MAST Users Group Meeting

January 14-15, 2016

Survey Results

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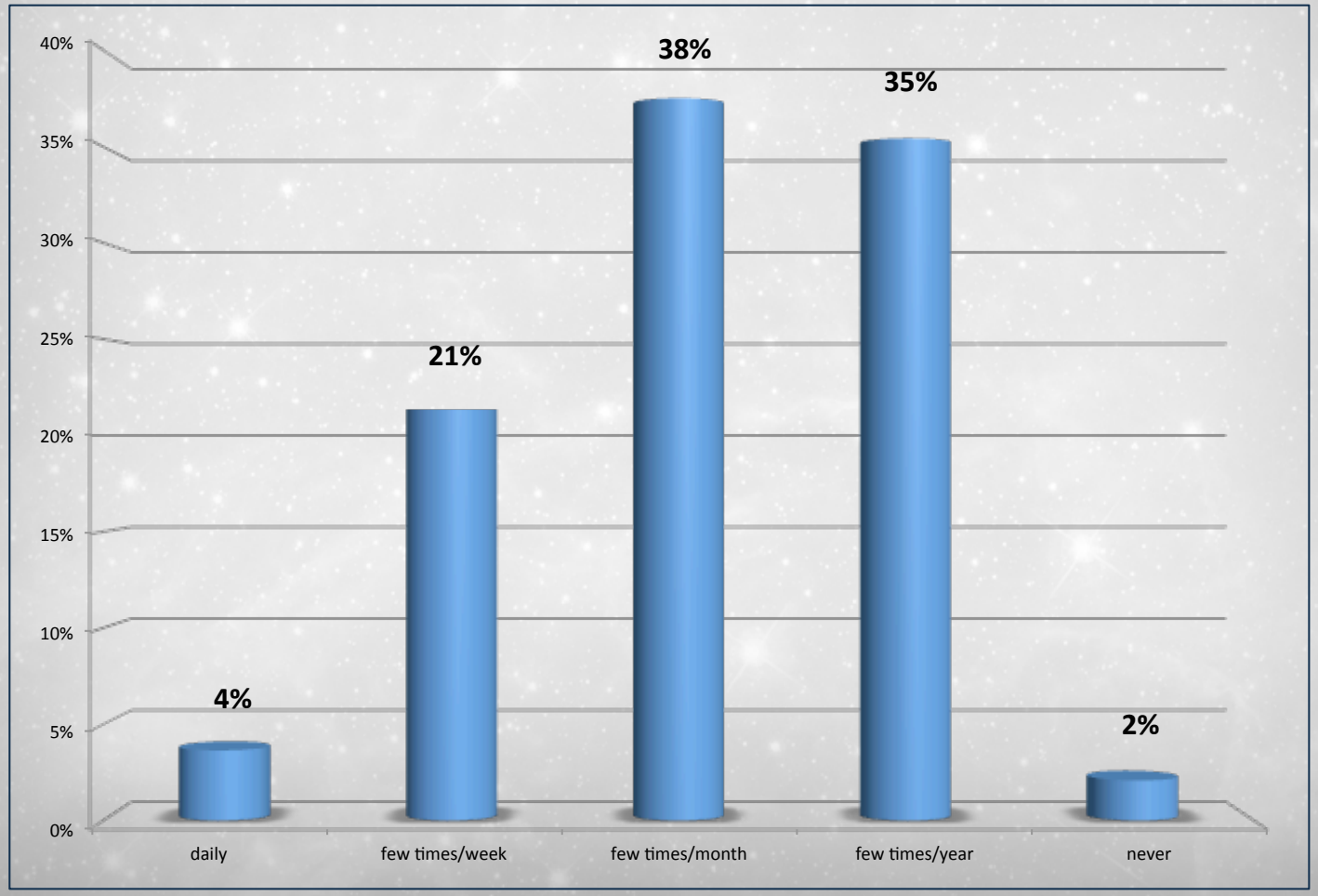
1. How often have you used MAST in the past 12 months?

63% of the respondents use MAST at least several times a month



2. Which missions or products did you use?

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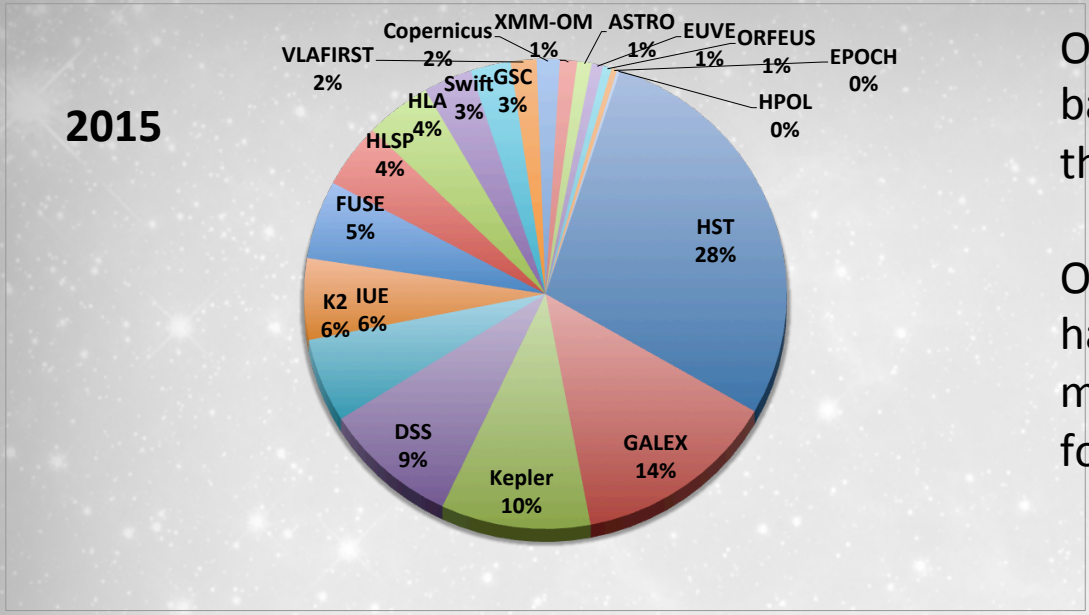
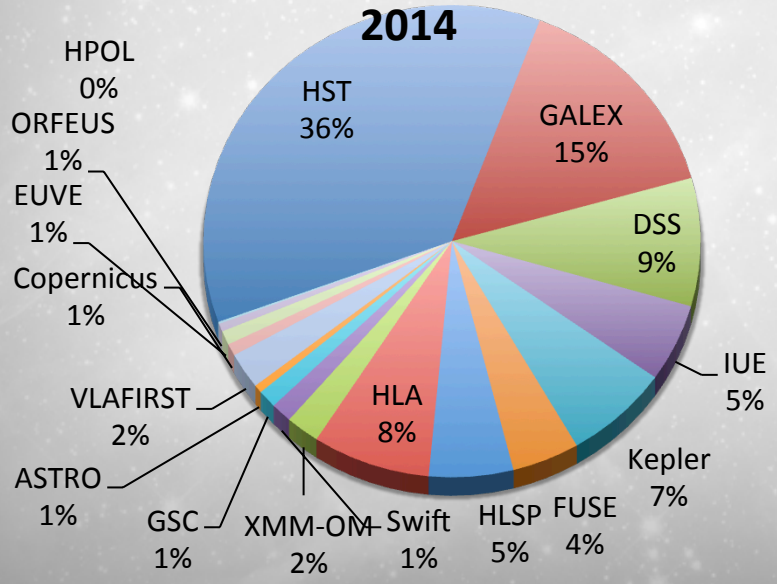
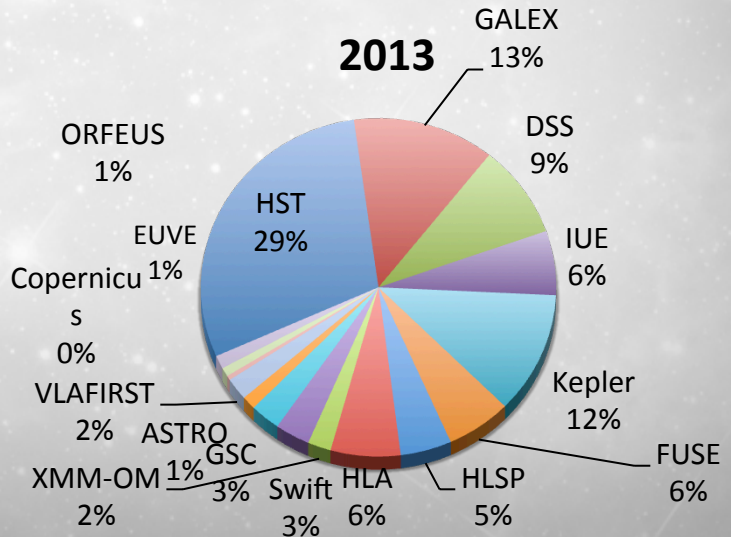


