

VOツール使用法(1)



TOPCAT

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TOPCAT

(Tool for Operations on Catalogues And Tables)

- カタログ・テーブルデータの処理
- VOからのカタログの取得・検索
- グラフの作成
- ファイル形式 : FITS, VOTable, ASCII, CSV ...

- ホームページ

<http://www.star.bristol.ac.uk/~mbt/topcat/>

インストール

- <http://www.star.bristol.ac.uk/~mbt/topcat/#install>
- (Virtual Machine にはインストール済)
- ダウンロードして使用する場合
 - Windows
 - topcat-full.jar をダウンロード。ダブルクリックで実行。
 - Mac
 - topcat-full.dmg をダウンロードしてインストール。
 - UNIX
 - topcat-full.jar と、起動スクリプトをダウンロード
 - スクリプトに実行権限を付与(`chmod +x topcat`)
 - コマンドラインから起動
- Web start も可能
 - OSに依らず。ホームページのWebStartにある topcat-full をクリックすると、起動。
- 大きなデータを読む場合は、JAVAの最大メモリ量を大きく設定して開く。
 - Windows: `java -Xmx512m -jar topcat-full.jar`
 - Mac: `/Applications/TOPCAT.app/bin/topcat -Xmx512m`
(パスはdmgからインストールした場所)

マニュアル類

- 講習会用資料
 - <http://jvo.nao.ac.jp/vos2014a/>
- 本家マニュアル
 - <http://www.star.bristol.ac.uk/~mbt/topcat/#docs>
 - FAQ, スクリーンショット集などもある
- Euro VOによるVO使用例 (他のVOツールも含む)
 - <http://www.euro-vo.org/?q=science/scientific-tutorials>
- Help 
 - その画面に関するHelpページを表示

- テキスト P.118 使用例
球状星団M3のHR図作成

検索

画面が狭い場合、
File => Scrollable
を選ぶと、スクロールバーが使える。

VizieR Catalogue Service

File Help

VizieR Server
Server:

Row Selection
 Cone Selection
Object Name: Resolve
RA: degrees (J2000)
Dec: degrees (J2000)
Radius: degrees
 All Rows
Maximum Row Count:

Column Selection
Output Columns:

Catalogue Selection
By Category By Keyword Surveys Missions
Keywords:
 Sub-Table Details Include Obsolete Tables

Δ Name	Popularity	Density	Description
I/278	514	0	Catalog of stars in M3 (von Zeipel, 1908)
J/A+A/208/83	58	0	M3 photographic photometry (Buenann
J/A+A/320/757	16	0	M3 stars CCD photometry (Ferraro+ 19
J/A+A/324/045	13	0	Blue stragglers in M3 (Ferraro+ 1997)
J/A+A/392/851	398	0	QSOS in the M3 field (Meusinger+, 200
J/A/J/108/1786	514	0	Blue stragglers and variable stars in M
J/A/J/120/1364	320	0	Abundances in M3 and M13 (Cavallo+,
J/A/J/122/3219	529	0	M3 and M13 CCD BV photometry (Rey+
I/A/I/129/1596	239	0	IRV1 photometric variability surve of M3

OK

TOPCAT

File Views Graphics Joins Windows VO Interop Help

Table List: 1: J_A+A_320_75

Current Table Properties

TOPCAT(1): Table Browser

File Subsets Help

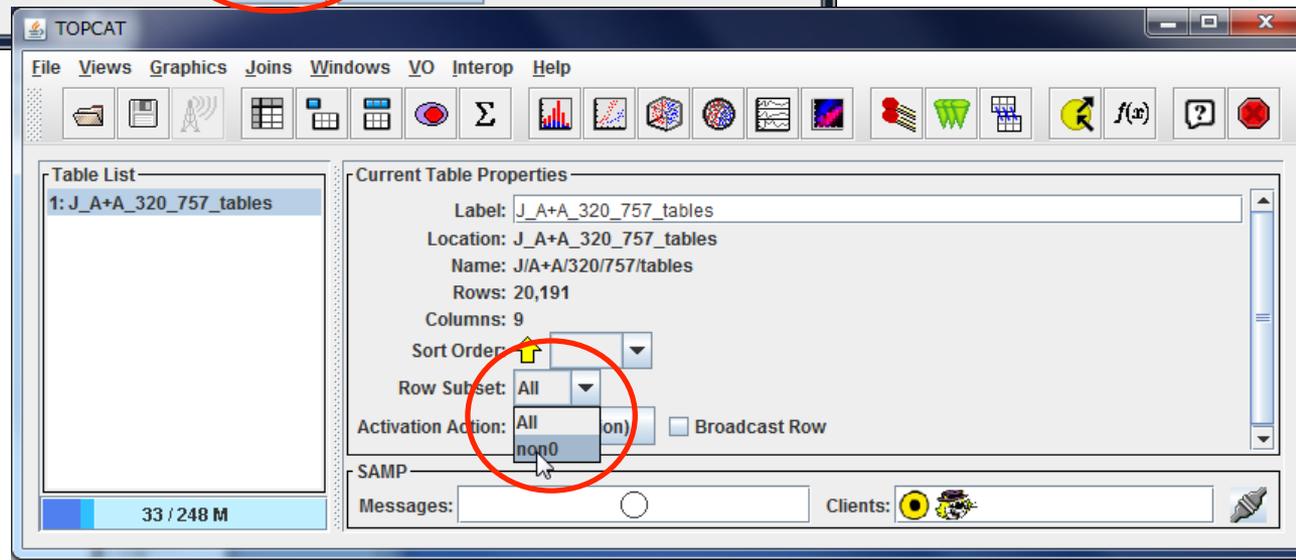
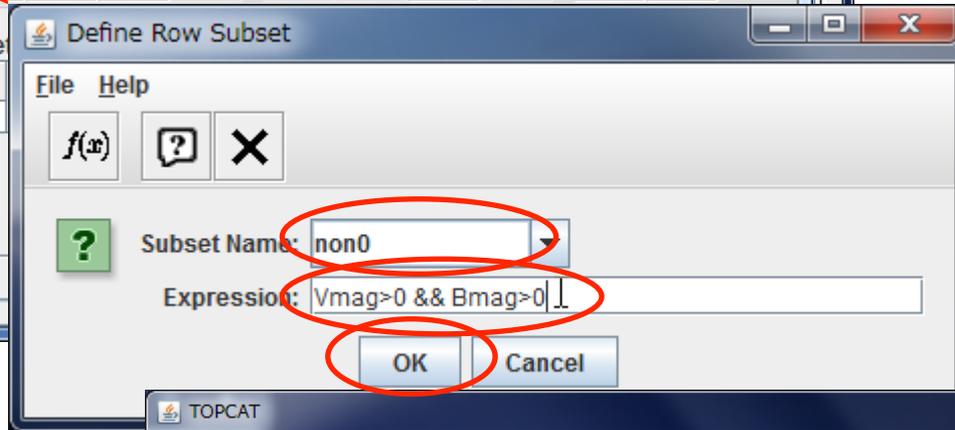
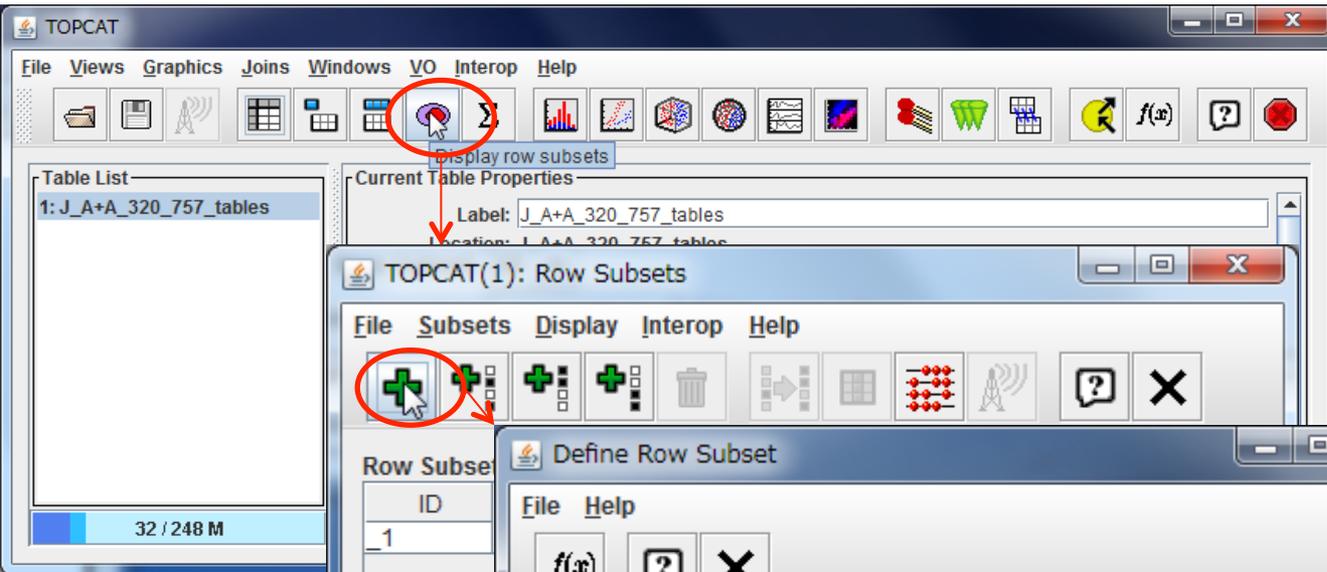
Table Browser for 1: J_A+A_320_757_tables

	recno	Name	Vmag	Bmag	Imag	Xpos	Ypos	Star	n_Star
1	1	1	17.024	17.748	0.	-87.	-460.	0	0
2	2	2	15.737	16.137	0.	142.	-440.6	17	1
3	3	3	17.618	18.305	0.	163.	-436.	0	0
4	4	4	16.304	17.028	0.	-3.	-433.	0	0
5	5	5	15.745	16.215	0.	127.	-431.	0	0
6	6	6	17.715	18.384	0.	218.	-421.	0	0
7	7	7	16.844	17.844	0.	269.	-417.	0	0
8	8	8	16.844	17.844	0.	126.	-411.	0	0
9	9	9	16.844	17.844	0.	-178.	-410.	0	0
10	10	10	15.844	16.844	0.	-29.4	-408.7	92	1
11	11	11	15.844	16.844	0.	-84.	-398.	430	1
12	12	12	15.844	16.844	0.	40.	-398.	0	0
13	13	13	15.908	16.655	0.	-301.	-397.	0	0
14	14	14	15.938	16.652	0.	-358.	-396.	0	0
15	15	15	17.618	18.49	0.	-61.	-383.	0	0
16	16	16	17.995	18.636	0.	285.	-378.	0	0
17	17	17	15.745	16.215	0.	101.	-377.	0	0
18	18	18	17.636	18.306	0.	230.	-375.	0	0
19	19	19	17.359	18.036	0.	68.	-375.	0	0

