

JVO システムの現状

current status of JVO

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

Aladin v11.0

File Edit Image Catalog Overlay Coverage Tool View Interop Help

Available data → 25327

Command

Frame ICRS Projection Spheric

Collections → 25327

- Image → 418
- Gamma-ray → 23
- X-ray → 31
- UV → 27
- Optical → 101
 - HST → 26
 - Skymapper → 7
 - SDSS → 7
 - CFHTS → 12
 - Swift → 5
 - MAMA → 3
 - DECaPS → 2
 - DES → 5
 - PanSTARRS → 7
 - HSC → 5
 - DSS → 4
 - DECaLS → 4
 - DECaLS - the Mellinger color optical survey
 - IPHAS → 8
 - J-PLUS-DR1 (July, 2018)
 - MINK-PAS-PDR201912 (December, 2019)
 - BASS → 1
 - DES DR1 LineA color
 - GTO Public Archive
- Infrared → 124
 - VISTA → 12
 - UKIDSS → 11
 - UltraVista → 5
 - 2MASS → 8
 - DIRBE → 89
 - UKIRT-WFDM → 1
 - WISE → 13
 - Spitzer → 9
 - HST → 5
 - ISO → 2
 - IRIS → 5
 - AKARI-FIS → 9
 - HERSCHEL → 15
 - PILOT → 5
 - APEX → 2
 - JPS-PR1 850um
- Radio
- Galaxies → 43
- Data base → 59
- Catalog → 23652
- Cube → 16
- Auxiliary → 11

select

from -- all collections --

grid study view north up alt match

[View G1] - CDS/P/GALEXGR6/AIS/FUV

0 sec / 0 sec 610MB

Data discovery

This panel is dedicated to browse, to filter, and to select the data collections that you want to load, to display and to process in Aladin. These collections represent all public astronomical data available on the net; several thousands of astronomical image collections, catalog, tables, spectra provided by the Centre de Données astronomiques de Strasbourg and other data providers over the world compatible with the Virtual Observatory protocols and standards. For each collection, you can select various access mode depending of the nature of the data, for instance the progressive access (HPS), or only on a specific region, etc... You can also load ...

- CDS/P/SCUBA/850
- CDS/P/Hi
- CDS/P/Mellinger/co
- CDS/P/HST/I
- CDS/P/allWISE/W2
- CDS/P/XMM/PNe/b
- CDS/P/GALEXGR6
- ESAVO/P/Spitzer/IR
- HSC/DR2/IR

depth: 1000
date: 2019-12-10 16:08:00
data: 00:47:040 -04:22:48
zoom: 100

16 08 00:47:040 -04 22 48
100
11 33 48 25 29 25 19 50
100
100

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
- XRISM data quick look service (New !)
- Data visualization in web browsers.

Japanese Virtual Observatory
Astronomy Data Center
National Astronomical Observatory of Japan

