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MEETING

Meeting Date:	16/05/2022	Ref.:	MoMUG#23
Meeting Place:	ESAC, B3-B4 Virtual Meeting via WebeX	Chairman:	Rudy Wijnands
Minute's Date:	25/05/2022	**Participants:** **UG members**: Rudy Wijnands (Chair), Stefano Bianchi, Enrico Bozzo, Megan Donahue (online), Phil Charles (OTAC Chair, online), Jimmy Irwin, Lidia Oskinova, Yael Nazé, Gabriel Pratt, Silvia Zane**. In attendance**: Norbert Schartel (Project Scientist), Peter Kretschmar (Mission Manager), María Santos-Lleó (Science Operations Manager), Markus Kirsch (Spacecraft Operations Manager) **Invitees**: Jelle Kaastra (RGS PI), Natalie Webb (SSC Project Director), Frank Haberl (EPIC pn), Mat Page (OM acting PI), Anne Decourchelle (incoming UG chairperson); **Presenters and interested staff from the XMM-Newton Science Operations Centre**. Absent: none	
Subject:	Minutes of XMM-Newton Users' Group Meeting 23	Copy:	

Description	Action	Due Date
Edited by Ignacio de la Calle. Approved by UG members on		

Description

Agenda

1. Welcome (5m)	N. Schartel & R.A.D. Wijnands
2. Adoption of the agenda (5m)	All
3. Overall mission status (15m)	P. Kretschmar
4. Report of the Project Scientist (30m)	N. Schartel
5. User support and mission planning (20m)	R. Gonzalez
6. Calibration EPIC (40m)	M. Smith
7. Calibration RGS (20m)	R. Gonzalez
8. Calibration OM (20m)	S. Rosen
9. Cross Calibration with NuSTAR (15min)	F. Fuerst
10. Status of Pipeline (20m)	P. Rodriguez
11. Status of SAS (10m)	A. Marston
12. SAS / Datalabs Demonstration (10m)	E. Ojero
13. Status of Slew Catalogue (10m)	R. Saxton
14. Status of Archive (10m)	E. Jimenez
15. SSC status (20m)	N. Webb
16. Input from the community (30m)	All
17. AOB and Dedicated Discussion	All

Welcome and Adoption of Agenda. N. Schartel & R.A.D. Wijnands

1. Opening remarks and welcome.
2. R.A.D. Wijnands in his last year as chairman.
3. We welcome A. Decourchelle as guest and incoming chairperson.
4. Meeting to be recorded, only for writing the minutes, not to be made public. All agree.
5. No further items or comments from other members.
6. Agenda agreed.

Overall Mission Status. P. Kretschmar

1. Presentation
2. Questions or Comments
    a. R. Wijnands: telemetry drops seemed to be resolved, but what caused it? Can you elaborate on that?

- M. Kirsch: it was caused by a problem in the network interface system (NIS) between the ground station and the mission control system. There was a software bug which only appeared after some changes done when introducing new hardware and suddenly the issue appeared much stronger than before. It took a while to find as it was deep down in the structure of the network system. Also, other issues were identified in the process that made the links a bit more unstable and they have been fixed too. There is now a more reliable system in place. But the main culprit was this bug in the NIS.

b. G. Pratt: about the point on community expectation and demand increase, can you elaborate more on this?
   - P. Kretschmar: see R. Gonzalez presentation later on. We have been getting more ToO requests and more constrained observations in recent years. The complexity of the constraints also increases, e.g. more simultaneous observations, or repetitions with complex time patterns. The feeling is that multi-wavelength science is more common now and hence the community also demands more science ready products and tools to exploit the data in the archive. There is no decrease in the things users expect from us, it is not a single thing that is taking our time, but a list of many things. In the short term, it is expected that the multi messenger astronomy will soon bring more coordinated observations. This will be mentioned in more detail in a presentation later.

c. P. Charles: on community demands, if someone outside the SOC wants to contribute offering own time to provide a service that could also be valuable to others, can something like this be done?
   - P. Kretschmar: I think this is something people want to go to, like Datalabs. This is a way to provide a framework, a platform open to the world. To point people to it and say there are a limited number of things we can provide directly with our means but we will support you there, although I say this with caution depending on the amount of support available but, yes, this is a way to go that I would personally like to see. Having a more integrated community there.
   - P. Charles: I agree, it really helps the community get a better appreciation of what your team can do and offer.
   - P. Kretschmar: I think it's the way I would like to go.

Report of the Project Scientist. N. Schartel

1. Presentation
2. Questions or Comments
   a. E. Bozzo: regarding the large program, they all look to be extragalactic? Is this right?
      - N. Schartel: Not really, for instance, in the last call time, large programmes were approved to observe a planet (Uranus) and a supernova remnant, in addition to one large programme on gravitational wave follow up. There is no restriction in extragalactic or galactic programs. Any bias mainly reflects what users ask for.

   b. E. Bozzo: there seems to be a big increase in unanticipated ToO?
      - N. Schartel: there is an overall increase but in both types of ToO, anticipated and unanticipated.

   c. R. Wijnands: The presentation shows two proposals were last year requested by PIs from an institute in Russia. Can they propose this year?
      - N. Schartel: ESA's policy doesn't make constraint on individuals. No countries are blocked. Their contribution is extremely small for XMM-Newton anyway.

   d. G. Pratt: can you clarify what is your interpretation for the drop in the Heritage program?
      - N. Schartel: a fraction of it is possibly related to the pandemic. There can be other factor also contributing: it could be that some of the 'large' things already done, like deep field observations, are difficult to be asked for a second time before results are worked out and published or before new and better samples are identified

- G. Pratt: has eRosita had an impact? Maybe people are waiting for new samples to come out of eRosita.
- N. Schartel: it is possible, yes.

