MAST APIs: Present to Future

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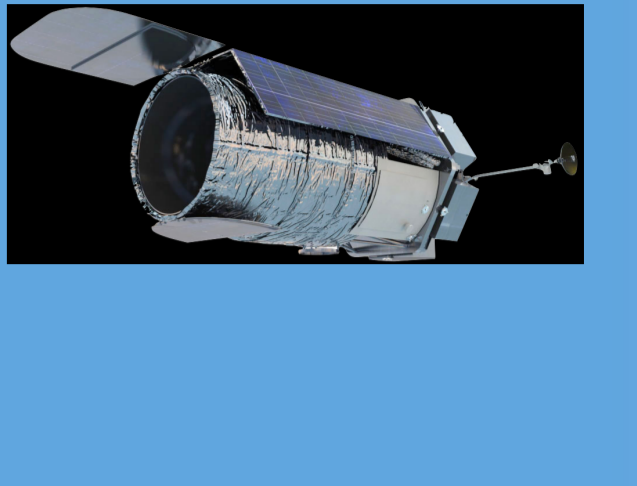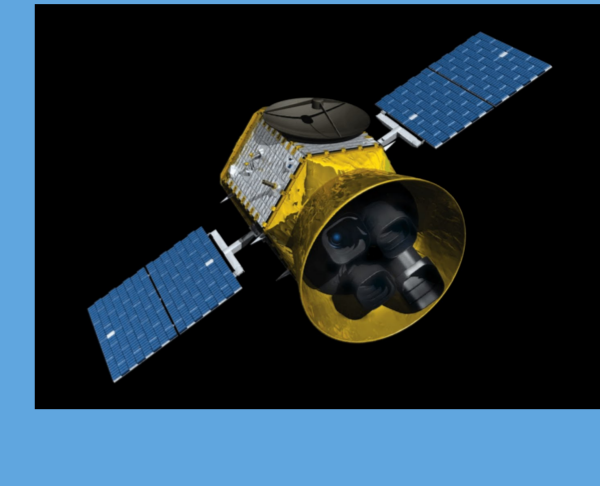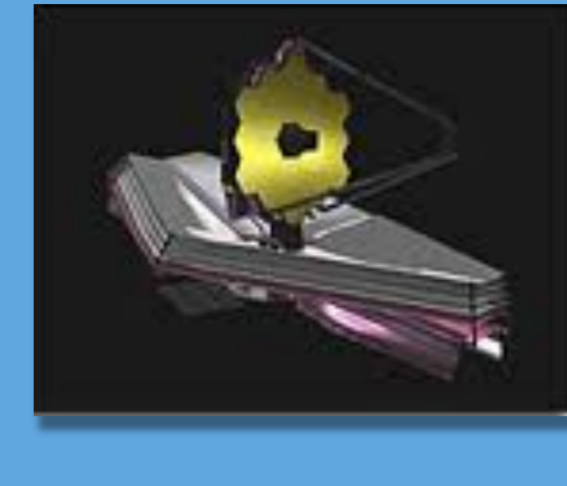