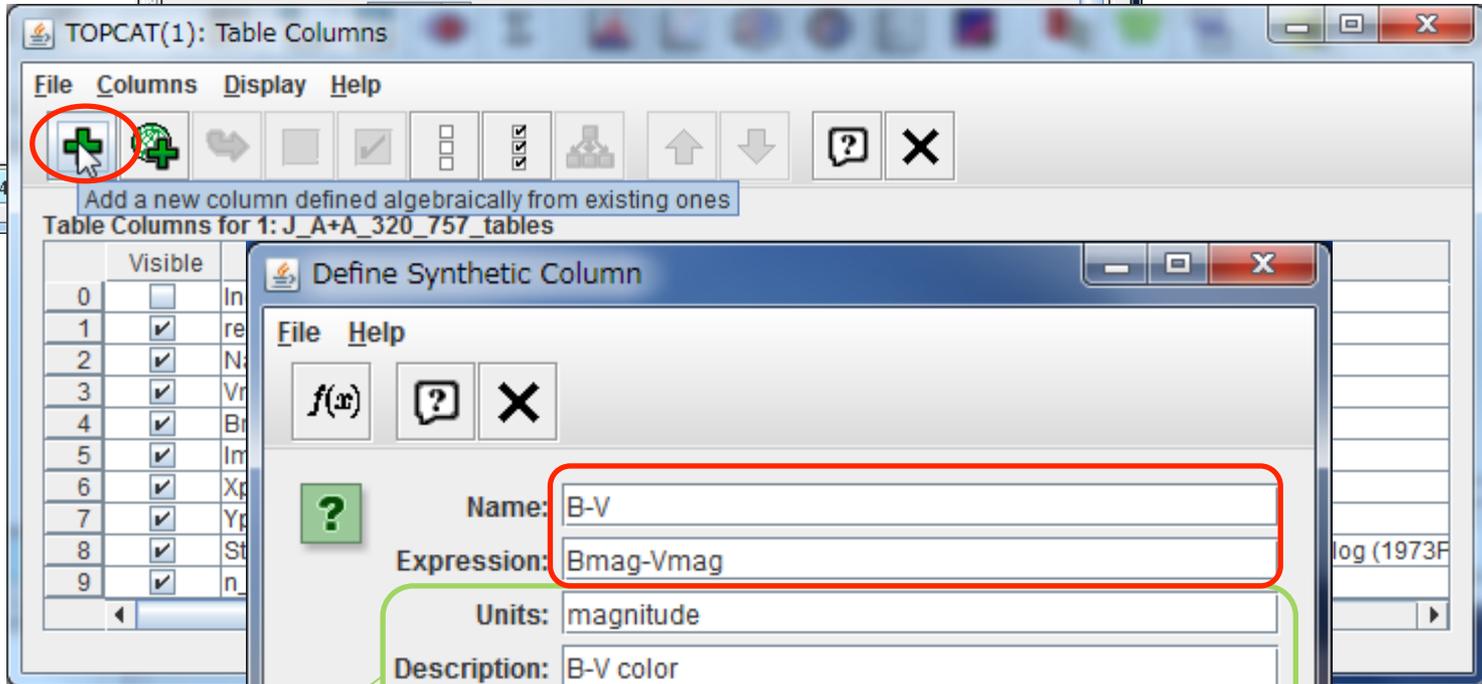
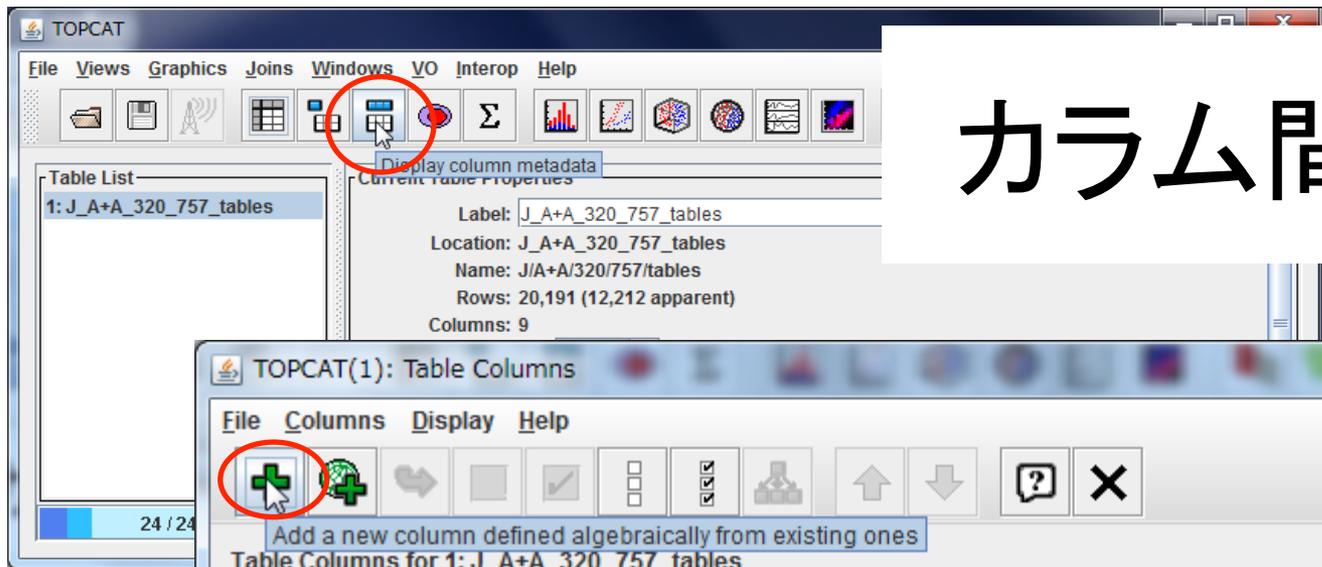
セルを選択して、データの直接編集も可能

