Online tools for planetary sciences

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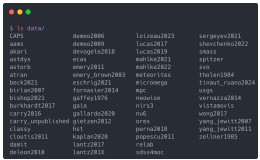
Databases and Data Aggregators

We all need data, we all generate data.

- **Databases**
  - Websites, CDS, on request
  - Mostly static, single bibliographic reference
  - Mixture of formats

Databases and Data Aggregators



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  - Collection of data with processing
  - Dynamic, large number of bibliography references
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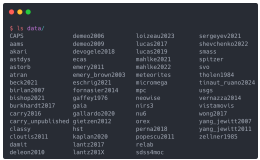

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Data aggregation takes effort but saves time and energy.

Data Aggregators

Name	Objects	Parameters	URL
ECOCEL	Asteroids	Physical, Orbital	http://www.ecocel-database.com/
JPL SBDB	Asteroids, Comets	Physical, Orbital	https://ssd.jpl.nasa.gov/tools/sbdb_lookup.html
Lowell	Asteroids	Physical, Orbital	https://asteroid.lowell.edu/astinfo/
MP3C	Asteroids	Physical, Orbital	https://mp3c.oca.eu/
NEOExchange	Near-Earth Objects	Orbital	https://neoexchange.lco.global/
SiMDA	Asteroids, Comets	Size, Mass, Density	https://astro.kretlow.de/simda/
SsODNet	Asteroids	Physical, Orbital	https://ssp.imcce.fr/forms/ssocard

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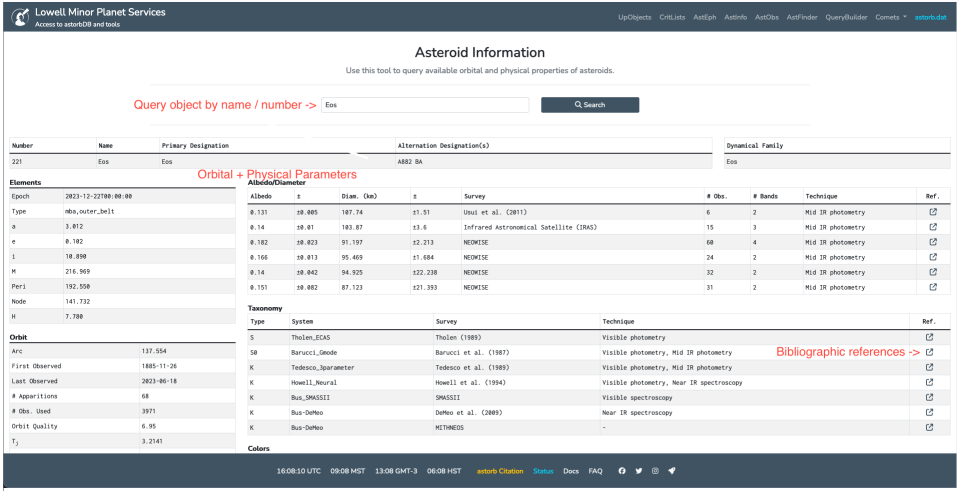
Demo

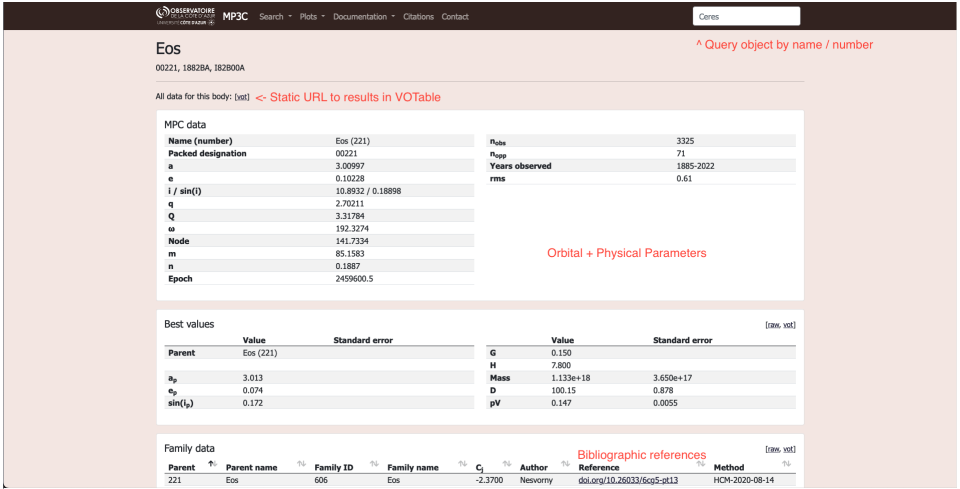
The next slides show an outline of the demoed material.

