Minutes of User Group Meeting 6
(19-20 May 2005)

Edited by María Santos-Lleó

Approved by voting members on 15 June 2005

Participants:

Jürgen Schmitt (chairman), Miguel Mas Hesse (external), Gregor Rauw (external), Jacqueline Bergeron (Mission Scientist), Richard Mushotzky (Mission Scientist), Roberto Pallavicini (Mission Scientist), Jelle Kaastra (RGS-PI) Mike Watson (SSC-PI), Simon Rosen (OM-PI delegate), Steve Sembay (EPIC-PI delegate) Fred Jansen (XMM-Newton Mission Manager), Norbert Schartel (XMM-Newton Project Scientist), María Santos-Lleó (User Group secretary), Monique Arnaud (invited guest).

Leo Metcalfe (Science Support Manager), Ramon Muñoz (Instrument Operations Manager), and interested staff from Vilspa

Welcome:

J. Schmitt (Chairman) opened the meeting at 10:00. He introduced Gregor Rauw as a new member of the User Group (UG), and M. Arnaud, who was invited to the meeting as a guest and will replace J. Schmitt as chairperson of the UG after the XMM-Newton mission extension approval.

Adoption of the agenda:

The agenda was approved by the participants.

Presentations:

The following presentations were given:

1. Report of the Project Scientist (N. Schartel; 10:10-10:35)
2. Overall mission status (F. Jansen; 10:46-11:15)
3. Instrument Operations (R. Muñoz; 11:15-11:40)
4. Science Support (L. Metcalfe; 11:55-12:25)
5. EPIC calibration status (M. Kirsch; 12:30-12:55)
6. RGS calibration status (A. Pollock; 13:00-13:20)
7. OM calibration status (A. Talavera; 14:30-14:55)
8. Cross calibration status (B. Altieri; 15:00-15:20)
9. SAS developments and future plans (C. Gabriel; 15:40-15:55)
10. SSC status and XID (M. Watson; 16:15-16:40)
11. Slew survey (R. Saxton; 17:10-17:30)
12. Action items from last meeting (M. Santos-Lleó; 17:40-17:50)

The viewgraphs of the presentations are available on the XMM-Newton public web site, under "User Support" and "XMM-Newton Users Group".

Discussions:

During the presentations, the speakers were frequently interrupted with questions and short discussions, in particular:

1. After the Project Scientist presentation, J. Bergeron asked about the fraction of rejected observing proposals that got comments from the Time Allocation Committee, OTAC, and N. Schartel answered about 80 to 85 %.

   Simon Rosen asked about the criteria to decide for or against Swift Gamma Ray Burst (GRB) observations. N. Schartel explained that XMM-Newton is not anymore considered essential to provide accurate positions since they are already provided by Swift and hence XMM-Newton's objective is to provide spectral information. If a GRB observation is requested via the ToO alert web page, then the proposed scientific case is evaluated independently of above general criterion for automatic alerts.

   J. Schmitt asked about the anticipated end of the AO4 observations. The answer was end April 2006. He mentioned that we should try to keep anti-phase with the Chandra cycle and the project said that there is no intention to shift the dates any further. Moreover the call for proposals is kept in the September-October time frame. The current modification is only a shift of one month in the start of the observations with a start in May 2006 rather than in April. This means that the anti-phase with Chandra is kept.

   A few items were identified as relevant for the discussion later on.

2. During the Mission Manager presentation, F. Jansen mentioned that XMM-Newton revolution 1000 was going to take place the following week, on May 25, and J. Schmitt expressed the UG congratulations for these 1000 revolutions, saying that ESA and the VILSPA XMM-Newton team can be very proud of it.

   The whole UG expressed their concerns about the extremely uncertain and difficult situation of the contractors in the XMM-Newton mission. The UG feels that the knowledge and expertise of the XMM-Newton contractors is essential for the mission and the potential loss of this expertise is currently a major risk. It was agreed to come back to this point in the discussion.