User Support and Mission Planning. R. Gonzalez

1. Presentation
2. Questions or Comments
   a. R. Wijnands: what kind of sources are in Jan-Dec (high increase in plot of ToO requests per month)?
      - R. Gonzalez: nothing specific different than other years or months.
      - N. Schartel: It seems to be AGN and tidal disruption events.

   b. R. Wijnands: why asking for the gender information?
      - N. Schartel: the decision comes from management. Answers will include more than just binary genders.
      - E. Bozzo: is this related to see if there is a gender bias or is it completely unrelated?
      - N. Schartel: yes, it is related to that.

   c. G. Pratt: are there any plans to go double-anonymous in the future for the proposal process?
      - N. Schartel: on the one side, there are some people that think we should go double-anonymous while also a lot of people think is a big mistake and that we lose a lot of science. There is reluctance to change until it is proven that the system is good.
      - P. Charles: I was going to say what Norbert just said. HST has gone completely anonymous.
      - N. Schartel: about this double-anonymous, the X ray community is a small community and everyone knows everyone anyhow and is easy to guess, if not the person that has written it, the group the proposals come from. It could be different for optical, like HST.
      - R. Gonzalez: Chandra has this double-anonymous system. Only one proposal was rejected because it was not compliant with this policy on how to write the proposal to be really double-anonymous. In each panel of the TAC there is a kind of coordinator to take care that the discussion does not disclose the name of the PI. It is a complex system.
      - S. Zane: is it a positive experience, the one from Chandra?
      - R. Gonzalez: I'm not experienced on it to comment on that.
      - R. Wijnands: I was there a few years ago and they had just started implementing it. It seems to work for Hubble, according to the statistics they showed.
      - L. Oskinova: now VLT has also implemented something like this, double-anonymous.
      - M. Donahue: if you look at the report, it actually backfired and they had a significant drop in the success of women's proposals in the second year. And then they stated that, post facto, they saw that it was benefitting early career scientists. But it did nothing for their gender statistics and actually made it worse for women with PhDs before 2000. The double-anonymous may be mostly a problem if organizations and community regards it as a 'silver bullet' that magically removes all bias and no further progress to remove them is attempted by other means.

   d. P. Charles: what is enhancement of XMM-Newton joint proposals?
      - R. Gonzalez: for joint proposals some technical evaluation checks need to be done before OTAC, to be sent to the joint facility. After OTAC, the instrument set-up needs to be defined by the Principal Investigators (PI) and then, as for all other proposals, the enhancement is a set of several checks that must be completed to ensure that the instrument configuration proposed by the PI is safe and is suitable for the proposal scientific goals. The PI is contacted by the SOC for this process and only after the enhancement is successfully completed can the XMM-Newton proposals be released for scheduling. The description can be found at: https://www.cosmos.esa.int/web/xmm-newton/proposal-enhancement

Calibration EPIC. M. Smith

1. Presentation
2. Questions or Comments
   a. E. Bozzo: can you clarify about the proton response matrix, is its purpose to gain a better understanding and be used for decreasing the amount of high background information that is rejected?
      - M. Smith: not clear if it can be used for that. Not clear if it can be used to see by how much you can reduce your flaring periods based on this. It is meant to be used for spectral analysis to see if one can disentangle the effect of the proton flux from your X-ray flux. So, to see if it can be better accounted for. But quantitatively, is not easy to say.

   b. G. Pratt: about the carbon and oxygen contamination, I find the issue worrying, but I don't see it in your current future work and it seems a rather important issue.
      - M. Smith: Its implied. We are working on it, its work in progress.

   c. G. Pratt: for the *corrarea* correction, is it going to be in SAS by default?
      - M. Smith: it has been discussed. We hope users will use it and we will get feedback. Depending on that, we will decide on how to go in the future, whether we make it implicit as the default option.

Calibration RGS. R. Gonzalez

1. Presentation
2. Questions or Comments
   a. R. Wijnands: a comment on UG recommendation 2021-06-10/11 about the further improvement of the wavelength scale and line spread function: so the conclusion for this recommendation is that you have checked everything you could but it cannot be improved?
      - R. Gonzalez: Correct, several quantities are continuously monitored. This is a continuous work; we keep monitoring things and keep the current accuracy. It is in fact considered good enough and within expectations.

   b. E. Bozzo: from the table of blazars shown, there is one case where the extra correction worsens the fit, is this right?
      - R. Gonzalez: there is more than one case. In about 70% of the cases the fit gets better. There are cases where it seems to make it a bit worse, but it's nothing significant or worrying. In general, with the correction, the fit improves or remains more or less the same.

