Update on **NED VO** activities: NED SIA Service

Olga Pevunova

Rick Ebert

Scott Terek

Joe Mazzarella

(NED, IPAC, Caltech)

October 2016 / IVOA Meeting

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NED's Image Archive and Current SIA Service

✳ The NASA/IPAC Extragalactic Database (NED) provides a large archive of FITS images spanning a wide variety of telescopes, instruments, and spectral regions ranging from X-rays through radio frequencies.

✳ NED currently provides about 450,000 images with valid WCS FITS header keywords.
  - About 22,000 files have naxis>2

✳ Most of the images were contributed by authors, who wish to share their data, linked to other information in NED.

✳ All NED images can be queried by object name (target) on the NED interface.

✳ The subset with valid WCS FITS header keywords can be queried by position using Simple Image Access interface, integrated into a service operated by IRSA.

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SIA2 in NED Status

∗ We evaluated SIA 2.0 2015-12-15 (Recommendation) as a reference and built prototype experimental SIAv2 service with only TARGET support in June 2016.

∗ NED v1.0 of SIA2 service was recently publicly released for testing.

  http://vo.ned.ipac.caltech.edu/sia/

∗ Expanded keyword support: POS, TARGET, ID/REFCODE, FACILITY, BAND, EXPTIME, FOV, SPATRES, FORMAT, CALIB, COLLECTION

∗ Keywords unsupported in NED v1.0 SIA2 service: POL, TIME, INSTRUMENT, DPTYPE, TIMERES, SPECTRP

  ➢ Due to the heterogeneous nature of NED image archive

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NED's SIA2 service capabilities

✳ Our SIA2 service requires a value for at least one parameter:

  ➢ TARGET or POS (Cannot be used together)

  ➢ REFCODE/ID (Can be used alone or in combination with one of the above)

✳ Parameters: FACILITY, BAND, FOV, SPATRES, EXPTIME

  ➢ can be used as additional filters with the main parameters

✳ Parameters: COLLECTION, CALIB and FORMAT

  ➢ each has only one value

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Query Examples

* http://vo.ned.ipac.caltech.edu/services/sia?TARGET=m31

* http://vo.ned.ipac.caltech.edu/services/sia?MAXREC=100&pos=CIRCLE 14 15 5

* http://vo.ned.ipac.caltech.edu/services/sia?refcode=2001ApJS..132..129M&maxrec=50

* http://vo.ned.ipac.caltech.edu/services/sia?pos=RANGE 13 14 14 15&fov=-Inf 1&Band=-Inf 0.0000007

* http://vo.ned.ipac.caltech.edu/services/sia?pos=RANGE 13 14 14 15&Facility=SDSS

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Output Descriptions

* * <DESCRIPTION>Type of product, default is Image</DESCRIPTION>
* * <DESCRIPTION>Calibration level (0,1,2,3) Default is 1.</DESCRIPTION>
* * <DESCRIPTION>Short name for the data collection. </DESCRIPTION>
* * <DESCRIPTION>Observation ID/REFCODE, in NED it is unique bibliographic reference.</DESCRIPTION>
* * <DESCRIPTION>Telescope name</DESCRIPTION>
* * <DESCRIPTION>Instrument name</DESCRIPTION>
* * <DESCRIPTION> Observation ID, in NED it is unique image id.</DESCRIPTION>
* * <DESCRIPTION>URL to download the data </DESCRIPTION>
* * <DESCRIPTION>Format of the data file(s)</DESCRIPTION>
* * <DESCRIPTION>Estimated size of the download </DESCRIPTION>
* * <DESCRIPTION>Name of intended target</DESCRIPTION>
* * <DESCRIPTION>RA of target </DESCRIPTION>
* * ...

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Output Value Example

* <TR>
* <TD>Image</TD>
* <TD>1</TD>
* <TD>NED/Images</TD>
* <TD>1991AJ....102..537L</TD>
* <TD>VLA</TD>
* <TD/>
* <TD/>
* <TD>http://vo.ned.ipac.caltech.edu/uri/NED::Image/fits/1991AJ....102..537L/3C_33:I:1.5GHz:lbs2003</TD>
* <TD>application/x-fits</TD>
* <TD>371</TD>
* <TD>3C 033</TD>
* <TD>17.22023</TD>
* …

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Return Error Examples

* http://vo.ned.ipac.caltech.edu/services/sia?TARGET=m31&MAXREC=10&POL=1

  UsageFault: The following unsupported constraints were specified: Keyword POL unsupported.

* [http://vo.ned.ipac.caltech.edu/services/sia?TARGET=m31&POS=RANGE 12 13 13 14](http://vo.ned.ipac.caltech.edu/services/sia?TARGET=m31&POS=RANGE%2012%2013%2013%2014)

  UsageFault: Too many key constraints supplied

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Feedback

✳ Scientific Notation is not 'floating point'

   ➢ required by SIA2 & not used in any examples

✳ 'Includes' presumes a dataset that has ranges (Band_min, Band_max)

   ➢ While this might be required by ObsCore Data Model, it isn't how data are generally published

   ➢ Matching boundary values in databases that store binary reals is problematic: we recommend to use ranges

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Looking ahead … TAP next

✳ TAP interface to NEDs Object Directory in 2017

✳ Object Names, aliases, and fiducial information: positions, diameters and redshifts (when available)

➢ Design plan – Fall 2016

➢ Development starts – Jan 2017

➢ Prototype – late Spring 2017

➢ Version 1.0 – end of 2017

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