

Monitoring and Validation at the NVO

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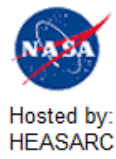
Monitoring

- Hourly checks of representative services
 - One service of each class/site
- Is the system up?
- Latest results available:
 - <http://heasarc.gsfc.nasa.gov/vo/monitor>
- Results reviewed daily and messages sent to responsible parties (3–5/week).
- Operational ~ 1 year





Summary and Status of VO Services



[NVO Home](#) [VO Service Notices](#) [NVO Feedback](#) [Monitor Help](#)

There are 0 Active Note(s), 0 Pending Note(s), and 0 Total Note(s)

User Tools	Data Services
Portal: 8 out of 8 services are up	Base Tools: SIMBAD: OK NED: OK
Tools: 8 out of 9 services are up	Images: 23 distinct hosts; 45 out of 47 tests passed
	Spectra: 13 distinct hosts; 26 out of 26 tests passed
	Tables: 25 distinct hosts; 23 out of 25 tests passed
	Databases: 27 distinct hosts; 26 out of 27 tests passed
Operations and Testing Service Tests: 4 distinct hosts; 4 out of 4 tests passed Publishing Registries: 4 distinct hosts; 4 out of 4 tests passed	
Number of Distinct Services Tested: 113 Parallel services at tested sites: 5720	
Services Last Tested between: 2009-05-27 20:14:48 and 2009-05-27 21:14:48	

We do not check all VO services. Instead, we try to query a representative subset of all services for each VO host. If you feel that an important service is missing from this page please send us a [note](#).

We also provide a tool for finding the status of a service using an IVO identifier: [get_status_help.html](#).



Validation

- Validate VO services using software to check results
 - NCSA Validation tools for Cone and SIAP services
 - Other tools possible –especially were they to adopt similar results format
- Validate all registered services
- Store results in DB
 - View at: <http://heasarc.gsfc.nasa.gov/vo/validation>
- ~Monthly cycle through all services
- Still in shakedown mode
 - Some issues with validation services
 - Critical versus tolerable violations




Validation Results - SeaMonkey

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Hosted by:
HEASARC

Total Number of Services	6339
Never Validated	0
Validated	6339

Status	Total	Percent
Passed	427	6.73
Failed	5881	92.7
Aborted	31	0.48

[View Results by Center](#)

Query by identifier or string. Any identifiers containing this string will be matched.

Last Validation Occured:

Next Scheduled Validation:

[See All Services and Test Runs](#)

Done



Validation Results - SeaMonkey

File Edit View Go Bookmarks Tools Window Help

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Center	Total Validated	not validated	passed	failed	aborted
CDS	5121	0	0	5115	6
LEDAS	482	0	0	482	0
Heasarc	505	0	397	105	3
IRSA	18	0	0	17	1
NRAO	10	0	0	9	1
Mast	28	0	27	1	0
NCSA	2	0	0	0	2
Harvard	1	0	0	0	1
Anu	4	0	0	2	2
ESO	2	0	0	2	0
noao	4	0	0	4	0
stsci	31	0	0	29	2
Arecibo	2	0	0	2	0
Astronet	20	0	0	16	4
CADC	11	0	1	10	0
CXC	1	0	0	0	1
Usno	3	0	0	1	2
Inaf	1	0	0	1	0
JVO	2	0	0	2	0
Keck	1	0	0	1	0
UCLuk	1	0	0	1	0
Ned	2	0	0	1	1
obelix inaf	3	0	0	3	0
nbs paris	3	0	2	1	0

Done



Quick and dirty analysis of results



CDS

- 5121 CDS Cone and SIAP services
- Accurate Validator Errors
 - 5115 fail with “Error message must appear in param called (via name or ID) Error”.
 - ~1200 fail with “The table must contain exactly one field with UCD= ID_main”. We see that many CDS Tables either contain more than one ID_main column or lack one entirely.
 - ~700 resources fail due to the wrong datatype used in the RA and DEC columns.
- Dubious errors
 - ~4000 fail with “ID_main column must have arraysize ‘*’”. However, the specification seems to allow fixed array sizes.
 - ~1400 fail with “ID_main column must have datatype ‘char’”.