Calibration OM. S. Rosen

1. Presentation
2. Questions or Comments
   a. R. Wijnands: why is there so much scatter on these plots (plots of OM Grism time-dependent degradation)?
      - S. Rosen: first, the plots are at different scales. There is a lot of scatter in the UV, it's a noisy spectrum with very few photons (error bars which are not shown in the plots, if shown, would be large).
   b. P. Charles: about the UVW2 time dependent, there was a request about updating the filter wavelength calibration for UWV2, because it seems to show 0 below 1800A.
      - S. Rosen: the issue is that the UVW2 was not fully (pre-launch) calibrated at the shortest wavelengths (below 1800A). It drops very rapidly at short wavelengths. Nevertheless, it looks like we are only missing about 2% of the effective area by comparison with UVOT UVW2 effective area. There is no ground data below 1800A for OM.
      - P. Charles: sounds reasonable. Would it be worth updating the online documentation?

- R. Wijnands: agrees.
- S. Rosen: we will do it and look into updating the documentation.
- M. Page: a comment on it. Below 1800A there is an actual cutoff because of transmission in the filters. There is a real cut off there, it's not only that there are no measurements.
- P. Charles: would this not apply also to UVOT?
- M. Page: this would have to be looked into more detail, but the point is that this is not only that there are no measurements, but that there is a real cut off there.

c. N. Webb: comment on the OM catalogue. MSSL has been developing new things in the context of the XMM2ATHENA project that could be used for the catalogue.
   - S. Rosen: I am aware, but for the next OM catalogue we are not ready to include them, but this may come in the future.

Cross-Calibration with NuSTAR. F. Fuerst

1. Presentation
2. Questions or Comments
   a. R. Wijnands: there is still a downturn of the residuals above 10keV where EPIC-pn is still lower, is this an issue?
      - F. Fuerst: this is an effect of the EPIC-pn effective area between 10-12 keV, which is very small at those energies for EPIC-pn. In that region the sensitivity is low and very few photons remain.

   b. J. Kaastra: a comment, we need to find out these differences between NuSTAR and EPIC-pn, but also, we should also look at older instruments like Chandra, specially at lower energies, not just the new ones. Have you also considered cross calibrating with older instruments to get an independent handle on this? F. Fuerst: there are plans in this direction, especially with Chandra for the lower energies.

   c. E. Bozzo: have you tried this calibration with bright sources taking in timing mode, like black hole binaries in the hard state whose spectrum is relatively simple?
      - F. Fuerst: We have not tested this yet because there are fewer observations that would fit, but this is something that would be looked at.

   d. P. Charles: the NuSTAR calibration of the crab was done when the source was out of the FOV. Isn't this a problem as it is an extended source? This could impact the results.
      - F. Fuerst: this has been brought up before and addressed by the NuSTAR team. The Crab is a complex source. For example, the pulsar has a different spectrum than the nebula. The nebula is also different depending on where you look, north and south for example. But using a big enough aperture (up to 2 arcmin) to extract the spectrum, the spectrum is a simple power law. NuSTAR has done a lot of work to check that this is the case and you get a powerlaw and a well-defined flux.

   e. N. Webb: is this correction equal across the entire field of view or does it depend on the off-axis angle?
      - F. Fuerst: all observations considered are done with the source on axis. From the vignetting calibration studies done, we don't have indications that this should be an issue.

Status of Pipeline. P. Rodriguez

1. Presentation
2. Questions or Comments
   a. None

Status of SAS. A. Marston

1. Presentation

2. Questions or Comments
    a. None

SAS / Datalabs Demonstration. E. Ojero

1. Presentation: live demo about SAS remote access and use in ESA Datalabs (https://datalabs.esa.int/), which is currently under development, not yet publicly open.
2. Questions or Comments
    a. E. Bozzo: If I understand correctly, Datalabs is the environment where you run things, but for SAS, you need to run a python notebook with all the commands, is this correct?
        - E. Ojero: correct.
        - E. Bozzo; so, is there any further developments foreseen in the future to make it more user friendly? For example, for INTEGRAL, something similar was developed in Geneva, a Datalabs compatible system. There is a python notebook structure but on top of that there is a user interface to make the full INTEGRAL analysis in an interactive analysis without the need of developing the python notebooks themselves or going into the details of the code. There is a graphical interface to introduce parameters in an easy way and launch processes. Is there anything like that plan in the future for XMM?
        - E. Ojero: we are open to the development of an interface. So far, we have worked on an interface to SAS from python. This can be improved in different directions like those that you mention, if considered useful by the community and pending on available resources.
        - R. Wijnands: it will also depend on the flexibility of things. So far you have added notebooks but it also offers X11 connection, right?
        - E. Ojero: yes, the X11 is one of the possible options. A problem with the notebook interface, is that there is no way to interact with tools like ds9 or other SAS GUI interfaces. This can only be done in X11. This is the reason why we made X11 available. Although this works only with no-VNC, nothing like a proper Linux workspace environment, so it is not the best way of connecting.

    b. R. Wijnands: can you also download the data?
        - E. Ojero: yes. The idea is that users will have a permanent user space to upload and download data.
        - R. Wijnands: any problems foreseen with having many users?
          E. Ojero: yes, this is an ESA infrastructure intended to provide multi-mission support. It is currently under study by ESA as to how many resources are provided. Performance is something that needs to be looked into.