Order of usage is basically the same over the past three years

Of the respondents who had used more than 1 mission 65% had used for the same project





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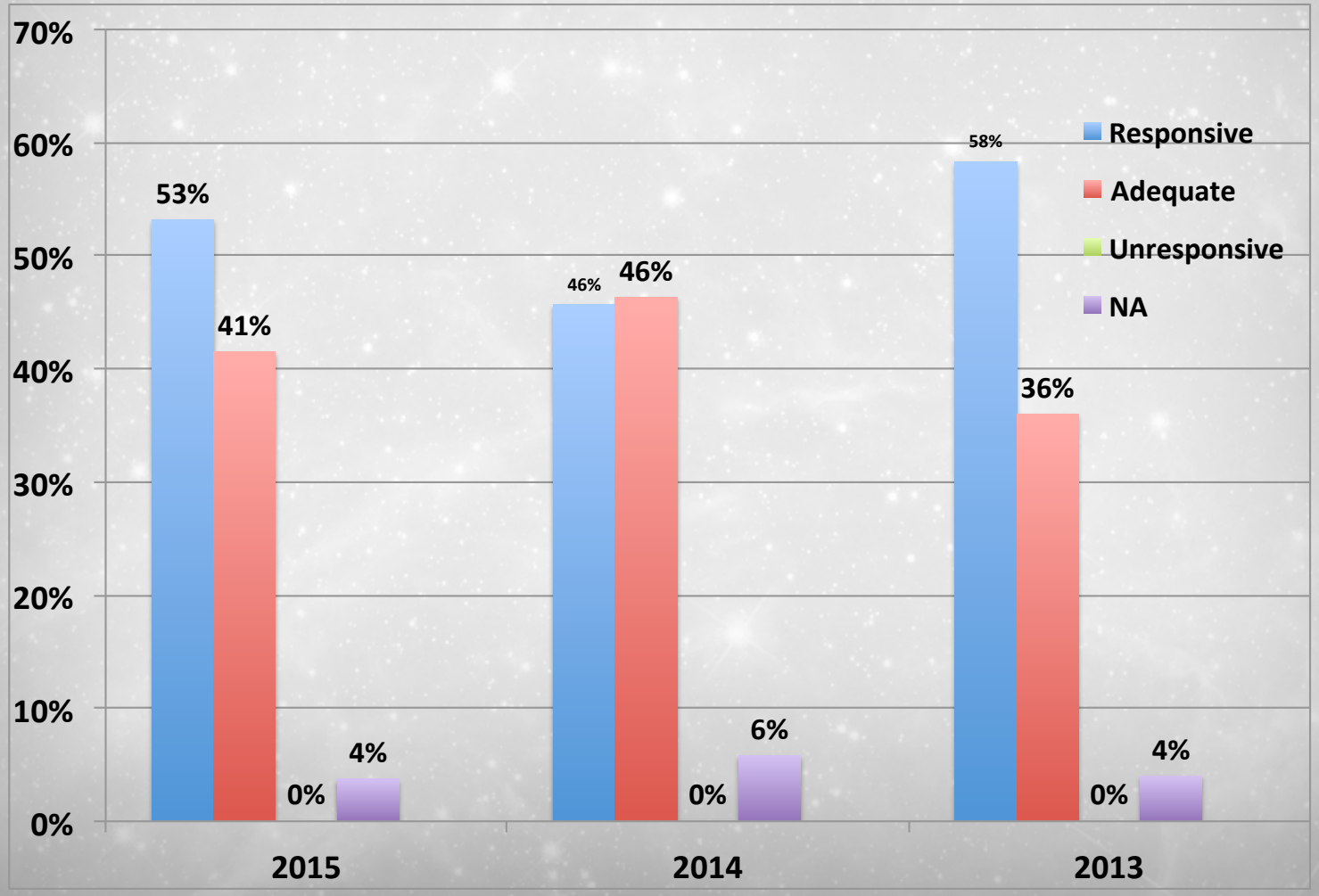
3. If you retrieved data from MAST in the last 6 months, what did you think of the performance?



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Q3 – Feedback received

- Logging and downloading changed, but I am not sure if for better, I were used to old methods, and it was a little uncomfortable for me.
- Can we please have the ability to plot spectra of the same object but obtained with different instruments on the same plot?
- It is not always easy to find the main search pages for the multi-mission data.
- It is not really a problem but it would be great if storing space could be a little bit bigger. BTW: Congrats for the great support. You helped a lot when I asked for help! Thanks!
- very slow response
- Data retrieval could be speedier if one was allowed to download all the query results at one time in one large file.... GALEX.
- Pretty happy with the portal and individual mission archives.
- Sometimes during FTP, the connection is dropped or files won't show.
- Excellent service.
- The long passwords required for MAST access are ridiculous
- Re-directs from other VAO sites were confusing. Where is Datascope??

Q3 – Feedback received (2)

- Show as well individual images from HST. I was aiming to search for magnitude variabiity of already known variable sources.
- I miss HST instrument-specific search forms in which all FITS header keywords are searchable. Specifically, COS darks are obtained at two detector voltages, but the user cannot select the one of interest.
- When I retrieved data from all HST observations in the f502n filter to study SN 1987A I found that a few data files from 14 Nov 2000 and 7 Dec 2001. They didn't show up in a search over all cameras, only when you specified WFPC2 (which made these observations).
- HST mission, it would be nicer if I can select images by dithering mode. Or maybe its already exist, just I haven't figure it out.
- The data query interface is not efficient when dealing with large amount of data. Missing query possibilities on HLSPs. HLSP Search Results page contains mostly broken links on my recent searches.
- Direct downloading of Kepler and K2 files (if they are not too big) would be very helpful.
- I had problem knowing the schema of your tables specially for the HSC catalage (the catalog from Hubble) there is only a few, not organised data available about the schema. Please add a part to your cas job tools as they have in SDSS.

Q3 – Feedback received (3)

- When downloading slightly larger programs consisting of more than about 50 files, the standard FTP interface tends to time out.
- Not used MAST till now. Plan to use it once my astrophotography gear is ready in few months.
- The calibrations of one of the HST instruments - the Cosmic Origins Spectrograph - are remarkably poor. STScI is funded to make sure that the instruments are calibrated, and STScI should be spending that money to do the calibrations properly. The poor state of the COS wavelength calibration is very disappointing.
- No I'm not facing any problem
- Dont really understand why SQL should be the way to retrieve data. There should be an easier way forward. And by implementing one you could revolutionize the way data could be used in a more straightforward sense!!
- K2 could use individual time stamps - every file gets the same start time, which isn't helpeful
- No problems.
- I had installation/dependency problems when installing gPhoton. It would be nice to have access to the time-tag GALEX database online.
- It would be positive to have the possibility to perform cross-correlations of the entire archive with (user-supplied) lists of sources.

Q3 – Feedback received (4)

- Data requests can be very slow to deliver - several hours per gigabyte of HST data requested. This is very frustrating when a quick analysis is needed (e.g., checking whether an observation was successful when planning more observations).

- Sometimes there are long delays before getting the requested data, sometimes it's very fast. But, there's nothing that I've found that gives me a reliable indication of how long it will take.

- Something should be done about the FUSE archive. One cannot download a spectrum that combines all the exposures, and one must combine them using software that does not work. I cannot get FUSE_REGISTER to work on my machine, and have spent a lot of time trying to solve the problem. There is nobody at MAST that has been able to help me on the FUSE problem, and the person who wrote the FUSE IDL procedures does not work for NASA any more and I have not been able to reach him for help. I resort to manually coadding the spectra but cannot include the minor shifts in wavelength between exposures as doing it by eye is not possible. It would be great if the FUSE archive was upgraded to include the coadding of the individual exposures (e.g. *2ALif*) or if an online tool was made available. I recall that the reason the coadded spectrum was not made available was that the FUSE project wanted researchers to inspect the individual exposures in order to omit the bad ones. But if reliable software for doing this is not available the result is that the best FUSE spectra are not analyzed, and models (or abundances) are based upon spectra that are no better than the *all* spectra that were originally provided.

