

CDS scientific council - The VizieR service

Gilles Landais (CDS)

June 29, 2011



Observatoire astronomique
de Strasbourg

Introduction



VizieR role

- unified access to the astronomical tabular data coming from publications and large surveys
- homogenized meta-data describing every column of every table
- currently 9,100 catalogs (*made of ~ 20,000 tables containing ~ 280,000 columns*)
- continue to tackle fast increase in usage
(up to 4,000,000 queries/days on several days)

... and continue to provide a quality service in the future

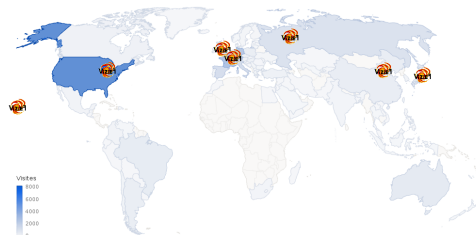
- get the best of our archive and improve the VizieR facilities
- rich links with other services

The technical side



VizieR mirrors to

- improve efficiency
- secure the archives



The VizieR software now works with the PostgreSQL database (free) in addition to Sybase (commercial).



- appreciated by the maintainers of the remote mirrors
- take advantage of PostgreSQL community developments

New interface

- improve the capabilities and ergonomy
- display more details for a better choice of catalogs
- use the annotation service

Compose criteria among different type of search

Add keywords: IR, Galaxies

Add a target

Submit

The screenshot shows the VizieR search interface. On the left, there are search criteria sections: 'Find catalogs among DDTs available' with a 'Clear' button, 'Catalogs, authority names' with a 'Refresh search' button, and 'Search by Position across IPAC tables' with 'Target Name' and 'Target direction' fields. A 'Find Catalogs' button is at the bottom right. A red circular target image is visible in the 'Target direction' field.

The result: catalogues matching the criteria

Lines of the catalog

Sort by catalogues name, popularity, size or density

Detailed catalogue description files

Spectral range of catalogue

Popularity statistics on catalogue

Coverage map

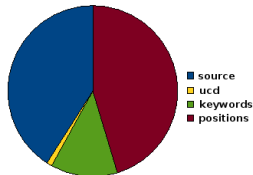
The screenshot shows the search results page. A table lists catalogues with columns for name, popularity, size, and density. Annotations include 'Spectral range of catalogue' (represented by colored bars), 'Popularity statistics on catalogue' (represented by small bar charts), and 'Coverage map' (represented by small circular maps). A 'Detailed catalogue description files' link is also visible.

New search capabilities



Search types available in VizieR:

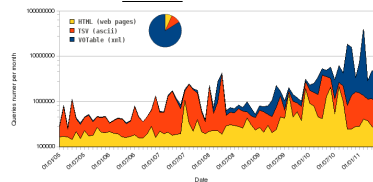
- positional search
- free text search (author, catalog, bibcode, ...)
- predefined keyword search
- contents (characterisation of column content)
 - VO standard: UCD



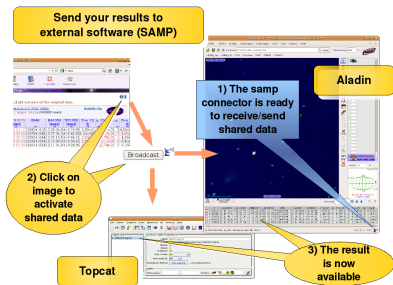
The screenshot shows the VizieR web interface. At the top, there's a search bar with the text "pos.primpos.eq.dec*". Below it, there are tabs for "Simple examples", "Textual search", and "UCD tree". The main content area is titled "Find catalogs among 9101 available" and lists various search criteria like "Position", "Motion", "Flux", and "Magnitude". On the right, there's a list of "19 definitions available" for the UCD "proper motion", including entries like "proper motion (430 catalog)", "proper motion Declination in equatorial coordinates (102 catalog)", etc.

Deal with external services

- improve links with Simbad using the CDSPortal
- important usage of VOTable output (TOPCAT ~ 50%)
- VizieR is a building block of the VO as an important data provider

VizieR usage in log scale

- take advantage of the VO technology
- SAMP connection with VO tools



Improved relations between tables of catalogs



- some catalogs have links to other catalogs in their result page
- join table using common column
- join tables using their positions (cross-match)

The screenshot shows the VizieR Search Page interface. At the top, there are search criteria including 'Simple Target', 'List Of Targets', 'Target dimensions', and 'Target bases involved by Sources or Positions'. Below this, there are search options like 'All sources', 'All sources', and 'All sources'. A list of results is displayed, including 'IRAS catalogue of Point Sources', 'IRAS Point Sources (MS1889)', 'The Virgo Cluster Catalog (VCC)', and 'Catalog of 2000 galaxies in the Virgo cluster area (2000)'. Callouts highlight specific features: 'Activate the crossmatch' points to the 'Crossmatch' button; 'You can modify the precision' points to the 'Precision' dropdown; 'Display only results that match' points to the 'Match' button; and 'Limit set by the application' points to the 'Limit' field.



Soon a more efficient cross-match service

VizieR in the future



Facilitate data ingestion

- continue to insert new large surveys (soon CFHTLS)
- improve the catalog insertion

Current developments

- propose an ADQL service (VO) :
(based on SQL including some astronomical functions)
- improvement of the Photometry:
 - accurate documentation of filters used
 - computation of SEDs (Spectral Energy Distribution) at any position