Demo



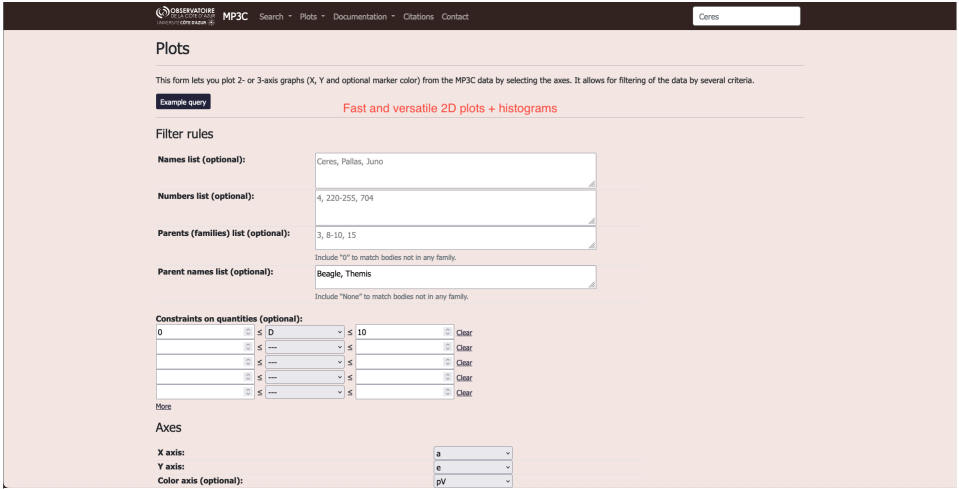
https://asteroid.lowell.edu/

Demo



https://mp3c.oca.eu/

Demo



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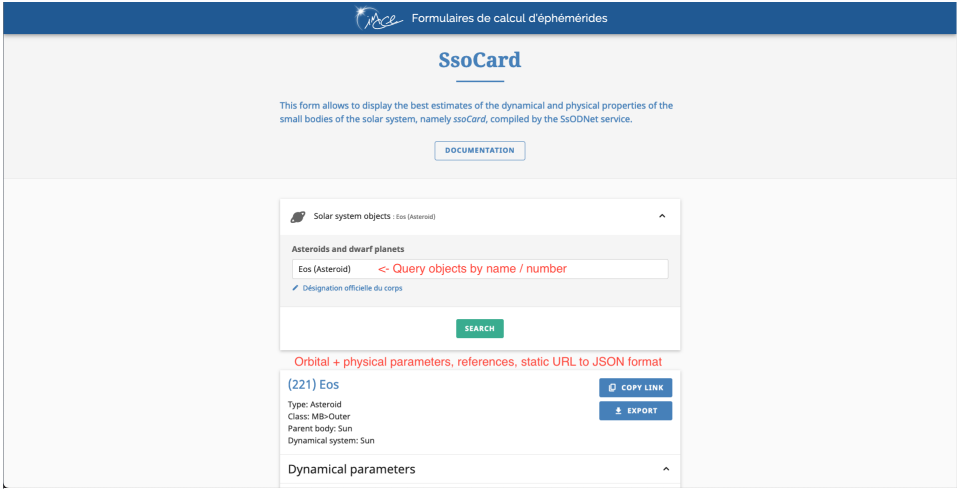
Demo



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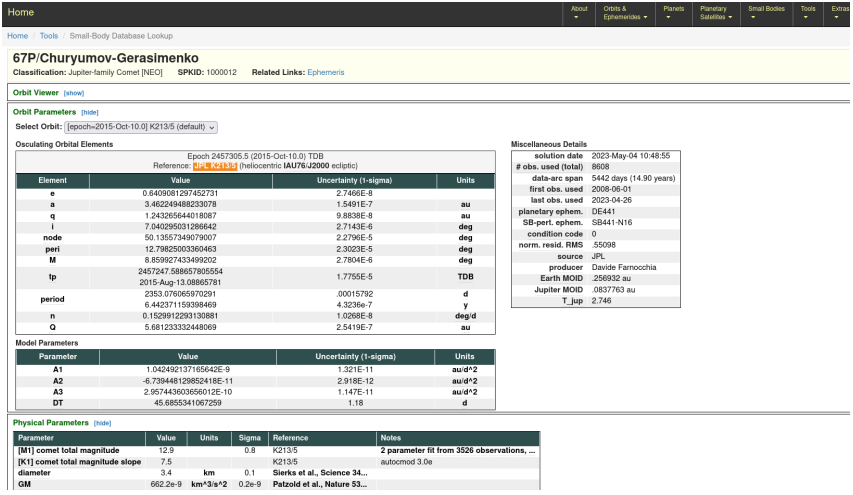
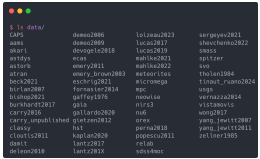
Demo



https://ssd.jpl.nasa.gov/tools/sbdb_lookup.html

The N-Body Problem



Lowell Minor Planet Services
Access to astorbDB and tools

OBSERVATOIRE DE LA CÔTE D'AZUR
UNIVERSITÉ CÔTE D'AZUR
MP3C

IMCCE webservices

- **Graphical User Interfaces do not scale**
  - Many bodies → Many clicks
  - Repeated queries to update data
  - Bibliography management

→ Data aggregators need programmatic APIs

- **Different degrees of simplification**
  - Static URLs pointing to text files
  - Common service such as the *Table Access Protocol*
  - Secondary client such as `python` packages

Tutorial

[20min] Tutorial notebook on data access

- Basic: Programmatic data access with `astroquery` and `rocks`
- Advanced: Analysis of catalogue data with `rocks`
- Expert: Building our own meteorite-classification lookup tool