   J. Schmitt asked how the new distribution of tasks between Project Scientist and Mission Manager is going after more than one year in place. They both confirm that the scheme is working extremely well. A different point is that the Mission Manager is overloaded with other project's tasks and needs to delegate more and more items to the Science Support and Instrument Operations leaders.

   F. Jansen explained, in reply to a question from J. Schmitt, why a new mission planning system is needed: basically due to the many problems of the existing one. He also explained that, contrary to previous expectations, the transfer to ESAC (Villafranca) of the Mission Operations Centre, if finally approved, will be very expensive for the project.

   J. Schmitt stressed that UG needs to discuss the help to be provided to N. Schartel for the preparation of the scientific justification of the mission to be presented to the ESA Astronomy Working Group (AWG) which meets in September, before the XMM-Newton Conference. This case will be used in the discussion of the mission extension.

3. After R. Muñoz presentation, F. Jansen remarked that in all the three anomalies discussed, the instrument teams were informed and collaborated in the analysis and the solution, showing that instrument teams are still alive and helpful.

   R. Mushotzky asked for some clarifications about the XMM-Newton efficiency graphs shown during the presentation.

   J. Schmitt asked for some details about the RGS2 and MOS1 instrument problems to get a clear idea on which one was more serious. RGS2 problem prevents from using it in single CCD spectroscopy mode. A. Pollock explained that this mode is useful to avoid pile up in very bright sources. The MOS1 problem seems to be more important for the time being. F. Jansen also

explained that if it is really due to a micro-meteorite impact, the rate of such impacts seen with XMM-Newton (almost 1 per year) has a serious influence on future missions that aim at a very large collecting area.

J. Schmitt mentioned that the impact of big solar flares in XMM-Newton operations should have decreased since launch, because the solar activity is going to a minimum. It was confirmed that this is indeed the case.

4. After his presentation, L. Metcalfe answered a few questions from J. Schmitt and R. Mushotzky about the impact of the current Science Operations Center (SOC) manpower reduction, which affects mostly the science support team. L. Metcalfe said that assuming the provisional budget is approved and requested partial replacement manpower recruited, no problem is expected in the area of user support and calibration.

   M. Arnaud mentioned that it should be avoided to schedule extended sources at both ends of the revolution, where the radiation background has greater probability to be high. N. Schartel explained that we can only follow OTAC priorities since basically everybody needs "good time" for their observations. He gave as example a very bright source, which *a priory* is less sensitive to high background, in which the observer is interested in weak spectral features. There was common agreement among the UG that the current policy for scheduling is correct.

5. After the presentation of M. Kirsch, R. Mushotzky and M. Arnaud stressed the importance of the cross-calibration between XMM-Newton and Chandra. The example of observations of clusters of galaxies was mentioned and it was suggested to use this kind of object for calibration. Markus Kirsch explained that the calibration teams of both observatories are already in close contact. J. Schmitt noted that it is already a big step in the calibration effort that out of the three X-ray instruments on board XMM-Newton two seem to converge now. He made the point that it is only now when it makes sense to take the next step and compare with Chandra as the calibration team is doing.

   M. Arnaud said that it would be very important to have a background generation tool generally available. This point was further discussed later on.

6. After A. Pollock's presentation J. Schmitt said he was impressed by the work done and the Capella spectrum shown before. The discussion was centered on the question why RGS is under-used and how the XMM-Newton legacy could be increased in this respect. R. Mushotzky explained that it is difficult to analyze the RGS data, mainly because a good knowledge of the atomic physics is required. He also said that it should be ensured that a good quality archive is left after the mission, a good example of which is here in Villafranca with the IUE archive. There was some discussion as to whether it is more difficult to get time from OTAC for RGS observations than it is for EPIC. J. Kaastra said that this could be the case, since in order to get enough quality data, the RGS proposals become large programs. N. Schartel said that in the OTAC competition, the ratio of RGS-prime successful to requested observations is the same as it is for EPIC-prime observations.

