



MEETING

Meeting Date 12-13 February 2019

Ref MoMAAUG#2

Meeting Place ESTEC, Db134 /Videoconf

Chairperson Beate Stelzer

Minute's Date 22 April 2019

Participants

AAUG Members : Beate Stelzer (Chair), Hervé Bouy, Christopher Conselice, Ioannis Georgantopoulos, Søren Larsen, Marc-Antoine Miville-Deschenes, Eva Villaver

In attendance : Deborah Baines (ESDC Astronomy Archives Science Lead), Guido de Marchi (ESDC Science Lead), Jan Tauber (Planck Project Scientist and ESA Astronomy Study and Project Scientist's representative), Rene Laureijs (Euclid Project Scientist), Bruno Merin (Head of ESDC), Marcos Lopez (Planck Archive Scientist and User Community Scientist).

WebEx: Eva Verdugo, Nora Loiseau, Daniela Coia.

Absent: Sandra Savaglio (AAUG member) sent her apologies.

Subject Minutes of Astronomy Archives User Group (AAUG) meeting #2.

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Description	Action	Status
On G. de Marchi and D. Baines to ask if the AAUG can receive a copy of the SPC reports. If the answer is positive, send the AAUG the recent reports and subsequent triannual reports.	2018-06-12/01	DONE
The UG is interested in seeing the number of users that access the archives via ESASky. D. Baines to report to the ESASky team.	2018-06-12/02	IN PROGRESS (statistics still to be collated)
On G. de Marchi and D. Baines to ask for a room to be booked at ESTEC for the 2 nd AAUG meeting.	2018-06-12/03	DONE
D. Baines to pass the ESASky requirements (and those given in recommendation 2018-06-12/04) to the ESASky team, include them in the project backlog and prioritise them in the ESASky roadmap. DB will provide feedback on the progress in the next AAUG meeting.	2018-06-12/04	DONE
D. Baines to inform the astronomy archives teams about the AAUG recommendation on the inclusions of interactive data analysis tools and the possibility of programmatic access to the archives as high priority.	2018-06-12/05	DONE
G. de Marchi and D. Baines to draw up detailed plans for the implementation of a programme to fund the active participation of junior scientists, including those from non-ESA member countries, in conferences with high visibility such as EWASS.	2018-06-12/06	IN PROGRESS



Description	Action	Status
D. Baines to identify and produce a list of EU FP7 and H2020 projects producing high-level science data products from ESA astronomy mission data.	2018-06-12/07	DONE
B. Stelzer and all AAUG members to define the plans for a user survey and questions to be asked to the community.	2018-06-12/08	IN PROGRESS
D. Baines to send the results from the previous archives survey (in 2011), along with the survey questions.	2018-06-12/09	DONE
G. de Marchi and D. Baines to send to the AAUG the list of publications per mission that are produced by the ESA project scientists.	2019-02-13/01	
ESDC to request SEPP experts to give a presentation about SEPP at the next AAUG meeting.	2019-02-13/02	
D. Baines to forward to the AAUG the videos of the JupyterHub workshop held at ESAC in October 2018.	2019-02-13/03	
G. de Marchi to provide more updated information to the AAUG on the archival research programme and on the possible extra option for archival research visiting scientists: if visitors can go to institutes external to ESA, to work on ESA mission data and provide a deliverable to ESA as the end result.	2019-02-13/04	
The AAUG and ESDC members to hold a telecon to further discuss the archival research programme ideas and to try to have this defined before EWASS.	2019-02-13/05	Due: March/April 2019
AAUG members to send suggestions for questions for a user survey to the AAUG chair.	2019-02-13/06	Due: mid March
ESDC to check the technical issues for creating a survey and the time needed to set up the survey and distribute it to archive users.	2019-02-13/07	Due: mid March
BS, DB and GdM to discuss the proposed survey questions and set up a telecon to be organized between the AAUG and ESDC members to finalize the user survey design.	2019-02-13/08	Due: beginning of April
ESDC to collate the email addresses of all active astronomy archive users, ready to send out the survey to the collated list.	2019-02-13/09	Due: May
ESDC to set up and activate the survey by sending the announcement to the archive mailing lists and active archive users.	2019-02-13/10	Due: beginning of June.
ESDC to send a list of projects and functionalities that are planned for the astronomy archives.	2019-02-13/11	Due: 22 nd February
D. Baines to add to the list of EU projects, the FP7 project DUSTPEDIA, and to send the updated spreadsheet to the AAUG.	2019-02-13/12	Due: 22 nd February
AAUG members to investigate one EU project each, investigate the type of data products from ESA missions that the project will be creating, advise ESDC what to ask the project PI, and if there is enough information at this point, recommend if the data should be added to any of the ESA science archives.	2019-02-13/13	
ESDC to contact the relevant EU project PIs.	2019-02-13/14	
D. Baines/B. Stelzer to send a doodle to AAUG and	2019-02-13/15	Due: mid March