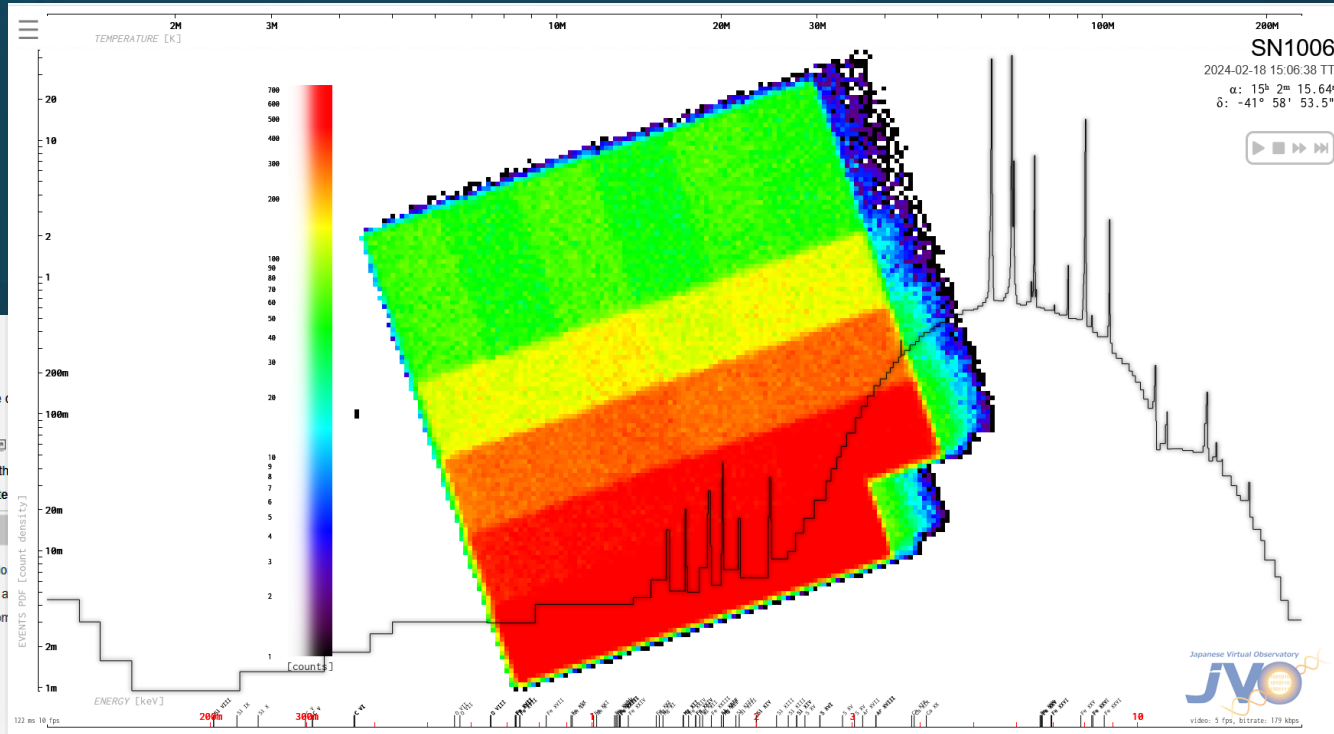
I am a guest [Login](#)

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, VO Crawler DB, JVOsky.	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	XRISM AKARI FIS image Subaru Deep Survey Catalog IRSF LMC/SMC/BMC Survey

XRISM Quick Look service

X-ray satellite, which provides ultra-high-resolution X-ray spectra.



XRISM Quick Look Service

About:

This page provides a quick look service for data acquired by the [XRISM X-ray satellite](#). The

Acknowledgement Information:

When publishing academic papers using XRISM data obtained from this site, please refer to [\[Part of\] the data were retrieved from the JVO portal \(http://jvo.nao.ac.jp/portal\)](#) operate

After you retrieved the data at JVO portal and when you find it helpful for your research work, the

Dataset List [Change Log](#)

To download the data: Click the "download" button at the row of data you want to download

To quick-look at the data: Click the "WebQL" button at the row of data you want to look at

To filter the data: Enter filtering condition at the header of the corresponding column. See

How to use regular expressions:

- "abc" -> matches any string which contains 'abc',
- "." -> matches any length of characters,
- "^a" -> matches any string which starts with 'a',
- "a\$" -> matches any string which ends with 'a' ...
- More information about the syntax of regular expression is found in [help page](#).

Number of data : 855

Order by : data_id asc

Filtering Condition : N/A

[Update](#) [Clear](#) Number of data per page:

Original data is available at [DARTS](#).