   There was no clear answer to whether a better use of RGS can be achieved.

7. After the OM presentation by Antonio Talavera, there was some discussion about the astrometric accuracy of OM

8. After the cross-calibration presentation by B. Altieri there was some discussion on the possible origin of the discrepancy between RGS and EPIC and it was clear after the discussion that the problem is not yet understood. In spite of this, there was common agreement that the progress made over the last year is remarkable and J. Schmitt congratulated the people on the work done.

9. After the SAS presentation by C. Gabriel, there was some discussion about the platforms to be supported in the future. Carlos Gabriel explained that there is basically no plan to change current support and J. Schmitt said that it seems to be the right approach. In particular, the support for the Macintosh means a lot of work but it is justified by the large use of this platform. The project is also aware that support demands for new platforms can arise even in the near future.

   J. Schmitt asked about the probability for the next release to be on August 16 as planned. Carlos Gabriel answered that the probability is high, with the only concern being that during the validation of the new version, previous to the release, a problem should be found that delays the public release, forcing it to November, after the AO5 closure.

   F. Jansen explained that SAS development continues as planned, where the baseline is to have one public version per year. This may mean that, eventually, an improvement appears several months after its development. Up to now, however, exceptional efforts have been made sometimes to make public new tools or improvements with the result of more than one release per year.

10. During the Science Survey Centre presentation, M. Watson explained the reasons for the recent delays on pipeline products delivery. J. Schmitt asked whether, in addition to going backwards to the old processing system, there are plans to solve problems in the new system. M. Watson explained that the old system is used to clear the backlog, but the work to configure the new system is continuing. R. Mushotzky said that the delay has created some confusion in the community. F. Jansen explained that the SOC did communicate to the principal investigators of delayed observations that there was a problem in SSC. Apart from that, F. Jansen also explained that the SOC web site with information about observation and data processing status had not been updated as regularly as before, due to the excessive workload on the Mission Manager. However, the date of the last update of this page is clearly stated on the web to avoid such confusion. The automatic generation of this web page is currently under development.

    There was some discussion about the plans for the release of the 2-XMM Catalogue and it was decided to go back to this point in the general discussion.

    J. Schmitt asked about any plan for the 3-XMM Catalogue and M. Watson answered that there are two main areas where significant improvements might be made: source detection and combination of data of the same sky region taken at different times. However, it is still too early to have clear plans.

11. After the slew survey presentation by R. Saxton, J. Schmitt mentioned that the results of the current analysis are really remarkable showing that the slews offer a really interesting data set with a strong scientific potential.

    There was some discussion on the attitude problems. R. Saxton explained that they have nothing to do with satellite maneuvers, but rather with the timing and that the Flight Dynamics team has been asked to provide help.

    M- Arnaud asked why the slews are done with the medium filter and R. Saxton answered that this is to avoid optical loading problems.

    J. Schmitt asked about the plans to make all the data available to the general public. R. Saxton explained that the plan is to make the slew data public through the XMM-Newton Science Archive, XSA, and adding tools to the SAS to allow people to process the slew data. In addition, it is planned to release a slew catalogue in early 2006 through XSA. It will also be possible to ask via XSA if XMM-Newton has slewed over a given position of the sky.

    R. Mushotzky pointed that the slew survey has a great potential for new observations, mainly

to trigger pointed observations of new objects. It was agreed to go back to this point in the general discussion.