Description	Action	Status
ESDC members to find a date for the next meeting.		
D. Baines to set up an AAUG email list to include all AAUG members, and once set up to add this to the main AAUG web page.	2019-02-13/16	

WELCOME:

B. Stelzer (Chair) opened the meeting on Tuesday 12th February 2019 by welcoming everyone and summarising the main topics to be discussed during the two days. A roundtable of introductions was performed as not all Astronomy Archives User Group (AAUG) members and participants had met in person.

ADOPTION OF THE AGENDA:

The agenda of the meeting was presented and adopted by the AAUG members.

REVIEW OF ACTIONS:

The actions from the previous meeting were reviewed. Three actions remain open and are currently in progress. These are the following: for **Action 2018-06-12/02**: *The UG is interested in seeing the number of users that access the archives via ESASky*. D. Baines reported that the statistics are still to be collated and will be reported in the next AAUG meeting. **Action 2018-06-12/06**: *G. de Marchi and D. Baines to draw up detailed plans for the implementation of a programme to fund the active participation of junior scientists, including those from non-ESA member countries, in conferences with high visibility such as EWASS*. G. de Marchi explained he will present the latest news regarding the funding scheme (see discussion session 2). **Action 2018-06-12/08**: *B. Stelzer and all AAUG members to define the plans for a user survey and questions to be asked to the community*. B. Stelzer explained this will be discussed and defined later in the meeting (see discussion session 4).

PRESENTATIONS:

The following presentations were given and discussion sessions were held on 12th and 13th February 2019

1. Archives in Post-operations and Legacy (B. Merín)
2. Archives long-term strategy (G. de Marchi) and discussion including funding scheme for junior scientists (All)
3. ESA Astronomy Archives session at EWASS 2019 (G. de Marchi)
4. Users Survey (Report on previous survey by D. Baines; ideas for new survey: All)
5. ESASky updates (D. Baines)



6. EU FP7 and H2020 projects (D. Baines)
7. Report to the AWG (B. Stelzer)
8. Date and time of next meeting (All)
9. AOB
10. Closed session

The slides of the presentations are available on the ESAC Science Data Centre (ESDC) public web site, under the heading Archives User Groups, Astronomy:

<https://www.cosmos.esa.int/web/esdc/aaug/meeting2>

DISCUSSIONS:

Discussions were held during both days of the meeting, during and after presentations, and in dedicated discussion sessions. This section gives a summary of the discussions and is ordered by the above presentations and discussion sessions.

1. Archives in Post-operations and Legacy

A presentation was given by B. Merin on the ESA Astronomy Archives in legacy and post-operations at ESDC, summarizing which archives these are, their scientific productivity, and how the ESDC is taking care of the Legacy missions. After the presentation, AAUG members asked about the statistics on the usage of the astronomy archives, and specifically the differences seen in the percentage of the total archive volume downloaded per month per mission. ESDC members explained that the percentage depends on a number of factors, for example, the amount of data available in the archive, the typical scientific objectives of the users per mission (reflecting how much data needs to be downloaded), and the specifics of the mission instrumental set-up. AAUG members also asked why the INTEGRAL archive is not included in the statistics and it was explained that the current INTEGRAL archive is located at the INTEGRAL Science Data Centre (ISDC) in Geneva. However, the legacy archive of INTEGRAL will be located at ESDC, and development on the legacy archive has just started this year. It was also noted by the AAUG that the legacy mission EXOSAT has had a lot of data downloaded in the past year. The ESDC has also noticed this and have seen many downloads from China, which could be related to the upcoming Chinese X-ray mission, Einstein Probe. G. de Marchi suggests the ESDC could send the AAUG the list of publications per mission that are produced by the ESA project scientists as the list might be interesting to have to compare against the archive usage statistics (**Action 2019-02-13/01**).