#	Observation ID ?	Data ID ?	Object ?	<input type="checkbox"/> all	Download all the checked data	Coords (Ra Dec) ? center:	Instrument	Filter	Mode	Start \geq	Exposure (ksec) \geq
	<input type="text"/>	<input type="text"/>	<input type="text"/>			Center RA/Dec or object name radius: <input type="text"/> Radius radius unit: <input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
1	000100000 DARTS/ISAS/JAXA	xa000100000rs1_p0px0000_cl.evt	Abell2319_BS	<input type="checkbox"/>	XWebQL Download	19h19m02 +44d06m16 289.762 +44.105	RESOLVE	UNDEF	PX_NORMAL	2023-10-09T05:25:26	138.1
2	000100000 DARTS/ISAS/JAXA	xa000100000rs1_p0px1000_cl.evt	Abell2319_BS	<input type="checkbox"/>	XWebQL Download	19h19m02 +44d06m16 289.762 +44.105	RESOLVE	OPEN	PX_NORMAL	2023-10-11T23:13:40	9.1
3	000100000 DARTS/ISAS/JAXA	xa000100000rs1_p0px5000_cl.evt	Abell2319_BS	<input type="checkbox"/>	XWebQL Download	19h19m02 +44d06m16 289.762 +44.105	RESOLVE	FE55	PX_NORMAL	2023-10-12T04:07:45	87.0
4	000101000 DARTS/ISAS/JAXA	xa000101000rs1_p0px0000_cl.evt	Abell2319	<input type="checkbox"/>	XWebQL Download	19h21m12 +43d56m43 290.300 +43.945	RESOLVE	UNDEF	PX_NORMAL	2023-10-15T02:40:10	0.2
5	000101000 DARTS/ISAS/JAXA	xa000101000rs1_p0px1000_cl.evt	Abell2319	<input type="checkbox"/>	XWebQL Download	19h21m12 +43d56m43 290.300 +43.945	RESOLVE	OPEN	PX_NORMAL	2023-10-14T00:38:42	55.8

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)

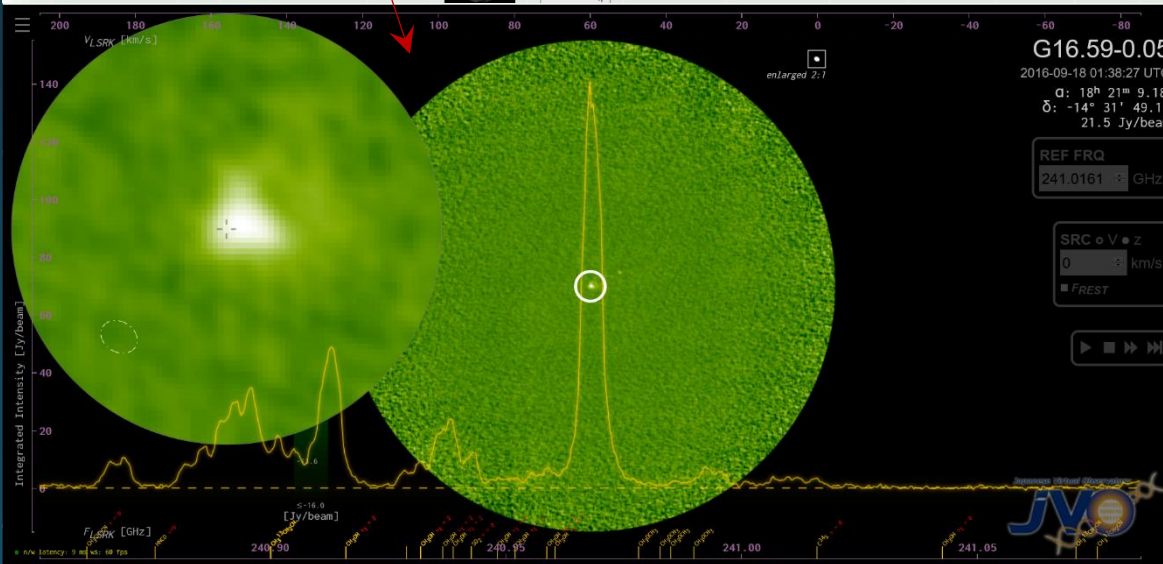
Total number : 2

#	dataset id	<input type="checkbox"/> 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	<input type="checkbox"/>	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	<input type="checkbox"/>	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	<input type="checkbox"/>	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	<input type="checkbox"/>	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	<input type="checkbox"/>	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