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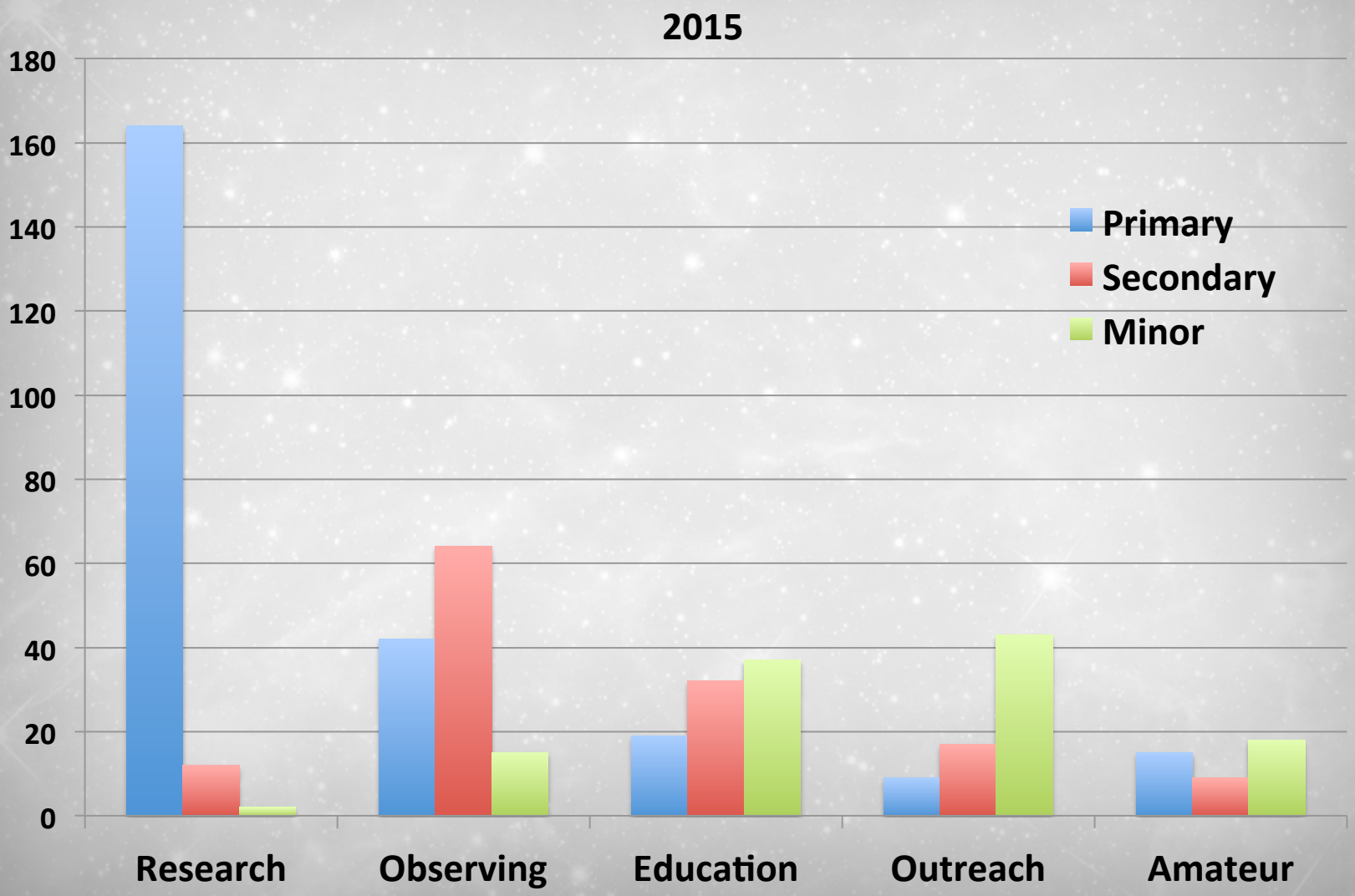
4. Which activities do you use MAST for?



Q4 – Feedback received:

- I had problem knowing the schema of your tables specially for the HSC catalage (the catalog from Hubble) there is only a few, not organised data available about the schema. Please add a part to your cas job tools as they have in SDSS.

- Not used MAST till now. Plan to use it once my astrophotography gear is ready in few months.

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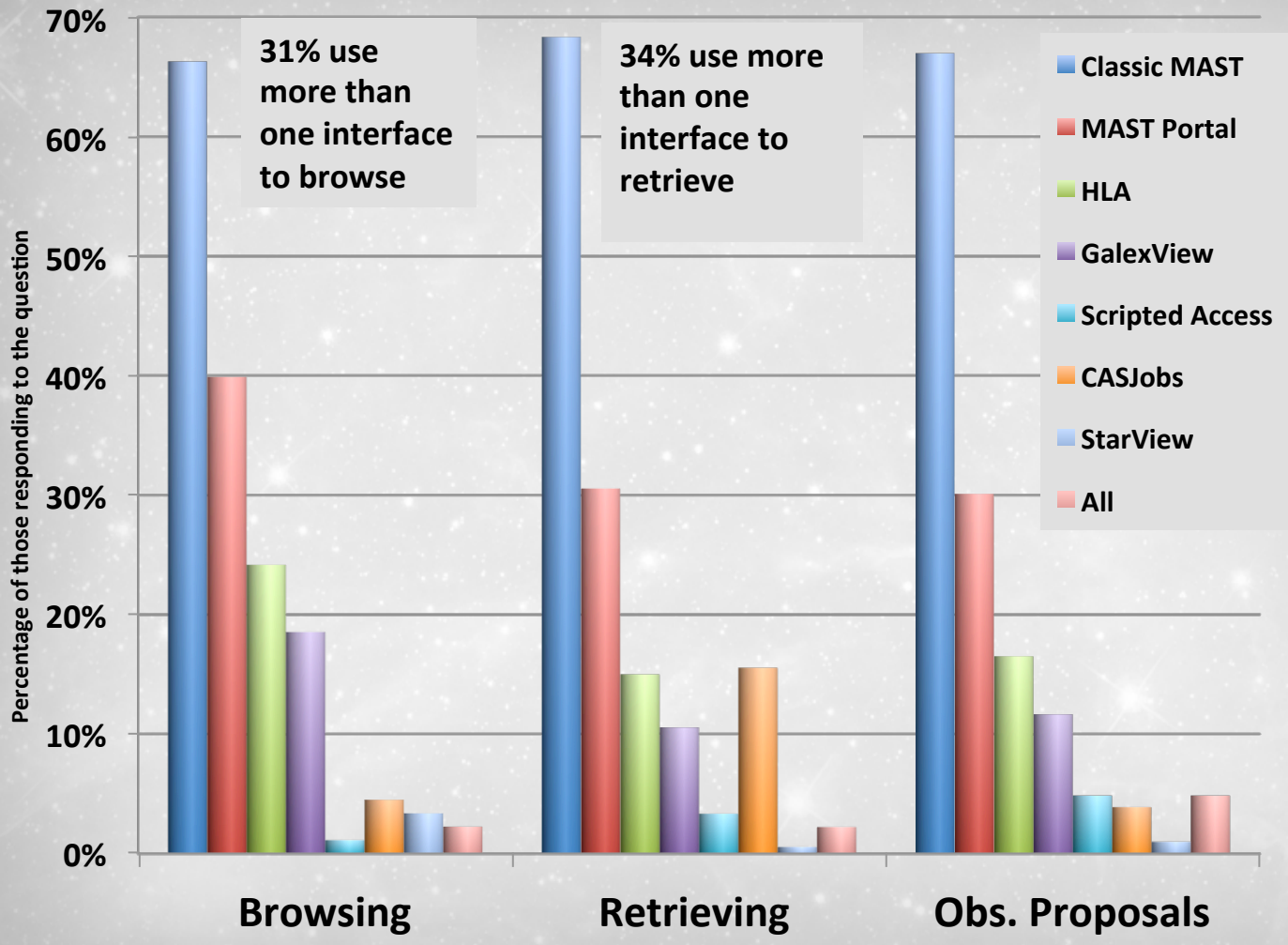
5. Which MAST interfaces do you commonly use



