User Support and Mission Planning

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XMM-Newton Users Group Meeting 17
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- Pipeline: Scientific Content (*dedicated talk P. Rodriguez*)
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- Public Outreach: Image Gallery
User Support: Routine Tasks

- **USG continuous providing support in the areas:**
  - Project Scientist & OTAC Support: AO, PI support, Proposal catching, distribution to panels, rating tool, results, ...
  - Proposal Enhancement
  - Planning & Scheduling, ToO support 24/7, HelpDesk
  - Newsletter, Web Pages (note the migration to cosmos)
  - Document updates (UHB, Data Files Handbook, Proposal Submission, etc.)
  - SAS related (together with IDT and SAS teams)
    - Threads updated few days after SASv15 release (10\textsuperscript{th} Feb)
    - SAS Manual (announced 11\textsuperscript{th} Apr)
    - Canned Response Matrices
  - Filter-Wheel-Closed repositories (updated once per year)
  - Organization of Science Conferences (LOC)
Special Events: User Support

- **Migration of Web Pages:**
  - SOC pages becoming part of the ESA corporate Web Service
    [http://www.cosmos.esa.int/](http://www.cosmos.esa.int/) => Science Missions => XMM-Newton
  - Same look-and-feel as for all ESA missions; Access to cosmos provided tools
  - Actions: Design Review; Check of migrated Pages & Tools; Document updates (broken html links: UHB, DFH, P&P, SAS Guide, SAS threads) – Pages went public & were announced 10 Feb

- **Ph.D Thesis List:**
  - **Past:** regular reminders in XMM-Newton Newsletter: inform HelpDesk with details about Ph.D. thesis based on/making use of XMM-Newton observations => only for internal analysis
  - **Now (since 18 May):** Info compiled and expanded; Community invited to cross-check, update and provide new submission, via [http://www.cosmos.esa.int/web/xmm-newton/phd-theses](http://www.cosmos.esa.int/web/xmm-newton/phd-theses) => statistics for SPC (all new info validated by USG members before going public)
Special Events: Mission Planning

- **Ground-station Changes:** (*cf. talk by R. Muñoz*)
  - Santiago station (Kourou backup) accepted for operational use (end Feb 2016):
    - USG involved in testing (with non-critical observations) and updating of mission planning tools (antenna configuration files)
  - Yatharagga station (replacing Perth, since end Oct 2015):
    - Updating/check of mission planning tools
    - (Early) issue with incomplete time delay info

- **MOC Calibration Request:**
  - Star Tracker Elementary Search Window (ESW):
    - 6 hrs EPIC CAL-CLOSED, no OM/RGS science (Rev 2973)
~51% of Revolutions needed to be re-scheduled (Reason, #, %):

Re-scheduling: Rev 2832-3019 (20.05.2015-23.05.2016)

- anticipated ToO, 30, 33%
- un-anticipated ToO, 16, 17%
- Target Recovery, 6, 7%
- PI change requests, 11, 12%
- MOC requests, 7, 8%
- G/S replan/unavailability, 4, 4%
- Planning, 10, 11%
- Others, 7, 8%
Statistics on AO-15 Enhancement by USG Scientists

- After phase II deadline (Feb 5) and in time for AO-15 start (May 1 minus 6 weeks): OTAC consistency, technical checks, optimization, constraints,…
- Number of proposals: 218; number of observations: 825
- Observation types: 329 A+B, 275 C, 221 anticipated ToOs (71 having approved time)
- ~25% (of all observations) are time constrained: coordinated, PA, phase monitoring,…
- More to come from:
  - Joint Programmes (Chandra, HST, INTEGRAL)
  - Routine Calibration Observations
  - Unanticipated ToOs
Scientific Mission Planning: AO-15 Proposal Enhancement

Time constrained observations in Ao-15

- NuSTAR 57%
- Other 43%

- HST 9%
- Chandra 11%
- Position Angle 14%
- VLT 3%
- Swift 5%
- Other 1%
- VLA 0%

Note: some observations asking for multiple coordinations
Scientific Mission Planning: Status of the Observing Program

Statistics up to the end of revolution 3010 (15 May 2016)

- **Guaranteed Time Program**
  - finished

- **Open Time Program AO-1 → AO-14**
  - finished

- **Open Time Program AO-15** (May 2016 – end April 2017):