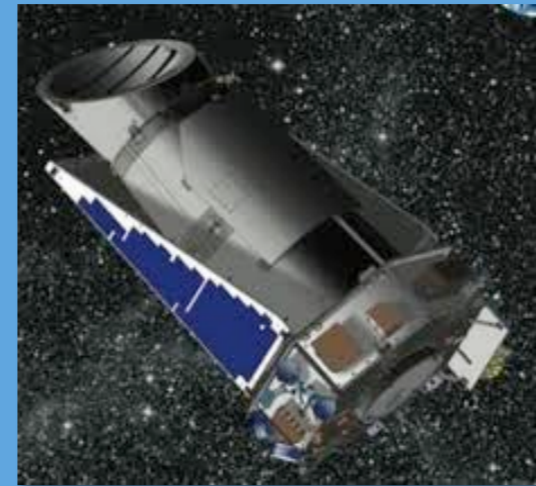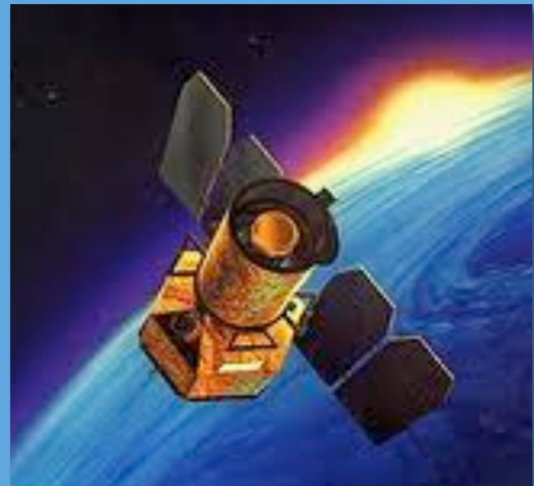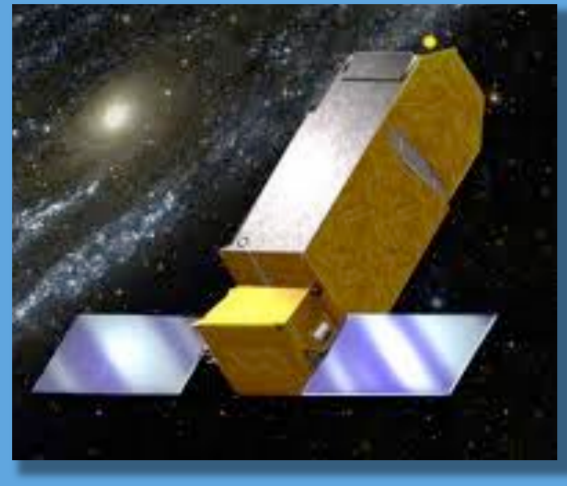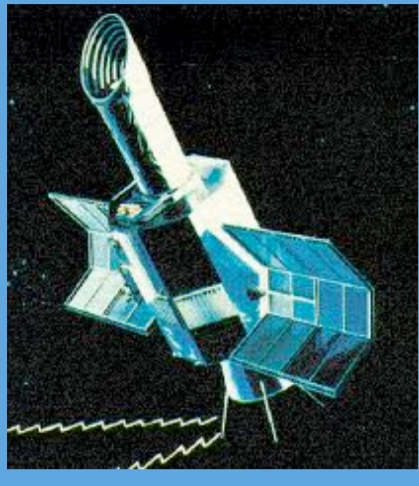