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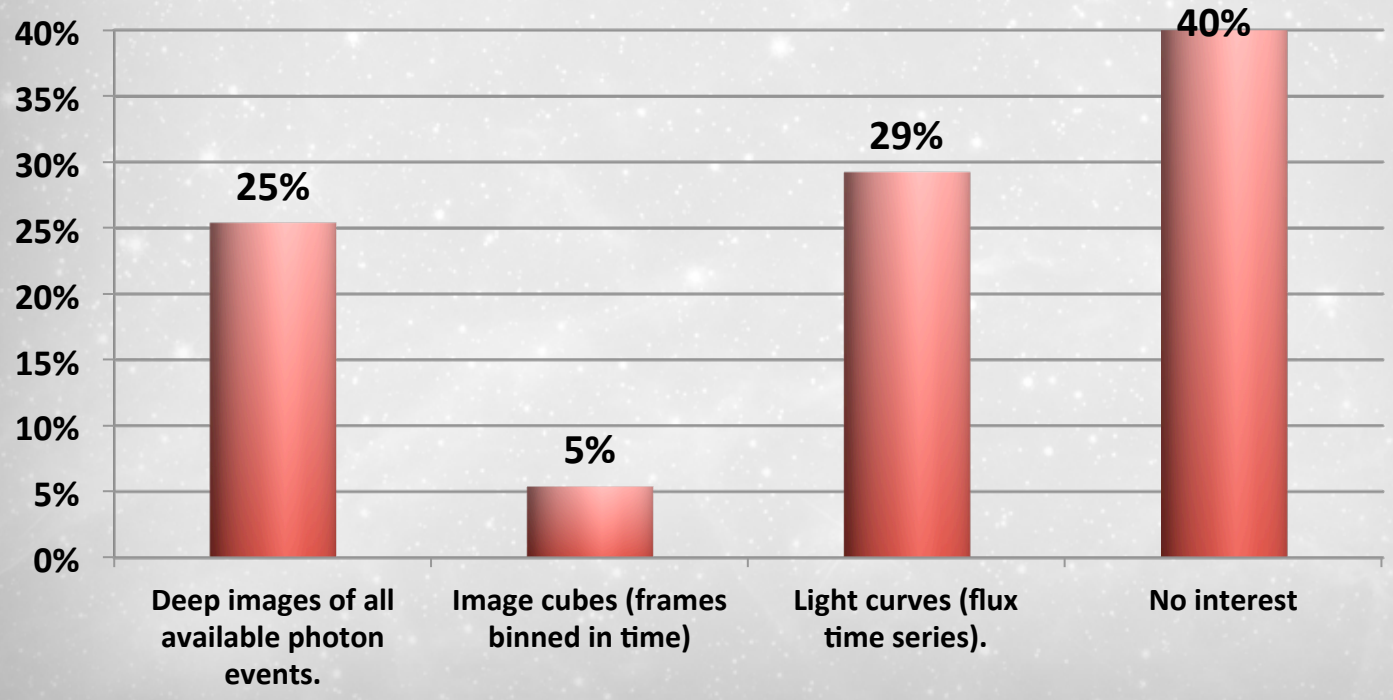
Q5 - Feedback

- occasional kepler lightcurve (instead of data)
- Looking up objects, looking for others' work/publications/proposals on objects
- Obtaining data
- Preparing HST Cy23 Phase II (Classic MAST)
- I have used CASjobs to run SQL data queries followed by retrieval.
- I generally reach MAST information through SIMBAD or VizieR queries.
- I assumed that the ftp downloads of data is under Classic MAST.

6 – Have you used the gPhoton software? What current capability is of interest

- Eight respondents have used gPhoton
- 130 responded to current capability of interest
- 77 responded to favorite potential new feature



Q6 – Feedback on gPhoton

- I didn't knew that something like gPython exist, I think I will look at it in free time.
- As the questionnaire won't let me select two, I will add that 'Capability to submit jobs to run at STScI and receive notification when complete' would also be incredibly useful
- not familiar with gPhoton
- MAST should maximize the sensitivity and impact of GALEX with forced photometry based on deeper optical imaging (e.g. DiPompeo et al. 2015, MNRAS, 452 3124).
- An online GUI would also help a lot. I had problems installing gPhoton.

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7 –Have you retrieved or used any of the community-contributed K2 light curves from MAST?

24 respondents said they had used the K2 HLSP (12% of total respondents)

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8– What is one feature or area you would like to see added or improved for MAST's support of K2 or Kepler data?

- The current system works fine.
- Links to SIMBAD, etc outside data
- Simplified downloading process
- light curves from SC data
- I would like to see more host star information in the Kepler Discoveries table, such as system radial velocity, proper motions, and visual extiction.
- I will use these data in the future...
- A way of comparing all the light curves you have on the same target. Fourier Transforms of the data could also be quite helpful.
- Paper references next to datasets.
- If not available jet, it would be interesting to obtain a combined light curve with all the observations of a given source
- Stellar mass and radii for K2 targets, as mentioned.

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8– What is one feature or area you would like to see added or improved for MAST's support of K2 or Kepler data? (2)

- ability to build light curve request (not just simple plots) from K2 data, run on STScI machines, return results
- ASCII light curves as well as FITS.
- It would be useful to download directly smaller amount of files.
- It all works very well.
- Individual info about the data files. I was looking at short cadence data, but it gave the start time, Ra and Dec of the long cadence data 9 which started earlier)
- More flexible search criteria, such as integrating Simbad object types or spectral types, etc.
- Making it clearer which data reduction and properties (e.g. pixel mask size) is available for K2 targets
- More online light curves. Online light curves for SC data. Ability to download ascii light curves that are displayed via screen plots for quick-look purposes.
- Images showing the aperture used for each light curve

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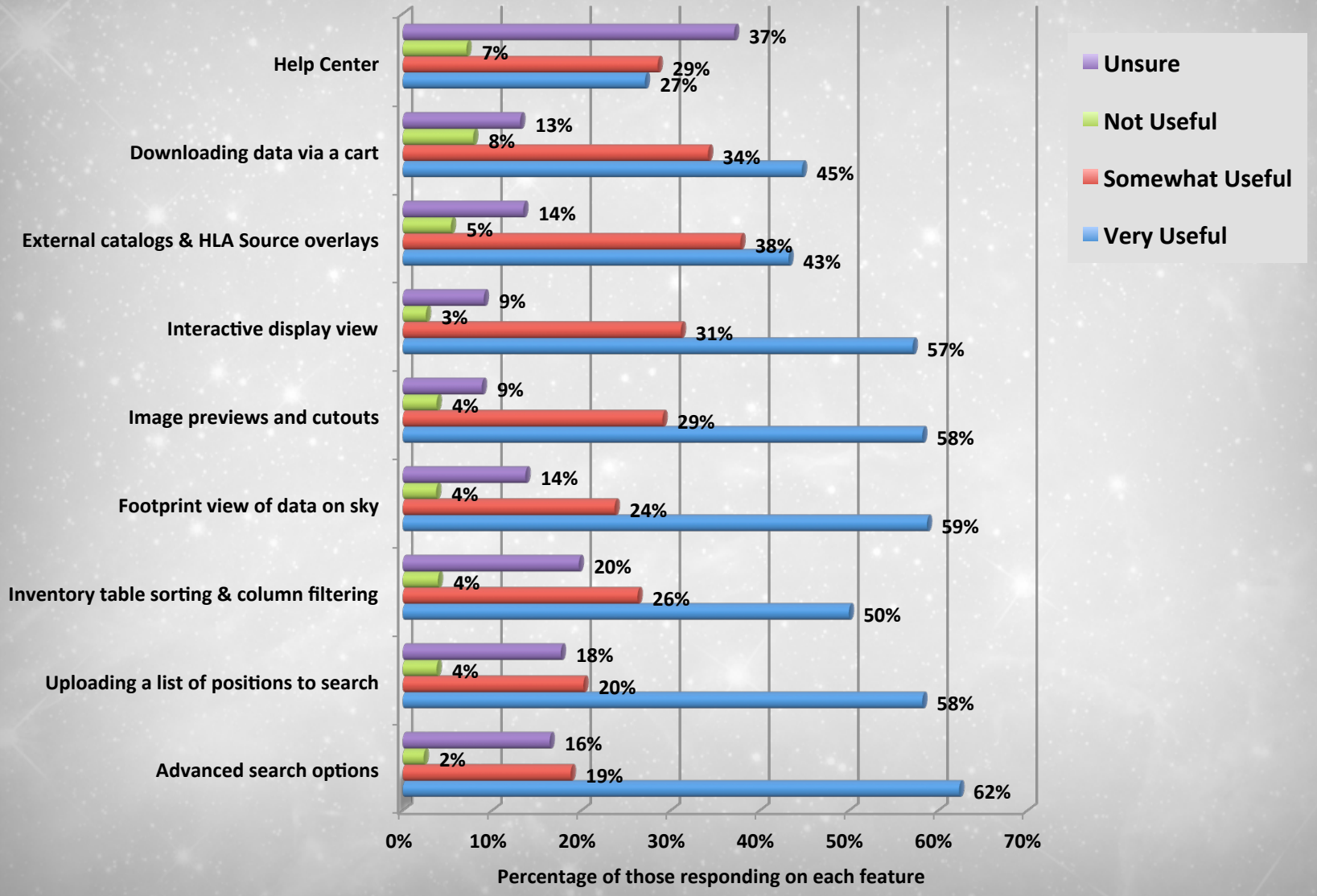
9 – Rate usefulness of the following HLA tools