  *Started with many fixed time & coordinated observations...*

  Number of successfully observed targets (A+B): 36 (11%)
  Successfully observed cumulative exposure time (A+B): 1539 ks (13%)
  Number of successfully observed targets (C): 8 (3%)
  Successfully observed cumulative exposure time (C): 215 ks (2%)
Radiation impact: instruments need to be closed/saved

Previous solar maximum ~2001/2 ⇒ Cycle 24 (lowest recorded sunspot activity) peaked in 2014

USG community support: monitoring radiation behaviour & making it public (XMM-SOC-GEN-TN-0014; updated annually, linked on AO-page & in UHB)

Effects of solar activity:
• Exposure time lost (X-ray instruments stopped during high radiation)
• Note: quiescent background higher with less active Sun – but beware of flares...
• Monitor closely what is lost, esp. critical targets that might need fast re-scheduling
Scientific Mission Planning: Continuous Update of Planning Tools

Planning Tool ‘XRTOPS’ maintenance needed, to

- **Cope with changing scheduling constraints:**
  - New/changing Ground Stations (see slide 5); i.e. new configurations
  - Changes in hand-over constraints
  - Eclipses & slew predictions

- **Be able to adjust to ToOs:**
  - Inclusion of new triggers from LIGO Gravitational Wave event candidates
  - (XMM-Newton signed MoU & is part of Observers Team performing multi-wavelength follow-ups)
Pipeline: Scientific Content

- **Pipeline Processing at SOC:**
  - Since March 1\textsuperscript{st} 2012 (observations since revolution 2236)
  - Full responsibility since June 2013
  - Smooth daily processing

- **Pipeline Scientist** (one of the USG scientists: *cf. talk by P. Rodriguez*)
  - Looking after **Scientific Content** of pipeline: requirements & validation

- **Pipeline Scientist & USG scientists**
  - Coordination of and contribution to **Products Screening**
  - Involvement/support to **Pipeline Operations**

- **Updates and improvements:**
  - Requirements through the Pipeline Scientist, based on input & recommendations from Project Scientist, who is advised by UG
XMM-Newton Science Archive (XSA)

- **Archive Scientist** (one of the USG scientists: *cf. talk by N. Loiseau*)
  - Looking after **Scientific Content and Interface** of XSA: requirements & validation
  - **Data Rights** updates (proprietary periods)

- **Archive Scientist & USG scientists**
  - Involvement in **XSA Release Testing**
  - Provision of info **linking ObsIDs with Publications**
  - **Coordination with Pipeline Production** (new products)

- **Updates and improvements:**
  - Requirements through the Archive Scientist, based on input & recommendations from Project Scientist, who is advised by UG
Scientific Conferences & Workshops

Conference Local Organization
USG: Chair(s) & Members of Local Organizing Committee (other SOC members participating in LOC)

Tasks include:
• announcements, web page
• supporting scientific committee & participants
• Web tools: abstracts, registration, proceedings

Annual Dedicated Workshops @ ESAC (8 done)
• 2016, May 9-11: XMM-Newton: The Next Decade
• 150 participants; legacy web page & proceedings under preparation

Major International Symposium every 3 years (4 done)
• The X-ray Universe 2017, in Rome (TBC)
(incl. planning for stronger involvement of scientific community in LOC activities)
XMM-Newton Image Gallery: A repository of science highlights & XMM-Newton related images

USG keeps validating new submissions & adding press release images

Using the XMM-Newton Gallery
The XMM-Newton Image Gallery is a collection of astronomical images and spectra taken with the XMM-Newton X-ray and optical instruments along with other XMM-Newton related images.
- Simply browse our collection of images below
- Search the gallery for a particular image
- Submit your own images
- If you feel your results would be of interest as an ESA Press Release please contact the Project Scientist via the XMM-Newton Helpdesk.
- Access our Glossary of Astronomical Terms

The U.S. XMM-Newton Guest Observer Facility (GOF) maintains a collection of EPIC images that have been created using the ESAS tasks in SAS.

Additional images and videos related to XMM-Newton are also available from the ESA Science & Technology Images and Videos Archive and the ESA Multimedia Gallery.

The XMM-Newton Gallery in Google Earth
The XMM-Newton Gallery can also be displayed in the latest version of Google Earth.
You will have to download the KML file xmm_gallery.kml
Switch to 3D in Google Earth and enjoy the XMM-Newton Gallery on the sky.

The “Images” Script
A script culling tasks from the Science Analysis System (SAS) to help in producing attractive multi-energy band images using and merging data from three EPIC cameras is available here.

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Thanks for your Attention