31 / 24

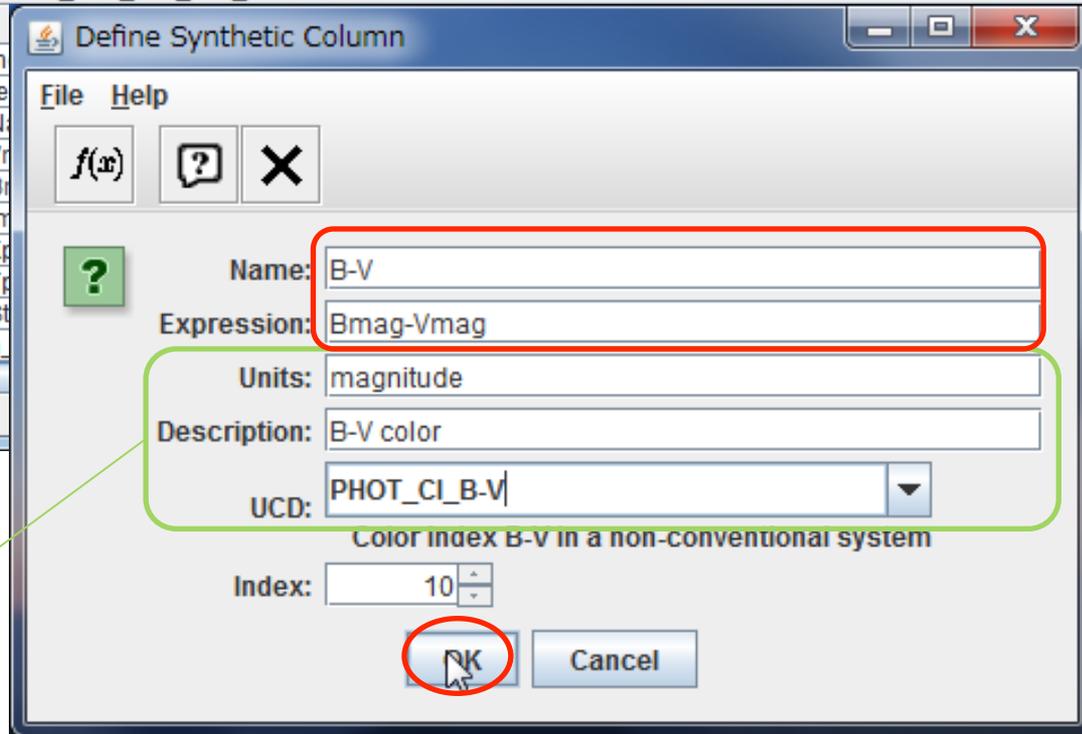
Filter

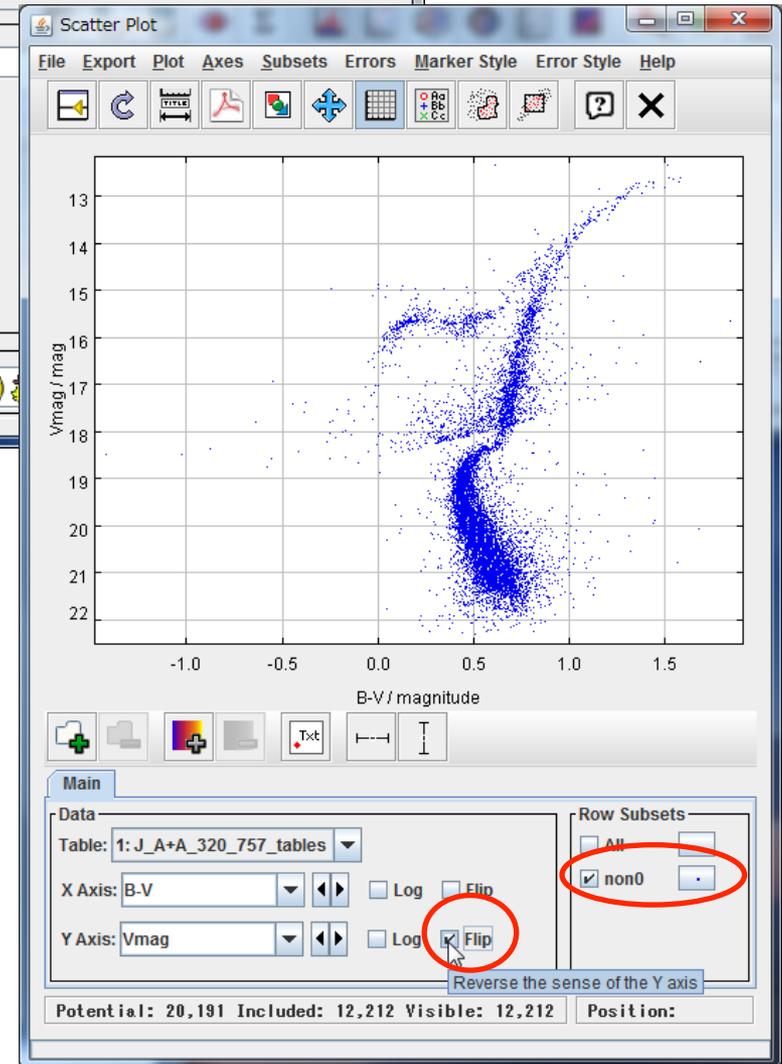
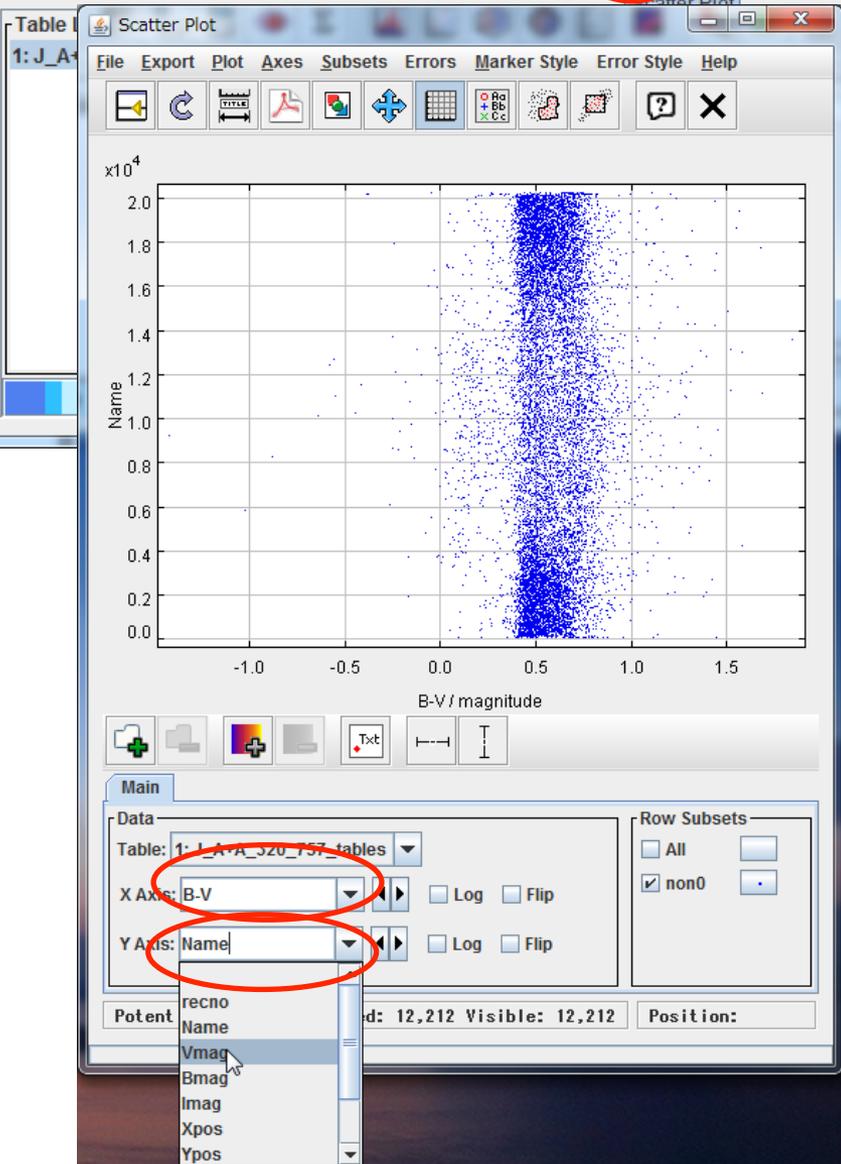


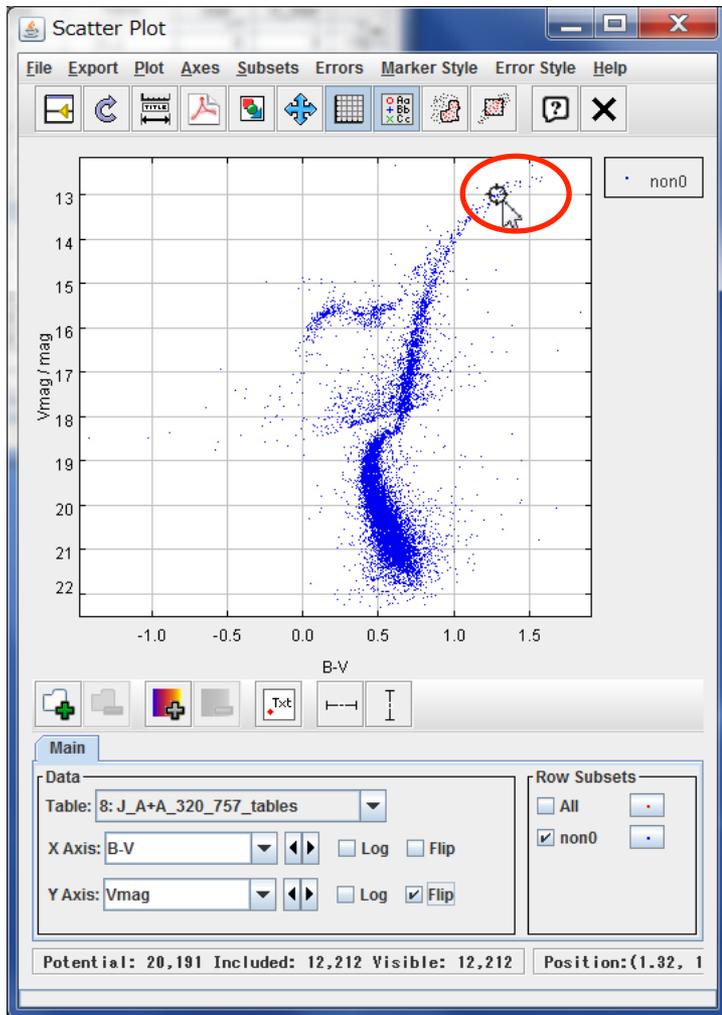
カラム間の演算



この3つは記入
しなくてもよい







TOPCAT(8): Table Browser window showing a table of data. The table is titled 'Table Browser for 8: J_A+A_320_757_tables'. The columns are: recno, Name, Vmag, Bmag, Imag, Xpos, Ypos, Star, n_Star. A red circle highlights the row corresponding to the point in the scatter plot (recno 10873, Vmag 13.023, Bmag 14.307).

recno	Name	Vmag	Bmag	Imag	Xpos	Ypos	Star	n_Star
10865	10865	19.206	0.	18.744	88.9	10.2	0	0
10866	10866	18.502	0.	17.385	45.3	10.2	0	0
10867	10867	18.955	0.	18.304	94.1	10.2	0	0
10868	10868	16.496	17.254	15.64	35.1	10.3	0	0
10869	10869	18.635	0.	18.053	24.9	10.3	0	0
10870	10870	19.029	0.	18.437	-111.7	10.3	0	0
10871	10871	19.25	0.	18.115	182.1	10.3	0	0
10872	10872	13.366	14.48	12.081	-18.8	10.4	0	0
10873	10873	13.023	14.307	11.629	-57.7	10.4	0	0
10874	10874	18.986	0.	18.379	-209.9	10.4	0	0
10875	10875	19.637	0.	19.004	-89.6	10.4	0	0
10876	10876	18.057	0.	17.251	87.6	10.5	0	0
10877	10877	18.652	0.	17.987	28.3	10.5	0	0
10878	10878	20.403	0.	20.145	29.9	10.5	0	0
10879	10879	18.74	0.	18.097	-37.9	10.5	0	0
10880	10880	18.895	0.	18.292	-100.	10.5	0	0
10881	10881	19.016	0.	18.49	31.	10.6	0	0

テーブルデータと、グラフ上の点の
対応関係を確認できる

恒星理論データの検索

The image shows two overlapping windows from a software application. The background window is titled "Load New Table" and has a menu bar with "File", "DataSources", "Examples", and "Help". Its toolbar contains several icons, with a blue folder icon circled in red. The foreground window is titled "BaSTI Data Loader" and has a menu bar with "File" and "Help". It features a "Query" tab and a "Results" tab. Below the tabs is a text box with instructions: "Build your query using provided fields. Check the boxes to select the fields you want in the query results. Then press SUBMIT: the BaSTI tables that satisfy your query will be displayed in the Results tab. Keep the mouse over the text fields to get an hint on boundary values." Below this is a form with various search parameters, each with a checked checkbox and a dropdown menu. The parameters are: Data Type (Isochrone), Scenario (Canonical), Type (Normal), Mass Loss (0.4), Photometric System (Johnson Castelli), and Mixture (Alpha Enhanced). To the right of these are numerical input fields for Age [Gyr] (12 to 13), Mass [MSun], Z, Y, [Fe/H] (-2 to -1), and [M/H]. The "min" and "max" labels are positioned above the Age and [Fe/H] fields. At the bottom of the form, it says "Number of results (present query): 24". There are "RESET" and "SUBMIT" buttons, with the "SUBMIT" button circled in red. An "OK" button is at the very bottom of the window.