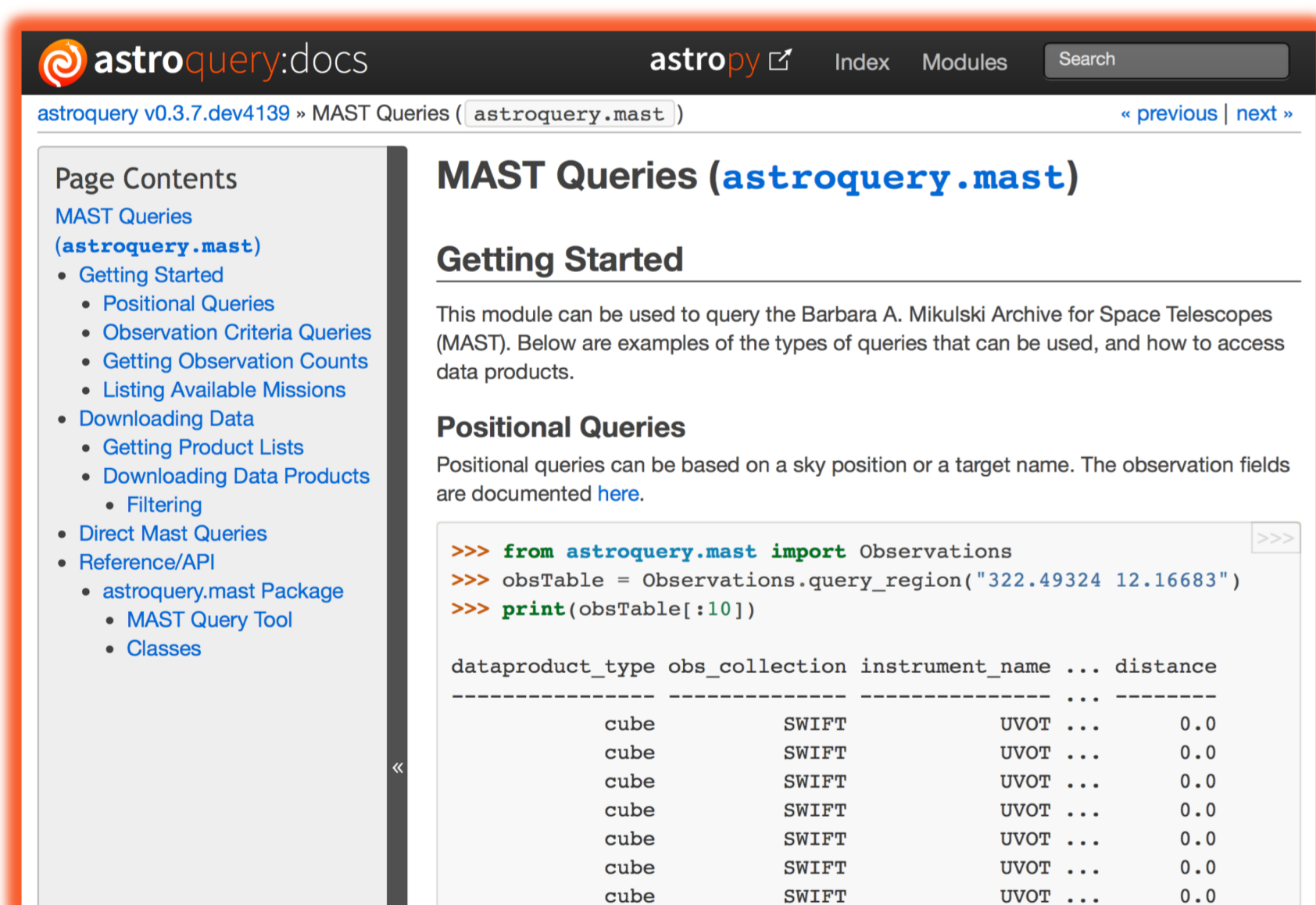| Multi-mission queries	Image/Catalog/ Observation Cone Searches	Cutouts	Criteria-based database queries	Catalog cross-match	Data product download