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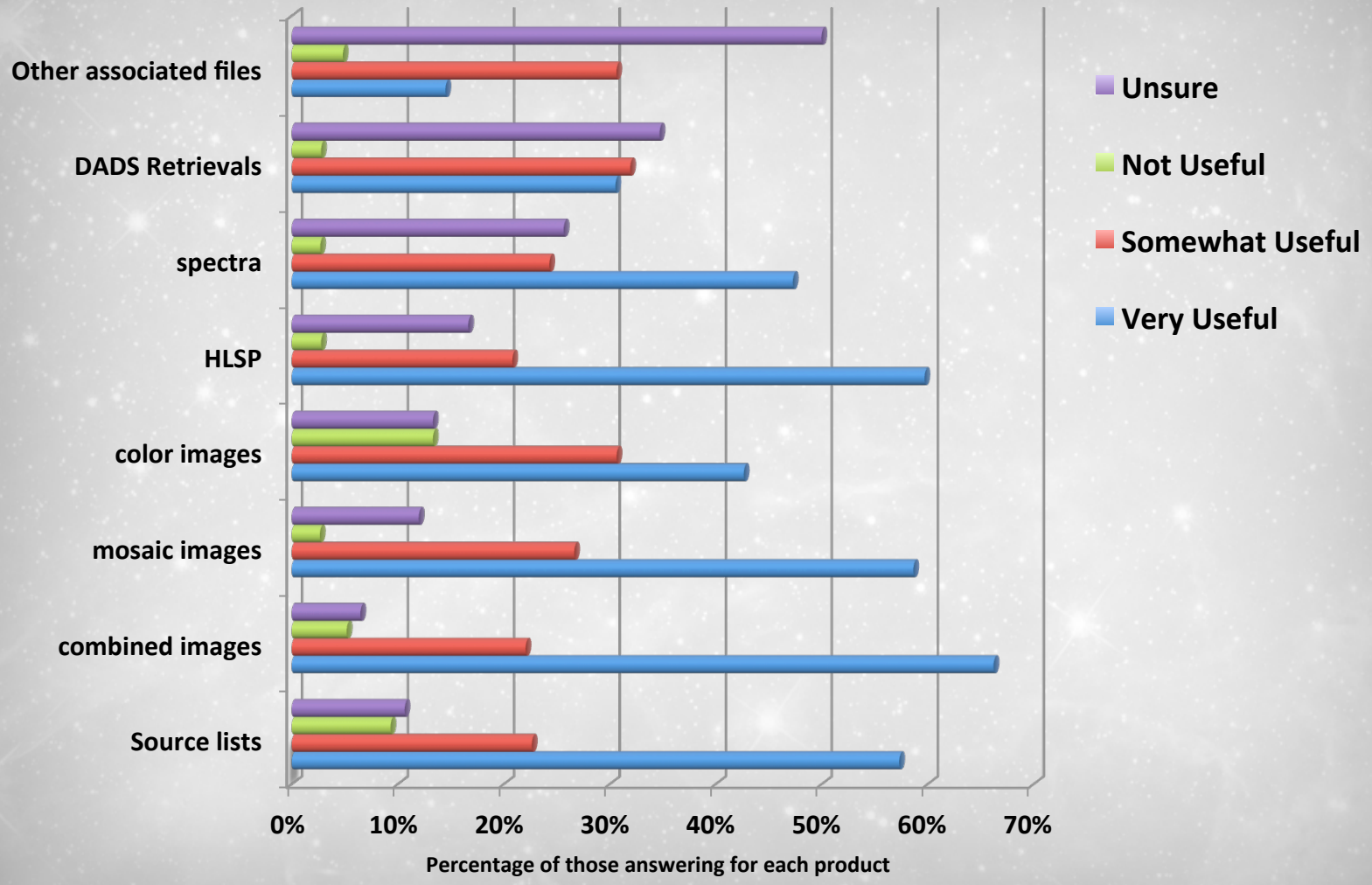
10 – Rate usefulness of the following HLA data products



HLA - Feedback

- Marked unsure for capabilities I haven't yet used. Am planning to use HSC but haven't yet.
- I have loads of trouble getting the cart to give flt or flc images. I usually download the table cull the ids and submit to dads with the html call.
- All images of a given field *must* be coadded.
- Why is it so difficult to look for planetary stuff? When entering the name of a planet in the target name field it says that there are no such targets ???
- The header should be fully comma-delimited in the Level 8 TXT file.
- Usually I have to re-reduce the data at specific pixel spatial/spectral scale that matched with my need and so what MAST shows can be at the quick-look level.

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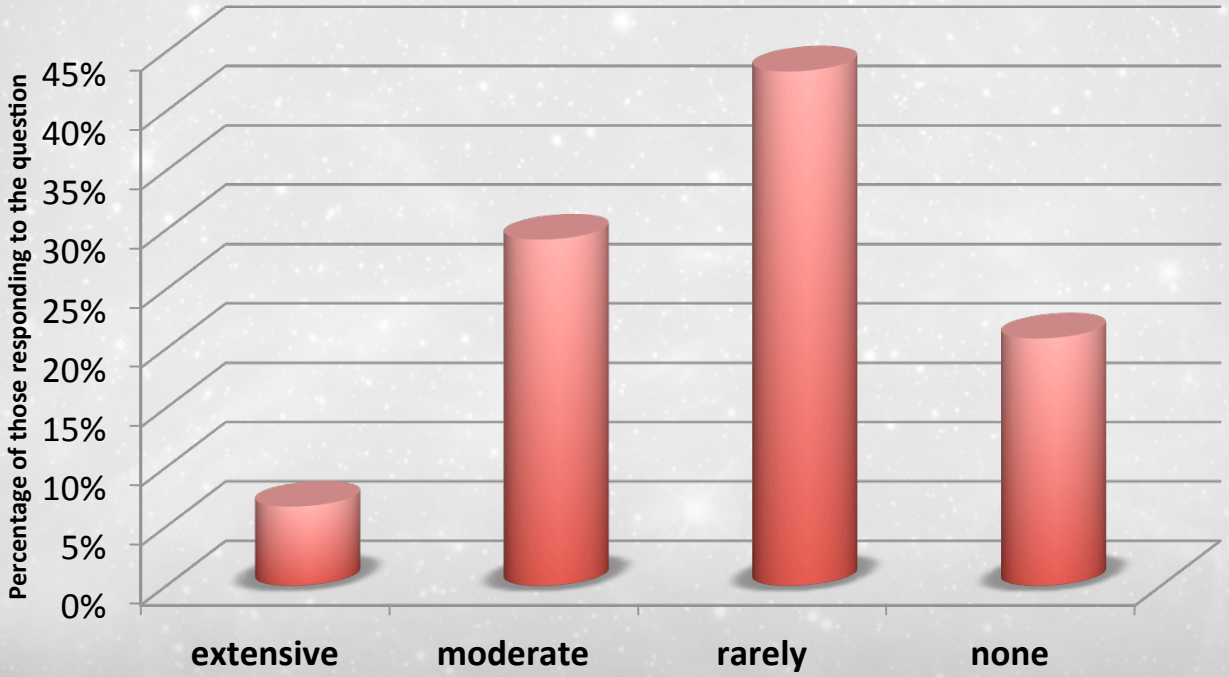
10 – Have you used the Hubble Source Catalog?