Discussing future missions, the AAUG asked if the ESDC is going to develop a JWST archive and the reasons for a JWST archive at ESA. ESDC confirmed that it is developing a JWST archive at the ESDC for the following reasons: because JWST is a mission in collaboration with NASA, ESA and CSA, and there are two European instruments on board JWST, one of which ESA is contributing to directly: the spectrograph NIRSPEC. Moreover, the European community has a percentage of guaranteed time on JWST and will need access to JWST data. The agreement is that proprietary data will only be held at NASA, STScI, however



various discussions are ongoing between ESA and NASA on how to best serve the proprietary data to the European community. One technical solution that is being examined is to allow users to log into their STScI account from the European JWST archive interface to download proprietary data this way.

Questions and discussions followed on the amount of support that is needed to be given to the archives in Legacy and post-operations. ESDC explained that currently small operational costs are spent to keep the legacy archives running. However, it is not enough to just have the archives running, they need to be actively maintained. If an archive is just kept running and never updated anymore, it will become almost impossible for people to work with the data. Therefore, more than just these operational costs need to be invested in order to resurface the data and make it useful today. To do this implies that a small number of FTEs would be needed, which will be very justified by the scientific production of these legacy missions. AAUG members asked about the limit in time on the Long-Term Data Preservation+ (LTDP+) programme. ESDC confirmed that the current program runs for 5 years, and a request for an extension is going to be made in this year's ministerial council. The AAUG noted that, especially since there will be many more ESA archives in legacy in the near future, it is very clear that these activities must be maintained or even further developed. The AAUG is convinced that the LTDP+ program is an essential initiative to aid the scientific community in continued data exploitation (see **Recommendation 2019-02-13/01**).

Finally, the AAUG asked what happens with the really old data. Citing the example of EXOSAT, it was mentioned that there should be some effort to give more pipeline products to users. Not only does the data need to be provided to users, but also the pipeline software, and a means in which to run the software. ESDC explained that this is one of the aims of the Science Exploitation and Preservation Platform (SEPP) project at ESAC. This will be a tool to bring the code to the data, and that code could be software that ran 30 years ago. The aim is to set up virtual machines to provide an appropriate framework in which to run legacy pipeline software. More is explained in the next section. The AAUG asked what the timescale is for the SEPP project. ESDC explained that there are two projects starting this year, both a year long, and they plan to have a prototype by the end of the year. The AAUG requested if a presentation can be given on SEPP in the next AAUG meeting (**Action 2019-02-13/02**). ESDC also suggested to forward to the AAUG the videos of the JupyterHub workshop held at ESAC in October 2018 (**Action 2019-02-13/03**).

2. Archives long-term strategy and discussion including funding scheme for junior scientists

A presentation on the ESA Science Archives Long-Term Strategy was given by G. de Marchi. During the presentation the AAUG asked about the number of tickets that are sent to the helpdesks and if the numbers are manageable. ESDC replied that each mission has its own helpdesk and tickets related to the archives go to the archive scientist, if scientific, and to the ESDC, if more technical. As an example, for the Planck Legacy Archive (PLA) these numbers are about 3 to 4 per month to the helpdesk, and more queries as direct emails to the project scientist or archive scientist. ESASky receives around 1 to 2 questions per month, and the ESDC also has a general helpdesk that receives less questions. Therefore, as a summary, the number of tickets coming to the ESDC is manageable.