    c. G. Pratt: when was the last time a survey of XMM users of SAS and how they interact with SAS was done?
        - E. Ojero: although we don't do survey as such, with every SAS download we request to fill a questionnaire. This is showing how people use it, although some people download SAS for the first time, so the most demanding downloads are always the latest SAS versions in terms of operating system. We have about 1500 downloads per year, about 500 are new users. The most demanded downloads are always the latest SAS versions and Linux in terms of operating systems. This year we have released dockers for the first time, but we still don't have much feedback about its usage because it's very early to say.
        - G. Pratt: do you know how does people interact with SAS, do they mostly interact with GUIs or with scripting?
        - E. Ojero: probably first-time users may use GUIs to learn while most experienced scientists prefer scripts.
        - G. Pratt: Another difference in the way of using SAS could be the type of scientific analysis people want to do. Is not the same point source analysis than extended source analysis.
        - P. Rodriguez: we don't have a survey as such, but we see that most of the questions in the helpdesk are related to scripts and not the use of GUI. Except maybe for xmmselect and xmmextractor. Otherwise, people ask about scripts.
        - G. Pratt: but then the python notebooks are yet another interface.

- E. Ojero: the python notebooks allow scripting work with a good interface and the possibility of documenting what is done at the same time.
- E. Bozzo: scripting gives one more power to run the different steps. But for the future, coming back to the INTEGRAL, and also the Swift XRT interface, they provide online interfaces which are powerful, so that you don't need to install the software or to know much, other than what data and parameters need to be input. In INTEGRAL we have a Datalabs compatible system. This would be useful for the long-term future when people lose the knowledge of the details of SAS.
- N. Schartel: this is not the idea for SAS on the long term. The idea is that, in the future, perhaps after operations end, scientists will not use SAS, but directly use pipeline products, from the XMM-Newton Processing Pipeline System (PPS). SAS will be there for very specific and complicated cases.
- E. Bozzo: But PPS products are not enough in some cases, like variable sources.
- G. Pratt: what about short term spectroscopy studies, which may not be part of the PPS products?
- A. Ibarra/N. Schartel: Yes, specific science cases, even if can start from calibrated events files included in the PPS products, may then need to generate different sets of science products not included in the PPS suit. For this kind of jobs, some options are or will be offered, SAS scripting might still be one option, but Datalabs might also be possible (under study) and currently the RISA interface (Remote Interface for Science Analysis) is already available.
- A. Ibarra: RISA allows full interaction with the data. It's embedded in the XMM-Newton Science Archive, XSA, and scientists can do some standard analysis with it. Astronomers willing to get images, spectra or light curves with different selections than those offered in the PPS suit can submit their jobs and receive an email with instructions for retrieving the results after the jobs have finished.
- M. Santos: A clarification, ESA Datalabs is not public yet. People interested in this platform are recommended to check its web page at https://datalabs.esa.int . As there announced, public access is currently planned for the 3rd quarter of 2022.

Status of Slew Catalogue. R. Saxton

1. Presentation
2. Questions or Comments
    a. R. Saxton presentation ended offering the tasks of updating the Slew Catalogue to the community. The SOC would be happy to help with the task transfer.
        - N. Webb: the SSC volunteers to do that, i.e., SSC would be happy to continue the work and take care of updating the catalogue in the future. Help from the SOC at the beginning would be appreciated.

Status of Archive. E. Jimenez

1. Presentation
2. Questions or Comments
    a. R Saxton: what does 'create an International VO view of the XMM-Newton Science Archive' mean?
        - E. Jimenez: XMM-Newton FITS files are fully compliant with the FITS standards. However, after the definition of the PPS products specifications, Virtual Observatory (VO) standards were defined. In order to also be compliant with these VO standards, we need to identify and do a few format modifications, mainly in header keywords.

SSC Status. N. Webb

1. Presentation
2. Questions or Comments
    a. S. Rosen: how does FLIX compare to the SOC Upper Limit (UL) server?
        - N. Webb: there were issues in the beginning and adjustments were made on both sides There are some minor differences but very similar. Some tests were carried out and we saw differences in

upper limits to at most less than a factor two.
- R. Wijnands: it can be confusing having these two tools, when should one use one or the other?
- N. Webb: it really depends on the users and what they want to do. One of the strengths of the SOC UL server is that it does multi-mission. You can access many missions and put all the information together. FLIX does not do that. One advantage of FLIX is that it uses the same routines as used in the elaboration of the catalogue for source extraction. So, you get the same values.
- R. Saxton: we also have RapidXMM which is included in the archive. RapidXMM contains precalculated UL in the archive for all the fields, which means they are very fast to obtain.
- N. Webb: In this respect, FLIX is very slow at present. We are trying to improve this. FLIX works the UL exactly in the position you introduce in real time. RapidXMM contains predefined positions so they could be plus or minus 5 arcsec from your wanted position. Both tools are complementary in a way.

b. R. Wijnands: about the stack method, some of them take a long time to stack, why?
   - N. Webb: we stack everything. Some regions are stacked on top of each other while other regions are more like a mosaic, in some cases very extended, and even more, some of the regions within the mosaic have several stack observations. So, some stacks are very big and contain many many observations and this takes some time to process.

c. N. Schartel: a comment about the carbon footprint, from the table shown, XMM is doing very good compared to every mission of similar size. For construction is clear that the footprint is bad, but in terms of carbon per paper, XMM is doing very good, is the best of the missions shown. And a question: for the multiwavelength data, it would be good to not just have a flux value, but also if the source is covered by a survey.
   - N. Webb: we are working on it. It has been integrated and this information will be available soon.