24% of those who answered the question have used the HSC

– How frequently do you think you will use the HSC?



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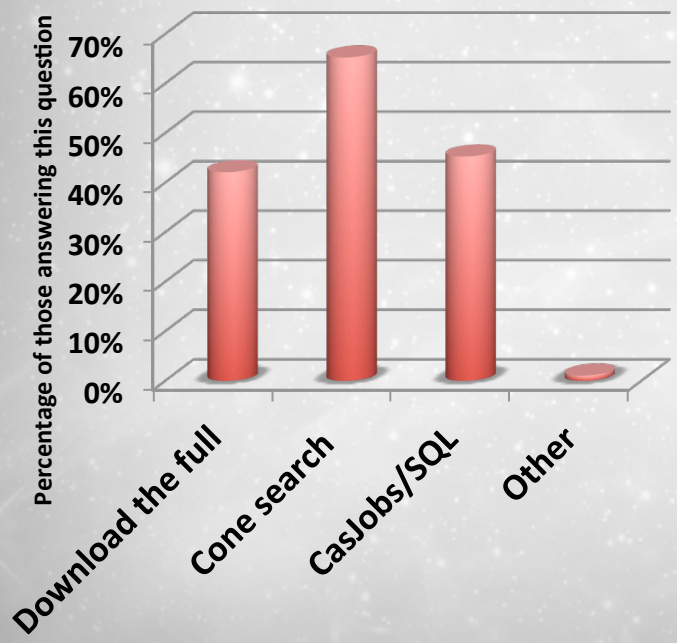
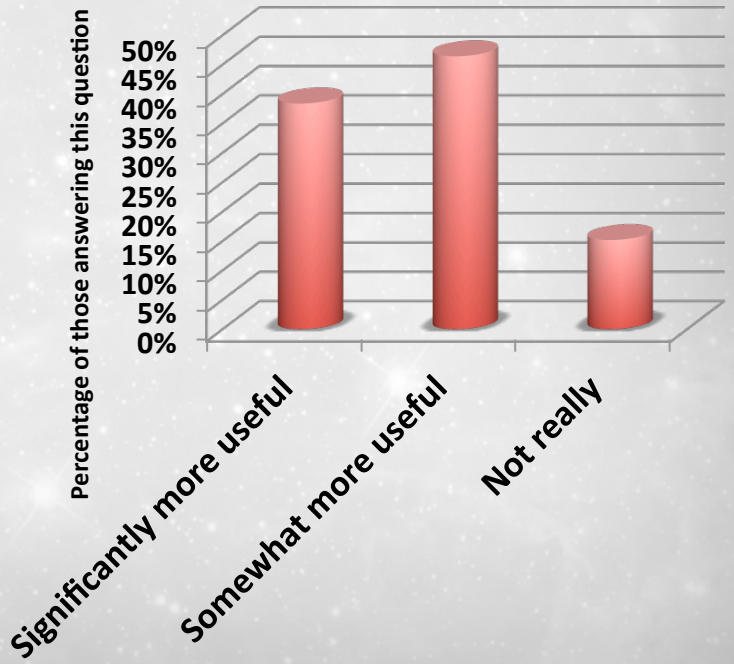
What modes might you want to use in interacting with the HSC?



Will incorporation of links to HST spectroscopy make the HSC more useful for your research?



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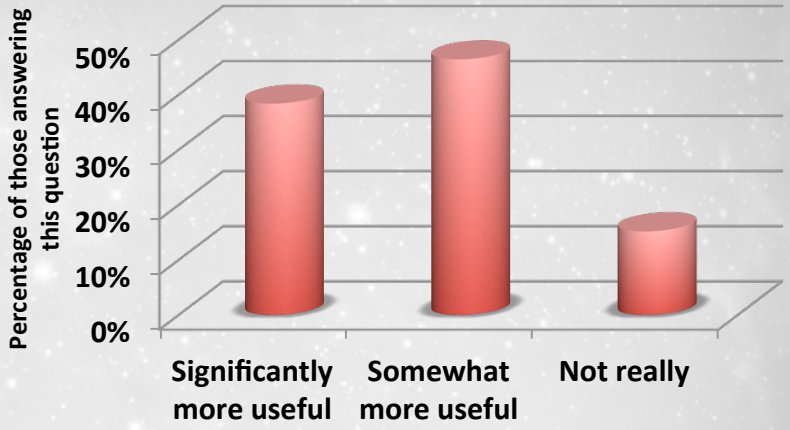
12 – Have you used the MAST Data Discovery Portal in the past year?

- 34% of those who answered the question have used the DDP

- Describe your experience using the new design and layout



- Have you used the HSC within the DPP either via direct search or cross-matching?

- 18% of those who answered the question have used the HSC within the DDP

- If you have used the HSC have you tried overlaying HST images onto the AstroView sky viewer?

- 15% of those who answered the question have tried

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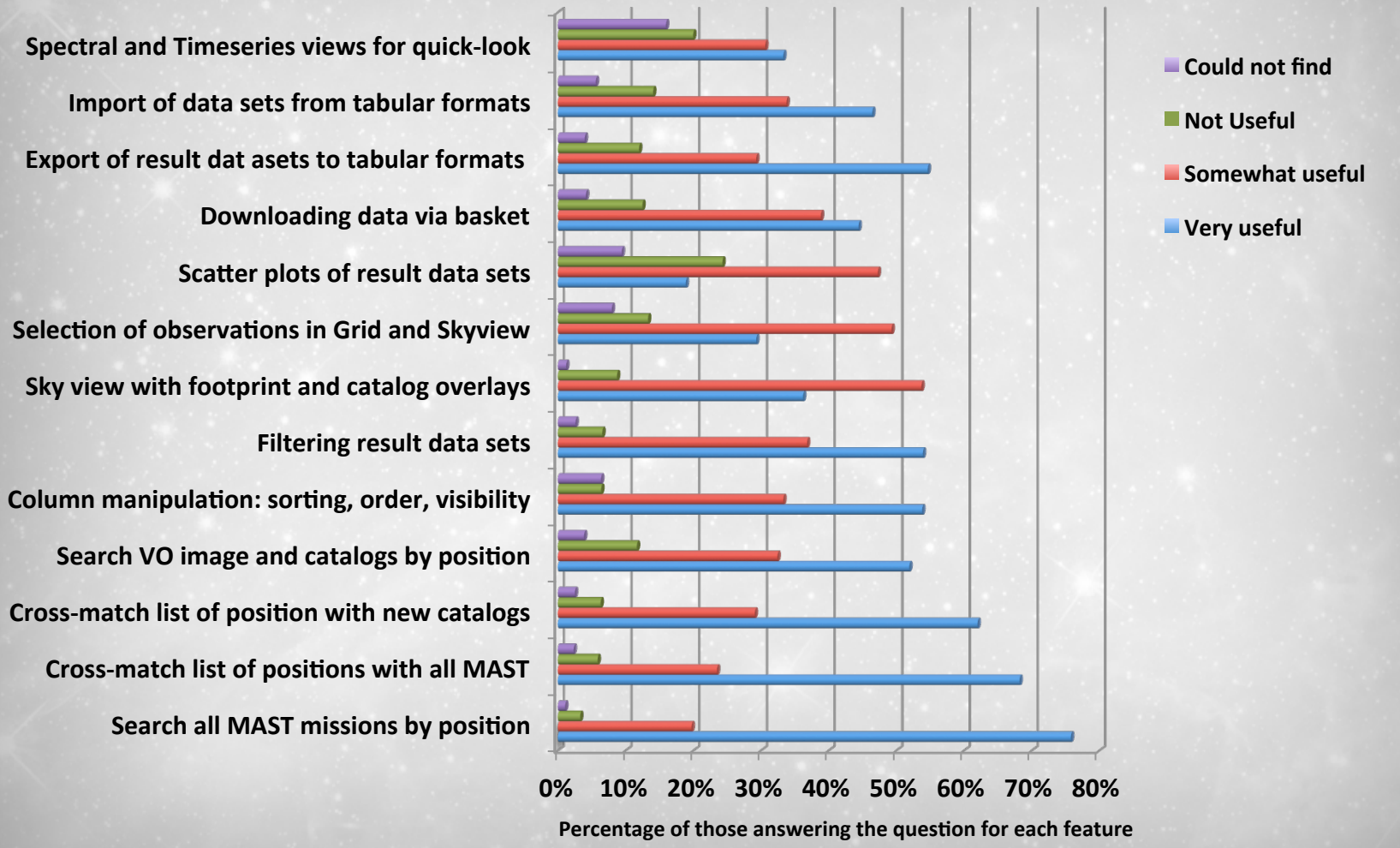
13 – Please rate the usefulness of these recent Portal features?



