

# Description and discovery of VizieR Resources in VO registries

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IVOA interoperability meeting  
Stellenbosch, 2016 May 09  
Registry I session

Sébastien Derriere

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## CATALOGUE

Metadata

TABLE 1




TABLE 2



TABLE 3



- 14,600 catalogues
  - 31,000 tables (15,400 with coordinates  )
    - 10s to  $10^9$  rows
  - 466,000 columns
- + 1000 catalogues / year



# □ VizieR mirrors



**VizieR main site in Strasbourg,  
France**


**8 other mirror sites**

- Not all catalogues on all mirrors  
(very large cats)

# VizieR metadata → VOResource



- Each catalogue has a standardized ReadMe

```
I/265          Second Cape Photographic Catalogue (CPC2) (Zacharias+, 1999)
=====
The second Cape photographic catalogue on the Hipparcos system.
  Zacharias N., Zacharias M.I., De Vegt C.
  <Astron. J. 117, 2895 (1999)>
  =1999AJ....117.2895Z
=====
ADC_Keywords: Photographic catalog ; Surveys ; Positional data
Keywords: astrometry - catalogs
Abstract:
  The Second Cape Photographic Catalogue (CPC2) is an astrometric,
  photographic catalog covering the entire Southern Hemisphere to a
  limiting magnitude of about 10.5. The Hipparcos Catalogue has been
  used for a new, plate-by-plate, rigorous reduction. A significant
  improvement over the release 1 version of the data was achieved. With
  an average accuracy of 53 mas and a mean epoch of 1968, the CPC2 is a
  key catalog for proper-motion determination. This release 2 of the
  CPC2 contains high-quality positions of 266629 stars and an appendix
  of 8040 other stars. Catalog reduction and construction details are
  given, as well as a description of the final product, which is
  available from the US Naval Observatory.
File Summary:
-----
  FileName      Lrecl  Records  Explanations
-----
ReadMe          80      .      This file
cpc2main.dat    55    266629  CPC2 main catalogue
cpc2app.dat     55      8040   CPC2 appendix
-----
See also:
I/239 : The Hipparcos and Tycho Catalogues (ESA 1997)
I/4   : Cape photographic catalogue (Stoy+, 1968)
I/85  : CPC2. Provisional catalogue (-40{deg}<=DE<=-52{deg}) (Nicholson+ 1984)
Byte-by-byte Description of file: cpc2*.dat
-----
  Bytes Format Units  Label  Explanations
-----
  1- 6  I6   ---   CPC2      CPC2 star identification number
                    (CPC2 FFNNNN in Simbad)
  8- 10 I3   0.1mag Ptv      Photographic photovisual magnitude (530-640nm)
 12- 21 I10  mas     RAmas   Right ascension at epoch EpRA-1900 (ICRS)
 24- 32 I9   mas     SPDmas  Declination +90{deg} at epoch EpDE-1900 (ICRS)
 34- 36 I3   mas     e_RAmas Formal standard error in RAcos(decl.)
 38- 40 I3   mas     e_SPDmas Formal standard error in declination
 42- 43 I2   ---   Nu      Number of images used (plates)
 45- 49 I5   10-3yr EpRA-1900 Mean epoch of RA (-1900)
 51- 55 I5   10-3yr EpDE-1900 Mean epoch of declination (-1900)
-----
History: From ApJS electronic version
=====
(End)          James Marcout, Patricia Bauer [CDS] 14-Sep-1999
```

- UCDs attached to columns
- Spectral coverage
  - Coarse band description
- Spatial coverage
  - MOC for tables with sky coordinates 



# □ Current description of Resources

- **1 catalogue = 1 Resource**
- One ivo identifier
- vs:CatalogService type
- Curation, content : from ReadMe
- Multiple capabilities
  - 1 WebBrowser interface
  - 1 ParamHTTP interface : base query returning VOTable
  - 1 ConeSearch for each Table with coordinates 
- 1 MOC at the catalogue level 

# VizieR Resource

```
<ri:Resource xsi:type="vs:CatalogService" created="2000-08-30T23:55:18"
  updated="2015-05-09T14:00:00" status="active">
  <validationLevel validatedBy="ivo://CDS.VizieR">1</validationLevel>
  <title>Second Cape Photographic Catalogue (CPC2) (Zacharias+, 1999)</title>
  <shortName>I/265</shortName>
  <identifier>ivo://CDS.VizieR/I/265</identifier>
  <curation ... />
  <content>
    <subject>Positional_Data</subject>
    <description>The Second Cape Photographic Catalogue (CPC2) is an astrometric,
    photographic catalog covering the entire Southern Hemisphere to a limiting
    magnitude of about 10.5. The Hipparcos Catalogue has been used for a new,
    plate-by-plate, rigorous reduction. A significant improvement over the release
    1 version of the data was achieved. With an average accuracy of 53 mas and a
    mean epoch of 1968, the CPC2 is a key catalog for proper-motion determination.
    This release 2 of the CPC2 contains high-quality positions of 266629 stars and
    an appendix of 8040 other stars. Catalog reduction and construction details
    are given, as well as a description of the final product, which is available
    from the US Naval Observatory. </description>
    <source format="bibcode">1999AJ....117.2895Z</source>
    <referenceURL>http://cdsarc.u-strasbg.fr/cgi-bin/Cat?I/265</referenceURL>
    <type>Catalog</type>
    <contentLevel>Research</contentLevel>
  </content>
  <rights>public</rights>
```

