

JV0 システムの現状

current status of JV0

国立天文台 天文データセンター 白崎裕治
Yuji SHIRASAKI, ADC, NAOJ

開発体制 (development organization)

- JVO portal サービス全般

白崎裕治 (JVO/ADC/NAOJ)

- データ可視化サービス (FITS WebQL)

Christopher Zapart (JVO/ADC/NAOJ)

- ALMA / Nobeyama FITS Archive 協力者

小杉城治、森田英輔、吉野彰 (ALMA/NAOJ)

大石雅寿 (NAOJ)

- Gaia Catalog サービス協力者

山田良透 (京都大学)、郷田直輝 (JASMINE/NAOJ)

- JAXA データの VO 配信協力者

海老沢研、稲田久里子、古庄多恵 他 (ISAS/JAXA)

Virtual Observatory (VO)

- 天文分野で標準化された API を実装した天文データベース
世界中の VO を一つの巨大 DB として利用
様々なデータを簡単に発見・取得することが可能となる

- International VO Alliance (IVOA)

23 カ国・地域が加盟

JVO : Japanese Virtual Observatory

<http://www.ivoa.net/>

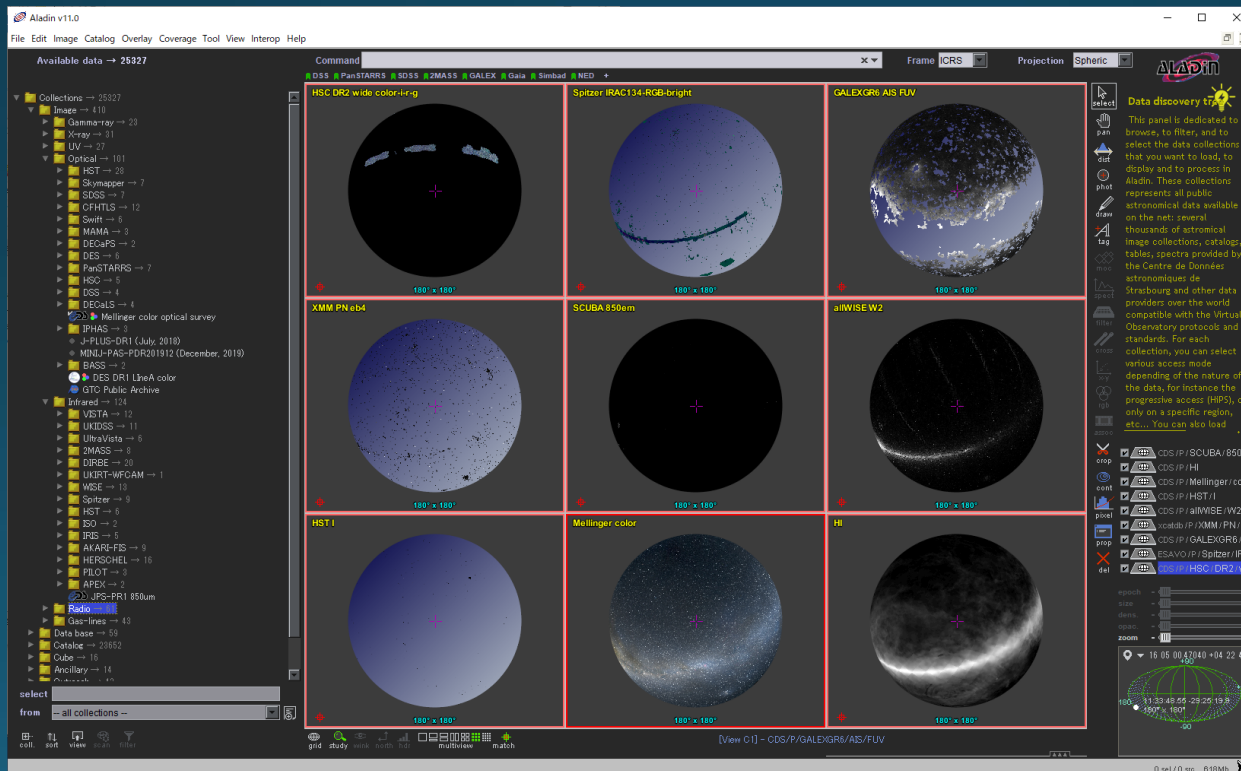


Aladin

<https://aladin.u-strasbg.fr/>



- The Strasbourg astronomical Data Center (CDS)
- Visualization tool for imaging data
 - Provides seamless access to V0 services
 - Superimpose objects from astronomical catalog