12. Only four recommendations and two endorsements were pending since last meeting. Their disposition was as follows:

    Recommendation 2003-09-23/24 Provide target scientific category within the list of approved targets: **Closed**

    Recommendation 2004-06-03/25 The solution of the cross-calibration problem between the different XMM-Newton instruments should have top priority in the efforts of the instrument teams: **Closed**

    Recommendation 2004-05-03/26 A study about the value of slew time data for scientific purposes should be done. Pending on the outcome of this study, the UG might make further recommendations: **Closed**

    Recommendation 2004-06-03/27 XMM-Newton/VLT coordinated programs are endorsed by the UG. The UG understands that the observations in this program should be observations that require simultaneous or nearly-simultaneous data from both observatories. A clear case for this must be made in the proposals and the time allocation committees should be alerted: **Closed**

    Endorsement 2004-06-03/06 The UG fully endorses that the Project organize a big X-ray conference: **Ongoing**

    The UG recommends the conference to take place early autumn 2005 rather than in spring 2006: **Closed**

    The UG recommends to issue written proceedings shortly after the conference: **under discussion in the LOC-SOC**

    Endorsement 2004-06-03/07 The UG endorses scientific workshops. Every UG member will suggest scientific topics and volunteers to help in the organization should their topic be accepted: **Open, due in 2006**

No actions or recommendations were issued during the presentations, rather it was decided to postpone them to the general discussion session.
The presentations ended at 17:55.

Input from the community and general discussion:

The meeting continued at 18:00 for the general discussion based on the inputs from Mission Scientists, UG external members and points collected through the previous discussions. On May 19, the pending points were identified and the first four in the list below were discussed. The session ended at 18:30 and resumed on May 20, at 9:00 for the rest of the points.
The items discussed were as follow:

- Joint XMM-Newton and ESO Very Large Telescope Programme.

  There was a comment from R. Pallavicini that in the previous AO an ESO observation approved by the XMM-Newton OTAC was a duplication of another ESO programme. It was considered a point to be addressed by ESO rather than XMM-Newton.

  There was a general agreement that the program is working fine and consequently, it was agreed to issue the following:

  Recommendation 2005-05-19/28 The UG recommends to continue the joint XMM-Newton – VLT program as is.

- Situation of XMM-Newton contractor staff.

  The UG expressed its concern about this point and agreed to make the following:

  Recommendation 2005-05-19/29: The UG is extremely concerned about the adequate support of the XMM-Newton project by contractors. A timely and unbureaucratic renewal of contracts is mandatory to be able to keep the required expertise in the project and guarantee a successful mission continuation.

- Observations that failed their scientific objective due to high radiation background.

  R. Mushotzky pointed out that there is already a flag in the proposal submission tool to identify such proposals and that, at least in some OTAC panels, these proposals have a high probability to be successful. However, he feels that the community is not well aware of this possibility.

- Targets of Opportunity and Director's Discretionary Time.

  N. Schartel explained, following a question on this subject, that all ToO and DDT observations are made public immediately after pipeline products are available with only two exceptions: 1. if scientific objectives demand a fast delivery of data, they are made public after ODF generation and 2. if data right conflicts exist with proprietary data, the date of public delivery of data is delayed. In this case the XMM-Newton ToO details web page identifies the date when data are public and the name of the scientist who has data rights in conflict with the observation

- Large Programs

  There was some discussion about the XMM-Newton OTAC: how the committees are organized, how the time is allocated to each panel and how this allocation per panel has evolved with time, reflecting the changes in the community interests. In particular, the UG discussed whether or not the fraction of time assigned to Large Programs was considered appropriate. There was common agreement that the UG finds the system adequate and wants to endorse the system as it is now.

  Endorsement 2005-05-20/08: The UG endorses the XMM-Newton LP handling; the OTAC panel chairs should continue to be consulted for their views of the quality of the submitted LP programs to obtain a clear view on whether the LP time share in the overall program should be changed.

- Astro E2

  R. Mushotzky suggested that with the imminent launch of Astro E2 and the very similar Sun constrains of XMM-Newton and Astro E2, some efforts could be invested in trying to coordinate both observatories to get them to observe common targets simultaneously. It was agreed that the effort is too large and it is too early for such an investment of resources, given that Astro E2 has not even been launched yet.