Format: (auto)
Location:
Loading Tables

BaSTI Data Loader

File Help

Query Results

Build your query using provided fields. Check the boxes to select the fields you want in the query results. Then press SUBMIT: the BaSTI tables that satisfy your query will be displayed in the Results tab. Keep the mouse over the text fields to get an hint on boundary values.

	min	max
Data Type <input checked="" type="checkbox"/> Isochrone	Age [Gyr] <input checked="" type="checkbox"/> 12	13
Scenario <input checked="" type="checkbox"/> Canonical	Mass [MSun] <input type="checkbox"/>	
Type <input checked="" type="checkbox"/> Normal	Z <input checked="" type="checkbox"/>	
Mass Loss <input checked="" type="checkbox"/> 0.4	Y <input checked="" type="checkbox"/>	
Photometric System <input checked="" type="checkbox"/> Johnson Castelli	[Fe/H] <input checked="" type="checkbox"/> -2	-1
Mixture <input checked="" type="checkbox"/> Alpha Enhanced	[M/H] <input checked="" type="checkbox"/>	

Number of results (present query): 24

RESET SUBMIT

OK

選択していくのにやや
時間がかかります

BaSTI Data Loader

File Help

Query Results

Found 24 results.
Select the desired rows and press OK to load the corresponding tables.

	Mass Loss	Photometry	Mixture	Age [Gyr]	Z	Y	[Fe/H]	[M/H]
4		JOHNSON CASTELLI	ALFA ENHANCED	12	.001	.246	-1.62	-1.27
4		JOHNSON CASTELLI	ALFA ENHANCED	12.5	.001	.246	-1.62	-1.27
4		JOHNSON CASTELLI	ALFA ENHANCED	13	.001	.246	-1.62	-1.27
4		JOHNSON CASTELLI	ALFA ENHANCED	12	.001	.246	-1.62	-1.27
4		JOHNSON CASTELLI	ALFA ENHANCED	12.5	.001	.246	-1.62	-1.27
4		JOHNSON CASTELLI	ALFA ENHANCED	13	.001	.246	-1.62	-1.27
4		JOHNSON CASTELLI	ALFA ENHANCED	12	.001	.246	-1.62	-1.27
4		JOHNSON CASTELLI	ALFA ENHANCED	12.5	.001	.246	-1.62	-1.27
4		JOHNSON CASTELLI	ALFA ENHANCED	13	.001	.246	-1.62	-1.27
4		JOHNSON CASTELLI	ALFA ENHANCED	12	.001	.246	-1.62	-1.27
4		JOHNSON CASTELLI	ALFA ENHANCED	12.5	.001	.246	-1.62	-1.27
4		JOHNSON CASTELLI	ALFA ENHANCED	13	.001	.246	-1.62	-1.27
4		JOHNSON CASTELLI	ALFA ENHANCED	12	.001	.246	-1.62	-1.27
4		JOHNSON CASTELLI	ALFA ENHANCED	12.5	.001	.246	-1.62	-1.27
4		JOHNSON CASTELLI	ALFA ENHANCED	13	.001	.246	-1.62	-1.27
4		JOHNSON CASTELLI	ALFA ENHANCED	12	.001	.246	-1.62	-1.27
4		JOHNSON CASTELLI	ALFA ENHANCED	12.5	.001	.246	-1.62	-1.27
4		JOHNSON CASTELLI	ALFA ENHANCED	13	.001	.246	-1.62	-1.27
4		JOHNSON CASTELLI	ALFA ENHANCED	12	.001	.246	-1.62	-1.27
4		JOHNSON CASTELLI	ALFA ENHANCED	12.5	.001	.246	-1.62	-1.27
4		JOHNSON CASTELLI	ALFA ENHANCED	13	.001	.246	-1.62	-1.27

OK

Load New Table

File DataSources Examples Help

Format: (auto)

Location: OK

Filestore Browser

System Browser

Loading Tables

BaSTI

 Cancel

絶対等級の計算

The image shows the TOPCAT software interface. The main window displays a table of columns with the following data:

Tab	Visible	Name	\$ID	Class
2	<input checked="" type="checkbox"/>	Name	\$2	Integer
3	<input checked="" type="checkbox"/>	Vmag	\$3	Float
4	<input checked="" type="checkbox"/>	Bmag	\$4	Float
5	<input checked="" type="checkbox"/>	Imag	\$5	Float
6	<input checked="" type="checkbox"/>	Xpos	\$6	Float
7	<input checked="" type="checkbox"/>	Ypos	\$7	Float
8	<input checked="" type="checkbox"/>	Star	\$8	Short
9	<input checked="" type="checkbox"/>	n_Star	\$9	Short
10	<input checked="" type="checkbox"/>	B-V	\$10	Float
11	<input checked="" type="checkbox"/>	Mv	\$11	Double

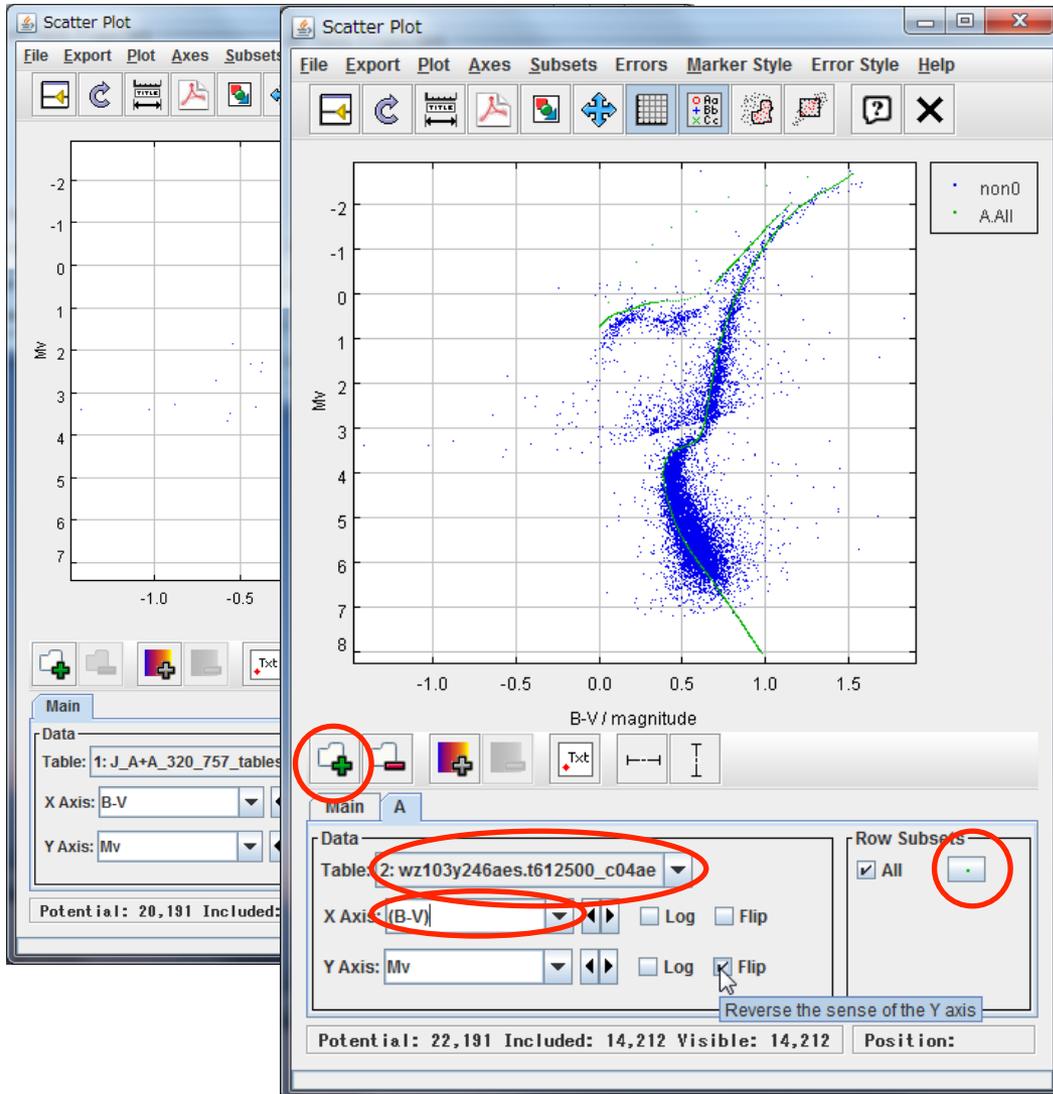
The 'Define Synthetic Column' dialog box is open, showing the following fields:

- Name: Mv
- Expression: $Vmag - 5 \cdot \log_{10}(10.4 \cdot 100)$
- Units: (empty)
- Description: (empty)
- UCD: (empty) no UCD
- Index: 11

Buttons: OK, Cancel

重ねてplot

色・点の形などは、見やすいように調整してみましょう。



Plot Style Editor

Legend
Icon: A.All Label: A.All Hide Legend

Marker
Shape: Circle Size: 1

Colour: Green

Transpa: 1

Error Ba: Pink

Line
Thickne: 1 Dash: Solid

None
Dot to Dot
Linear Correlation

Cancel OK

Row subset

The image displays a software interface for creating a row subset from a scatter plot. It consists of three main components:

- Scatter Plot (Left):** A plot of *Mv* (Y-axis, ranging from -2 to 8) versus *B-V / magnitude* (X-axis, ranging from -1.0 to 1.5). The plot shows a distribution of blue data points with a magenta curve overlaid. A red circle highlights the 'Draw a region' button in the toolbar.
- Scatter Plot (Middle):** A second instance of the scatter plot where a grey rectangular region is drawn around a portion of the data. A red circle highlights this region.
- New Subset Dialog (Right):** A dialog box for creating a new subset. It contains:
 - A text field for 'New Subset Name' with the value 'HorizontalBranch'.
 - An 'Add Subset' button, which is circled in red.
 - A tooltip for the 'Add' button that reads 'Add the new subset to the table's Subset'.
 - 'Transmit Subset' and 'All Clients' buttons.
 - A 'Cancel' button.