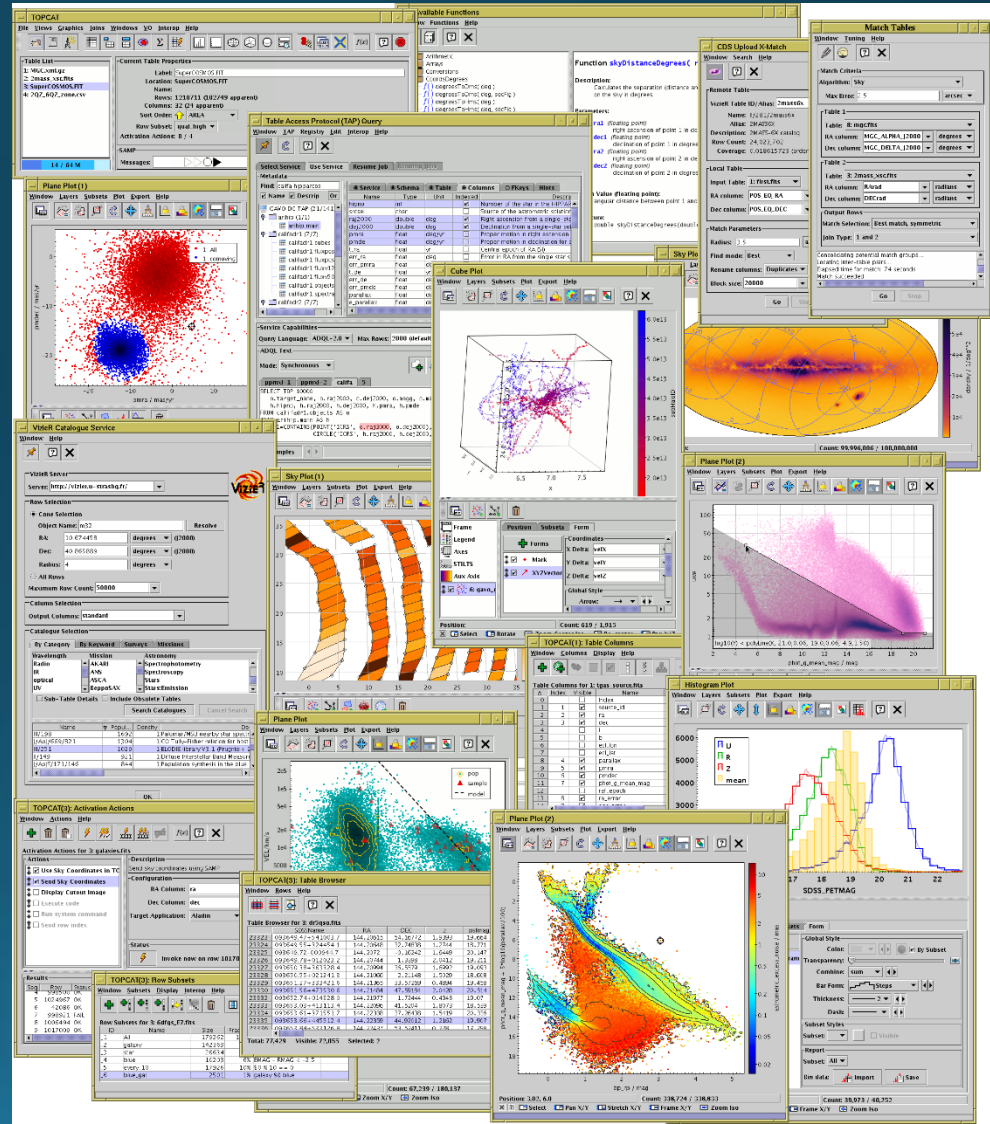


Topcat

<http://www.starlink.ac.uk/topcat/>



- Mark Taylor (U. Bristol)
- Interactive graphical viewer for tabular data
- Load data from local file or V0 services.
- Xmatch between two tables.



JVO Portal

<http://jvo.nao.ac.jp/portal>

- Portal site for the VO services around the world
- Reduced data of Subaru, ALMA, Nobeyama telescopes
- Gaia catalog data service
- Data visualization on a web browser.



Japanese Virtual Observatory
Astronomy Data Center
National Astronomical Observatory of Japan



I am a guest

[Login](#)



Acknowledgement

Things to be included
in your publication

VO Search	Subaru Reduced Data Archive	ALMA FITS Archive	Nobeyama FITS Archive	Gaia Catalog	Other resources
					
Summary	Summary	Summary	Summary	Summary	Summary
JVO portal VO search page version 2. You can access to the VO Crawler DB at THIS page or JVOSky . Older version of JVO portal (version 1) is linked from here .	Download the reduced Subaru data. Suprime-Cam (HIPS), MOIRCS, HDS.	Search, View, and Download the ALMA data cube in FITS format. SV data, Archive, WebQL demo.	Search, View, and Download the Nobeyama data cube in FITS format. FUGIN, COMING, StarFormation, NRO FITS Archive.	Gaia related source catalogs. Gaia DR1, Gaia DR1 TGAS, Gaia DR2 Gaia EDR3 Gaia DR3	AKARI FIS image Subaru Deep Survey Catalog IRSF LMC/SMC/BMC Survey

VO Crawler DB

Metadata DB of observational data collected from VO around the world

VO Crawler DB

Dataset List About VO Crawler Change Log

To download the data: Check the checkboxes of the data you want, and click the "download" button. By clicking the "download" button at each row, you can download the data of the corresponding dataset. By clicking the "download" button at the header of the table, you can download all the checked data.

To quick-look at the data: Check the checkboxes of the data you want, and click the "WebQL" button.

Criteria unchecked in the checkbox are ignored.

1. Region of Interest ☒

Center Coords or Target Name: **Crab** J2000 (FK5)
 Sample Format: --
 Search Radius: 10 arcsec
 Polygon:

2. Other Search Conditions

☐ id? =
 ☐ dataset? =
 ☐ target? =
 ☒ facility? = **HST** or -
 ☐ instrument? = -- or

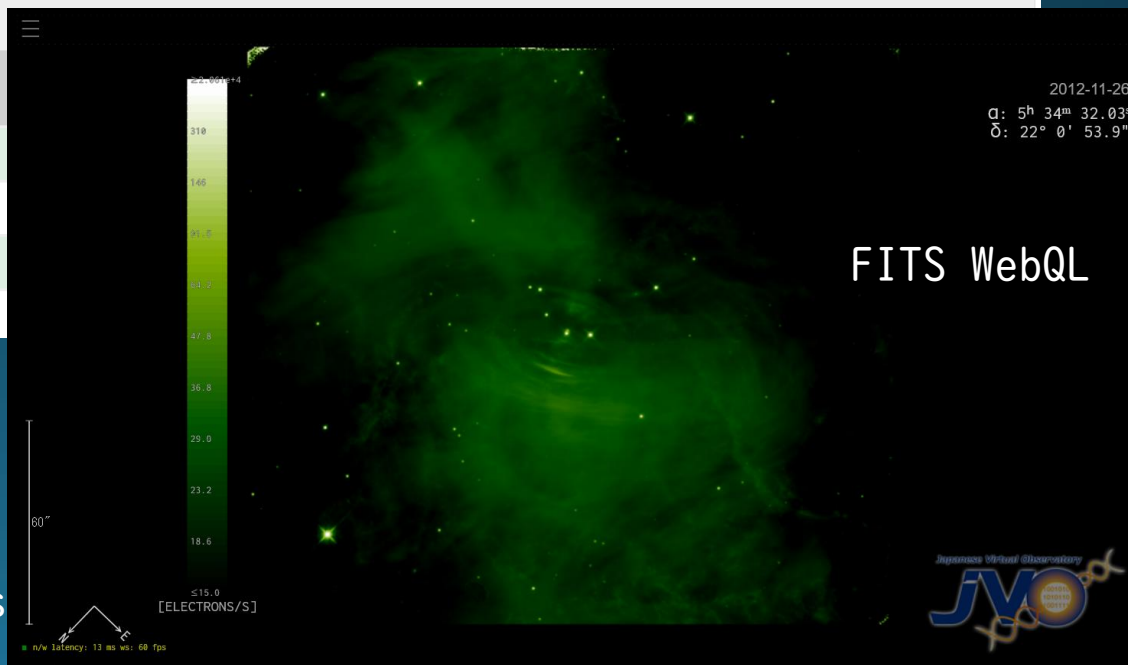
3. Sort

id
 ☒ ascending order ☐ descending order

Update

Number of data : 577
 Number per page : 100
 orderBy : id asc

#	Data ID	☐	Download all the checked data	dataset name	target
1	33300125583	☐	Download FITS WebQL	European HST SIAP service	CRAB
2	33300125590	☐	Download FITS WebQL	European HST SIAP service	CRAB
3	33300125591	☐	Download FITS WebQL	European HST SIAP service	CRAB
4	33300125592	☐	Download FITS WebQL	European HST SIAP service	CRAB



FITS WebQL

Data can be searched by coordinates, facility, instrument name, and so on.