AAUG members also asked questions regarding integrating high level data products coming from the community into the archives, and how the quality of the data will be validated. ESDC explained that the idea is that these products will go into SEPP, not the archives. An example on the validation was given from the planetary archives: if the data are described in a refereed paper it is assumed the referee has done the work of validating the data. If no paper is available, a review committee is created, composed of members of the user group and members of the community recommended by the user group. This committee then validates the data. The AAUG noted that there are still some ESA mission products that are under the radar, as one example, XMM-Newton photometric redshifts for all the extragalactic sources. Sometimes users do not know about this added value data. ESDC commented that is another good reason to bring all this data together in one place: to the SEPP platform. The AAUG then asked what the plans are to offer users access to very large data. ESDC confirm there are no plans to develop into a super computing centre. Instead, discussions are going on regarding if the archives need to connect to a cloud service, and if this is connected in any way with an EU project that is just starting: the European Open Science Cloud. Finally, the AAUG commented that ESA isn't the only organisation facing the problem of how to handle and provide very large data to the community. The ESDC agreed and said that it is in contact with and discuss this topic with other large astronomical data centres around the world. The fact that ESA has a presence in organisations such as the International Virtual Observatory Alliance (IVOA) and the International Planetary Data Alliance, that draw up the standards to be used by data centres for preserving data, is also very important.

G. de Marchi then presented ideas on funding schemes for an archival research programme developed at the ESDC. A discussion followed on these ideas. AAUG members asked how a thesis prize would help the development of the archives. ESDC confirmed, this option alone would not help the development, but only the visibility of the archives. Regarding a visitor programme, it was noted that its limitation will be the amount of time the specialists at ESA can spend with the visitor. The added value for visitors to come to ESA will be to have someone to support them on the particular data set of interest. This visitor programme will be different to existing ESA visiting programmes since it will be the visitor who will write and submit a proposal. The AAUG raised a question on the selection process for the proposals, particularly if there is an oversubscription. ESDC said the idea for the selection is twofold, firstly the technical part should be assessed, for example, if the data the person would like to use are available and if there is an expert at ESA on the particular data who is available. And secondly, a scientific assessment of the proposal is going to take place, in consultation with the AAUG. The collaboration with the visitor within such a new program will mean some overhead on scientist's time at ESA. It was noted by the AAUG that there are many experts of ESA mission data who are external to ESA, therefore the question was raised if visitors could carry out their visitor stage in these places. ESDC replied that this might be possible, provided that there is a clear deliverable to ESA. The AAUG noted that in this case a review panel may be needed, in order to ensure that the deliverables are met. The AAUG asked ESDC to find out if this option is acceptable for ESA and, eventually, to obtain more information about this option (**Action 2019-02-13/04**). The AAUG noted that looking at this from a post-doc's point of view, a visitor programme to ESA for two to three months seems very attractive, will be very good for his/her CV, and will give the ESA archives high visibility.

The AAUG also asked about having a possible visitor programme to ESA for established researchers, and if this could be linked to the scientific curation of archives. The visitors (experts in certain data and a certain



field) would then give a report to ESA on their findings, and would have dedicated time to work on the project since they will be located at ESA. This could be viewed similar to a sabbatical. Plus, it would require less time from ESA specialists. The Euclid project scientist commented that within Euclid they have also had a similar idea. Regarding the expertise available at ESA and ESA staff's availability, this will need to be checked with the relevant channels at ESA.

Finally, a discussion followed on the proposed prizes using archival data. Examples from the IAU and the EWASS MERAC prizes were given, MERAC prizes being more visible due to the winners giving plenary talks at each EWASS. One option to investigate is if ESA can help to fund some large conferences and a prize winner can give a presentation. The possible types of prizes were also discussed and how often they should be awarded, i.e. one per wavelength regime, one per mission, prizes that combine mission data, new ways to using data, etc. The AAUG felt that these prizes will be rather a large overhead on time for relatively little impact on the visibility of the archives, especially if they are not linked to any large scientific conference.

It was agreed the AAUG will come up with a consensus on a general outline for all these ideas (see **Recommendation 2019-02-13/02**). The idea was to have the new archival research funding possibility defined by EWASS (end of June 2019), where it could be announced to the community during the astronomy archives lunch time session. The AAUG agreed to have a telecon in the next few months to further discuss the various archival research programme ideas (**Action 2019-02-13/05**).