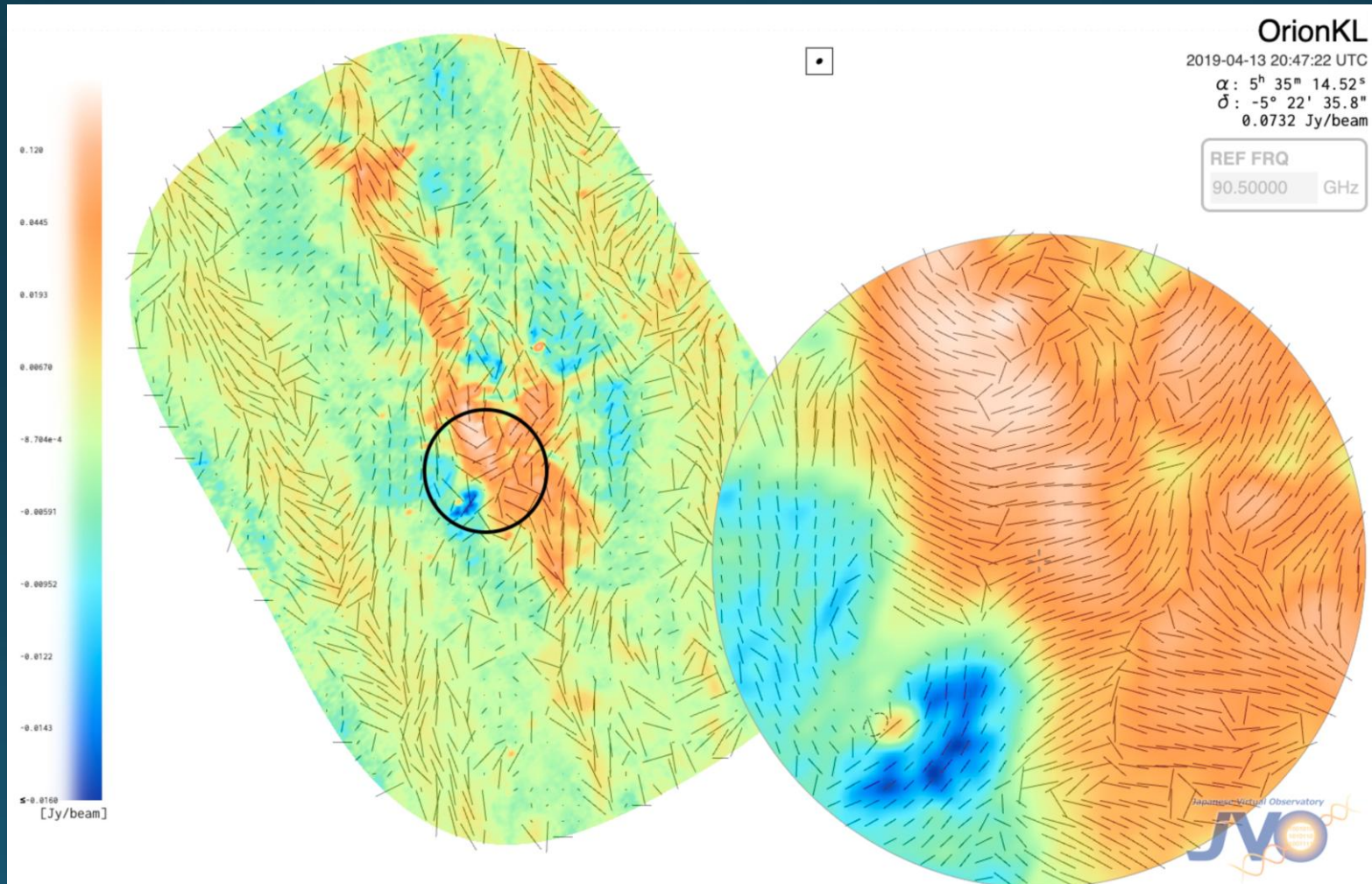
Close



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

Recent updates of FITS WebQL

- Drawing of P-V diagram has been implemented (Mar. 2023)
- Drawing Polarization map will be added soon. (Mar. 2026?)