At the bottom of the interface, there are panels for 'Data' and 'Row Subsets'. The 'Data' panel shows 'Table: 1: J_A+A_320_757_tables', 'X Axis: B-V', and 'Y Axis: Mv'. The 'Row Subsets' panel shows a list of subsets: 'All' (unchecked) and 'non0' (checked).

図の保存

Scatter Plot

File Export Plot Axes Subsets Errors Marker Style Error Style Help

non0
A.All
HorizontalBranch
A.HorizontalBranch

Mv

タイトル・軸名・軸範囲の指定

Plot Title
Title: M3 HR diagram

X Axis
Label: B-V / magnitude
Range: -1 - 2

Y Axis
Label: Mv
Range: -3 - 8

Cancel Apply OK

Potential: 22,191 Included: 14,212 Visible: 14,212 Position:

Scatter Plot

File Export Plot Axes Subsets Errors Marker Style Error Style Help

Export as pdf
Export as gif
Export as eps
Export as eps-gzip
Export as jpeg
Export as png

non0
A.All

Export Plot As gif

参照: VOS2013a

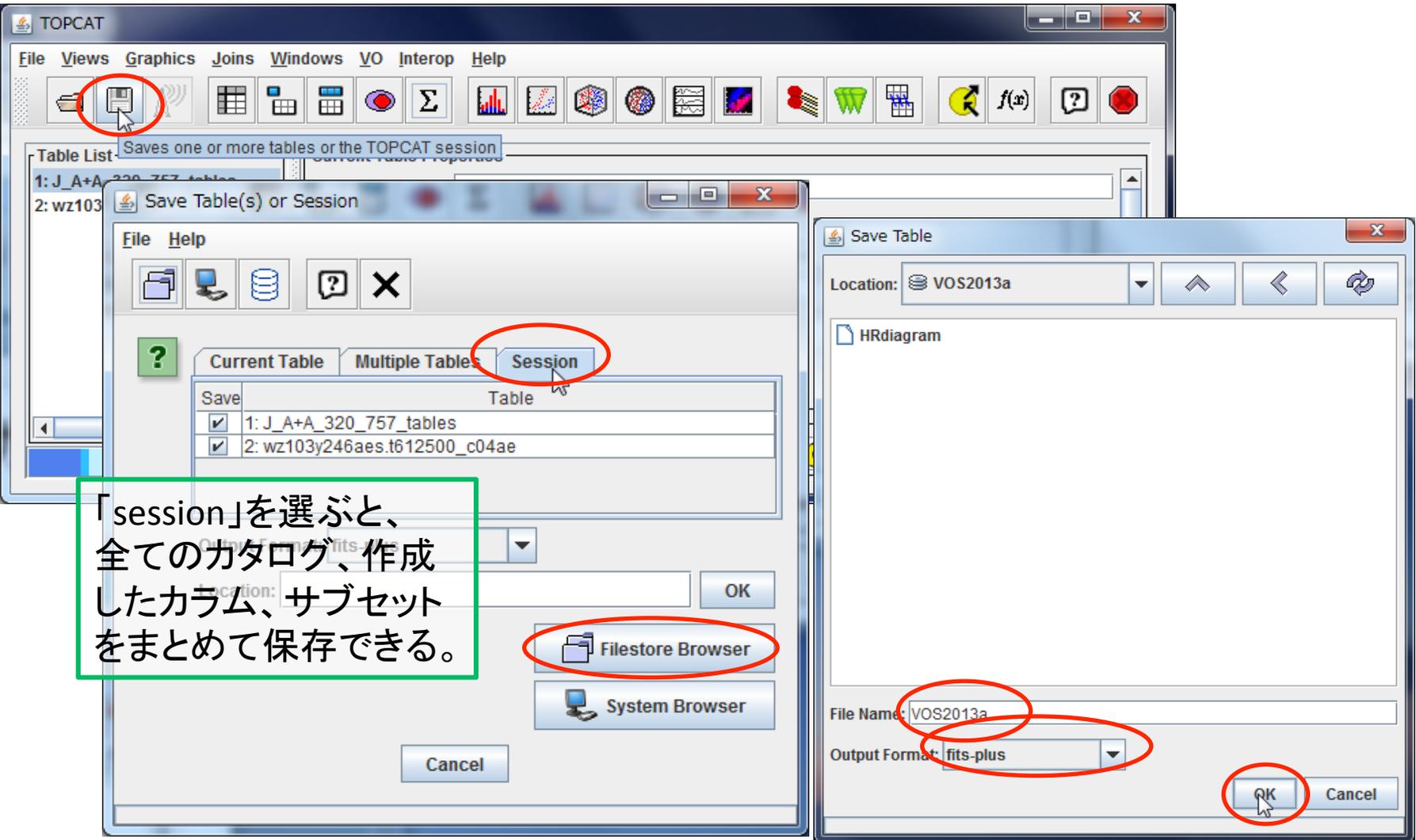
ファイル名: HRdiagram

ファイルのタイプ: .gif

Write gif 取消

Potential: 22,191 Included: 14,212 Visible: 14,212 Position:

データの保存



使用例(2) クロスマッチ

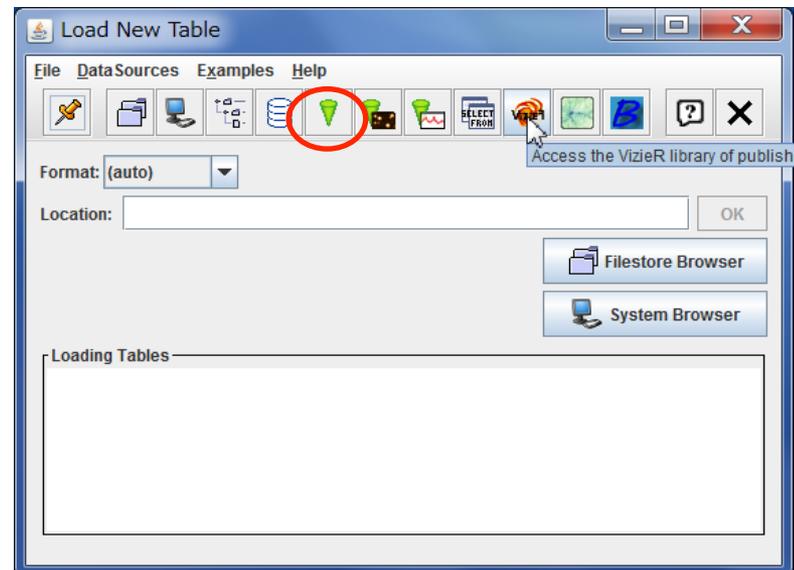
X線と可視光でのAGNのカatalogを取得してクロスマッチする。

方法1

2つのデータを検索・取得した後、クロスマッチ。

方法2

手元のカatalogとVO上のデータとをクロスマッチしながら検索



Cone Search

File Columns Registry Interop Help

Available Cone Services

Registry: http://registry.astrogrid.org/astrogrid-registry/services/RegistryQueryv1_0

Keywords: XMM AGN

Match Fields: Short Name Title Subjects ID Publisher Description

Accept Resource Lists

Cancel Query Submit Query

Short Name	Title
AGNSDSSXM2	Sloan Digital Sky Survey/XMM-Newton Type1 AGN X-Ray and Radio Properties Ca
AGNSDSSXMM	Sloan Digital Sky Survey/XMM-Newton AGN Spectral Properties Catalog
CAIXA	Catalog of AGN in the XMM-Newton Archive
J/A+A/444/79	XMM observations of Lockman Hole brightest AGNs (Mateos+, 2005)
J/A+A/457/501	XMM-Newton survey of the ELAIS-S1 field (Puccetti+, 2006)
J/A+A/459/693	XMM/CDFS AGN intrinsic absorption (Akylas+, 2006)
J/A+A/471/1105	XMM-LSS at 240MHz and 610MHz (Tasse+, 2007)
J/A+A/473/105	Lockman Hole AGN variability with XMM (Mateos+, 2007)
J/A+A/474/472	XMM-LSS survey AGN classifications (Carretti+, 2007)

AccessURL	Description	Version
http://heasarc.gsfc.nasa.gov/cgi-...		

Cone Parameters

Cone URL: <http://heasarc.gsfc.nasa.gov/cgi-bin/vo/cone/coneGet.pl?table=caixa&>

Object Name: Resolve

RA: 170 degrees (J2000) Accept Sky Positions

Dec: 30 degrees (J2000)

Radius: 20 degrees

OK

Load Selected Table

Cone search から
Keyword: XMM AGN
でサービス検索。
ヒットしたサービスの
中から、CAIXAを使用。

RA: 170 deg
Dec: 30 deg
Radius: 20 deg
で検索すると
14件ヒット

Cone Search

File Columns Registry Interop Help

Available Cone Services

Registry: http://registry.astrogrid.org/astrogrid-registry/services/RegistryQueryv1_0

Keywords: SDSS quasar

Match Fields: Short Name Title Subjects ID Publisher Description

Accept Resource Lists

Cancel Query Submit Query

Short Name	Title
SDSSXMMQSO	Sloan Digital Sky Survey (DR3)/XMM-Newton Quasar Survey Catalog
SWSDSSQSO	Swift Simultaneous UV, Optical, and X-Ray Observed Quasar Catalog
VII/243	SDSS quasar catalog, III. (Schneider+, 2005)
VII/252	SDSS-DR5 quasar catalog (Schneider+, 2007)
VII/260	The SDSS-DR7 quasar catalog (Schneider+, 2010)
VII/269	SDSS Quasar Catalog, DR9Q (Paris+, 2012)
	SDSSQUASAR: Sloan Digital Sky Survey Quasar Catalog (5th Data Release) (LEDAS)
	SDSSNBCQSC: Sloan Digital Sky Survey NBC Quasar Candidate Catalog (LEDAS)
	DR3QSO: SDSS Quasar Catalog (Release 3) (LEDAS)

AccessURL	Description	Version
http://vizier.u-strasbg.fr/viz-bin/Vo...		