d. R. Wijnands: about the carbon footprint paper, there are a lot of assumptions and some things should be done in more detail. Is ESA doing anything for carbon footprint?
   - N. Schartel: yes, for example, there is intention to significantly reduce travel (by about 40%). There are other initiatives, like putting solar panels here at ESAC, but more general plans and their details can be found in ESA web pages (e.g., green and digital Europe is one out of the five priorities in ESA Agenda 2025). The XMM-Newton SOC was reducing travel and waste materials while organizing workshops already before pandemic
   - F. Fuerst: a note, ESAC is running on renewable energies during the summer months completely.

e. F. Fuerst: a reminder that we have the XMM-Newton twitter account and we can connect it with your project.
   - N. Webb: perfect, we should do this.

Input from the Community. All

1. R. Wijnands: there is some input regarding the update of the OM UWV2 filter wavelength effective area below 1800A.
   a. Already addressed during S. Rosen presentation.

2. No further input from the community.

AOB and Dedicated Discussion. All

1. R. Wijnands: any further comments?

2. R. Wijnands: any plans after Gaia is dropped (in about 2 years) from mission control at ESOC?
   - N. Schartel: MOC grouped Gaia, INTEGRAL and XMM. The plan was when Gaia closes, or before,

to have other missions join (Euclid). Things should work as planned. There should not be any concerns.
- M. Kirsch: there are plans to include Euclid in the operations with Gaia, INTEGRAL and XMM for the next year. However, the Euclid launch might be delayed, but the plan goes ahead. All operations will be merged in one room. The plan is already in place. Operations and operator will be shared amongst missions. So, Euclid will have its proper share and will economically contribute.

3. J. Kaastra: about XRISM (launch next year) and XMM joint observations. Are there any plans in place or anything about having joint programs? Any news on the status?
   - N. Schartel: we have not been contacted so far by the XRISM team. The AO will open in August. Norbert asked for the contact person. Cross calibration observations are not a problem, but if they want to have a joint program, this is becoming urgent now.
   - J. Kaastra to send contact details to Norbert.

4. A. Decourchelle : Is there any prospects for joint observations with JWST?
   - N. Schartel: they have been contacted but they are slow responding. There will be a joint program. It's clear it won't be for their first call, but maybe for the second call. In general, all large NASA missions have joint programs.
   - R. Gonzalez: Chandra has contacted them and are now negotiating a joint program for the second call, but are still negotiating the time.

5. P. Charles: a topic came back, if one wanted to do TDE or periodic transients that are difficult to predict, if one wants multiwavelength data, one would need immediate access to the XMM data. But what if these data are contained within a field in someone else's proprietary region, could this be accommodated within the rules? Some people think this won't work. Any comments on this?
   - N. Schartel: such cases are decided case by case. Depends on the physics of the original proposal, for example is the proposed observation with the source in a different flux state as in the original proposal? There is no general rule. Everything can be accommodated but it has to be done by hand because it has to be looked at carefully from the science that is going to be extracted.
   - P. Charles: so, it could be accommodated within the existing rules?
   - N. Schartel: yes, it is a very manual process, but doable.

6. E. Bozzo: concerning the mentioned transients, what is the minimum delay to provide people data to look at? People normally want to look at the data fast, e.g. in order to ask for more observations. INTEGRAL has two versions of the data, like a quick look, to see what is going on, and a more reliable version later.
   - N. Schartel: XMM-Newton data turnaround time comes mainly from the need to add attitude and orbit data, which are provided by Flight Dynamics, FD, at the MOC and from the limited manpower. In order to have the attitude constituents the current orbit needs to be finished and a few checks need to be done. The moment the MOC data is at the SOC, the ODF can be finalized and provided to scientists via the archive. This is usually done within a few days of the observation. The PPS come later.
   - E. Bozzo: what if we remove auxiliary, FD data, can we do it faster? Just images or light curves.
   - N. Schartel: it was done at the beginning of the mission, but it was a bad idea as for example the flux estimates were not good. The discussion has been on the table since 2002 and different attempts were done, however the conclusion was that there is nothing we can give out earlier.
   - R. Wijnands: how fast can you provide the ODF?
   - N. Schartel: normally in a few days, within less than week.
   - E. Bozzo: so, how can we provide data faster for transients? There would be a big advantage. For example things like, is the source bright or faint, in the hard or soft state within a few hours of the observation. Could we have something very preliminary, without FD data, even if e.g., the flux is wrong?
   - N. Schartel: we cannot deliver data that cannot be analysed or that can provide wrong results. Experience showed that it can give rise to wrong conclusions, e.g., flux is published in circulars; it