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

image	Download	Photometry	Magnitude dist.
	<ul style="list-style-type: none"> MOS Image 199MB MOS Param CCD URL PS1 Catalog FITS WebQL 		

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	■ Start Time of Observation (UT) 2009-11-24 11:52:35.66	■ Exposure Time (sec) 600.0
■ Date of Observation 2009-11-24	■ Filter01 FREE	■ Filter02 SC46
■ 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	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.

Gaia Catalog Service

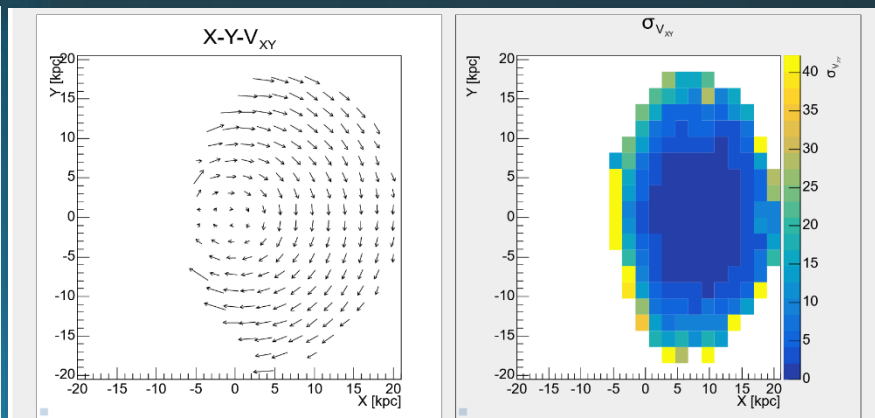
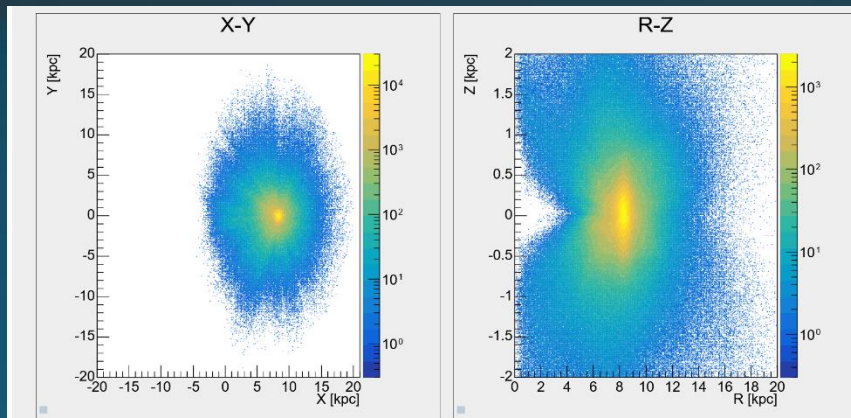
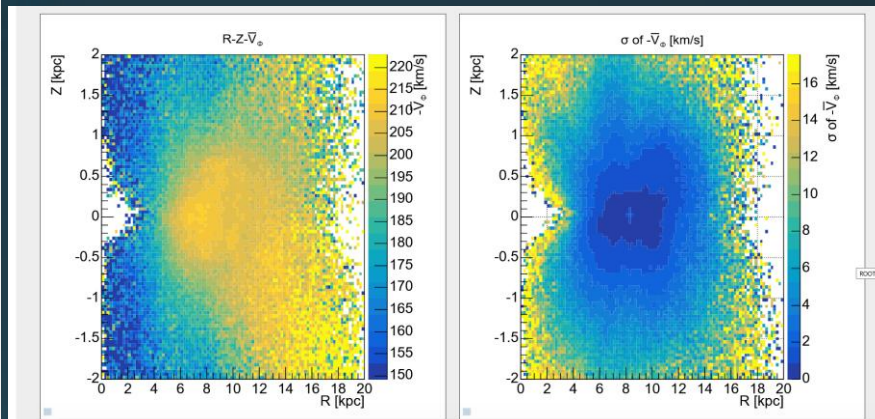
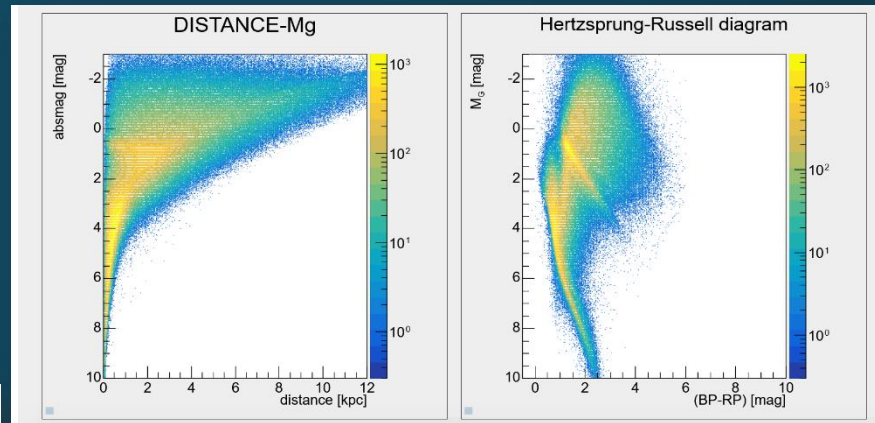
- Gaia Affiliate Data Center
- Catalog data of DR1, DR2, EDR3, DR3
- Gaia WebQL is available from EDR3
- DR3 : 18億天体、~600GB (gzipped csv)
- DR4 : mid 2026 and beyond