Cone Parameters

Cone URL: <http://vizier.u-strasbg.fr/viz-bin/votable/-A?-source=VII/252&>

Object Name: Resolve

RA: 170 degrees (J2000) Accept Sky Positions

Dec: 30 degrees (J2000)

Radius: 20 degrees

OK

Load Selected Table

同様に、今度は
SDSS-DR5 quasar
catalog (Schneider+
2007)
にアクセス。

同じ領域を検索。

8335件ヒット。

Help

Properties

match(1,2)

match(1,2)

Joined

5

23

All

(no action) Broadcast Row

2つのカタログをクロスマッチ

同一天体とする条件は
角度2誤差秒以内、
赤方偏移誤差0.02以内
とする。

Match Tables

File Tuning Help

Match Criteria

Algorithm: Sky + X

Max Error: 2.0 arcsec

Error in X: 0.02

Table 1

Table: 1: CAIXA-20d

RA column: ra degrees

Dec column: dec degrees

X column: redshift

Table 2

Table: 2: VII_252-20d

RA column: _RAJ2000 degrees

Dec column: _DEJ2000 degrees

X column: z

Output Rows

Match Selection: Best match, symmetric

Join Type: 1 and 2

Go Stop

Perform the match

TOPCAT(3): Table Browser

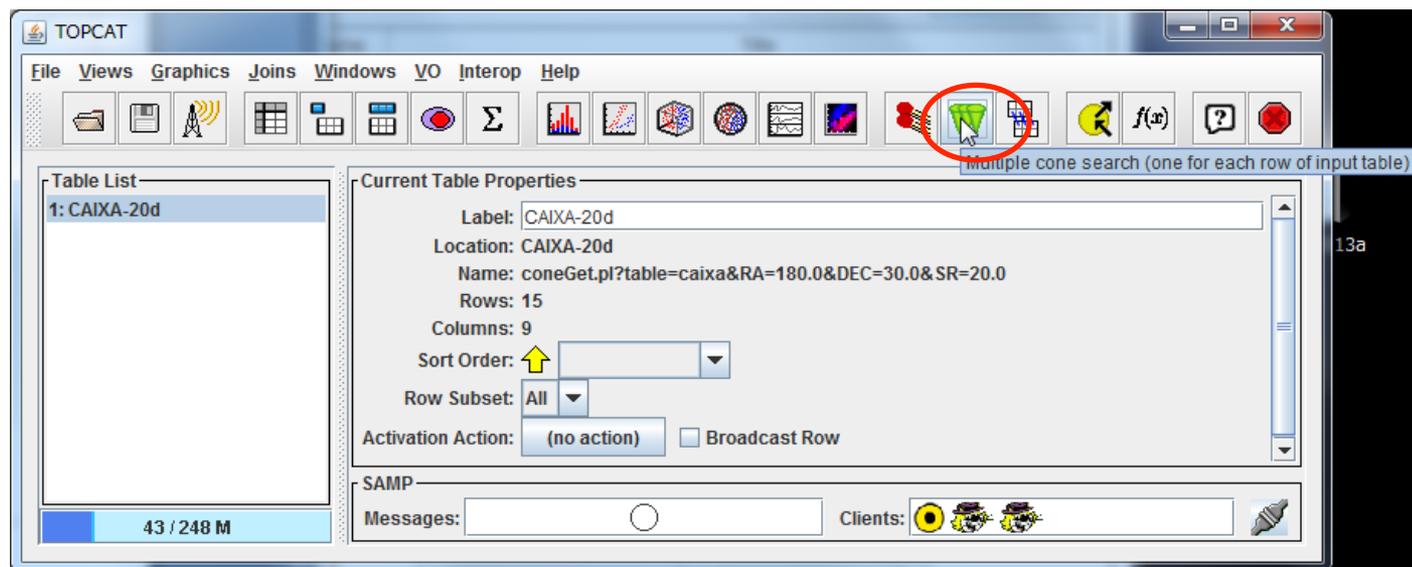
File Subsets Help

5組が得られる。

Table Browser for 3: match(1,2)

	hb_lx	hb_lx_error	Search_Offset	_r	_RAJ2000	_DEJ2000
1	1.030000E44	5.000000E42	431.86216	7.19752	162.9329	33.99075
2	7.900000E43	6.000000E42	626.16649	10.43611	169.62619	40.43167
3	1.250000E44	3.000000E42	854.24673	14.23745	169.27666	44.22592
4	1.900000E45	5.000000E44	1102.17799	18.36954	182.24171	45.67652
5	2.300000E45	5.000000E44	1116.42227	18.60703	167.66101	48.52102

クロスマッチ検索



今は、検索した結果を取得してからクロス
マッチしたが、
VO上にあるデータと直接クロスマッチしな
がら検索することも出来る。

Multiple Cone Search

File Columns Registry Interop Help

Available Cone Search Services

Registry: http://registry.astrogrid.org/astrogrid-registry/services/RegistryQueryv1_0

Keywords: SDSS quasar

Match Fields: Short Name Title Subjects ID Publisher Description

Accept Resource Lists

Cancel Query Submit Query

Short Name	Title
VII/252	SDSS-DR5 quasar catalog (Schneider+, 2007)
VII/260	The SDSS-DR7 quasar catalog (Schneider+, 2010)
VII/269	SDSS Quasar Catalog, DR9Q (Paris+, 2012)
	SDSSQUASAR: Sloan Digital Sky Survey Quasar Catalog (5th Data Release) (LEDAS)
	SDSSNBCQSC: Sloan Digital Sky Survey NBC Quasar Candidate Catalog (LEDAS)
	DR3QSO: SDSS Quasar Catalog (Release 3) (LEDAS)

AccessURL	Description	Version
http://vizier.u-strasbg.fr/viz-bin/vot...		

Multiple Cone Search Parameters

Cone Search URL: <http://vizier.u-strasbg.fr/viz-bin/votable/-A?-source=VII/260&>

Input Table: 1: CAIXA-20d

RA column: ra degrees (J2000)

Dec column: dec degrees (J2000)

Search Radius column: 1.0 arcsec

Verbosity: 2 (normal)

Output Mode: New joined table with best matches

Parallelism: 5 Error Handling: abort

Go Stop

Start multiple query running

サービスは同様に選ぶ。

Input table で、既已取得しているXMMのカタログを選択。

検索条件は座標誤差。

Multiple Cone Search

File Columns Registry Interop Help

Available Cone Search Services

Registry: http://registry.astrogrid.org/astrogrid-registry/services/RegistryQueryv1_0

Keywords: SDSS quasar

Match Fields: Short Name Title Subjects ID Publisher Description

Accept Resource Lists

Cancel Query Submit Query

Short Name	Title
VII/252	SDSS-DR5 quasar catalog (Schneider+, 2007)
VII/260	The SDSS-DR7 quasar catalog (Schneider+, 2010)
VII/269	SDSS Quasar Catalog, DR9Q (Paris+, 2012)
	SDSSQUASAR: Sloan Digital Sky Survey Quasar Catalog (5th Data Release) (LEDAS)
	SDSSNBCQSC: Sloan Digital Sky Survey NBC Quasar Candidate Catalog (LEDAS)
	DR3QSO: SDSS Quasar Catalog (Release 3) (LEDAS)

AccessURL	Description	Version
http://vizier.u-strasbg.fr/viz-bin/vot...		

(もちろん)
先ほどと同じ結果が得られる。
(Separation のカラムが付く。)

場合によって使い分け。

Multiple Cone Search Parameters

Cone Search URL: <http://vizier.u-strasbg.fr/viz-bin/vot...>

Input Table: 1: CAIXA-20d

RA column: ra

Dec column: dec

Search Radius column: 2.0

Verbosity: 2 (normal)