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astroquery

General purpose Python-based API

Features
- Standard Astroquery interface
- Integrates with Python workflow
- Includes multi-mission observations, catalogs and tesscut
- **Beginner friendly**

Use this API to:
- Perform and automate common tasks
- Integrate data queries with analysis
- Perform moderate-load processing (loops great, parallel queries limited)

Future plans
- Additional catalogs
- Generalized cutout support
- Expanded mission interfaces

https://astroquery.readthedocs.io/en/latest/mast/mast.html
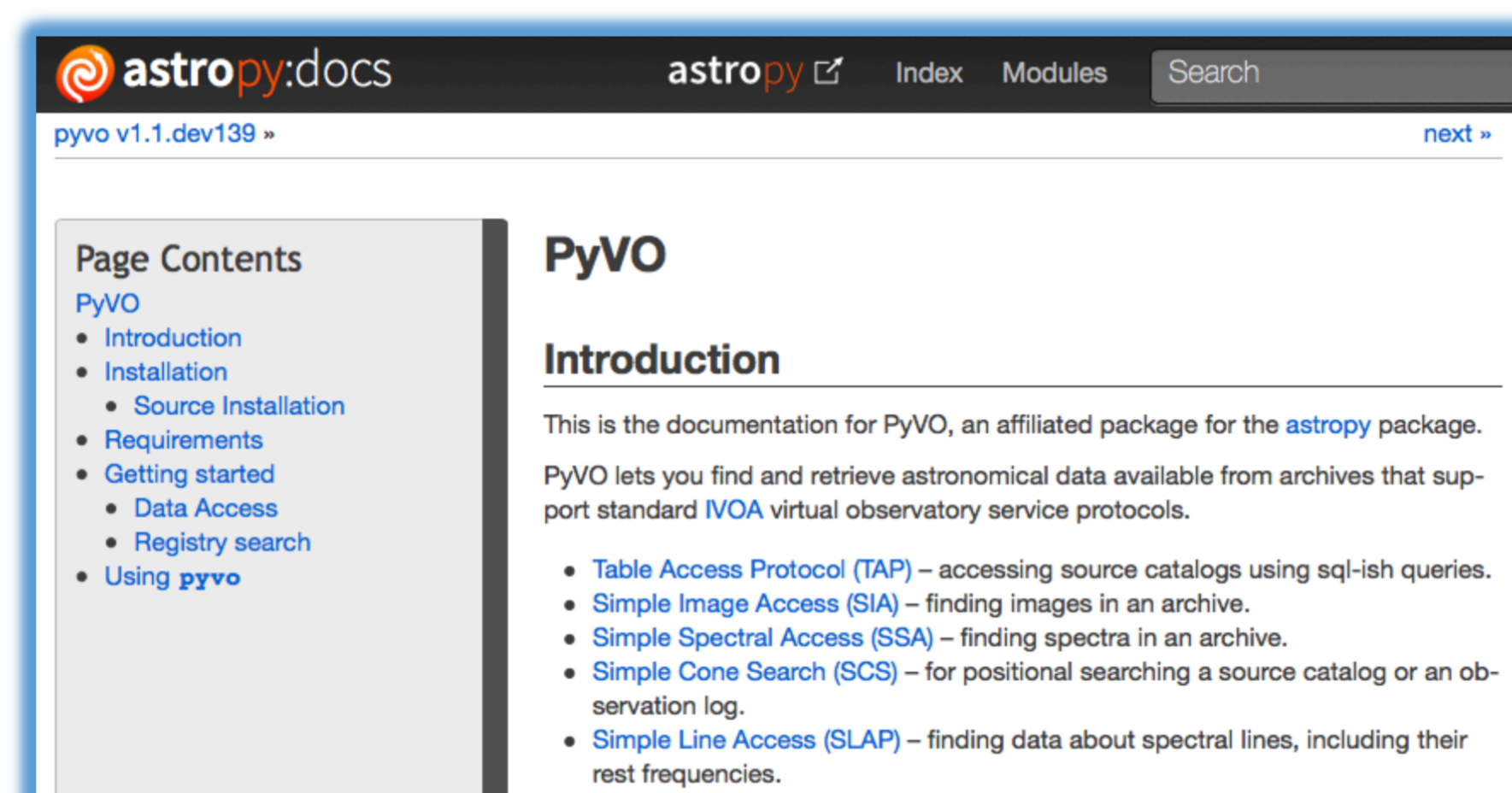

IVOA

## Standards-based Web API

Features
- Cone search of catalogs and products
- SQL-style queries on databases (TAP)
- **Language-independent queries**
- Library support includes PyVO (Python) and STILTS (Java)

