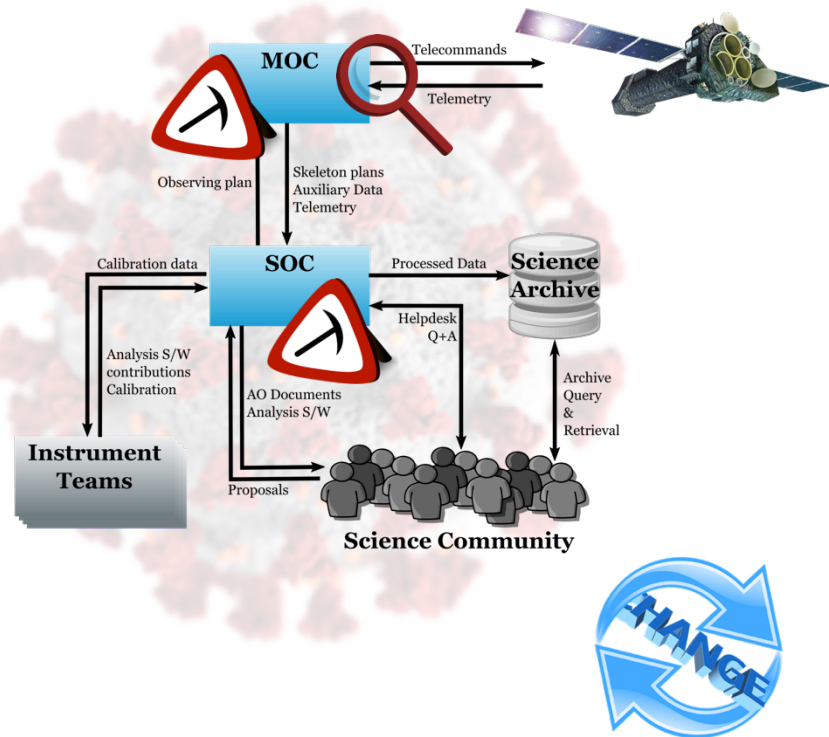
Monitoring the Coarse Attitude Anomaly Detector

- SOHO suffered multiple safe modes due to false triggers by CAAD, same used in INTEGRAL and XMM-Newton.
- Risk analysis done at ESOC and TN published in May. Using eclipse entry & exit transitions as proxy.
- ➡ “Educated guess” gives early 2029 for first expected false triggers.
- ➡ Keep measuring proxy values and study problem further. May lead to constraints on eclipse attitudes.



The ground segment needs more attention

- ✓ Science operations continued despite COVID-19 crisis, thanks to great efforts!
- ⚠ But 'hidden' impact in less critical areas.
- ⚠ Brief, unexplained telemetry drops affect observations since end March 2021. Search for causes still ongoing!
- ⚠ Systems need to continue to be updated, push for 'rejuvenation' from management.
- ⚠ New Frame Contract starting 1 July, but negotiations still ongoing.
- ➡ Expect some choppy waters ahead.