- Gamma Ray Burst alerts from Swift

  Simon Rosen asked N. Schartel to explain again the handling of Swift GRB alerts. N. Schartel explained that since Swift is already giving an accurate enough position to allow optical follow-up observations, XMM-Newton is no longer needed to provide GRB positions. The focus has to be to provide good spectral information. The main selection criteria are therefore moderately bright GRBs and low column density in the line of sight, but a few other criteria are also applied. In Simon Rosen's opinion, also shared by M. Watson, XMM-Newton has observed too few Swift GRBs because of too restrictive selection criteria. M. Watson pointed out that it is difficult to apply the 'brightness' criterion, since it is difficult to predict the X-ray flux of a GRB given the diverse behaviours of observed GRBs.

N. Schartel explained that most GRB are simply outside the XMM-Newton visibility window, with only about 10% of the sky visible at a given date. Moreover, some of the very few observable GRBs could not be scheduled because the alert took place during the second half of an XMM-Newton revolution therefore leaving no possibility to schedule a long enough observation within a short reaction time.

After some discussion it was clear that automatic GRB alerts are different than GRB observations requested via the XMM-Newton ToO alert facility. The second class is dealt with on a case by case basis, using the expected X-ray flux and EPIC count rate that has to be provided by the requester. Automatic alerts also need careful consideration, but there was no recommendation from the UG as a whole regarding this point.

- XMM-Newton Mission extension

  The UG agreed to provide help to N. Schartel for the preparation of the scientific justification case to be presented for the mission extension next autumn. A text is needed by the end of August. This text should include one paragraph for each major scientific area covered by XMM-Newton, with current status and outlook, no figures are accepted. It is essential that the ESA AWG and Science Programme Committee (SPC) see that it is worth investing the requested money, in particular that the science is outstanding and that a large community is participating in the project.

  R. Mushotzky also mentioned that the US XMM-Newton mission extension is to be discussed next. F. Jansen and N. Schartel offered to support him to present the case in the US.

- Calibration

  J. Schmitt expressed the very good impression about the progress made in the EPIC cross-calibration, being probably very close to its final point. The UG congratulated the XMM-Newton SOC for that.

  R. Mushotzky mentioned the remaining problems: the disagreement between EPIC-MOS and EPIC-pn at high energies and the RGS-EPIC discrepancies. There were recommendations from him and M. Arnaud to contact RGS Columbia instrument experts and to compare with other X-ray missions, respectively. A. Pollock said that RGS calibration team is already in contact with Columbia people. The EPIC calibration experts also explained that the team is currently analyzing data from the Crab from all previous missions. A program of multi-mission cross-calibration exists. There was some further discussion as to which are the best calibration targets. The X-ray pulsar PSR 1509-58 was suggested by R. Mushotzky, but other sources and kind of objects were also suggested. J. Schmitt suggested to use sources with a few lines and no continuum and it was said that a few of them are indeed used. Finally, it was also reminded that the EPIC response needs to be refined for line-rich spectra.

  J. Kaastra explained that there is no room in the current RGS calibration for a 40% error at the long wavelength end.

  After the discussion of the next point, the UG decided on the priorities to be given to the different issues currently identified as the most critical ones to be addressed by the SOC.

- Background

  J. Bergeron explained that people need to have more information to decide which of the currently available blank fields can be used for their data. M. Arnaud also pointed out that this is absolutely not a trivial issue and needs to be coordinated by the SOC.

  L. Metcalfe and M. Kirsch explained that following last UG recommendation, the largest effort has been dedicated to cross-calibration issues, but that the background was also included in the

task list. The first steps to properly address this problem are currently under way, for instance a web page is in the process of being created with all information available. There is a tool developed by S. Snowden, at the NASA/Goddard Space Flight Center guest observer facility for XMM-Newton. This tool estimates the EPIC-MOS background and will be incorporated into SAS by the SOC. It needs to be noticed that the tool is based on a technique that cannot be used for EPIC-pn.

It was generally agreed that the UG want to re-affirm the need of a background estimator tool as a high priority item.