could be wrong by a factor of 100.
- P. Charles: doesn't this link to R. Saxton talk? since 2009 you have been doing *real time* searches for transients within a few days, is this right?
- R. Saxton: this is true but for slew data not for pointed observations.
- P. Charles: some topics need data very fast to follow up transients. How can one get access to this proprietary data? The rules seem to allow this to be accessed. Can proprietary data, not slew data, be looked at right away?
- N. Schartel: for pointed observations, the PI would have to be consulted. No one else has access to the data.
- P. Charles: having something like what Richard commented for the slew would be good to have also in pointed observations. An automated process to search for something and deliver it fast.
- N. Schartel: at the present only by contacting the PI you can get the data.
- N. Webb: we would like to get an alert during pipeline processing and make the info public quick. The software was developed and the idea was to make some basic info public. This was presented last year. The users group thought this would be of limited use. This would need some endorsement.
- M. Santos: yes, this is correct, as recorded in the minutes of last year Users' Group meeting, there was a proposal from SSC to include a transient alert task in the pipeline processing, noting that still it would only be possible to get related products no faster than current PPS products, and certainly after ODF production. The UG was not convinced about the usefulness of implementing such alerts (given the small field of view of the XMM-Newton instruments) in relation with the workload it would take
- R. Wijnands: a comment on last year's decision. It was decided that data only was available from a few days to two weeks after, so UG thought the return would not be good as most sources would be gone by then. Specially those more interested. It was not worth the effort of manpower. It does not mean the UG did not find the issue interesting, it was more a matter or where to put the resources.
- N. Webb: the software has been developed and is ready to go. We use it to screen al the data sets. It does not require any further manpower.
- N. Schartel: for the slew, it also takes time to get data out. The slew also needs the attitude files.
- R. Saxton: it takes 6-10 days for a slew to be ready. Time scales of 1 week is good enough for some extragalactic sources (for example, TDE, AGN and supernova). Some objects are still interesting/bright after a week. It is worth doing.
- R. Wijnands: it can be discussed tomorrow in the closed UG meeting.

7. No further comments.
8. Meeting closed for today.

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Minutes of UG's executive Meeting on May 17th, 2022

The UG's executive session started on May 17th, 2022. This was a hybrid meeting with most attendees being present at ESAC but with several online participants (using Webex). Present were: Rudy Wijnands (Chair), Stefano Bianchi, Enrico Bozzo, Jimmy Irwin, Megan Donahue (online), Lidia Oskinova (online), Yaël Nazé, Gabriel Pratt, Silvia Zane, Phil Charles (OTAC Chair, online), Mission Manager (Peter Kretschmar, online), Science Operations Manager (María Santos-Lleó), and Project Scientist (Norbert Schartel). In addition, Anne Decourchelle was present as a guest and as incoming chairperson.

In the UG's executive session, several general points were discussed:

- It had been suggested to schedule the presentations and the open discussion only on the first day of the UG meeting so that non-UG members can already return home that day or early the next day. The UG decided that this will be further discussed between the incoming UG chairperson (Anne Decourchelle) and the Project Scientist (Norbert Schartel) when the agenda of the next UG is being made (spring 2023).
- Following the discussion in the open session about 'real-time transients' and whether or not to implement transient alerts, the UG reassessed its viewpoint of last year *(Quoting the UG 2021 meeting minutes: "In the UG's executive session, the UG discussed the 'real-time' transient alerts that the SSC has investigated. Several UG members reported about their own experiences with transient searches and stressed that only a very small fraction of the found transients are, at the end, of high scientific interest. The UG was not convinced about the usefulness of implementing such alerts (given the small field of view of the XMM-Newton instruments) in relation with the workload it would take.")* The outcome was that the UG stands by last year's decision but UG chairperson (Rudy Wijnands) will ask (action item 2022-05-17/20) the SSC Project Director (Natalie Webb) to assess the rate of those transient types that would warrant such an alert and present a brief summary of the outcome during next year's UG meeting. The UG will then again discuss this point to determine if any change in policy is desirable.
- The UG briefly discussed the recent experiences by the UG members about the fulfil program. Generally, the experience was satisfying although it remains true that not always all proposers and OTAC members fully understand the program. After the next proposal review round, the OTAC chairperson (Phil Charles) will also discuss with the OTAC panel chairpersons what their experiences were with the fulfil program and will report on that back to the UG group (action item 2022-05-17/21). For now, no changes are recommended to the fulfil program.
- The UG discussed the XMM-Newton data rights policy and the user model and was satisfied with the current situations (see also endorsement 2022-05-17/16).
- The UG discussed if the proposal review process for XMM-Newton should also be double anonymous (as is the case for certain other observing facilities). The UG fully realizes the importance of this topic and that all people have conscious and unconscious biases. However, for the UG it was unclear if XMM-Newton has significant problems in this aspect and would like to see more statistics about this. Moreover, even if there are indeed issues found, it was not clear to the UG that a double anonymous review process would solve these issues. Therefore, the UG recommends to keep the review process as it currently is but that the OTAC panel members are instructed and informed about potential biases during the review process (see recommendation 2022-05-17/17).
- The UG briefly discussed if any changes should be made to the Multi-Year-Heritage Programme (MYHP) and decided to recommend that the suggestion made by the Project Scientist (Norbert

Schartel) to have a flexible approach to MYHP, with an amount of time between 3 and 6 Msec in total to be allocated over two or three years should be implemented (see recommendation 2022-05-17/18).

The UG also reviewed the status of the recommendations and action items formulated at previous meetings and formulated new ones.