LEDAS

- ~500 resources
- Accurate Validator Errors
 - incorrect datatypes for the RA/DEC columns. The datatypes should be “double” but the tables contain “float”. E.g.
<http://camelot.star.le.ac.uk:8080/dsa-catalog/SubmitCone?DSACAT=ledas&DSATAB=rosstl&RA=30&DEC=30&SIZE=1>
 - `<FIELD name='ra' ID='rosstl.ra' ucd='POS_EQ_RA_MAIN' datatype='float' unit='deg' />`
 - All fail with “Error message must appear in param called (via name or ID) ‘ERROR’”. Bogus user input results in a badly formed table.
- Dubious errors
 - ID_main column must have datatype “char”. (1 / 4 fail for this)
 - ID_main columns must have arraysize = “*”. (1 / 4 fail for this)



HEASARC

- ~500 resources.
- $\frac{3}{4}$ of services tests pass
- Accurate Validator Errors
 - Failures primarily due to missing ra/dec columns or missing ID_main column
 - We also force SIAP services to fail when they do not return VOTables with image URLs.

No metadata to say where to get image
Inappropriate scale for image



CADC

- Only 11 CADC resources.
- There are 10 SIAP services, 8 of which pass the NCSA validation, but fail overall since we do not find any data
- There is 1 cone service that fails for:
 - a missing ID_main column
 - an incorrect error response when bogus positional information is entered.
 - Examples:
<http://cadwww.hia.nrc.ca/cadcbin/cadcConeSearch.pl?CA T=CNOC1&RA=30&DEC=90&SR=1>
<http://cadwww.hia.nrc.ca/cadcbin/cadcConeSearch.pl?CA T=CNOC1&RA=3x&DEC=30&SR=1>
- 2 SIAP services appear to fail validation due to unavailable service URLs.



SVO Amiga

- There is 1 Amiga resource that fails with:
 - The ID_MAIN column must have arraysize='*'.
 - The POS_EQ_RA_MAIN column must have datatype='double'.
 - The POS_EQ_DEC_MAIN column must have datatype='double'.
- The votable response shows:

```
<FIELD name="CIG Number" ID="col1" datatype="char"
ucd="ID_MAIN" arraysize="8*">
<FIELD name="RA J2000" ID="col2" unit="deg" datatype="float"
precision="5" width="9" ref="J2000" ucd="POS_EQ_RA_MAIN">
<FIELD name="DEC J2000" ID="col3" unit="deg" datatype="float"
precision="4" width="7" ref="J2000" ucd="POS_EQ_DEC_MAIN">
```
- Example:
<http://amiga.iaa.csic.es/amigasearch?RA=83.8&DEC=-5&SR=1>

Astronet

- There are 20 Cone Search Services
- 16/20 fail due to an incorrect response when a bogus string is added to the RA/DEC parameters.
E.g.
http://vo.astronet.ru/sai_cas/conesearch?cat=sdssdr6&tab=p ropermotions&RA=x30&DEC=30&SR=1
- Response is:

```
<VOTABLE version="1.1">  
  <DESCRIPTION>ERROR: Invalid input for (RA,DEC,SR)  
  </DESCRIPTION>  
</VOTABLE>
```
- The service also has a problem returning data with real RAs and DECs



Harvard ADS

- There is one ADS resource. The failure is: The ID_MAIN column must have arraysize='*'. However, this is likely an error in the validator.
- The votable response contains:
<FIELD ID="MAIN" ucd="ID_MAIN" datatype="char arraysize="19" />
 - E.g. http://adsabs.harvard.edu/cgi-bin/abs_connect?data_type=VOTABLE&DEC=60&RA=16&SR=.1
- We believe that fixed length is allowed by the specification. The specification gives: Exactly one FIELD must have ucd="ID_MAIN", with an array character type (fixed or variable length), representing an ID string for that record of the table.