Not stopped, but affected by COVID-19

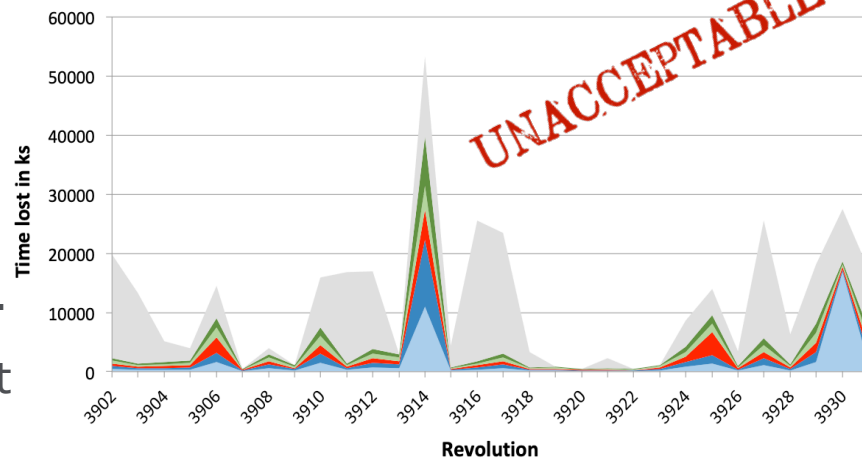
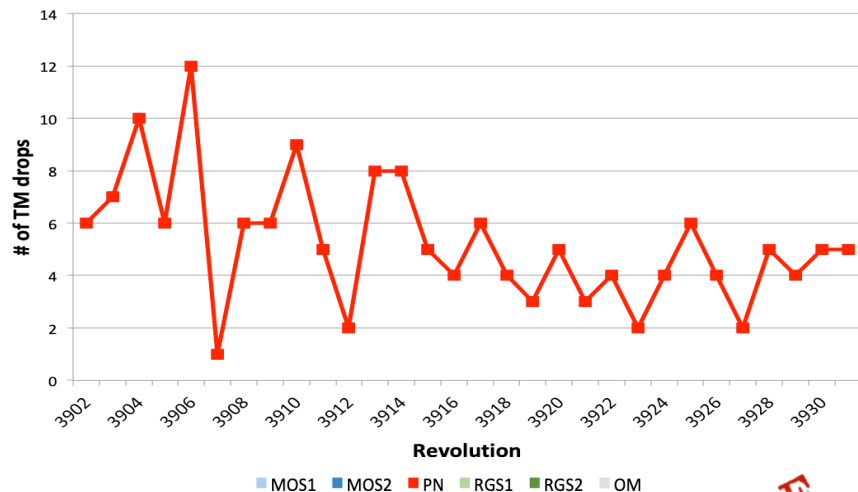
- Thanks to teleworking and great team spirit, science operations continued and even special operations (fuel replenishment) were done largely remotely.
- Great efforts all around, but accumulating stress. Work from home is less efficient for various tasks.
- Longer-term efforts *did* suffer somewhat, e.g., required modernisation of SOC systems, especially where multiple teams needed to interact.



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Too many telemetry drops!

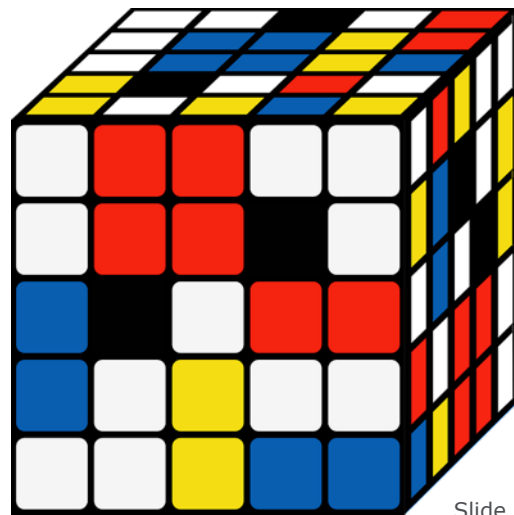
- Seen before, but since late March multiple brief telemetry drops **every revolution**, duration depends on SPACON reaction.
 - Impacts can be much larger: sometimes losing data for whole exposures. Also added trouble in data processing at SOC.
- ➡ So far 6 Anomaly Reviews @ ESOC, but without success.
- ➡ Problem has been raised to next level on 1 June as formal Non-Conformance Report.
- ➡ No drops since June 1st, but causes still not identified. Further investigations on-going.



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Framework puzzle is still being solved

- ESA Frame Contracts for contractor support are being renewed, with target date for start of new contract **1 July 2021**. Negotiations still on-going.
- Very significant effort for everybody.
- ➡ Major change to work organisation, uncertainty for team members. Future situation still not fully clear.
- ➡ Coming months will be marked by adaption to new framework and related changes.



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People news



- Eva Verdugo now at 50/50 between XMM-Newton and PLATO. Planned to move completely to PLATO from 2023.
- John Hoar's involvement will finish end 2021.
- Nora Loiseau retired end of May. Position filled by Elena Jiménez Bailon. Nora is helping in transition.
- PK now working as 75% MM / 25% Archive Scientist.
- PK has been on sick leave from end February to mid April, Started again at 50%, currently at 80%, ramping up to 100% soon. Thanks to colleagues, especially María Santos-Lleo taking over in that time.



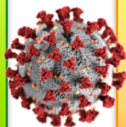
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In summary

Spacecraft & instruments remain in good shape; fuel replenishment successful

GEO crossings and hardware need attention to ensure long-term operations

No real impact of COVID-19 for observations



Impact of pandemia accumulating on longer timescales

GS systems will need to continue adapting for the long-term future



Major changes in contractual situation at SOC will impact work