There was some discussion about the priority that has to be given to the currently identified areas of concern. The agreement was that there is no need to prioritize any of the three outstanding areas. The UG then decided to make the following

Endorsement 2005-05-20/09: The UG endorses the ongoing calibration activities by the SOC, with particular emphasis in the following areas: EPIC-MOS and EPIC-pn discrepancy at high energies; EPIC and RGS discrepancy at the long wavelength end of RGS; background estimation tools.

- Slew survey

  There was some discussion about the possibility to suggest to the Project Scientist to make use of his discretionary time to observe some of the sources discovered in the slew survey that have no ROSAT counterpart. However, there was no common agreement and no recommendation was made in this respect.

  Regarding the slew survey itself, the UG felt impressed by the work done and acknowledged that the previous year's recommendation was followed and that the SOC work went even further. The UG wants to make the following:

  Endorsement 2005-05-20/10: The UG endorses the activities currently being performed at SOC to develop SAS tools to deal with slew exposures and that these tools, together with the slew data, and a catalog are made available to the general public.

- 2-XMM Catalogue

  There are two extreme approaches regarding the forthcoming release of the 2-XMM Catalogue. One is to release it only after a careful human intervention and verification of the results and the opposite is to release with zero verification. There was some discussion on this point, with the general feeling that a release as early as possible is recommended. It was suggested that the catalogue integrity could be verified by the community and the catalogue revised as necessary. M. Watson stressed the point that the catalogue needs to be reliable, since the expectations of the community, if not fulfilled, would cause a negative impact. The UG decided to make the following:

  Recommendation 2005-05-20/30: The UG encourages an early release of the 2-XMM Catalog. Given the concerns about the integrity of the product, it can be released with appropriate advertisements to the community that SSC counts on them to verify the product integrity and will revise the catalog as necessary. If possible, a release before the end of 2005 is recommended.

- X-ray 2005 Conference proceedings

  This item is currently under discussion in the conference local and scientific organizing committees. The baseline is that ESA will take care of this issue. It is not clear whether the ESA publication department will require that camera ready manuscripts be provided by the

authors at the conference itself. The organizing committees would consider such a requirement as too strong and counterproductive. F. Jansen offered to clarify this point and the organizing committees will proceed to take a decision and inform the authors accordingly. The aim is to provide written proceedings if possible. M. Watson mentioned that it will also be considered to have proceedings public on the web and to distribute them in CDs. The three options are not exclusive.

- Information about observations

  The UG agreed to make the following

  Recommendation 2005-05-20/31: The UG would like to see a unique web interface to all information pertaining to observations planned and their processing status.

- OTAC feedback to proposers

  The UG was positively impressed by the OTAC reaction to the offer to give comments to proposers who got their proposals rejected: 85% of them got feedback. The UG thought it desirable that N. Schartel encourages the chairpersons of all OTAC panels to provide comments, so that 100% of rejected proposals get feedback on OTAC decisions.

- Any other business:

  Miguel Mas mentioned that the possibility to recommend a coordinated XMM-Newton – INTEGRAL program will be discussed in July within the INTEGRAL Users Group.

  R. Pallavicini asked about the Image Gallery, he was told that very few people answered the SOC request for images to be put in the gallery. In this context, M. Arnaud asked what should a scientist do to publicize a paper via the ESA PR office. It was agreed that the Image Gallery web page, under the XMM-Newton SOC web site, will add a short text with instructions on how to contact ESA PR to produce more publicity on given results.

The discussion ended at 11:10. J. Schmitt handed over the chairing of the meeting to M. Arnaud to arrange details of the next meeting:

Date of next meeting May 18 and 19, 2006, starting at 10 a.m. on May 18 in Villafranca

M. Arnaud, and all persons in the room, sincerely acknowledged J. Schmitt for his service as UG chairman, especially for leading the meeting so successfully for more than three years, i.e., since the UG was established.