Harvard CXC

- There is one CXC service. It fails with:
 - The VOX:Image_Scale column must have arraysize='*'.
 - The response contains:
<FIELD datatype="double" name="ImageScale"
ucd="VOX:Image_Scale"/>

The URL is:

<http://cda.harvard.edu/siap/queryImages?POS=30,30&SIZE=3>



JVO

- Two resources. Both are SIAP and both fail due to issues with the incorrect datatype or array attribute values. In this case there are several unique errors produced by the validator.
- E.g. For URL:
<http://jvo.nao.ac.jp/skynode/irsf.do?POS=30,30&SIZE=1>
 - Three of the errors are:
 - (a) The VOX:Image_MJDateObs column must have datatype='double'.
 - (b) The VOX:Image_MJDateObs column must have arraysize=''. .
 - (c) The VOX:BandPass_LoLimit column must have arraysize=''. .
- The response contains the lines:

```
<FIELD ID="C2" arraysize="*" datatype="char"
name="JVO_T0.DATEOBS" ucd="VOX:Image_MJDateObs" unit="">
<FIELD ID="C12" arraysize="1" datatype="double"
name="JVO_T0.BAND_LIMIT_LO" ucd="VOX:BandPass_LoLimit"
unit="">
```
- The arraysize is 1. Issue a seems real, but b,c are debatable.



RVO

- Only two resources, both of which fail with a communication error.
- The URL provided in the registry is not a valid service URL.
- This is a case where the validator gives the communication error: “Apparent communication error produced an exception inside the validator: ProcessingException: Element type "FRAMESET" must be followed by either attribute specifications, ">" or "/>". (Is your network up? Behind a firewall)”
- E.g. URL is: <http://virtual.sai.msu.su/~pavlyuk/snIcurve/>
- This appears to be a web form, not a service.



STScI

- 19/31 resources fail due to the errors:
 - The TABLE must contain exactly one FIELD with ucd='ID_MAIN'
 - The TABLE must contain exactly one FIELD with ucd='POS_EQ_RA_MAIN'
 - The TABLE must contain exactly one FIELD with ucd='POS_EQ_DEC_MAIN'
- E.g. URL:
- <http://archive.stsci.edu/hut/search.php?RA=30&DEC=30&SR=1>
- The response neither contains any FIELD elements nor UCDs
 - <PARAM ID="RA" name="RA" datatype="float" unit="degrees" value="30"/>
 - <PARAM ID="DEC" name="DEC" datatype="float" unit="degrees" value="30"/>
- The others fail due to a validator communication error (E.g. This URL: ["http://chart.stsci.edu/gscvo/DSS2I.jsp"](http://chart.stsci.edu/gscvo/DSS2I.jsp) does not work.



Starlight

- There is 1 starlight resource.
- The service fails due to missing ra,dec, and ID_Main fields
- E.g.
- <http://www.starlight.ufsc.br/vo/conesearch.php?RA=30&DEC=30&SR=1>



Uk AC Cam

- There are 7 Cone services listed. Most fail due to datatype and arraysize Issues. (The ID_main column must have datatype='char' and arraysize='*'. Also, the POS_EQ_RA_MAIN column must have datatype='double'.)
- The VOTable response contains:

```
<FIELD name="serial"
ID="Object_catalogue_2dF_Galaxy_Redshift_Survey.best_observations.serial.1" ucd="ID_MAIN" datatype="int">
<FIELD name="ra1950"
ID="Object_catalogue_2dF_Galaxy_Redshift_Survey.best_observations.ra1950.5" ucd="POS_EQ_RA" datatype="float"
unit="deg"> <FIELD name="dec1950"
ID="Object_catalogue_2dF_Galaxy_Redshift_Survey.best_observations.dec1950.6" ucd="POS_EQ_DEC" datatype="float"
unit="deg">
```

ESO

- There are two ESO resources
- Accurate Validation error:
 - A communication error. The service URL produces an “object not found error”.
- Dubious error:

“Service should report syntax errors (such as bad position formats).”