Action times and recommendations from previous meetings

Action 2021-06-10/22: The members of the XMM-Users' Group are requested to send suggestions for the following topics to the Project Scientist

1) Topics, titles, and chairpersons for SOC for the XMM-Newton workshop in 2022
2) New candidates for the Users' Group and candidates for the chairperson for the Users' Group
3) Input for next extension exercise will be needed autumn 2021 or early 2022

Status: Closed

On calibration priorities:

Recommendation 2020-06-08/07: The UG strongly appreciate the efforts made by the EPIC calibration team to further improve the cross-calibration of the XMM-Newton instruments and the cross-calibrate between the XMM-Newton EPIC detectors with the NUSTAR one (to resolve discrepancies between the two observatories in inferred spectral shape and normalizations). The UG strongly recommends to continue these efforts and that the final outcomes (e.g., the improved CORRAREA correction) are incorporated into SAS.

Status: Closed. Partly rewritten into recommendation 2022-05-17/03.

Recommendation 2020-06-08/09: The UG recommends to continue the investigations into the pn empirical RMF modelling (e.g., expand to energies >1.7 keV, include other modes, epochs, and spatial regions) and incorporate the outcome into SAS.

Status: Open

Recommendation 2020-06-08/10: The UG recommends to implement the spatial and temporal refinement of the pn energy scale as presented in Sanders et al. (2020, A&A 633, 42) as a calibration product.

Status: Open

Recommendation 2020-06-08/11: The UG recommends to continue the investigations into the off-axis flux calibration of the EPIC cameras.

Status: Open

Recommendation 2020-06-08/12: The UG recommends to continue the evaluation of new methods for background subtraction for the RGS detectors.

Status: Open

Recommendation 2021-06-10/09: The UG recommends to finalize the analysis of the possibility of a column by column rate-dependent PHA correction of pn in Burst and Timing modes and publish the conclusions.

Status: Open. Analysis has been completed and a technical note is being prepared

Recommendation 2021-06-10/10: The UG recommends to continue to improve the MOS redistribution and determine the impact any improvement has on the MOS-to-PN cross calibration at low energies.

Status: Open

Recommendation 2021-06-10/11: The UG recommends to continue investigations whether it is possible to further improve the wavelength scale and the line spread function of the RGS

Status: Closed. The investigations have shown that no further improvements were possible.

On Spacecraft operations:

Recommendation 2021-06-10/02: The UG recommends to continue the investigations into the collision avoidance operation and the degradation of the coarse attitude anomaly detector.

Status: Closed

Recommendation 2021-06-10/03: The UG very strongly recommends to continue the investigations into the cause behind the telemetry drops and resolve any issues that are found.

Status: Closed

On the changes of SOC organization:

Recommendation 2021-06-10/04: The UG strongly recommends that any changes in staff and/or the SOC structure (i.e., in the context of the frame contract changes) ensures the conservation of the required performance and expertise.

Status: Closed

On User Support Group:

Recommendation 2021-06-10/06: The UG recommends that the users are informed about the migration to XIPS and its consequences (e.g., not yet able to reload old proposals) in all ways possible and well ahead of the next proposal deadline to avoid unpleasant surprises for the users.

Status: Closed

Recommendation 2021-06-10/07: The UG recommends that the XSA enables queries that make use of the multi-wavelength information included in the catalogue.

Status: Open

On the OM:

Recommendation 2021-06-10/13: For consistency, the UG recommends that future OM catalogues are based on results obtained using the general pipeline instead of internal software

Status: Open

On SAS development:

Recommendation 2021-06-10/14: The UG considers it to be very important that ESAS is fully integrated (if indeed possible) and therefore strongly recommends to complete this process as soon as possible.

Status: Open

Recommendation 2021-06-10/15: The UG considers it to be important that the SAS source code is made public (and that any remaining copyright issues are resolved) and that the distribution and installation of SAS is made easier and in modern ways. Therefore, the UG strongly recommends to complete this processes as soon as possible.

Status: Open

Recommendation 2021-06-10/16: The UG recommends to complete the transformation of the code to Python and eliminate all problematic dependencies (i.e., PGPLOT/Grace, Perl, HEASARC dependencies).

Status: Open

On the Pipeline Processing System:

Recommendation 2021-06-10/18: The UG recommends to continue to implement the option for FWC scaling according to the relation between background rate and the NDSLIN in pn.

Status: Open

Recommendation 2021-06-10/19: The UG recommends that the new features planned for the next release of the pipeline are indeed included at that time. In particular, the following products and options:

1) Apply results from the EPIC Filter Wheel Closed data analysis to background estimate for image creation and products for spectral analysis
2) Astrometric rectification of EPIC images and events after cross-correlation of detected sources with external catalogues
3) Alignment of pipeline processing of OM data with current “ad-hoc” processing for catalogue production

Status: Open

Recommendation 2021-06-10/20: The UG strongly appreciate the long-term activities planned for the pipeline but strongly recommends to start working on these activities already now before knowledge and expertise disappear over time.

Status: Closed

NEW RECOMMENDATIONS AND ACTION ITEMS

The UG formulated the following new recommendations, endorsements, and action items:

On the impact of Covid-19 on operations:

Endorsement 2022-05-17/01: The UG would like to reiterate its endorsement of last year (endorsement 2021-06-10/01) and that it again strongly appreciates the efforts done by all XMM-Newton teams to limit the impact of Covid-19 on operations over the past two years. The UG compliments everybody on how this impact has been minimized and how well things functioned (and still are functioning) during this period.