The FITS data on remote servers can be viewed using FITS WebQL.

ALMA FITS Archive

ALMA FITS Archive : Project Info

Project Code: 2015.1.00408.S [ALMA Sci Portal](#)

☐ Show all the data including calibration (*.flux.fits, *.pb.fits, target=J####{+}#####), duplicated, and deprecated data.

Number of data per page : 20

Ordered by dataset_id (desc)

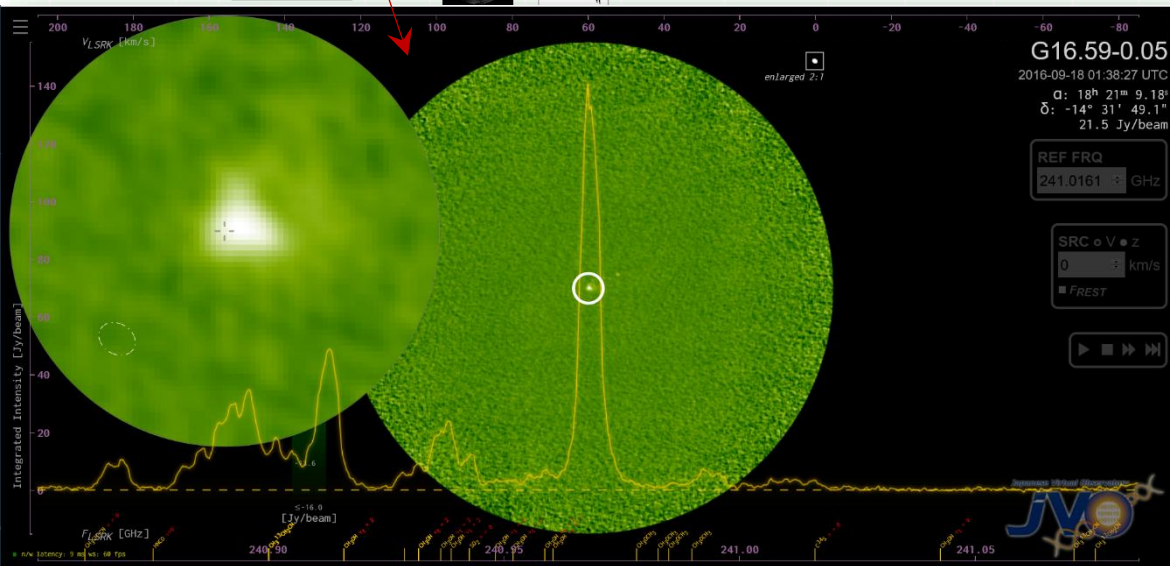
Total number : 2

#	dataset id	☐ all	Download all the checked data	origin ?	image	spect	ra/dec (J2000)	target name	Cube size (XxYxF) ?	Image size (arcmin2)	pixel scale, beam size (arcsec)	band ?
1	ALMB00093861	☐	Download WebQLv4 VO Search	ARI-L			18h21m09.1 -14d31m48	G16.59-0.05	1440 x1440 x1 x1	0.67 x0.67	0.028, 0.192 x0.150	Band6
2	ALMB00093860	☐	Download WebQLv4 VO Search	ARI-L			18h21m09.1 -14d31m48	G16.59-0.05	1440 x1440 x477 x1	0.67 x0.67	0.028, 0.192 x0.150	Band6
3	ALMB00093859	☐	Download WebQLv4 VO Search	ARI-L			18h21m09.1 -14d31m48	G16.59-0.05	1440 x1440 x1 x1	0.67 x0.67	0.028, 0.191 x0.151	Band6
4	ALMB00093858	☐	Download WebQLv4 VO Search	ARI-L			18h21m09.1 -14d31m48	G16.59-0.05	1440 x1440 x957 x1	0.67 x0.67	0.028, 0.192 x0.151	Band6
5	ALMB00093857	☐	Download WebQLv4 VO Search	ARI-L			18h21m09.1 -14d31m48	G16.59-0.05	1440 x1440 x957 x1	0.67 x0.67	0.028, 0.192 x0.151	Band6

Image data collected by other facilities

AKARI	FIS	4
ALMA	--	249
Chandra	ACIS	45
Chandra	ACIS-I	4
Chandra	ACIS-S	16
Herschel	PACS	9
Herschel	SPIRE	12
NRO45m	FOREST	18
PTF	--	31
Spitzer	IRAC	664
Spitzer	MIPS	10
UKIDSS	WFCAM	7
WISE	--	416
XMM	--	76
XMM	EPIC	4
XMM	XMM EPIC	4

