PS1 News

This page describes recent changes and additions to the PS1 interfaces, services, and documentation.

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2024.02.02: Search for moving targets in PS1 images and catalogs

A new Python Jupyter notebook has been written to search PS1 images and catalogs that have observations of a moving solar system target. In about one minute, the notebook finds all PS1 observations that included a particular target and extracts cutout images and catalog measurements. See the How to search for moving targets in PS1 images and catalogs page for details.

2022.06.30: PS1 astrometry updated using Gaia EDR3

The astrometry in PS1 has been updated using Gaia EDR3. Systematic astrometric distortions and color terms (from differential chromatic aberration) are greatly reduced. It is still possible to access the old positions, but the new astrometry is preferred for most purposes. See PS1 Astrometry Correction Using Gaia EDR3 for more details.

2021.11.04: Bulk image download Python script

A Python script that does faster bulk cutout image downloads from a list of RA and Dec positions has been added to the PS1 Image Cutout Service page.

2020.06.29: PS1 VO Table Access Protocol information added

PS1 has a Virtual Observatory-compatible Table Access Protocol (TAP) interface for the PS1 database. It provides an alternative to CasJobs for SQL queries of the database. See the How to retrieve and use PS1 data page for additional information, including a link to a Python Jupyter notebook.

2020.06.29: Missing data sky regions updated

The PS1 DR2 caveats page's description of sky regions with missing data in the PS1 database has been updated. Currently about 4.9 square degrees (only 0.016%) of the sky has missing objects. That is substantially reduced from the missing area at the time of the DR2 release.

2019.12.11: Easy cross-match using the MAST catalogs API

A new web page, Easy cross-match with PS1 using a list of source positions, shows that it is very simple to cross-match a list of positions to the PS1 catalog using a single curl command or a simple Python script.

2019.02.25: ForcedMeanObject and ForcedMeanLensing tables available

The ForcedMeanObject, ForcedMeanLensing, and ForcedMeanObjectView tables are now available in the DR2 database.

2019.01.28: PS1 Data Release 2

The PanSTARRS Data Release 2 (DR2) was opened to the public on 2019 January 28. The release includes a new database with the multi-epoch photometry and astrometry (typically there are 60 epochs of observation over 3 years from the 5 PS1 filters). It also includes access to the single-epoch "warp" images. The mean and stack measurements are still available, and the DR1 catalog remains available as well for ongoing research projects. The 150 terabyte database together with 1.5 petabytes of images comprise the largest single astronomical survey data release to date (to our knowledge).

There are multiple new interfaces available for the catalogs and images. The new MAST PS1 user interface is a simple web form that provides fast access to the data along with numerous customization options. The associated MAST API enables straightforward programmatic access from languages such as Python.

The images are available via both the PS1 Image Cutout Service and the MAST Portal. Both services are also accessible via programmatic interfaces.

Finally, the MAST CasJobs interface provides direct SQL query access to the very large database. We have also provided a new Python Jupyter notebook that shows how to execute CasJobs queries from Python.

See How to retrieve and use PS1 data for more information and for links to Python. Also, see the PS1 DR2 caveats for warnings about minor issues associated with the DR2 database and images.

2018.10.23: Sample Python notebook for image retrievals

A simple Python script that shows how to determine what images are available at a sky position and how to retrieve the images (in FITS or JPEG/PNG format) has been added to the PS1 Image Cutout Service web page.

2017.03.17: DR1 database update adds 14M object measurements

A new version of the CasJobs PanSTARRS_DR1 database has been installed. This adds mean measurements for about 0.1% of objects that were missing in the 2017 Feb 2 release to the MeanObject table. The objects added are near declination = +30 degrees. For users who have done large-scale queries and want to get just the new objects, there is a new table to make this easier. MeanObjectMissing_03172017 has 14 million objects that were previously missing from MeanObject. It should be possible to run most queries that used MeanObject again using this much smaller table to quickly fill in missing data.

The new database replaces the old one since it is preferred for all purposes. Existing objects in the database did not change in any way. This version of the database is thought to be complete over the sky.

2017.02.02: DR1 database now has 1.5 percent more objects

A new version of the CasJobs PanSTARRS_DR1 database has been installed. This adds about 1.5% of objects that were missing in the 2016 Dec 19 release of ObjectThin, MeanObject, and StackObjectThin tables. For users who have done large-scale queries and want to get just the new objects, there are 3 new tables to make this easier. ObjectThinMissing has 132 million objects that were previously missing from ObjectThin; MeanObjectMissing has the same 132 million objects that were missing from MeanObject; and StackObjectThinMissing has 40 million objects that were missing from StackObjectThin. It should be possible to run most queries again using these much smaller tables to quickly fill in missing data.

The new database replaces the old one since it is preferred for all purposes. Existing objects in the database did not change in any way.

There is still a very small number of missing objects (about 0.01%) that are missing near declination = +30 degrees. Currently we do not expect those objects to be filled in before the DR2 data release (which will include all the multi-epoch PS1 photometry).

2017.02.02: PS1 sky available in MAST Portal

The MAST Data Discovery Portal now includes an option to show a PS1 image as the background in the sky viewer that shows the search results. See an article in the February 2017 MAST Newsletter for more details.

2016.12.21: PS1 DR1 caveats

A new PS1 documentation page describing PS1 DR1 caveats was added. It highlights some quirks in the PS1 DR1 data.

2016.12.21: How to separate stars and galaxies

A new PS1 documentation page describing how to separate stars and galaxies was added.

2016.12.21: Catalog search radius limited

Due to heavy demand, we are limiting the size of the allowed search radius in the catalog search form. Currently search radii must be less than 0.5 degrees for standard single-position searches and less than 0.02 degrees for file upload queries.

2016.12.20: Bug in catalog search (fixed)

A bug was introduced in the catalog search form at about 5pm EST on Tuesday 2016 December 20. The bug prevented any PS1 searches from running. It was fixed the morning of 2016 December 21.

2016.12.19: PS1 Data Release 1

The Pan-STARRS1 archive Data Release 1 (DR1) was opened to the public at 8am EST on 2016 December 19.