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 in the Gaia EDR3.
We also provide parameters derived from the original parameters in the Gaia source catalog, such as the Galactocentric coordinates (L_x, y, z) or (L_r, ϕ, z), velocity (L_{vx}, vy, vz) or (L_v, v_{phi}, vz), and absolute magnitude (L_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, BSGC* were registered
*BSGC : Bisei Space Guard Center
- 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.

The screenshot displays the ALADIN (Astronomical Library and Data Interface) interface. At the top, there is a search bar labeled "Coordinate or ObjectName:" with a "Go" button. Below the search bar is a list of astronomical instruments, each with a sub-list of specific instruments and their counts in parentheses:

- ALMA
 - ALMA (0)
- Subaru
 - Subaru (0)
 - Suprime-Cam (0)
 - MOIRCS (0)
 - HDS (0)
- NRO45m
 - NRO45m (0)
 - FOREST (0)
- AKARI
 - AKARI (0)
 - FIS (0)
 - IRC (0)
- HALCA
 - HALCA (0)
- HITOMI
 - HITOMI (0)
- Suzaku
 - Suzaku (1000)
- ASKAP
 - ASKAP (0)
- CFHT
 - CFHT (0)
 - MegaPrime (0)
 - WIRCAM (0)
- Chandra
 - Chandra (0)

The main display area shows a star field with numerous red squares representing observation footprints. A popup window for the object **J173933-285533** is visible, containing the following information:

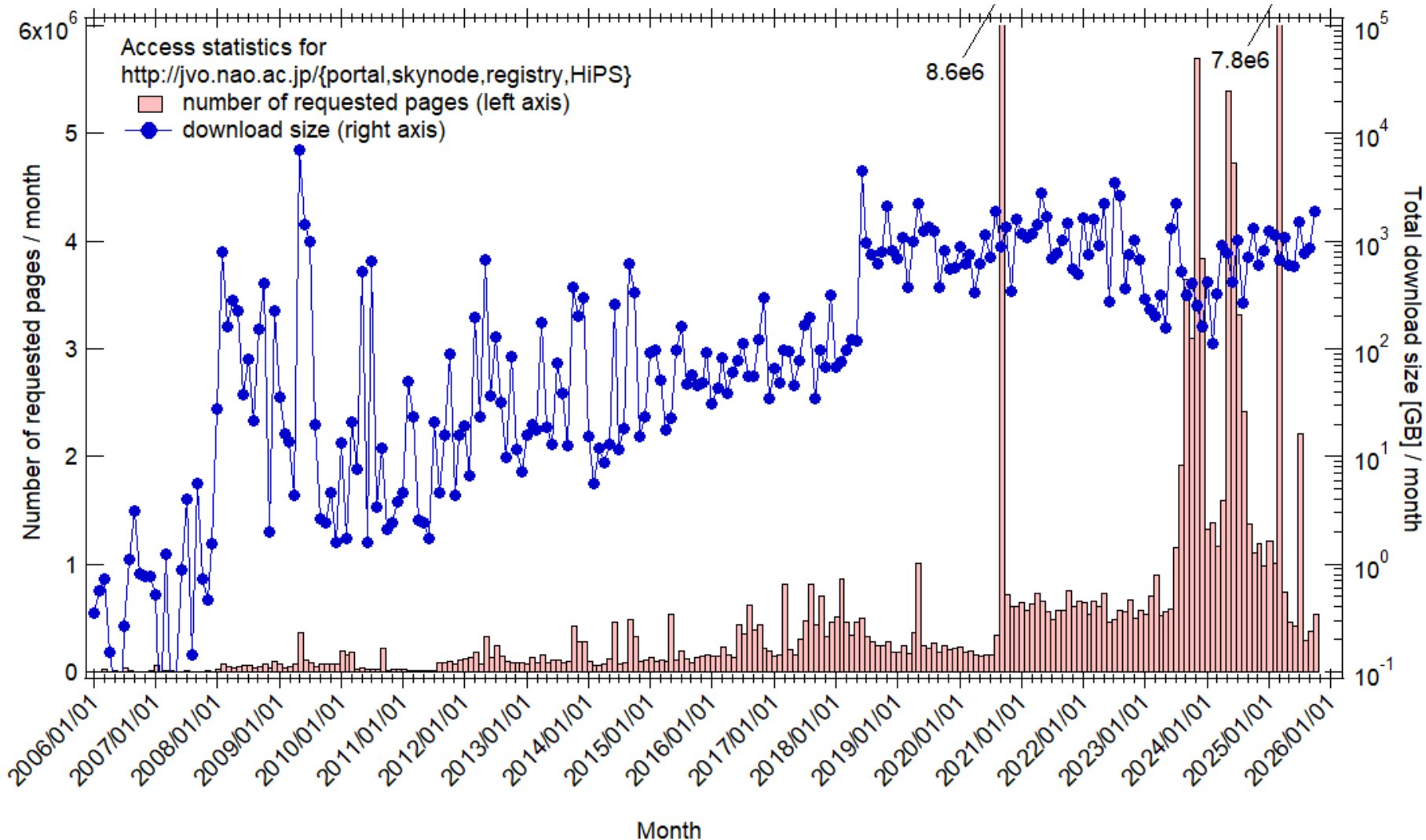
- id: 100000016606
- title: Suzaku observation for GCL2 (event)
- target: GCL2
- URL: [Download](#)

At the bottom left of the star field, the field of view is indicated as "FoV: 14.53°". The ALADIN logo is in the bottom right corner.

Access Stat.