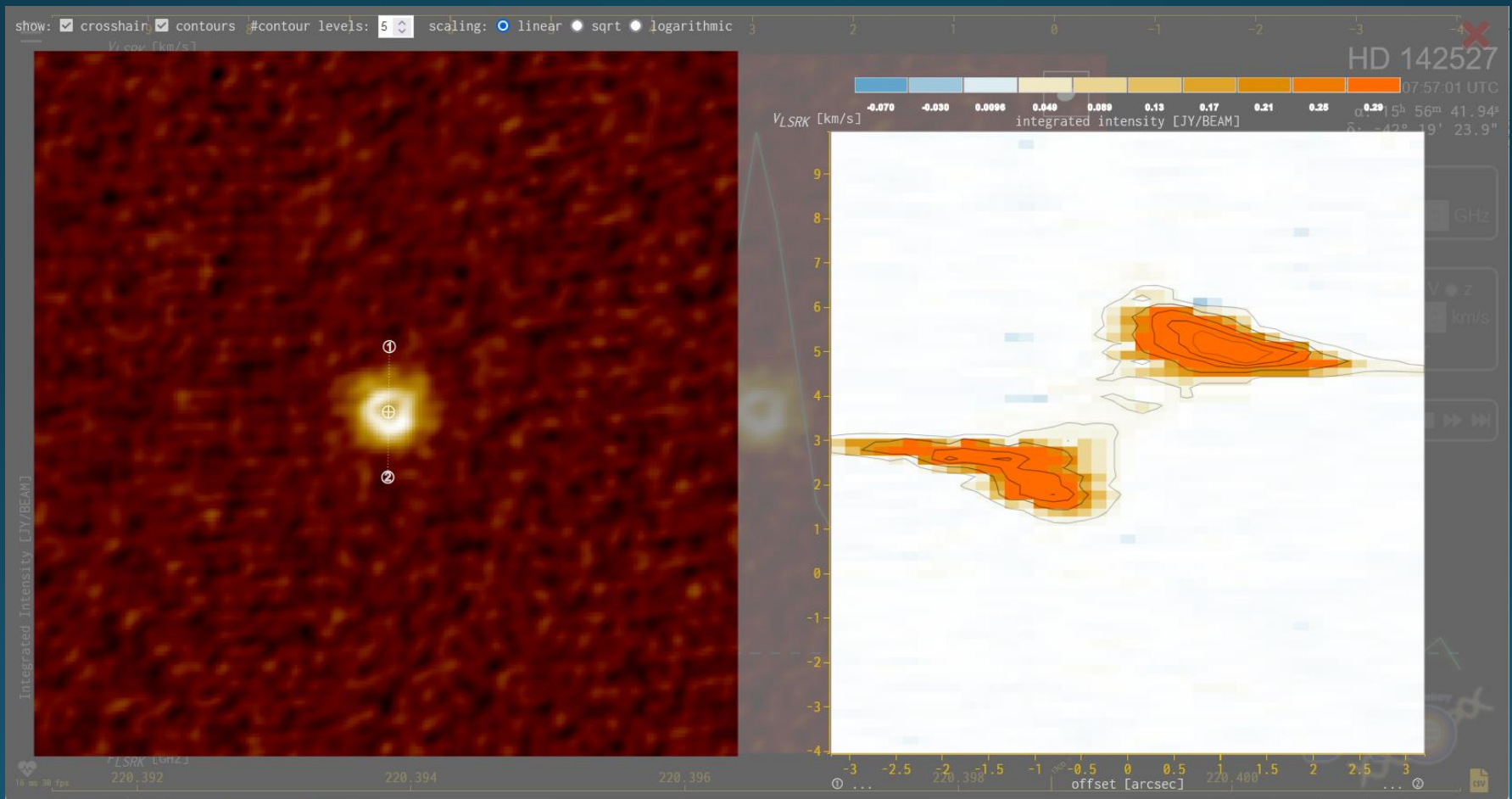
Close



- Archive dedicated to FITS data
- Easy and Simple GUI
- Fast search of related data
- Interactive visualization of FITS cube

Major update of FITS WebQL

- Functionality for drawing P-V diagram was added. (2023-03-08)
- P-V diagram is updated in real-time according to the position of the line segment.



Subaru Reduced Data Archive

- For quick look purpose before analyzing from raw data
- Only for Suprime-Cam, HDS, and MOIRCS

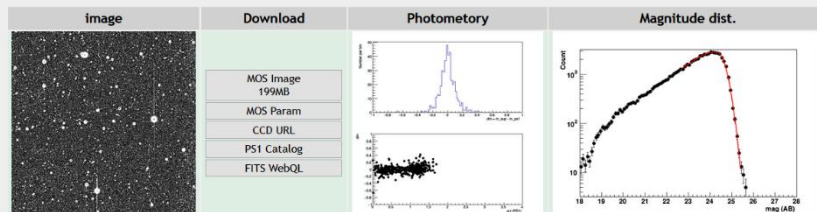
Subaru Suprime-Cam DR2: Mosaic Info

Mosaic ID : SUPM19E987B50351E500 (Sky ID : 100000+020000, Filter : W-S-I+)

Summary Other Filters Neighbor Same Filter Neighbor All Filters Other Facilities

Summary of this mosaic image

■ Sky ID 100000+020000	■ Process ID 201010_154349_grid42_485
■ Coord. (RA/DEC J2000 sexag) 09h59m59.9+01d59m59	■ Coord. (RA/DEC J2000 deg) 150.000 2.000
■ Band Name W-S-I+	■ Wavelength (Å) 7,300
■ Image Size (arcmin2) 25x25	■ Image Pix Size 7489x7489
■ Image FWHM (arcsec) / # of samples 0.85 / 3845	■ Good pix fraction in the image 0.9996
■ Astro pos CC / # of samples ? 328.72 / 6245	■ Astro mag correlation ? 0.959
■ Photo magzero (sigma, # of samples) ? 34.126 (0.09, 413)	■ Limiting Mag (M50/M90/Mpk) ? 24.6 / 24.0 / 24.1
■ Number of CCDs used ? 345	■ DR version dr2.1
■ Targets COSMOS, COSMOS_90	■ Obs Dates 2004-01-22, 2004-02-19, 2008-12-02



Subaru HDS Archive : Dataset Info

Summary Flat & Apref Wavelength Cal. Related Datasets Other Facilities Using the data

Data Summary

■ Dataset ID PIPE-1.0_00062459	■ Target HAT-P-13 [634.338 765.509]	■ Coord. (RA/DEC J2000) 08h30m31.3+47d21m12 (129.881 47.353)
■ Raw Data ID HDSA00062459		
■ Date of Observation 2009-11-24	■ Start Time of Observation (UT) 11:52:35.66	■ Exposure Time (sec) 600.0
■ Filter01 FREE	■ Filter02 SC46	■ Collimator RED
■ Cross Disperser RED	■ Detector ID 1	■ Binning 2x1
■ IS Unit NOUSE	■ I2 Cell USE	
■ Wavelength Range. (nm) ? 634.338 ~ 765.509	■ Spectrum Scale per pix. (nm) 0.0019	
■ Creator JVO HDS PIPELINE 1.0	■ Date of Processing 2024-05-06	

Data download / FITS WebQL

raw data	overscan ?	flat fielded ?	aperture extracted ?	wavelength calibrated ?	RV corrected ?	normalized ?	combined ?
Download	Download WebQL v5	Download WebQL v5	Download	Download	Download WebQL v5	Download	Download WebQL v5
fits	fits	fits	fits	fits	fits	fits	fits
spect continuum ?	spect continuum fit ?	spect normalized ?	spect combined ?	1D spect Text (cont) ?	1D spect Text (normalized) ?	1D spect Text (combined) ?	
Download	Download	Download	Download	Download	Download	Download	
pdf	pdf	pdf	pdf	text	text	text	

Data Quick Look

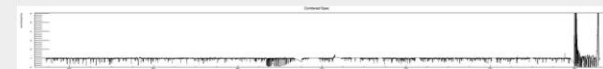


Fig.1. Combined normalized spectrum The normalized spectra of each aperture are combined to create the wide range of a single spectrum.