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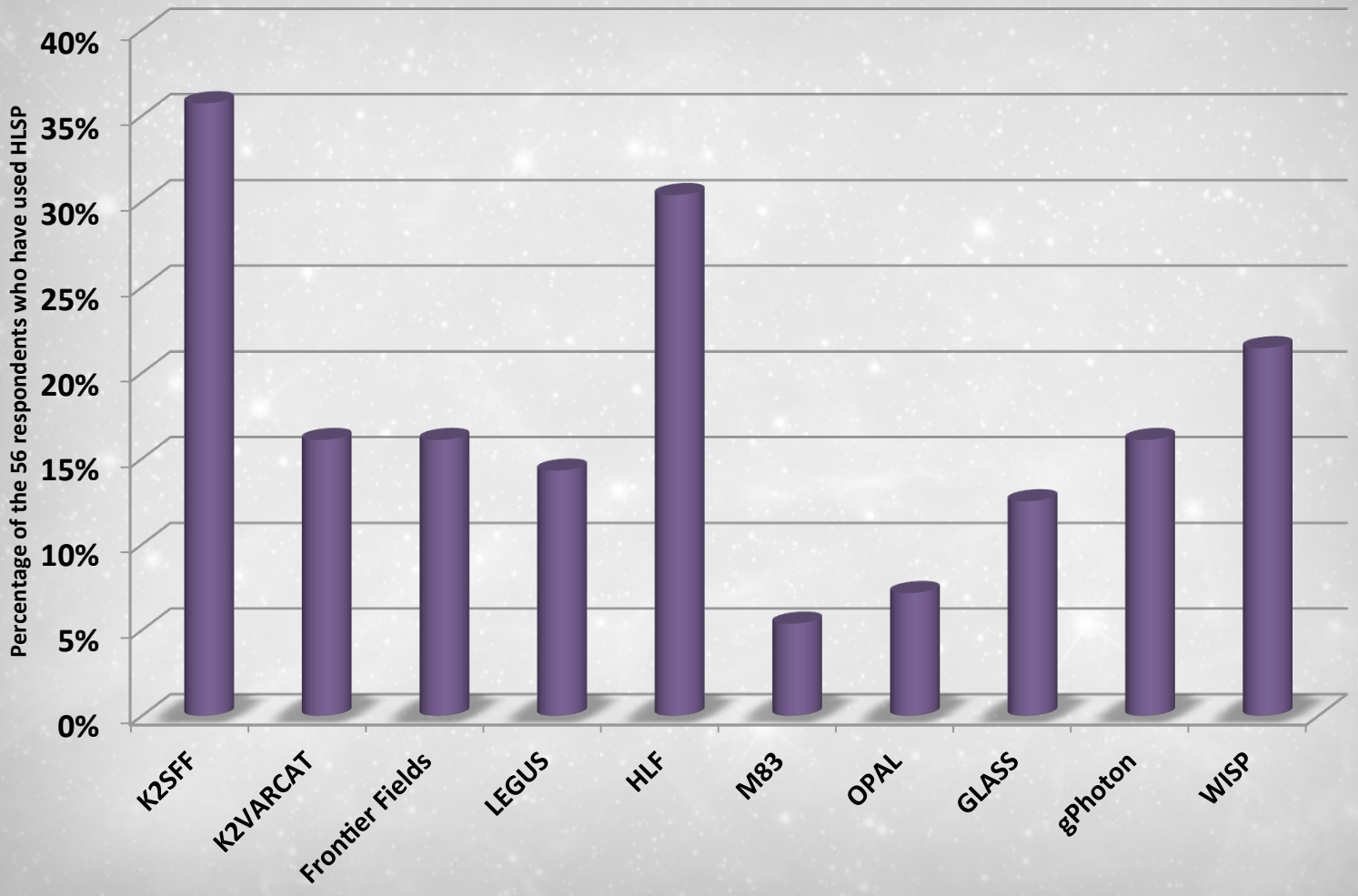
14 – Have you retrieved or used any of these HLSPs?



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15 – Do you have any data you are thinking about contributing to MAST as an HLSP?

26 responded yes

-- HLSP Feedback

- I'm making an aldinlite viewer and bokeh based display. Where should it be hosted? I was planning on github pages.
- How much lead time is needed and how much control is there over presentation and delivery.
- If I ever can finish it, possibly COS combined (and properly aligned) spectra and a line identification list
- Amount of time to make spent converting the data to the required format.
- Quality control
- OPAL spectral data would be significant, if I could retrieve
- At some point I would have complementary MUSE data to WISP and CANDELS fields, but I am not sure those are adequate
- None yet, it would be done as part of the LEGUS project.

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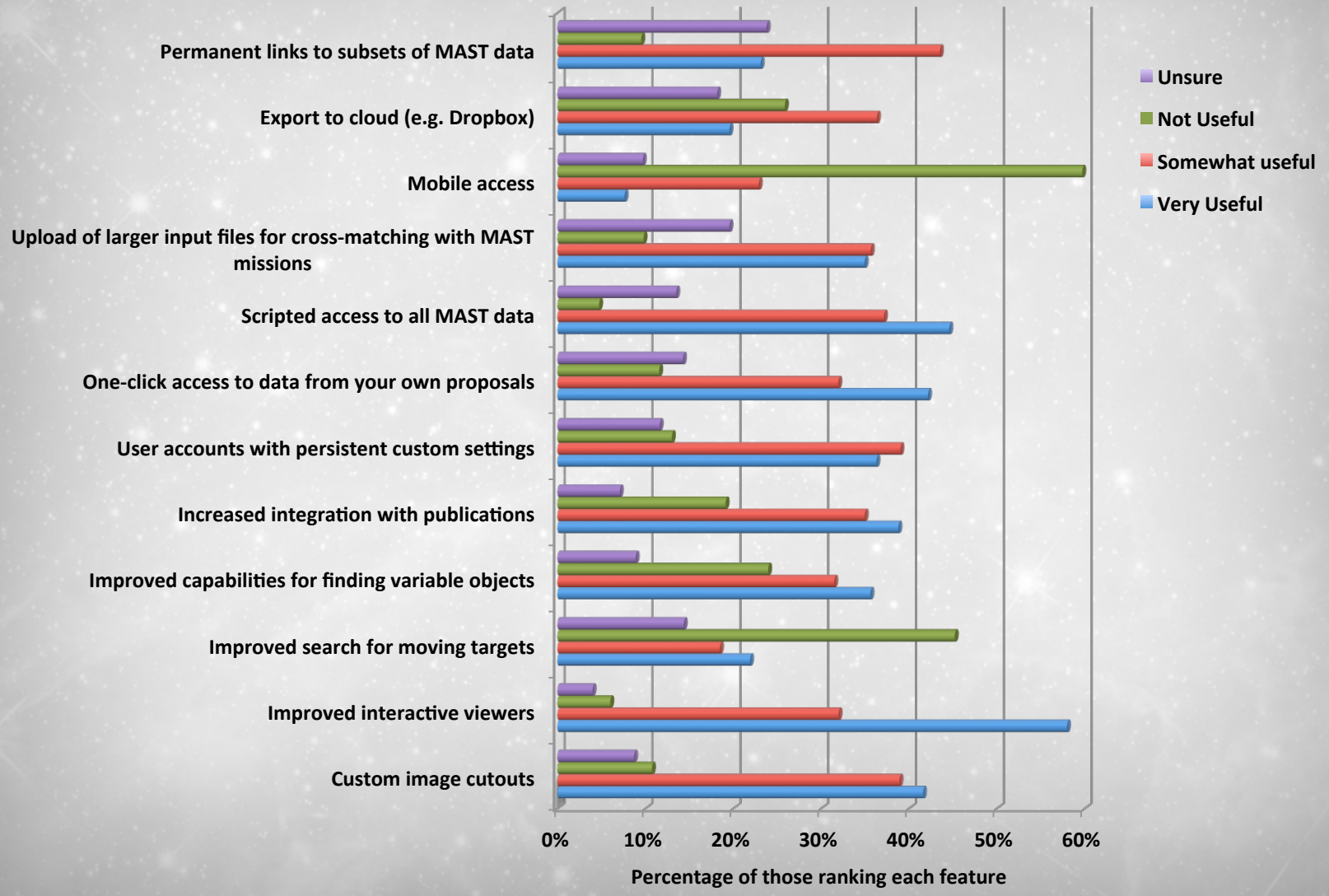
16 – How important are the following planned features in terms of being useful for your own work?