Started HiPS
service

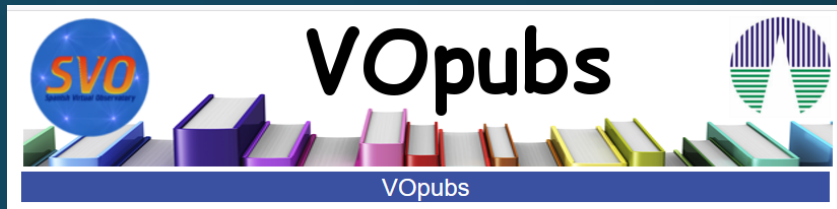
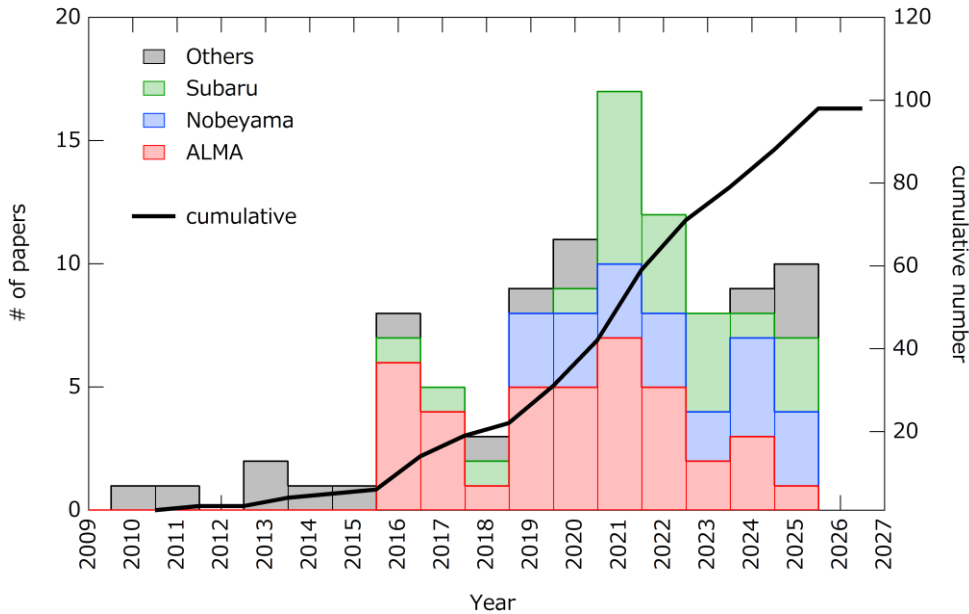
Programmatic
access for
AI ?



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)



5267 Results

Comment	Number
Use of VO tools: TOPCAT	2072
Use of VO tools: SIMBAD	1137
Use of VO tools: Vizier	1106
Use of VO tools: Aladin	813
Use of VO tools: VOSA	435
Use of VO services: SVO Filter Profile Service.	308
VO project (SVO) acknowledged in the paper.	174
Use of VO tools: STILTS	112
Use of VO tools: CASSIS	89
Australian All-Sky Virtual Observatory (ASVO)	84
VO project (GAVO) acknowledged in the paper. Use of Millenium database.	67
VO project (GAVO) acknowledged in the paper	57
VO project (China-VO) acknowledged in the paper	41
Use of VO tools: SkyBot	39
Use of VO tools: ESASky	27
Use of VO services. Theoretical model service provided by SVO.	27
Use of VO tools: CDS Cross-match	27
VO project (JVO) acknowledged in the paper.	23
Use of VO tools: Sky View	22
Use of VO tools: Splat-VO	22
VO publication of data collections. Using and accessing SVOcat	21
Use of VO tool: Miriade	16
Use of VO services. TMAD provided by GAVO	13
Use of VO services: JVO	13
VO project (GAVO) acknowledged in the paper. Use of Multidark database.	8
Use of VO tool: SsODNet	8
Use of VO tool: TheoSSA (GAVO)	5
VO project (Euro-VO) acknowledged in the paper	4
Use of VO tools: GAVO cross-matcher	4

https://sdc.cab.inta-csic.es/vopubs/jsp/result.jsp?order=pub_id&bib=&com_id=&com=&in=01&y_in=2015&en=12&y_en=2026&submit=Submit

Future plan

- Continue the data reduction of HDS spectrum
- Update of V0 crawler DB
- Polarization data on FITS WebQL (coming soon)
- Calibrated ASTE data