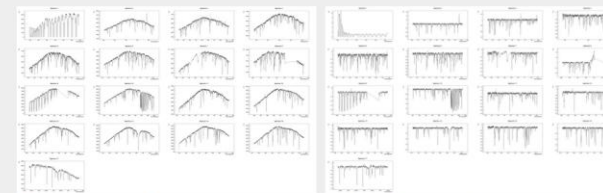
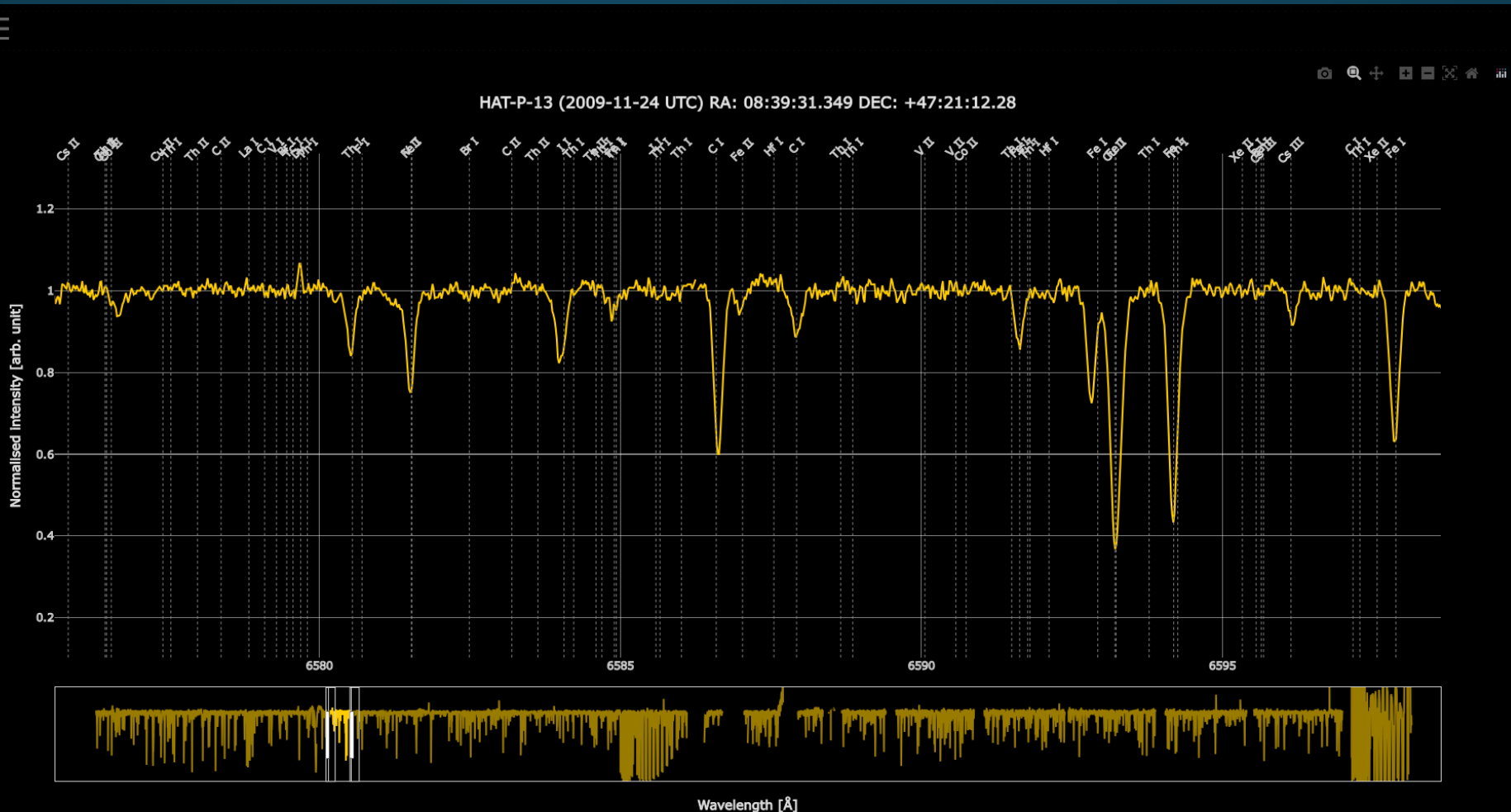


Fig.2. Continuum spectrum per aperture

Fig.3. Normalize spectrum per aperture

HDS FITS archive has recently been updated. 41,968 CCD frames were reduced by JVO HDS pipeline.

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Nobeyama FITS data archive

- **FUGIN** (PI: 梅本 & 南谷)

C0 Galactic Plane Survey (~200 GB)

- **COMING** (PI: 徂徠)

C0 Multi-line Imaging of Nearby Galaxies

134 galaxies (~150 MB)

- **Star Formation** (PI: 中村)

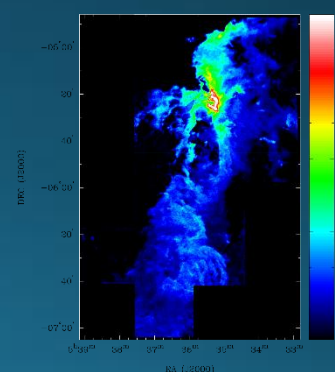
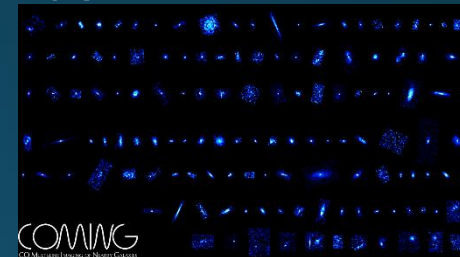
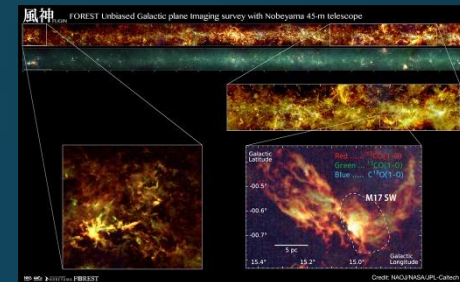
Wide-field mapping of nearby molecular clouds

Aquila Rift, M17, Orion A (~12 GB)

- **NRO FITS Archive**

Data taken by open-use observations

4,777 datasets. (~5.5 TB)



Gaia Catalog Service

- Gaia Affiliate Data Center
- Catalog data of DR1, DR2, EDR3, DR3
- Gaia WebQL is available from EDR3
- DR3 : 18億天体、~600GB (gzipped csv)
- DR4 : mid 2026 and beyond

Gaia EDR3 WebQL

About this service:

This service provides a quick look of the Gaia EDR3 catalog.