The service appears to handle error input in the RA field by returning an appropriate VOTable so perhaps the validator is wrong?
- Response contains info tag:

```
<INFO name="QUERY_STATUS" value="ERROR">  
  SIA Input Error: value "x30,90" for parameter "POS" is  
  incorrect. Must be under the form "ra,de".</INFO>
```
- E.g. URL:
[http://archive.eso.org/bin/dss_sia/dss.sia?VERSION=1.0&POS=x30,90&SIZ
E=1](http://archive.eso.org/bin/dss_sia/dss.sia?VERSION=1.0&POS=x30,90&SIZ
E=1)

INAF

- 4 resources (2 Cone, 2 SIAP)
- 1 service URL fails with a code 500 error when manually checked

E.g.

<http://natzgul3.oats.inaf.it:8080/servlets/servlet/SibillaImage?POS=30,30&SIZE=1>

- 3 services fail during validation with: “Internal Validator Error: No stylesheet configured for response type=“VOTable-1.1.xsd” (Please report to validator service provider.)”.

–The response contains:

```
<VOTABLE version="1.1">
```

```
  <RESOURCE type="results">
```

```
<TABLE name="Table0">
```

E.g. URL:

<http://obelix.lambrate.inaf.it/vodb/ConeSearch?CAT=CDFS&R>

[A=30&DEC=30&SR=1](http://obelix.lambrate.inaf.it/vodb/ConeSearch?CAT=CDFS&RA=30&DEC=30&SR=1)

NOAO

- 4 services (only cone)
- Three validation error types.
 - The ID_MAIN column must have arraysize='*'.
 - The POS_EQ_RA_MAIN column must have datatype='double'.
 - The POS_EQ_DEC_MAIN column must have datatype='double'.

- Response contains:

```
<FIELD ucd="POS_EQ_RA_MAIN" datatype="float" name="RA"
unit="deg" ref="J2000">
```

```
<FIELD ucd="POS_EQ_DEC_MAIN" datatype="float"
name="DEC" unit="deg" ref="J2000">
```

```
<FIELD ucd="ID_MAIN" datatype="char" name="Id">
```

E.g. URL:

```
http://archive.noao.edu/nvo/landolt.php?cat=1983&RA=30&
DEC=30&SIZE=1
```

Omegacen

- 4 resources (2 SIAP, 2 Cone)
- Cases with fieldname issues (VOTable lacks FIELD elements).
<http://vo.astro-wise.org/SIAP?FORM=VOTable&PROJECT=COMALS&POS=30,30&SIZE=1>

Response:

```
<VOTABLE version="1.0"><DEFINITIONS>
  <COOSYS ID="J2000" equinox="2000." epoch="2000."
    system="eq_FK5"/></DEFINITIONS><RESOURCE><PARAM name="AWE-
  Observer" datatype="char" arraysize="*" value="AWE anonymous">
  <DESCRIPTION>This parameter is designed to store the observer's
  name</DESCRIPTION></PARAM>
<TABLE name="VOTABLE COMALS"> <DESCRIPTION>Table generated by
  AWWOTS</DESCRIPTION>
<DATA><TABLEDATA></TABLEDATA></DATA></TABLE>
</RESOURCE>
</VOTABLE>
```



Mast

- 28 SIAP services. 18 SIAP services pass validation. However the positional information we used did not return any image URLs.
- The others failed due to a communication error that could either be in the validator or in our automated system.



Conclusion

- Lots of significant errors detected
- Many services fail due to less significant issues:
 - Invalid error messages
 - Float vs double for coordinates
- With a little attention we believe that VO can achieve much higher compliance rates
 - Very helpful in making reliable applications