# VizieR Resources

```
<capability>
  <interface xsi:type="vr:WebBrowser">
    <accessURL use="full">http://vizier.u-strasbg.fr/cgi-bin/VizieR-2?-source=I/265</accessURL>
  </interface>
</capability>
<capability>
  <interface xsi:type="vs:ParamHTTP">
    <accessURL use="base">http://vizier.u-strasbg.fr/viz-bin/votable/-dtd/-A?-source=I/265</accessURL>
    <queryType>GET</queryType>
    <resultType>text/xml+votable</resultType>
  </interface>
</capability>
<capability xsi:type="cs:ConeSearch" standardID="ivo://ivoa.net/std/ConeSearch">
<description>Cone search capability for table I/265/cpc2main (CPC2 main catalogue)</description>
  <interface xsi:type="vs:ParamHTTP" role="std">
    <accessURL use="base">http://vizier.u-strasbg.fr/viz-bin/votable/-A?-out.all&-source=I%2F265%2Fcpc2main&</accessURL>
    <queryType>GET</queryType>
    <resultType>text/xml+votable</resultType>
  </interface>
  <maxSR>180</maxSR>
  <maxRecords>9999</maxRecords>
  <verbosity>>true</verbosity>
  <testQuery>
    <ra>45.04394531249999</ra>
    <dec>0.24246333228778008</dec>
    <sr>0.028629053431811713</sr>
  </testQuery>
</capability>
<capability xsi:type="cs:ConeSearch" standardID="ivo://ivoa.net/std/ConeSearch" <description>Cone search capability
  <interface xsi:type="vs:ParamHTTP" role="std"> <accessURL use="base">http://vizier.u-strasbg.fr/viz-bin/votable
    <queryType>GET</queryType>
    <resultType>text/xml+votable</resultType>
  </interface>
  <maxSR>180</maxSR>
  <maxRecords>9999</maxRecords>
  <verbosity>>true</verbosity>
  <testQuery>
    <ra>44.93408203124999</ra>
    <dec>0.634145923360648</dec>
    <sr>0.028629053431811713</sr>
  </testQuery>
</capability>
```



# □ VizieR Resources

```
<coverage>
  <footprint ivo-id="ivo://mocivod">http://alasky.u-strasbg.fr/footprints/cats/vizier/I/265?produc
  <waveband>Optical</waveband>
</coverage>
```

```
<table>      <name>I/265/cpc2main</name>
  <description>CPC2 main catalogue</description>
  <column>      <name>recno</name>
    <description>Record number assigned by the VizieR team. Should Not be used for identification.
    <unit> </unit>
    <ucd>meta.record</ucd>
  </column>
  <column .../>
</table>
```

```
<table>      <name>I/265/cpc2app</name>
  <description>CPC2 appendix</description>
  <column>      <name>recno</name>
    <description>Record number assigned by the VizieR team. Should Not be used for identification.
    <unit> </unit>
    <ucd>meta.record</ucd>
  </column>
  <column ... />
```

# □ VizieR resource discovery

- Do any of the following (and, or)
  - Find catalogues from keywords, authors, bibcode
  - Catalogue « name »
  - Content-based query (UCD)
  - By spatial coverage
  - Time coverage(?)
  - Service type : ConeSearch, TAP, web form...

# □ Problems with current scheme

- One Resource contains
  - Several ConeSearch capabilities
  - Several Table descriptions
- ... but no way to link one ConeSearch to its table description !
- MOC at table level not provided
  - and we'd have the same missing link to Table
- No link to VizieR TAP service
  - ONE Resource for VizieR TAP, with full schema
- Mirror sites not described at all



# □ Possible solutions

1 Resource = 1 Table

Change VOResource  
schema

Internal links/references  
(Table to capability, Table to  
coverage, ...)

# □ Resources at the Table level

- Changing to 1 table = 1 resource
  - Unambiguous association of columns descriptions with single ConeSearch capability
  - Fine-grained description : possible to identify a table by ivo-id
  - MOC coverage at Table level
- What to do with catalogues ? Keep, delete ?
  - Avoid duplication of (curation, content) metadata
  - Link Catalogue and Table Resources ?
  - Deleting current resources : impact ?

# □ Impact on VO registries

- VizieR resources represent 90 % of registry contents !
- Resource update → nearly full OAI reharvest
- Moving from catalogue to table
  - 14,000 deprecated identifiers (current resources)
  - 31,000 new identifiers
- Adding spatial tables to current catalogues
  - Add 15,400 resources
- Within each capability, list interfaces for mirrors
  - How do tools manage multiple interfaces ?