You can make a plot for all the parameters given in the Gaia EDR3.

We also provide parameters derived from the original parameters in the Gaia source catalog, such as the Galactocentric coordinates (x_g, y_g, z_g) or

(l, b), velocity (v_x, v_y, v_z) or (v_l, v_b, v_z) and absolute magnitude (m_g) of the sources.

A quick start guide on the usage of Gaia WebQL is available at [GaiaWebQL QuickStartGuide.pdf](#)

If you would like to create another new plot, please click the "Clear" button and start from the 1st step (selection of data).

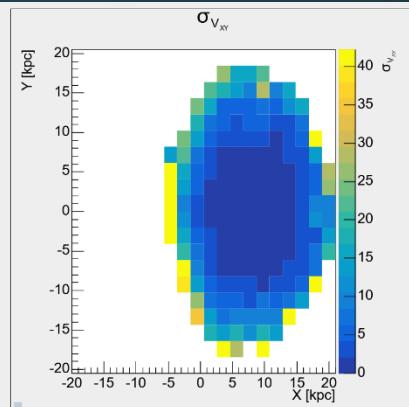
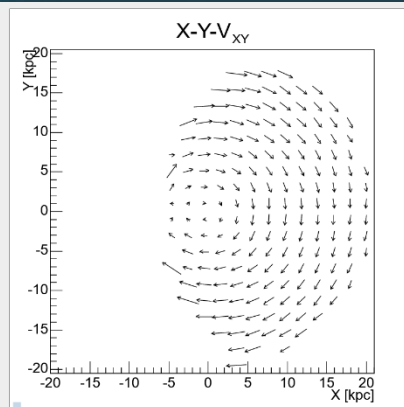
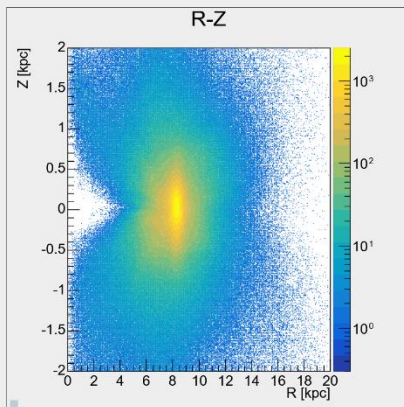
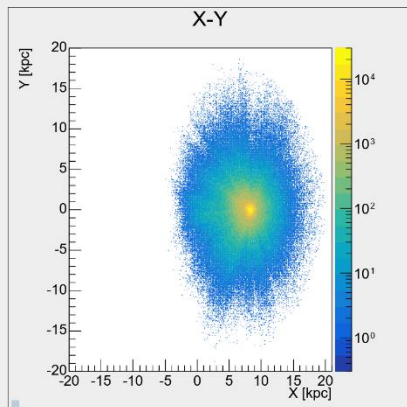
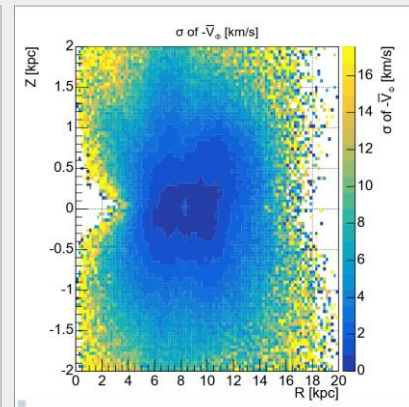
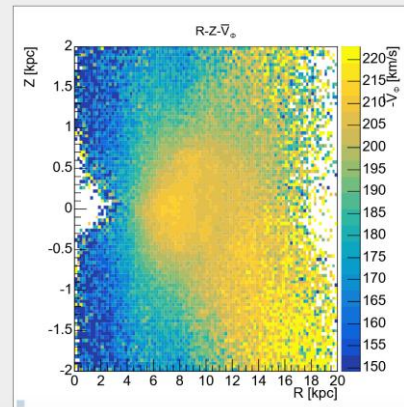
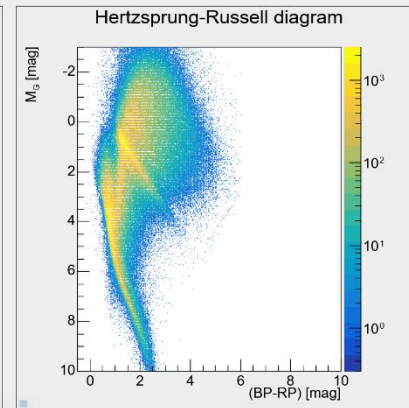
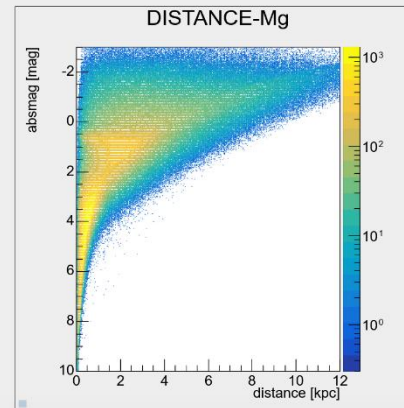
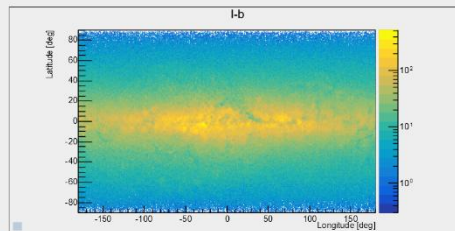
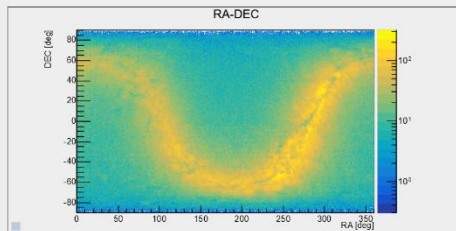
1. Select Data