On Calibration Priorities:

Endorsement 2022-05-17/02: The UG strongly appreciated the efforts done by all the XMM-Newton instrument teams over the past year to further improve the calibration of the instruments. In particular, the progress made in resolving the discrepancies in the inferred spectral shape between XMM-Newton and NUSTAR is strongly appreciated as well as that made in implementing the refinement of the pn energy scale as first presented in Sanders et al. (2020, A&A, 633, 42). The UG is also strongly appreciating the ongoing evaluation of the background subtraction methods for the RGS detectors and is looking forward to having them in SAS.

Recommendation 2022-05-17/03: The UG strongly recommends to continue the efforts to further improve the cross-calibration of the XMM-Newton instruments and the cross-calibration between the XMM-Newton EPIC detectors with the NUSTAR ones (i.e., to resolve discrepancies between the normalizations) and that the final outcomes are incorporated into SAS. The UG also recommends to investigate options to improve the soft energy calibrations (below the NUSTAR lower energy boundary).

Recommendation 2022-05-17/04: The UG strongly supports and recommends the production of an analysis guide for observation specific rate-dependent PHA correction (for the PN Burst & Timing modes).

Recommendation 2022-05-17/05: The UG strongly recommends to further streamline the process of CTI correction and to fully implement the energy scale calibration at Cu Kα with that at Al Kα and Mn Kα.

Recommendation 2022-05-17/06: The UG recommends to verify the pattern fractions determined from in-orbit data with the expected pattern fractions

Recommendation 2022-05-17/07: The UG recommends the creation of proton response matrices and to make them available through SAS

On the changes of SOC organization:

Endorsement 2022-05-17/08: The UG strongly appreciated the efforts done to conserve the required performance and expertise during the SOC reorganization and compliments everybody about the outstanding performance over the last year.

On the OM:

Endorsement 2022-05-17/09: The UG strongly appreciate the efforts of the SOC OM calibration and MSSL teams to prepare the XMM-OM SUSS6 catalogue and is looking forward to its release in late 2022 or early 2023.

Recommendation 2022-05-17/10: The UG recommends that the determined update for the OM time-dependent sensitivity degradation (for the filters) is applied prior to the SUSS6 catalogue generation and release.

On the Pipeline Processing System:

Recommendation 2022-05-17/11: The UG strongly appreciates the continuing efforts to improve the pipeline and the proactiveness of the team to investigate new analysis techniques (such as AI, machine learning, novel analysis techniques for super resolution). The UG strongly recommends that, when possible, such new techniques are implemented in the pipeline and to keep an eye out for any additional new techniques that might become available.

Recommendation 2022-05-17/12: The UG strongly appreciate the efforts already initiated to ensure the retention of knowledge and expertise related to the pipeline and recommends to continue these efforts.

Recommendation 2022-05-17/13: The UG recommends that the option to generate redistribution matrices for individual spectra is included in the pipeline.

On the XMM-Newton Survey Science Centre (SSC):

Endorsement 2022-05-17/14: The UG highly appreciate the offer by the SSC to continue the work and take care of updating the slew catalogue in the future.

Recommendation 2022-05-17/15: The UG strongly appreciate the efforts made by the SSC for the 5XMM catalogue and the planned and proposed additions (e.g., adding multiwavelength information from the OM and other catalogues). The UG recommends that the viabilities of the proposed inclusions are investigated and, if possible, that they are implemented.

On XMM-Newton data rights policy and the user model:

Endorsement 2022-05-17/16: The UG strongly supports the current XMM-Newton policy on the data rights and on the user model.

On the XMM-Newton peer review process:

Recommendation 2022-05-17/17: The UG strongly realizes the importance and possible effects of conscious and unconscious biases during the peer review process. The UG strongly recommends to further investigate (if possible) to what degree these biases negatively affect the XMM-Newton review process and in what way. For the upcoming proposal cycle, the UG recommends not to change the review process to become double anonymous and strongly recommends that the OTAC panel members are instructed and informed about potential biases during the review process.

On the Multi-Year Heritage Programme:

Recommendation 2022-05-17/18: The UG recommends to have flexible approach to the MYHP, with an amount of time between 3 and 6 Msec in total to be allocated over two or three years.

Action items for the XMM-Users' Group members:

Action 2022-05-17/19: The members of the XMM-Users' Group are requested to send suggestions for venues and chairpersons for the Science Organizing Committee for the XMM-Newton-organized 'The X-ray Universe 2023' conference in 2023

Action 2022-05-17/20: The UG chairperson (Rudy Wijnands) will ask the SSC Project Director (Natalie Webb) to make an assessment of the rate of those transient types that would warrant 'real-time' alerts and to present a brief summary of the outcome during next year's UG meeting.

Action 2022-05-17/21: The OTAC chairperson (Phil Charles) will discuss with the OTAC panel chairpersons their experiences with the fulfil program and will report the outcome of this discussion to the UG during next year's meeting.

Date of next meeting: May/June 2023 (exact date TBD), starting at 10:00 at ESAC.

Closure of the meeting: Rudy Wijnands communicated that this was his last meeting as UG chairperson. We would handover to Anne Decourchelle during the year. Anne acknowledged the great job done by Rudy during a very critical period with e.g. two successful XMM-Newton operations extension reviews. The UG role was key to demonstrate the community support and at the same time set their requirements. She thanked Rudy for his dedication and smooth work including during the difficult time of Covid pandemic. Rudy thanked Anne for her words and said it was with pleasure. He wished all the best to all.