Use this API to:
- Automate multi-archive discovery
- Explore archives with VO-aware tools
  - MAST Portal, Topcat, Aladin, ESASky…
- Perform moderate-load processing (loops great, parallel queries limited)
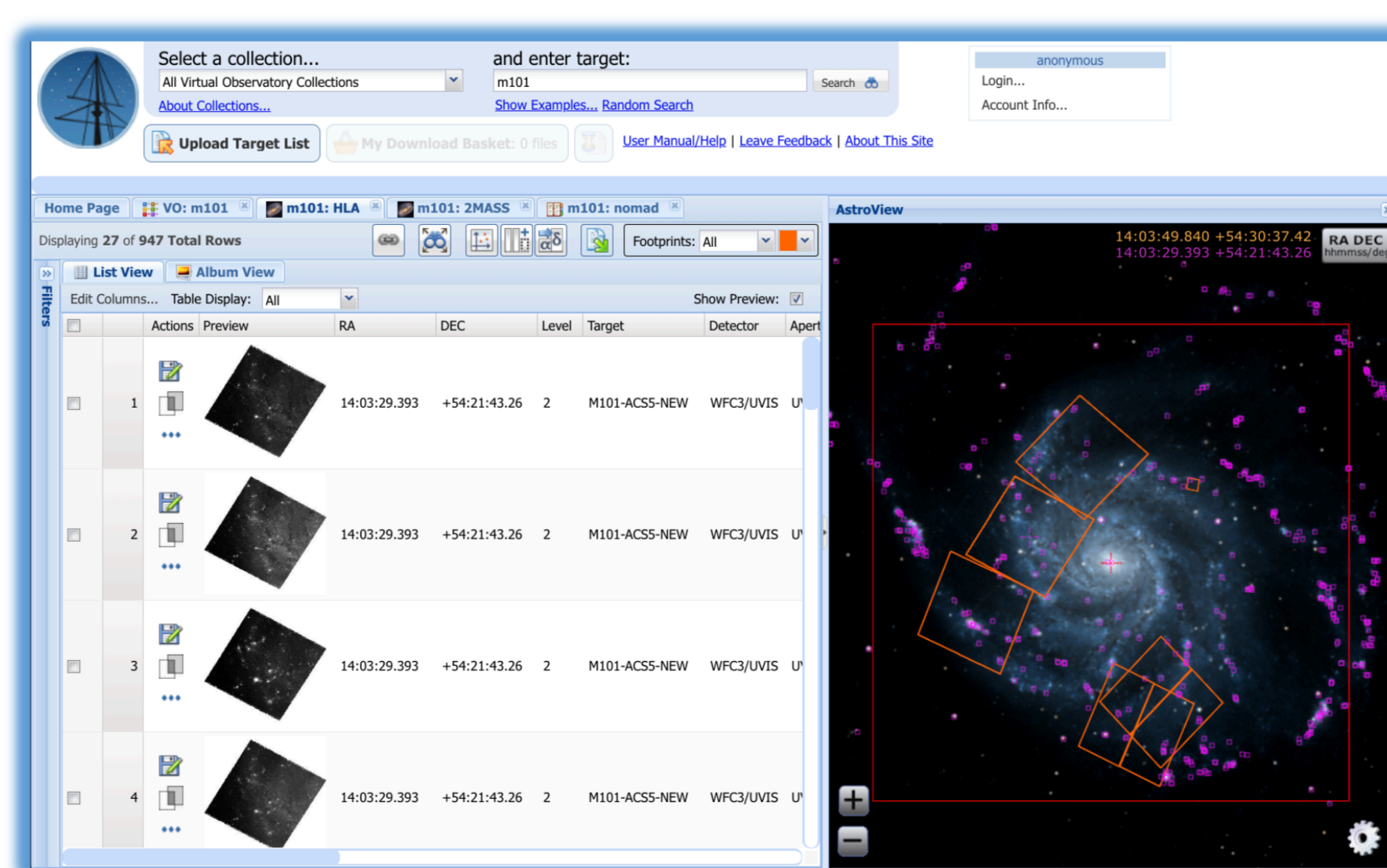
Future plans
- Generalized cutout support (SODA)
- Mission-specific DB queries (TAP)
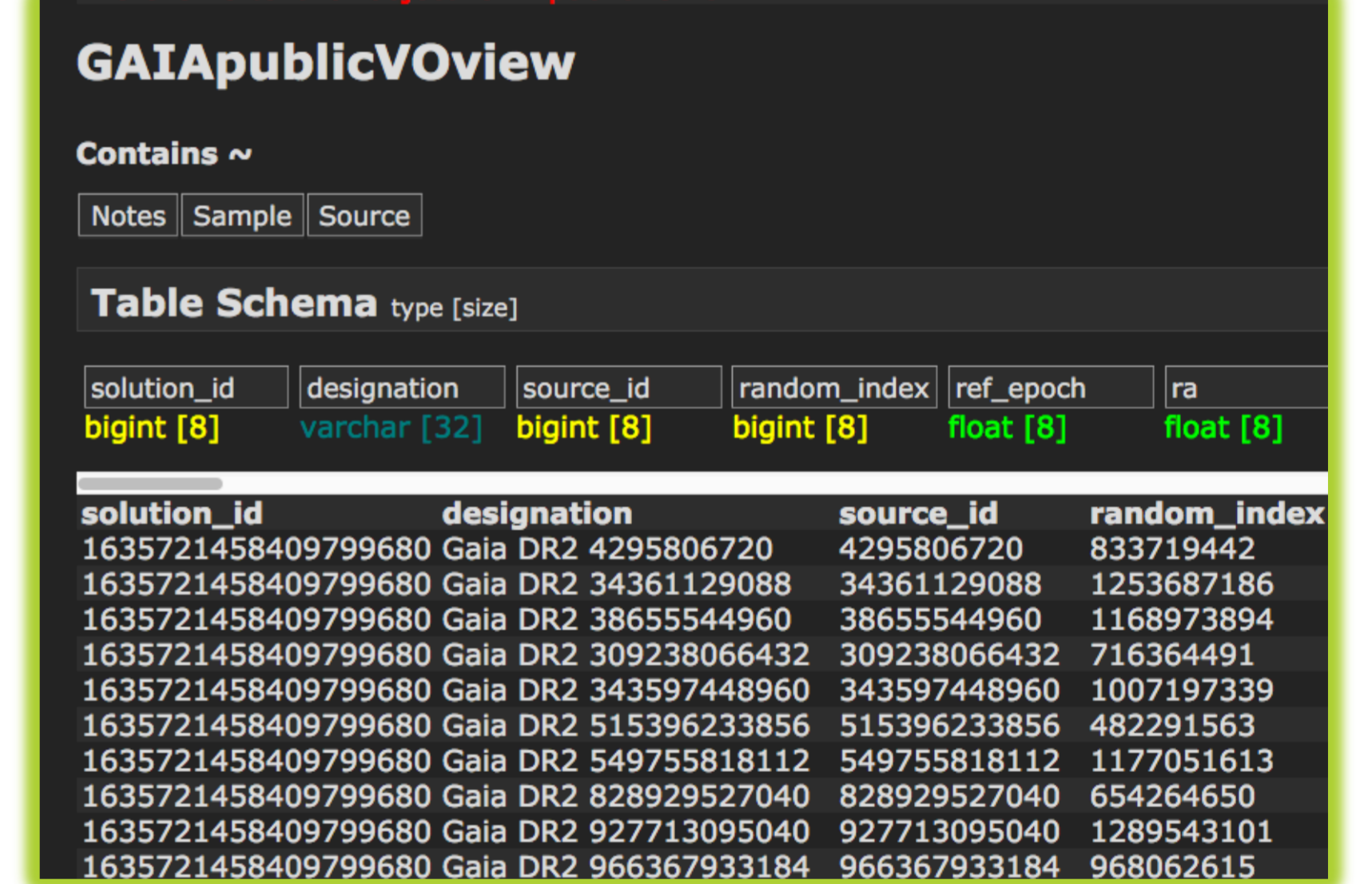- Observation product queries (DataLink)