2. Query Condition

3. Result

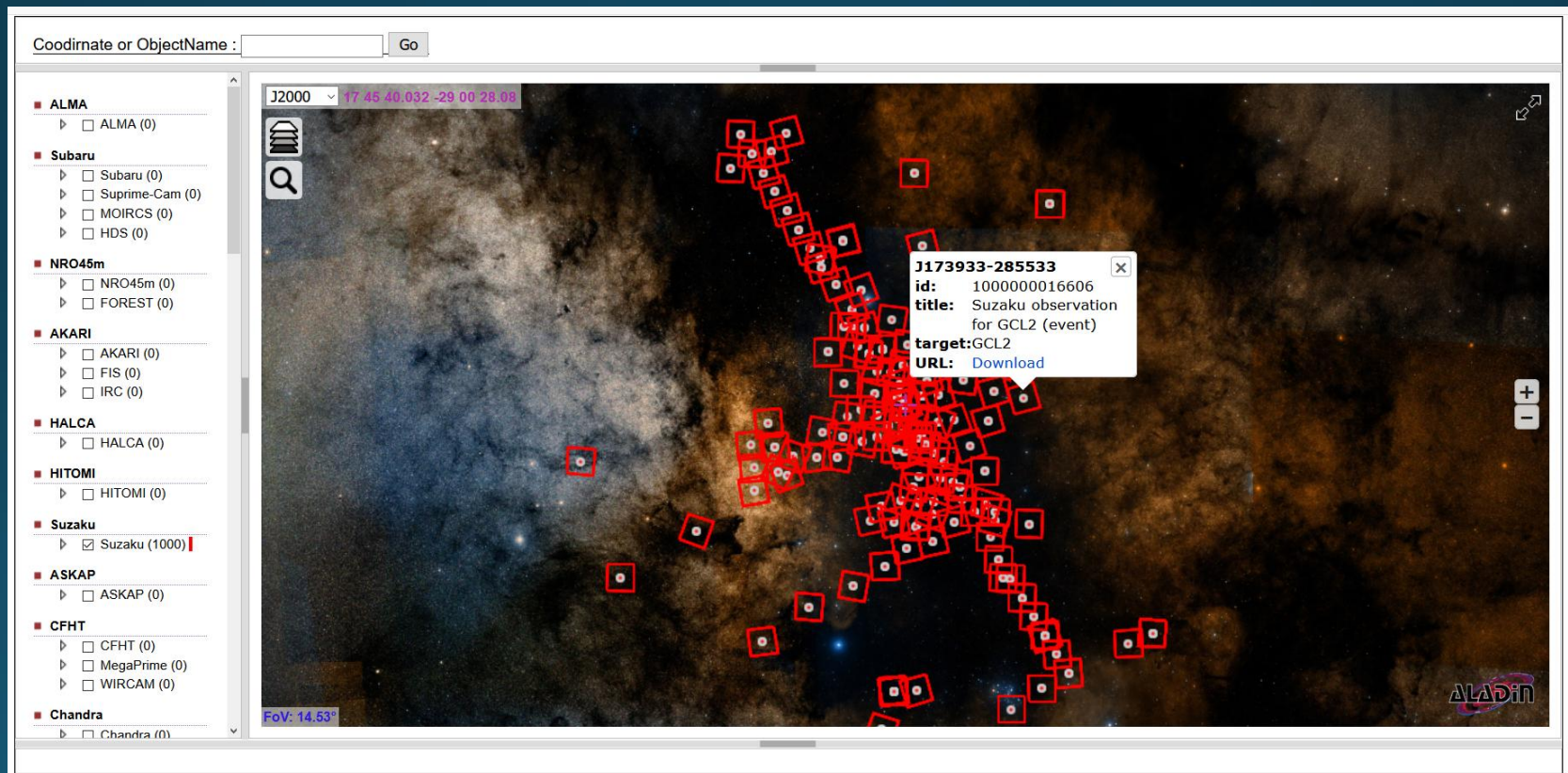
Clear

Previous



Space science data of ISAS/JAXA thru VO

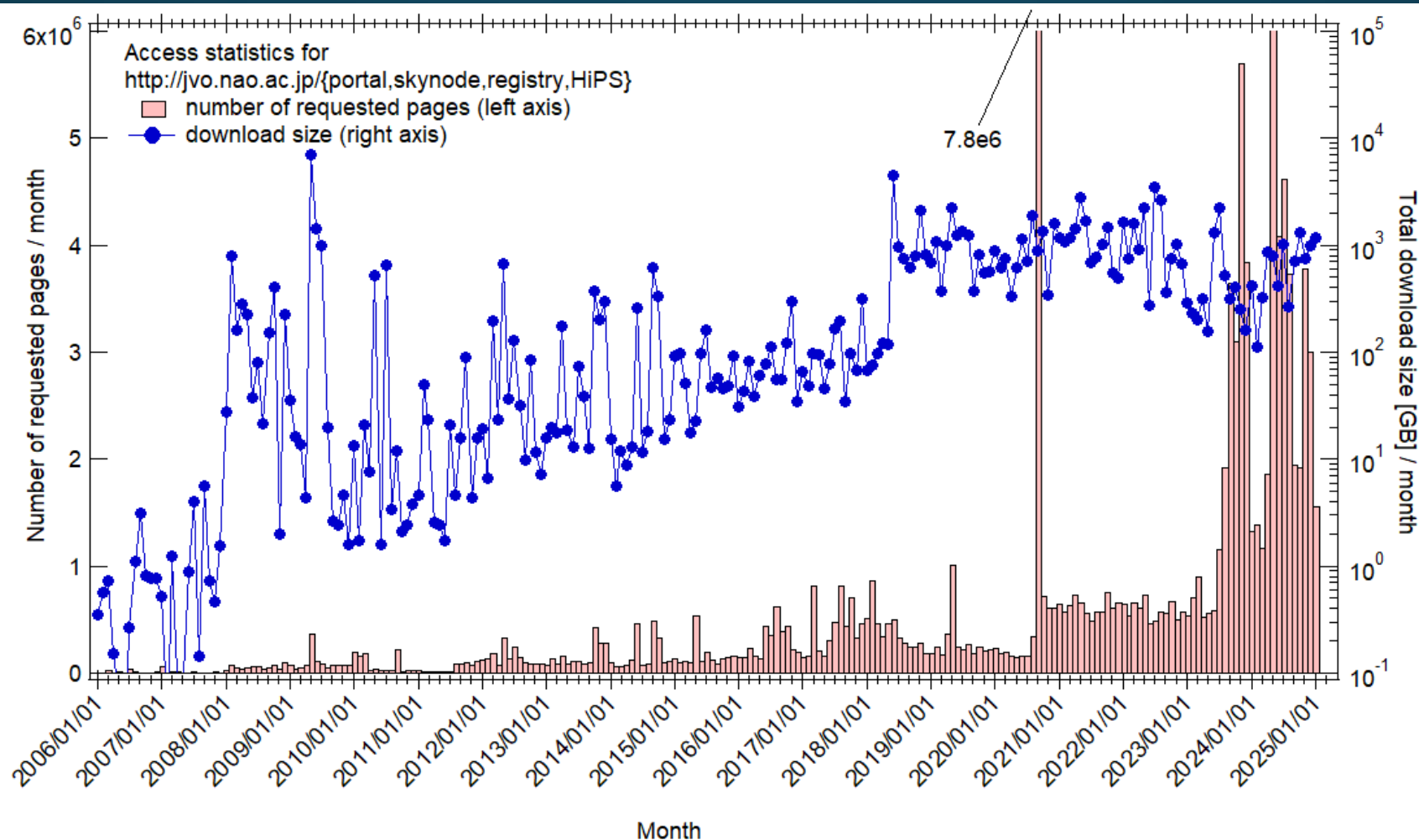
- Data of AKARI, Suzaku, HITOMI, HALCA, IRTS were registered
- Data itself is on DARTS of ISAS. We provides the metadata and URL of the data via VO interface.
- Also included in the JVOSky service.