3. ESA Astronomy Archives session at EWASS

G. de Marchi presented a couple of slides on the upcoming ESA astronomy archives lunchtime session at EWASS, on Wednesday 26th June 2019. The details of the programme for the session were discussed. The AAUG noted that the user survey is currently missing in the programme, but this is intentional as it is not yet known if it will be ready. ESDC and AAUG agreed that EWASS will be an ideal location to announce the user survey to the community. ESDC commented that the idea is to also mention and advertise all the ESA astronomy archives, not just ESASky, and to announce the Gaia archive session which is in the EWASS program two days later, and that any astronomy archive can be demonstrated at the ESA booth. The AAUG suggested that questions should be prepared for the last half an hour open discussion session. Emphasis could be made on how the ESDC has the many different ESA science archives all under the same umbrella, and that the ESDC has very good visualization tools. Or to simply show the functionalities available, show what are the advantages, and ask what is missing for the users. For the ESASky demo, the AAUG suggested it will be good to show how ESASky interacts with all the other astronomy archives, the data that is available in the archives, using it as a tool to promote the ESA astronomy archives, and most importantly, to show relevant science cases throughout the demo.

4. Users Survey

Following up on the previous suggestion of the AAUG to consider holding a new archives user survey (see



Recommendation 2018-06-12/04), D. Baines gave a presentation on the previous archives survey in 2011 and the lessons learned. The AAUG asked if there were any particular complaints from the users. ESDC explained that many users were not happy with Java and that further details, and the feedback from the survey in 2011, are given in the report of 2012 which was distributed to all AAUG members. The AAUG members pointed out that the career stage of the users was not asked for and may be an interesting point, and they were surprised by the large number of users using the archives for educational and outreach purposes. The AAUG asked for any examples of modifications taken place as a result of feedback from the survey. ESDC commented on two points, firstly, that the archives are migrating from Java to web based technology filing away the respective user comments provided in the first survey. Secondly, feedback was given in 2011 that the archive interfaces were not too user-friendly, whereas now the current and new archives are far more intuitive to use. Moreover, the feedback from the user survey was very useful as input to the archives long-term strategy.

A question arose on the use of having a second user survey. It was discussed that it would be very useful to hear feedback from the community on the latest developments in the archives and particularly on the new archives and ESASky which is also new. Secondly, the AAUG has the impression that ESASky is not well known within the scientific community, and a user survey will help to give it more visibility. Similarly, the survey can be useful for pointing users to the recent establishment of the AAUG. A discussion on interpreting the results and statistics followed. The AAUG commented that the satisfaction levels of the users are only really useful if you can associate them with the comments on what the users were happy, or unhappy, about and for which archive/s. A suggestion was given where users should be asked to refer to which mission they are talking about when providing comments. The idea is to keep the survey simple, short, easy to fill out and that it addresses what the AAUG and ESDC want to learn about from the community. A suggestion was given that if the survey is ready for EWASS, a tablet could be provided at the ESA booth, for users to fill out the survey whilst at the booth. The discussion on a new user survey led to **Recommendation 2019-02-13/03**.

The following timescale for the user survey was then agreed: AAUG members to send suggestions for questions for a user survey to the AAUG chair by mid March (**Action 2019-02-13/06**). ESDC to check the technical issues and the time needed by ESA to set up the survey and distribute it (**Action 2019-02-13/07**). B. Steltzer, D. Baines and G. de Marchi to then discuss the result via email and subsequently a telecon to be organized between the AAUG and ESDC members to finalize the user survey design by the beginning of April (**Action 2019-02-13/08**). Meanwhile, the ESDC should collate the email addresses of all active astronomy archive users (**Action 2019-02-13/09**). Finally, the ESDC members will set up and activate the survey by sending the announcement to the archive mailing lists and active archive users with a hard deadline of 21st June (just before EWASS; **Action 2019-02-13/10**). It was discussed that it would possibly be better not to show any preliminary results at EWASS, so that the collected feedback is independent.

Finally, a discussion continued on the type of questions to include in the survey and to consider what the ESDC and AAUG would like to do with the responses. Asking for user opinions and priorities on the projects and functionalities that are planned by ESDC in terms of archive developments was identified as a useful feature of a new survey. Therefore, ESDC was asked to send such a list to the AAUG within a week (**Action 2019-02-13/11**).



5. ESASky updates

D. Baines gave a presentation on the work that has been done on ESASky since the last AAUG meeting in June 2018. A minor version (v2.3) and major version (v3.0) were released during this period, in September and November 2018 respectively. The major version includes, amongst many features, Spitzer HiPS, updated Solar System Objects, and a science mode and explorer mode, as recommended by the AAUG in June 2018 (Recommendation 2018-06-12/01).