http://archive.stsci.edu/access-mast-data/virtual-observatory

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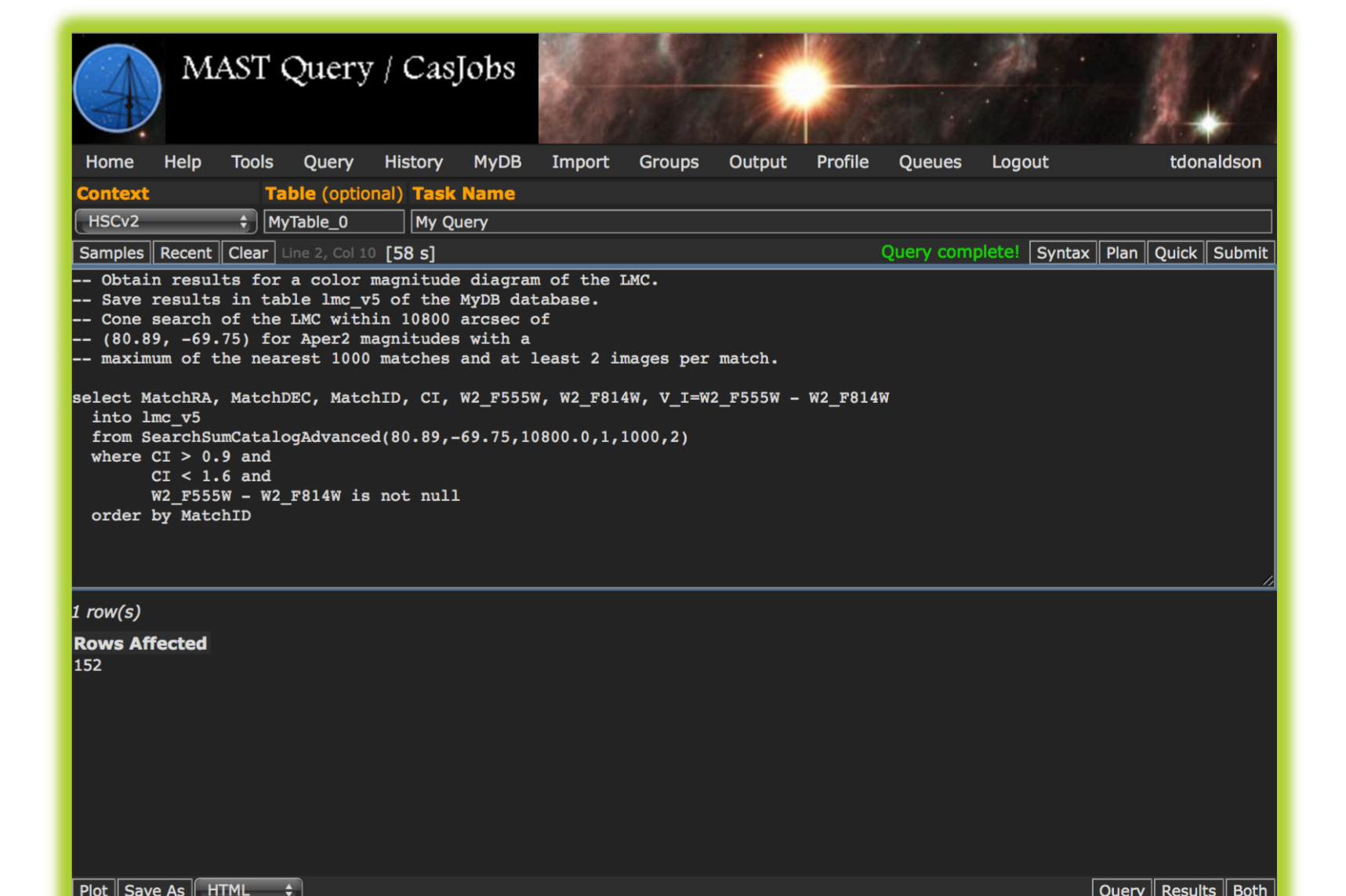## CasJobs*

Catalog Database Interface

Features
- Large selection of available catalogs
- Allows SQL access to catalogs
- Allows access to catalog metadata
- Has a batch queue for large queries
- Supports asynchronous queries

Use this interface to:
- Run arbitrary SQL queries
- Combine tables/use intermediate SQL results
- **Perform large/long running queries** (queries that are too large/complex for Astroquery)

https://mastweb.stsci.edu/mcasjobs/

*Developed by JHU/SDSS