Output Mode: New joined table

Parallelism: 5

TOPCAT(4): Table Browser

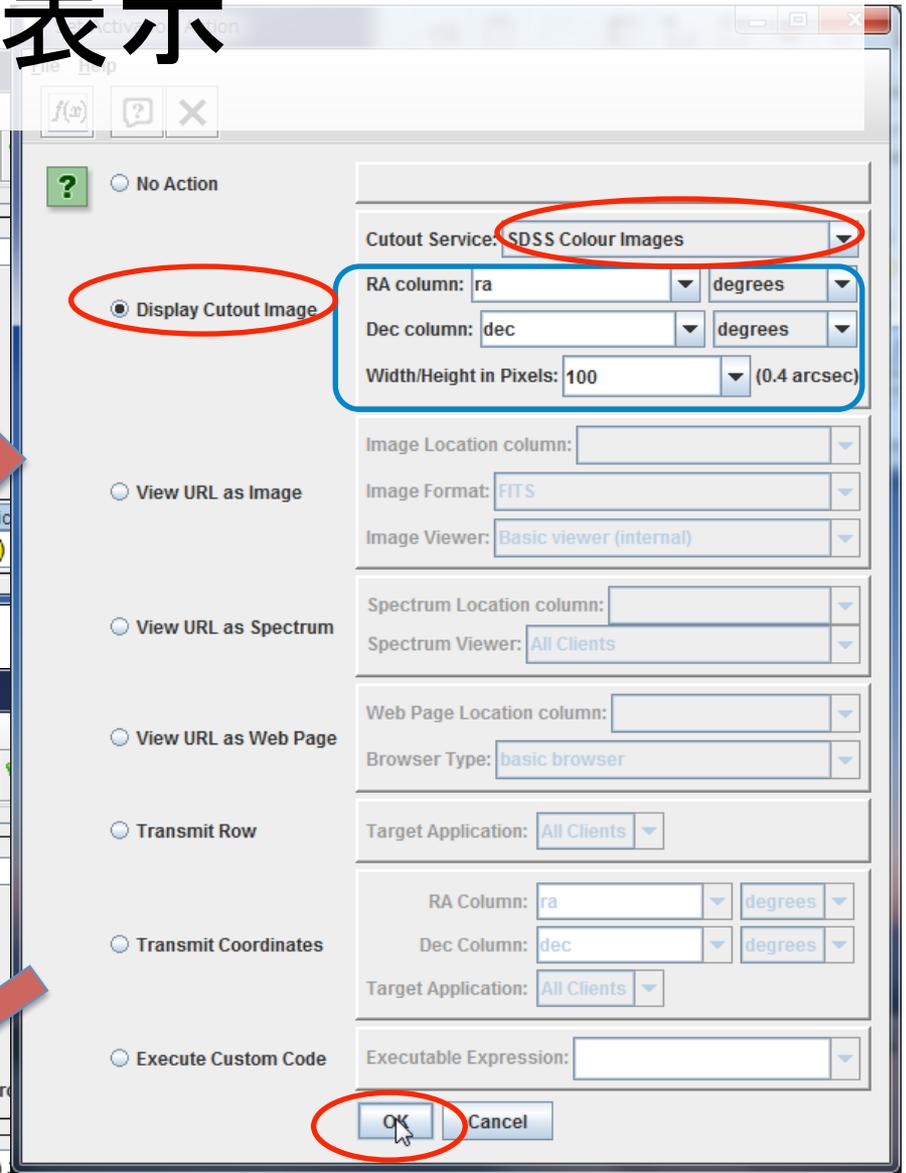
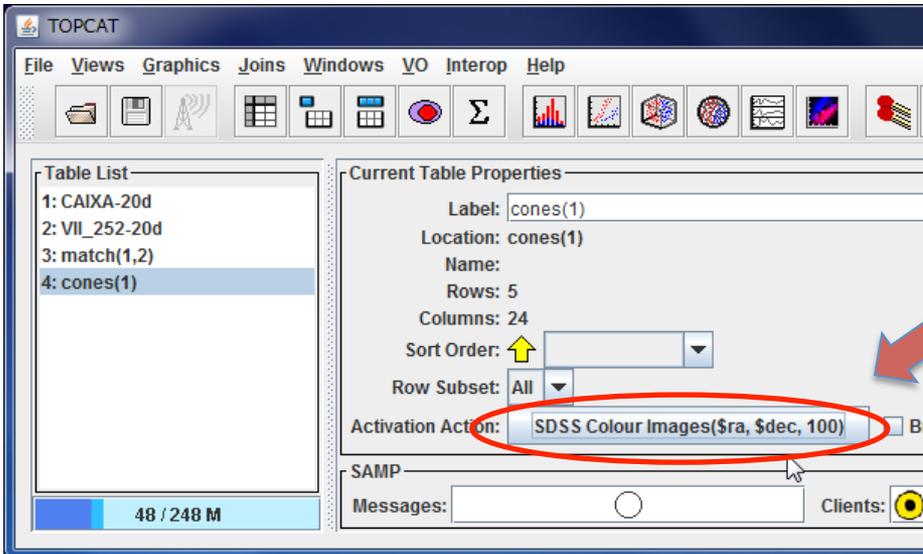
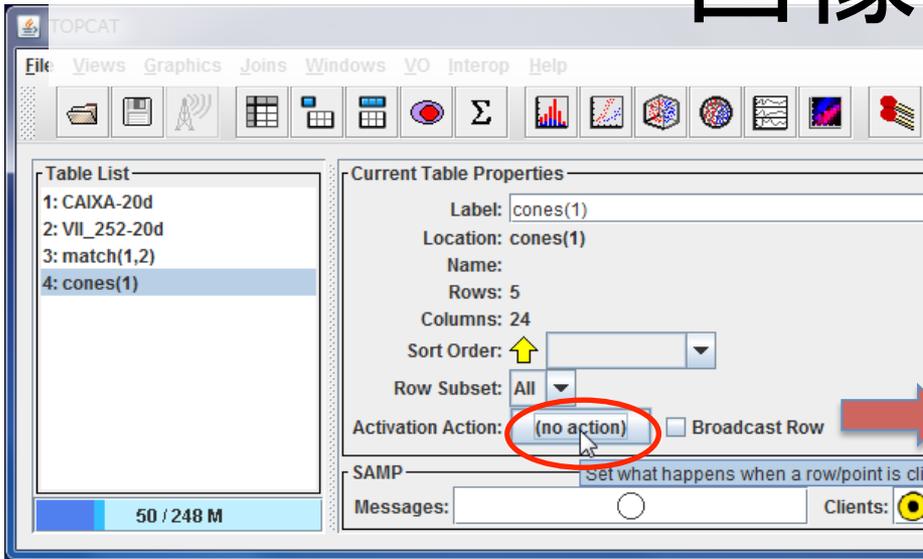
File Subsets Help

Table Browser for 4: cones(1)

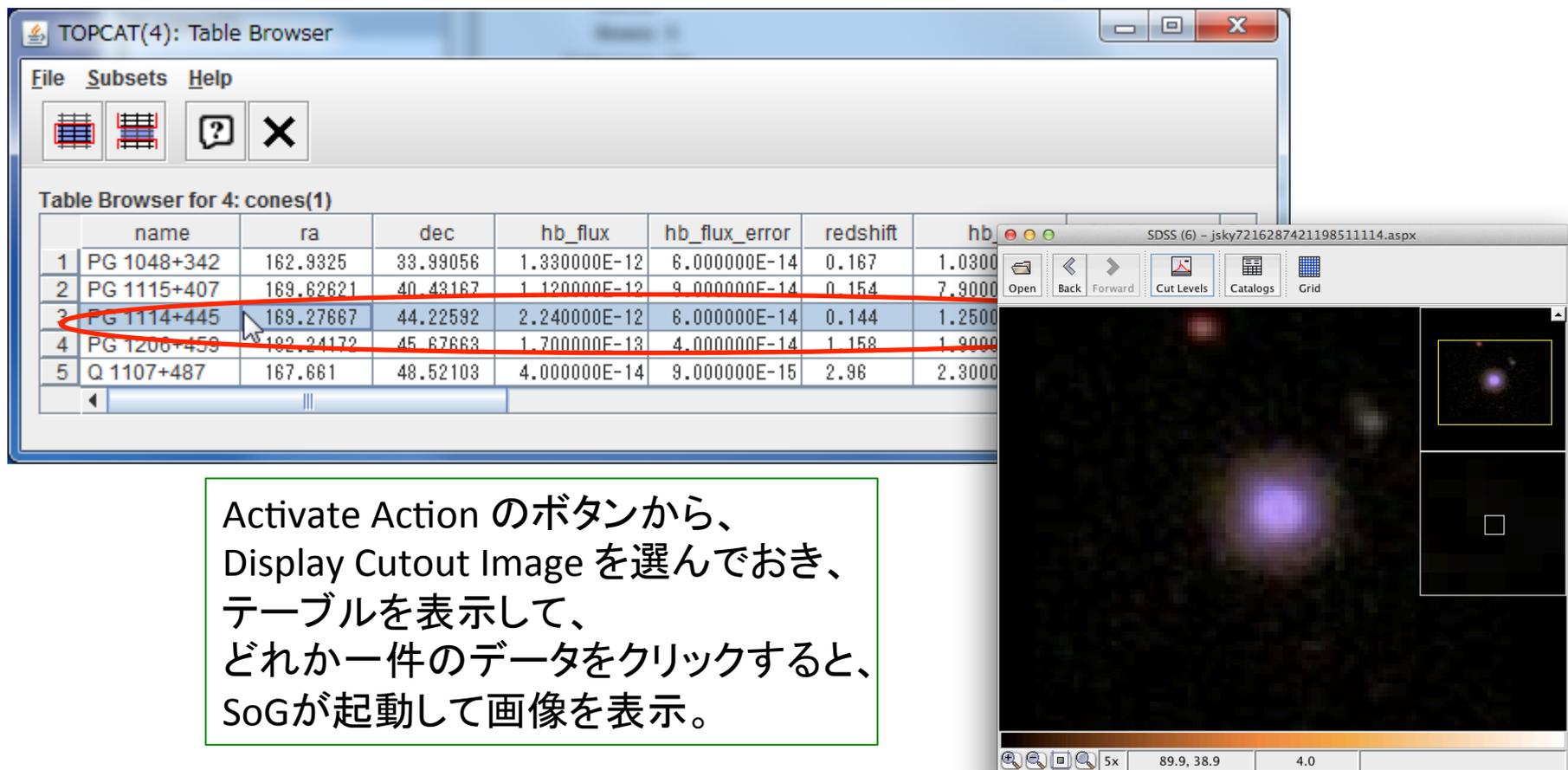
	l2000	z	umag	gmag	rmag	imag	zmag	logX	DR5	Separation
1	99075	0.1671	16.771	16.853	16.737	16.261	16.518	-0.665	DR5	0.00038
2	43167	0.1546	15.834	15.909	15.999	15.628	15.815	-0.298	DR5	1.297864E-5
3	22592	0.1438	16.012	15.889	15.79	15.283	15.603	-1.641	DR5	5.016166E-6
4	67652	1.1625	15.672	15.466	15.241	15.273	15.292		DR5	0.00011
5	52102	2.9549	18.293	16.771	16.718	16.521	16.504		DR5	6.818823E-6

