IPAC Archive Holdings

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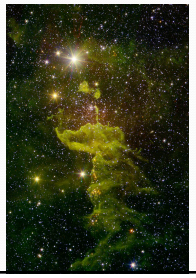
Why?

- The "I" in NITARP stands for "IPAC", based at Caltech.
- IPAC is not the Astronomy Department!
- IPAC houses several different archives, each with their own goals, methodology, tools, staff, (and sometimes science goals).
- As NITARP educators, you will learn about at least one of our data sets in great detail, but the rest of IPAC's holdings may also prove useful to you in your NITARP project, or your future (post-NITARP) work!
- Essentially all of IPAC has been consolidated into one AAS booth (for better branding in the community).
- (There are archives based at other places that have other booths here too…)

An archive's job

- Ingest new data (and reprocessing of old data).
- Maintain/serve vital repository of irreplaceable data:
  - Support for observation planning and mission planning.
  - Resource for original science.
  - High level science products.
- Enable cutting-edge research:
  - API and Virtual Observatory.
  - User support by experts.
  - New/enhanced services.
  - Multi-wavelength projects.



NED

- NED = NASA/IPAC Extragalactic Database
- Focused on extragalactic science.
- Ingests catalogs and literature tables.
- Hundreds of millions of unique objects!
- Myriad cross-links, notes, etc.
- Updates every few months.
- http://ned.ipac.caltech.edu/

NASA Exoplanet Archive

- Focused on stars harboring exoplanets, or thought to harbor exoplanets.
- Includes Kepler data, and US portal to CoRoT data.
- Anyone using Kepler data (none of you this year) will get more of an introduction to this as part of your work.
- Online tools to work with these data, like the periodogram service.
- http://exoplanetarchive.ipac.caltech.edu/

IRSA

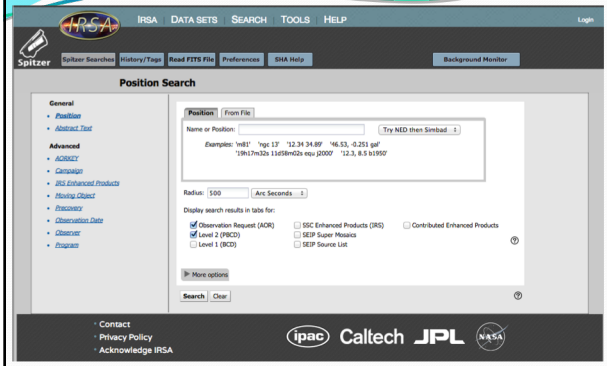
- IRSA = NASA/IPAC Infrared Science Archive
- Charter is to provide interface to all NASA infrared and sub-mm data sets. Has a few others in there too.
- Some are small (e.g., Spitzer Legacy programs), and some are VERY large (all-sky surveys like WISE).
- IRSA datasets are cited in about 18% of astronomical refereed journal articles.
- Several of the newest data sets are served via Firefly; the rest are accessible via Atlas or Gator.
- >1 PB (petabyte) in disk space, 3.5 PB if you include non-NASA data; billions upon billions of rows in catalogs.

Some IRSA holdings

- Infrared Astronomy Satellite (IRAS) – the first all-sky mid- and far-IR survey.
- Two Micron All-Sky Survey (2MASS) – a deep, uniform all-sky survey at J, H, and Ks.
- Spitzer Space Telescope – 3-160 microns (see next slide).
- WISE = Widefield Infrared Survey Explorer – all-sky survey at 3-23 um
- Herschel Space Observatory – 60-670 microns
- Planck = ESA mission, all-sky survey at 30 to 857 GHz (1 cm to 350 microns)
- Cosmic Evolution Survey (COSMOS) - a multiwavelength survey of a 2 sq. degree field involving every Great Observatory as well as ground-based data.
- BOLOCAM – a millimeter wavelength bolometer array at the Caltech Submillimeter Observatory.
- AKARI – a Japanese IR telescope that surveyed the whole sky at 9-160 microns.
- Midcourse Science Experiment (MSX) – a mid-IR telescope that mapped the Galactic plane and the gaps in the IRAS all-sky coverage.
- Infrared Space Observatory (ISO) – US interface to the ESA archive for ISO.