Access Stat.

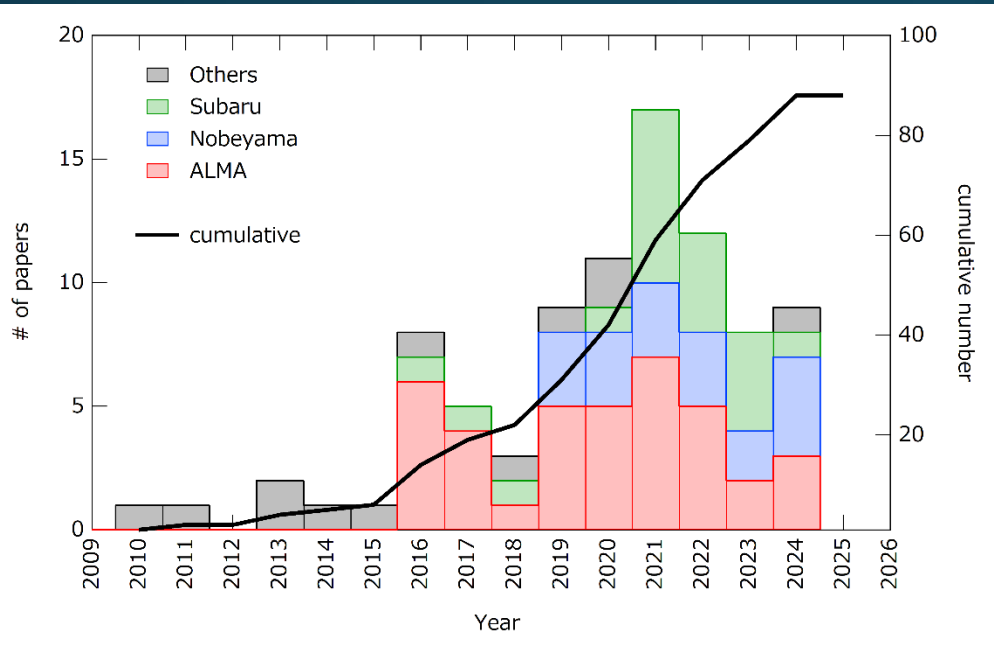
Started HiPS
service

Programmatic
access for
AI ?

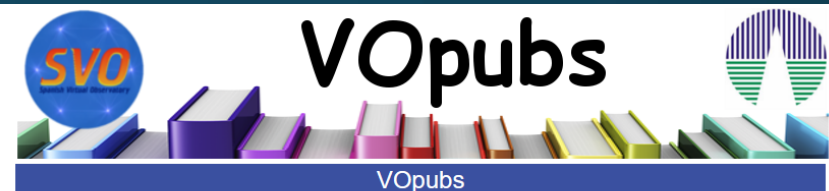


Published papers

Papers that explicitly mention the use of “JVO” in the text.



Papers that mention the use of VO tools or services in the acknowledgement. (by SVO)



4734 Results

Comment	Number
Use of VO tools: TOPCAT	1840
Use of VO tools: SIMBAD	1013
Use of VO tools: Vizier	991
Use of VO tools: Aladin	745
Use of VO tools: VOSA	385
Use of VO services: SVO Filter Profile Service.	290
VO project (SVO) acknowledged in the paper.	175
Use of VO tools: STILTS	104
Use of VO tools: CASSIS	90
Australian All-Sky Virtual Observatory (ASVO)	78
VO project (GAVO) acknowledged in the paper. Use of Millenium database.	67
VO project (GAVO) acknowledged in the paper	55
VO project (China-VO) acknowledged in the paper	41
Use of VO tools: SkyBot	37
Use of VO tools: CDS Cross-match	25
Use of VO services. Theoretical model service provided by SVO.	24
Use of VO tools: ESASky	24
VO project (JVO) acknowledged in the paper.	23
Use of VO tools: Splat-VO	23
VO publication of data collections. Using and accessing SVOCat	21
Use of VO tools: Sky View	18
Use of VO tool: Miriade	16
Use of VO services: JVO	13
Use of VO services. TMAD provided by GAVO	12
VO project (GAVO) acknowledged in the paper. Use of Multidark database.	8
Use of VO tool: SsODNet	7
Use of VO tool: TheoSSA (GAVO)	5
VO project (Euro-VO) acknowledged in the paper	4
Use of VO tools: GAVO cross-matcher	4
Use of VO services: TOSS	3

https://sdc.cab.inta-csic.es/vopubs/jsp/result.jsp?order=pub_id&bib=&com_id=-&com=&m_in=01&y_in=2015&m_en=02&y_en=2025&submit=Submit

Future plan

- Continue the data reduction of HDS spectrum
- Update of V0 crawler DB
- Update of ALMA line DB
- Polarization data on FITS WebQL
- Publication of calibrated ASTE data