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Feedback on future options

- light curve viewer might be useful if the archive could cope with objects observed with different missions
- Scripted access to all MAST data => Yes, please!! Export data to cloud (e.g., Dropbox, other) => Great idea!
- Associating objects with publications would be hugely beneficial. Perhaps this could be aided by users inputting their own publications to said objects in a comment section.
- Unsure about this as I haven't used MAST as extensively in the past 12 months as in the previous years. There are likely lots of tools already that I am not familiar with.
- It is more productive (for science) to enhance the scientific data, combining images taken in different visits, than offering the same science product in a variety of ways.
- Build all the above. :-)
- I don't know if it's the right place to say that, but a tool like Casjob is really powerful but also painful to use because there in no description of the different tables and their content (or this description is well hidden somewhere).
- I use the scripted access all the time. It's by far my favourite part of MAST. You should advertise it more.

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Feedback on future options (2)

- I would like to see rsync as a download option instead of the ancient ftp interface. This would be very useful and even more so with some minor tweaks to how files and directories are generated for download. The idea is to be able to 1) generate and submit a query, 2) wait for notification of completion, and 3) run a script (without needing to edit) to download everything that's now available from the request(s).

- The more stellar properties that can be added the better. I often have to go to vsx or simbad to look those up. Thank you for all you do though, it is appreciated!

- Adding and integrating large datasets that cover large regions of the sky would be the most useful addition to MAST from my perspective, e.g. PanSTARRs. The problem with using HST data for general project is that is taken in so many ways and it covers such a small fraction of the sky.

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What sort of files or information is key to ensuring a long-term legacy of the Kepler data?

- periodicity search functions
- Associating KOIs/Planets with publications.
- easy to access and use
- All of the above Updated stellar parameters and references
- One thinks of all those glass plates from 19th century observations which have been crucial in establishing long chronology baselines. Preservation of the raw data and technical information about the instruments that collected it would seem to be key to its future usefulness.
- Raw & processed data, with clear documentation (or even better release of pipeline software).
- Documentation of the Code and Release of the Code. As new stellar information is available, you need flexible ways to filter data on that information for download.
- Full images, target pixel files, calibration files and light curves

What sort of files or information is key to ensuring a long-term legacy of the Kepler data? (2)

- Documentation. It needs to be clear, concise and complete. Tool usage should be documented in detail with examples if possible.
- Analysis of blended signals and contamination
- exobiology data in respect of astrochemistry is important
- fits file light curves for all targets
- Complete data release notes with flagged periods of poor data. Links to publications using or citing the datasets.
- Definitely, ascii or FITS files with light curves.
- I am unfamiliar with the Kepler data products, but I would urge MAST generally to save whatever the community believes could be necessary or useful for future science. The MAST archive is one of the primary astrophysical resources and the ability for any individual at any institution (large/small; primarily undergraduate serving etc.) to access data and derive new science results from old data is what sets this facility apart from others in the field at these wavelengths.

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Share features or tools to enhance ability to use archive for JWST, TESS, Gaia, PanSTARRS

- Time series tools for JWST exoplanet science would be very useful.
- handle coronagraphic data properly
- light curve display
- PanSTARRS should be matched to GALEX in the UV and WISE in the mid-IR
- . I reach most of this data through SIMBAD; pushing complete stellar data to SIMBAD (such as mKp, for instance) would be a timesaver.
- Periodograms and Fourier Transforms (with the ability to prewhiten by the largest peaks.) Ability to fold on interesting periods.
- Would be interested in JWST, Gaia and PansStars archive- format of the existing mission data is convenient and easy to work with

Share features or tools to enhance ability to use archive for JWST, TESS, Gaia, PanSTARRS (2)

- Connect all these catalogs.
- Persistence for search results. Rapid response. Place to store intermediate results. Visualization tools.
- For Gaia + PanSTARRS, a casjob-like interface would be great to have.
- Co-added pixel imaging for Pan-STARRS Integrated and linked astrometric information for Gaia
- Incorporate more of the tools developed at IRSA. Their data, catalog, and image servers are generally much more intuitive & useful than MAST is. Half the time when I download what I thought was a simple image in fits format, like I saw in the preview, it's got some weirdness in scaling or warped coords that make it unusable. That never happens with the data I get from IRSA
- target that meet my criteria in the search results.

Share features or tools to enhance ability to use archive for JWST, TESS, Gaia, PanSTARRS (3)

- Cross-link targets in search from all missions so one can see all available data. Give the option to email yourself details or a permanent link to a dataset.
- Cross-matching for surveys.
- This is really a comment about the MAST portal. It is cumbersome to search for data from a particular filter pair on a particular instrument (for example, HST ACS data in F606W and F814W bands). It is also not obvious how to search by program number (or perhaps this isn't an option). I'm not always sure if I have *all* the data on a particular
- easy scripting within astropy, e.g. vo
- Not sure, but glad these data sets will be available.
- A spectrum viewer/GUI for JWST data I'm sure is already in the works/ implemented. Some ability to do a basic background subtraction and then a line profile fit online might also be useful

General Feed back

- enable plotting and over plotting of data for same object from different missions.
- Thank you for your diligent work!
- Mast portal api on github or some version control
- allow short passwords so we can remember what they are and don't make us change them constantly!
- You are doing an outstanding job.
- Maintain legacy support when upgrading.
- HST instrument-specific search forms with fully searchable header information.

General Feed back (2)

- There is tension between flexibility and usability. The Portal may be pushing too hard towards flexibility, with too many features that make it excessively complex and sometimes hard to use. Sometimes when I go to the Portal I am overwhelmed by the number of choices and have a hard time figuring out how to do something simple.

- Simplify your interfaces. The search forms are horrible.

- A very stripped down version of the interface would be useful for those who have very specific needs. The multicatalog searches and current interface can be very slow and cumbersome. But otherwise you're all doing a spectacular job and a truly vital service. Thank you all and best wishes for the new year.

- Can this portal also have data from Fermi, Chandra and NuStar?

General Feed back (3)

- I strongly suggest to enhance the scientific data, combining images taken in different visits.

- MAST continues to build excellent web desktop products. GalexView, HLA and now the MAST Portal are excellent examples of tools that are fast, easy to use and feature rich. I look forward to a single integrated cross-mission search tool that combines all the best features into a single application that is mobile ready (android user). Onward and upward MAST !!! Thank you.

- I love the classic search form. Thank you so much for maintaining a wonderful archive. For new users a one page 'end all be all' introduction to MAST highlighting the most major features would be very very useful (i.e. I had never heard of the HSC before this survey). Thank you!

- Faster data download please!

- i am very happy with the job you currently do

General Feed back (4)

- Having some means of sftp access to archive.stsci.edu would be excellent. Currently, all three institutions I have access to (grad, postdoc1, postdoc2) have installed 'gateway machines' such that a multihop ssh protocol is needed for external access. Two of the three institutions do not have ftp allowed, only sftp. Since I cannot use dads to deliver via ssh, I must use the staging area. Then I must use the one machine that allows ftp access to download the data, and finally upload the data to whichever machine in needs to live on.

- contextual help.

- Is there a way to automatically link proprietary HST data to user/PI ID? (Should be.) This looks like this still needs human intervention, making for a slower process.