The AAUG asked how complete are the Spitzer HiPS that have been created by the ESDC. ESDC explained that the images within the HiPS have been produced from the four channels of the IRAC instrument from the Spitzer Enhanced Imaging Products of the Spitzer Heritage Archive, as recommended by the Spitzer team in Caltech. These Spitzer HiPS were validated by the Spitzer team, along with the relevant documentation before releasing the data (as is the standard procedure for any new or updated data from any mission in ESASky).

A discussion took place on the updates with the Solar System Objects (SSOs) functionality. ESDC explained that all known SSOs can now be searched for, i.e. the whole databases of known SSOs (over 750,000 objects). These SSOs have been cross-matched against three ESA missions: XMM-Newton, HST and Herschel. The functionality allows users to search for an SSO object and find images in which the SSO falls within the field of view. This functionality brings back both targeted and serendipitous observations. A description of the SSO pipeline created by the ESDC can be found in [Giordano et. al. \(2018\) A&C, 24, 97](#), and will also be given in more detail in a future paper currently being written by the ESDC. As a result of this effort, a citizen science project is being developed within the Zooniverse platform, in which the general public will help to identify where in the images the asteroids appear. Citizens will be asked to mark the start and end points of the asteroid in HST images, they will be able to visualize the pipeline predicted start and end points, and they will be asked to mark any other asteroids, which could lead to new, serendipitously observed asteroids being identified.

Finally, whilst presenting the short to mid term plans for ESASky, the AAUG was interested in the prototype to be developed in the ESASky integration version for the new IVOA protocols Object Visibility Simple Access Protocol ([ObjVisSAP](#)) and Observation Locator Table Access Protocol ([ObsLocTAP](#)), and in particular what these new protocols are and how they will benefit the community. ESDC explained that ObjVisSAP is the proposed protocol for retrieving the period in which a given object is visible as seen by a given astronomical observatory; and ObsLocTAP is the proposed protocol to discover metadata about observations for a given astronomical observatory, e.g. to view what are the near-term planned observations for any given observatory.

The AAUG expressed its satisfaction with the commitment of ESDC to ESASky and the visible results of these efforts and issued **Recommendation 2019-02-13/04**.



6. EU FP7 and H2020 projects

A presentation was given by D. Baines on the EU Horizon 2020 and FP7 large projects that are producing high-level science data products from ESA astronomy missions. The goal is to identify any data products from these projects that could be included in the relevant ESA astronomy archives, in order to preserve the data. A list of 11 projects (6 H2020 and 5 FP7) was presented. The AAUG commented that there is another large FP7 project that should be added to the list called DUSTPEDIA (**Action 2019-02-13/12**).

A discussion followed on the type of data products from these projects, for example software may also need to be preserved. A lot of work may be needed from the ESDC to check the data format, documentation and correspondence with the PIs, and it was considered that the EU projects are a good place to start and assess this. It was noted that guidelines from the AAUG regarding EU projects will be very useful. Finally, the next steps and actions were agreed. Of the 12 EU projects presented, 4 projects have already been contacted by the relevant missions (2 H2020 projects using Planck data and 2 FP7 projects using XMM-Newton data), leaving 8 projects that need to be looked at in more detail, initially by the AAUG. It was agreed that each AAUG member will take one project and investigate the type of data products from ESA missions that the project will be creating. If the data products look relevant, or if there is not enough information online, the AAUG members should advise ESDC what to ask the project PI, and if there is enough information at this point, recommend if the data should be added to any of the ESA science archives (**Action 2019-02-13/13**). ESDC will then contact the relevant project PIs (**Action 2019-02-13/14**). The AAUG thinks a clear procedure is needed for the inclusion of EU funded projects with use of ESA data into the archives (see **Recommendation 2019-02-13/05**).

7. Report to the AWG

B. Stelzer gave a brief report to the AAUG members on a recent presentation that she gave to the ESA Astronomy Working Group (AWG) summarizing the first AAUG meeting and the recommendations from the AAUG that came out of the first meeting. The long-term strategy of the archives was also presented to the AWG just beforehand. It was reported that the AWG was pleased to know that the AAUG has made important recommendations and said they wanted to bring those recommendations up one level, to the ESA Space Science Advisory Committee (SSAC), in particular the recommendation on helping early career researchers to work with data in the archive, and the recommendation on ESASky, and that it needs to be advertised more to the scientific community as a scientific tool. Feedback from the next SSAC regarding the AAUG recommendations will be given to the AAUG as soon as it is available to the ESDC.