Spitzer

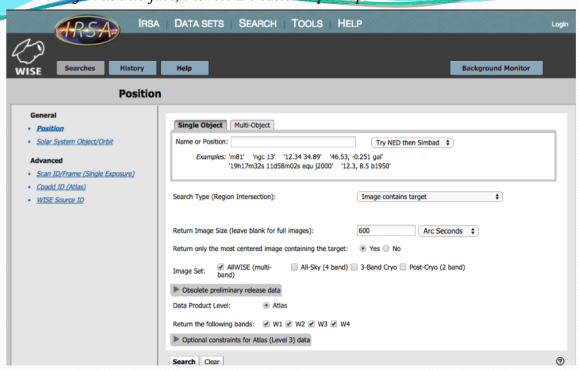
- Spitzer is both an active mission (but only for a few weeks more) and no longer an active mission. Its entire archive is available through IRSA.
- Those of you using Spitzer data will get more of an introduction to Spitzer in the context of your work.
- Spitzer's data are available from the Spitzer Heritage Archive (SHA).
- It was the testbed for a new "look and feel" for all of IRSA's holdings, and the same underlying software is now used to serve several of the rest of IPAC's holdings!

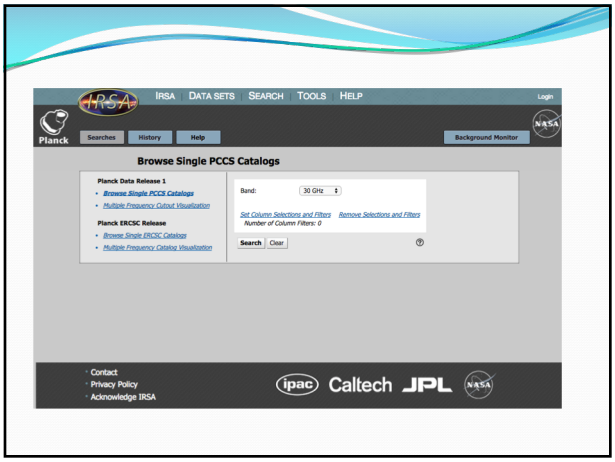


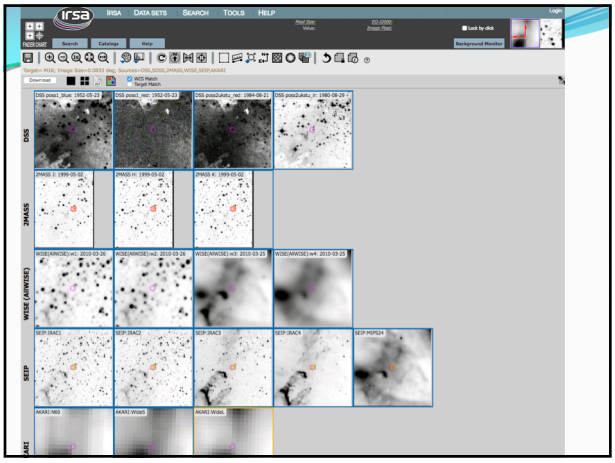
WISE

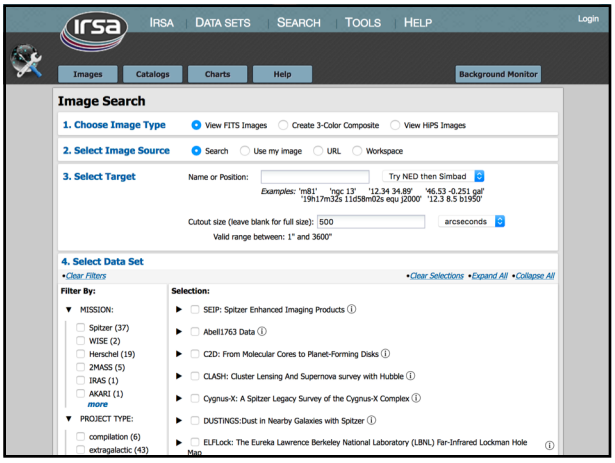
- Widefield Infrared Survey Explorer (WISE) is also both active and no longer an active mission. Its entire archive is available through IRSA.
- WISE was on for ~13 months, then turned off, and reawakened Fall 2013 and re-christened NEOWISE. It's due to be turned off June 2020.
- Those of you using WISE data will get more of an introduction to WISE in the context of your work.
- WISE data (images and data tables) are available most transparently from the WISE Image Server.

Does this look familiar? Once you've mastered one of these archives through this interface, the rest are easier to pick up.









Summary

- LOTS of data available to you RIGHT NOW.
- Everything is web-based. Most are intuitive (I hope). Most have on-line help. They are getting more integrated all the time.
- Many have some related material on the NITARP wiki, and/or in NITARP Tutorials. IRSA has a YouTube channel.
- All of these archives have representation here at the AAS.
- You will learn more about archives specific to you as you work on your project, but don't be afraid to branch out and go exploring!