8. Date and time of next meeting

September is preferred but there are many conferences during the first weeks of September, and most university terms start during the last weeks of September, therefore many members had clashes with dates. A doodle will be sent around the AAUG and ESDC members to fix the dates for the next meeting (**Action 2019-02-13/15**).

9. AOB

It was mentioned that the other ESA archive user groups provide contact emails in their web pages, therefore it was decided to set up an email list containing all AAUG members and to put this on the main AAUG web page (**Action 2019-02-13/16**).

RECOMMENDATIONS

The following recommendations were formulated by the AAUG:

Long-term Data Preservation (LTDP)

Recommendation 2019-02-13/01: The AAUG is impressed by the ESA Science Archives Usage Statistics. The extensive use of data from missions in the legacy phase underlines the high scientific value of the ESA missions well beyond their active mission lifetime. The AAUG welcomes the efforts of the ESDC to preserve the data of all missions and to update the archive infrastructure with the aim to guarantee the full data exploitation capability in a quickly changing technological landscape. The Long-Term Data Preservation plan is seen as an essential piece of the overall mission success, and the AAUG strongly recommends that these activities be supported with specific funding for appropriate archive development and maintenance.

Funding for archive research

Recommendation 2019-02-13/02: The AAUG welcomes and fully supports the plans of ESA to allocate funds for initiatives highlighting the use of the astronomy archives. Among the possible schemes for encouraging the visibility and the scientific exploitation of the astronomy archives the establishment of a specific visitor program with a selection through an open call is seen as a particularly efficient approach. The execution of an archive-based research project during an extended (2-3 month) stay at ESTEC or ESAC under the guidance / with the collaboration of local experts would be of benefit for both ESA and the participating external scientists. Such a program would (1) provide the ESA staff a direct access to the needs and demands of the scientific community in terms of the archive infrastructure, (2) allow ESA to incorporate external contributions to the scientific curation of the archives and (3) it would be a significant gain for participating scientists in all stages of their career.



A prize for PhD theses is considered by the AAUG as an excellent opportunity for PhD students and ESA as an organization but a less efficient way for enhancing the awareness of the potential of the ESA science archives among the scientific community.

The AAUG recommends ESA to take the necessary steps for a prompt implementation of the extended visitor program or a similar funding path. The lunch time session of the ESDC at EWASS 2019 has been identified as an ideal occasion to announce this new opportunity and its modalities. The AAUG assures its assistance in working out the procedure for the selection process.

User Survey

Recommendation 2019-02-13/03: The AAUG observed that the astronomy archives have undergone major developments in the last years, most notably the design of ESASky and the advent of two new mission archives, EHST and Gaia. The last User Survey dates 2011 and does not take account of these recent developments. The AAUG, therefore, deems it timely to carry out a new User Survey to gather the response of the scientific community to the efforts that have been undertaken by ESA to enhance the archives. The AAUG invites ESA to take the necessary steps for the implementation of such a survey in short time. The AAUG will support ESDC in defining the design of the User Survey and its channels of distribution. An announcement of this initiative at the ESDC lunchtime session at EWASS 2019 seems appropriate.

ESASky

Recommendation 2019-02-13/04: The AAUG noticed that ESASky has substantially evolved since the last AAUG meeting making it an increasingly powerful tool with unique features for the usage of astrophysical data. The AAUG highly appreciates that these developments have taken into account previous recommendations from this group.

The AAUG fully supports the further plans of ESA for enhancing the capabilities of ESASky as a universal data exploitation tool, including both the use by professional astronomers and possibilities for the public, such as citizen science projects. Activities to increase the attractiveness and usability for researchers through the provision of popular access modes such as astroquery and Jupyter notebooks are encouraged.

Inclusion of non-ESA data products / pipelines in the archives

Recommendation 2019-02-13/05: The AAUG recommends that ESA reaches an agreement with the EU ensuring that data products from EU funded projects specifically addressing research making use of ESA data are ingested into the ESA archives.