Start multiple query running

画像表示



画像表示



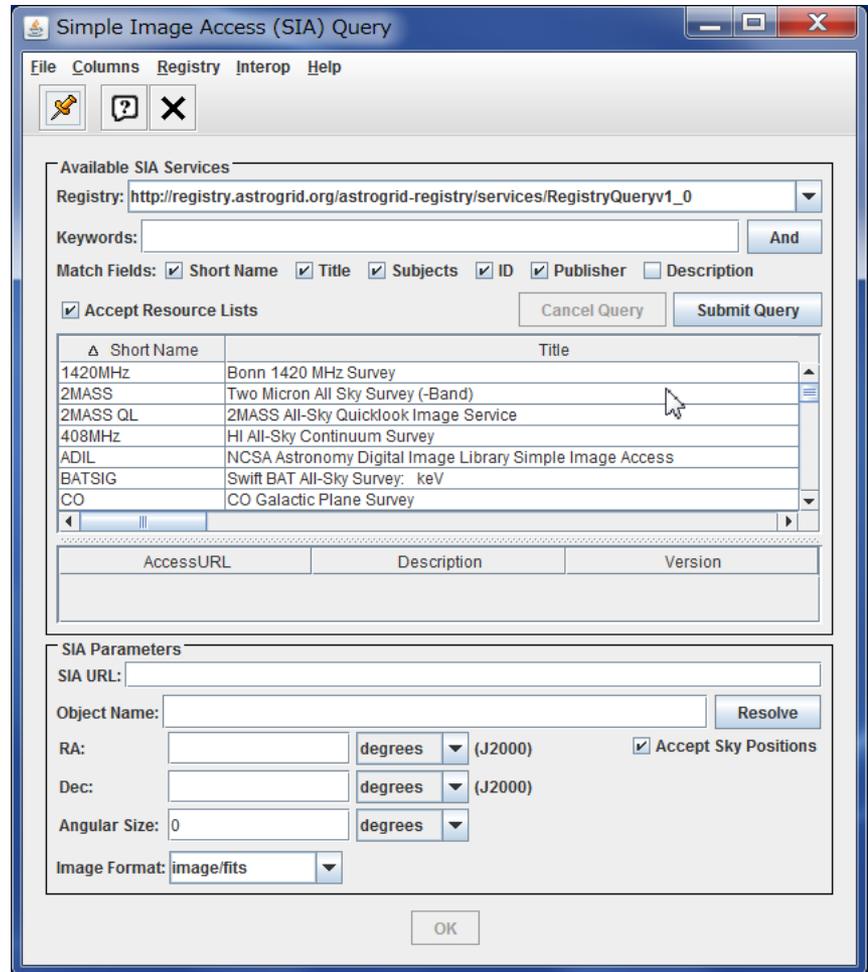
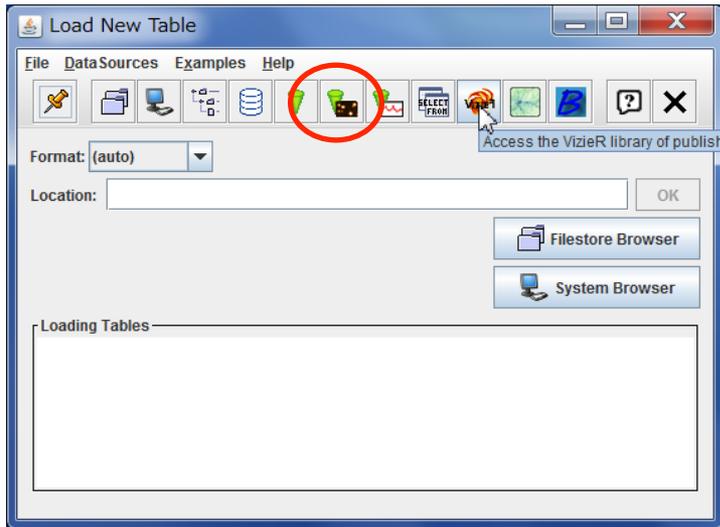
The image shows two overlapping windows. The top window is 'TOPCAT(4): Table Browser' displaying a table of astronomical data. The bottom window is 'SDSS (6) - jsky7216287421198511114.aspx' showing a large image of a galaxy with a yellow box highlighting a specific region.

Table Browser for 4: cones(1)

	name	ra	dec	hb_flux	hb_flux_error	redshift	hb
1	PG 1048+342	162.9325	33.99056	1.330000E-12	6.000000E-14	0.167	1.0300
2	PG 1115+407	169.62621	40.43167	1.120000E-12	9.000000E-14	0.154	7.9000
3	PG 1114+445	169.27667	44.22592	2.240000E-12	6.000000E-14	0.144	1.2500
4	PG 1206+459	162.24172	45.67663	1.700000E-13	4.000000E-14	1.158	1.9000
5	Q 1107+487	167.661	48.52103	4.000000E-14	9.000000E-15	2.96	2.3000

Activate Action のボタンから、
Display Cutout Image を選んでおき、
テーブルを表示して、
どれか一件のデータをクリックすると、
SoGが起動して画像を表示。

画像データの検索



画像データのクロスマッチ検索

検索しなくても最初から
サービスリストが表示さ
れる

Joins Windows VO Interop Help

- Cone Search
- Simple Image Access (SIA) Query
- Simple Spectral Access (SSA) Query
- Table Access Protocol (TAP) Query
- VizieR Catalogue Service
- GAVO Millennium Run Query
- BaSTI Data Loader

Active Clients

- Multicone
- Multiple SIA**
- Multiple SSA

Multiple SIA

Keywords: And

Match Fields: Short Name Title Subjects ID Publisher Description

Accept Resource Lists

Cancel Query Submit Query

Short Name	Title
1420MHz	Bonn 1420 MHz Survey
2MASS	Two Micron All Sky Survey (-Band)
2MASS QL	2MASS All-Sky Quicklook Image Service
408MHz	HI All-Sky Continuum Survey
ADIL	NCSA Astronomy Digital Image Library Simple Image Access
BATSIG	Swift BAT All-Sky Survey: keV

AccessURL	Description	Version
http://irsa.ipac.caltech.edu/cgi-bi...		

Multiple SIA Parameters

SIA URL:

Input Table: 4: cones(1)

RA column: (J2000)

Dec column: (J2000)

Search Radius column:

Image Format:

Output Mode:

Parallelism: Error Handling:

Go Stop

検索半径 0 でもOK

TOPCAT(5): Table Browser

File Subsets Help

Table Browser for 5: sias(4)

		Format	PixFlags	URL	Logical...	Separation
1	111111111111E-4)	image/fits	F	http://skyview.gsfc.nasa.gov/cgi-bin/images?position=...	1	0.
2	111111111111E-4)	image/fits	F	http://skyview.gsfc.nasa.gov/cgi-bin/images?position=...	1	0.
3	111111111111E-4)	image/fits	F	http://skyview.gsfc.nasa.gov/cgi-bin/images?position=...	1	0.
4	111111111111E-4)	image/fits	F	http://skyview.gsfc.nasa.gov/cgi-bin/images?position=...	1	0.
5	111111111111E-4)	image/fits	F	http://skyview.gsfc.nasa.gov/cgi-bin/images?position=...	1	0.

画像のあるURLの
リストを取得

TOPCAT

File Views Graphics Joins Windows VO Interop Help

Table List

- 1: CAIXA-20d
- 2: VII_252-20d
- 3: match(1,2)
- 4: cones(1)
- 5: sias(4)

Current Table Properties

Label: sias(4)
 Location: sias(4)
 Name:
 Rows: 5
 Columns: 35
 Sort Order: ↑
 Row Subset: All
 Activation Action: **image(URL)** Broadcast Row

SAMP
 Messages: Clients:

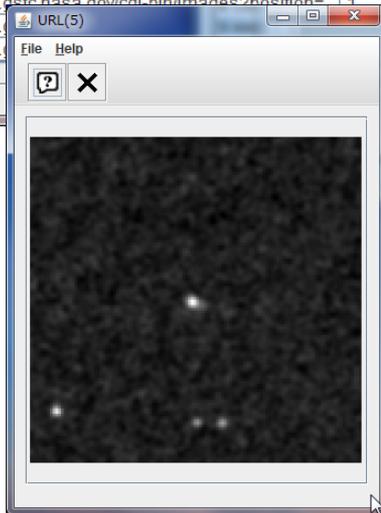
43 / 248 M

TOPCAT(5): Table Browser

File Subsets Help

Table Browser for 5: sias(4)

	Format	PixFlags	URL	Logic	
1	111111111111E-4)	image/fits	F	http://skyview.gsfc.nasa.gov/cgi-bin/images?position=...	1
2	111111111111E-4)	image/fits	F	http://skyview.gsfc.nasa.gov/cgi-bin/images?position=...	1
3	111111111111E-4)	image/fits	F	http://skyview.gsfc.nasa.gov/cgi-bin/images?position=...	1
4	111111111111E-4)	image/fits	F	http://skyview.gsfc.nasa.gov/cgi-bin/images?position=...	1
5	111111111111E-4)	image/fits	F	http://skyview.gsfc.nasa.gov/cgi-bin/images?position=...	1



Set Activation Action

File Help

No Action

Display Cutout Image

View URL as Image

View URL as Spectrum

View URL as Web Page

Transmit Row

Transmit Coordinates

Execute Custom Code

Cutout Service: SuperCOSMOS All-Sky Blue

RA column: ra degrees

Dec column: dec degrees

Width/Height in Pixels: 100 (0.67 arcsec)

Image Location column: URL

Image Format: FITS

Image Viewer: Basic viewer (internal)

Spectrum Location column:

Spectrum Viewer: All Clients

Web Page Location column:

Browser Type: basic browser

Target Application: All Clients

RA Column: ra degrees

Dec Column: dec degrees

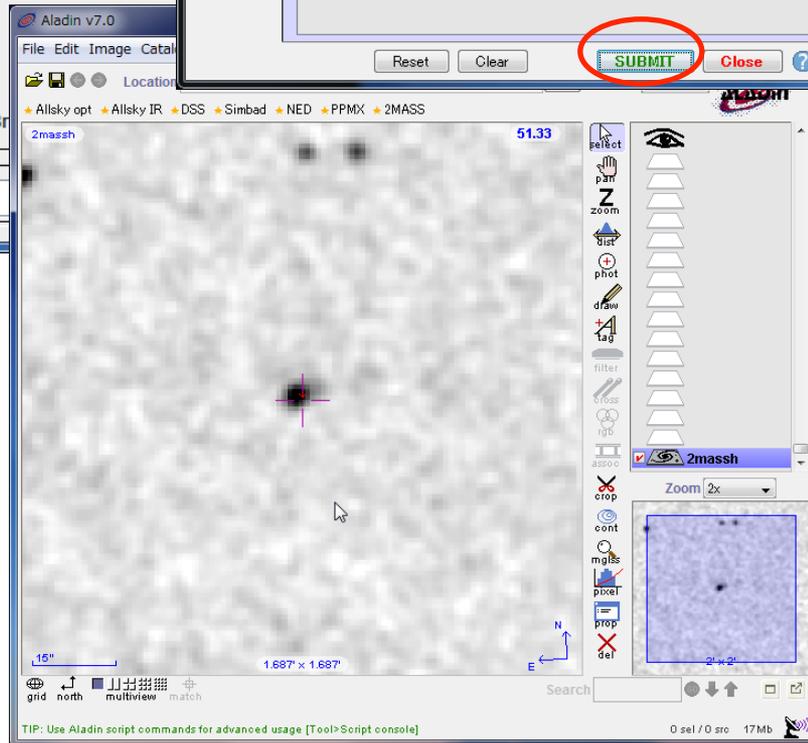
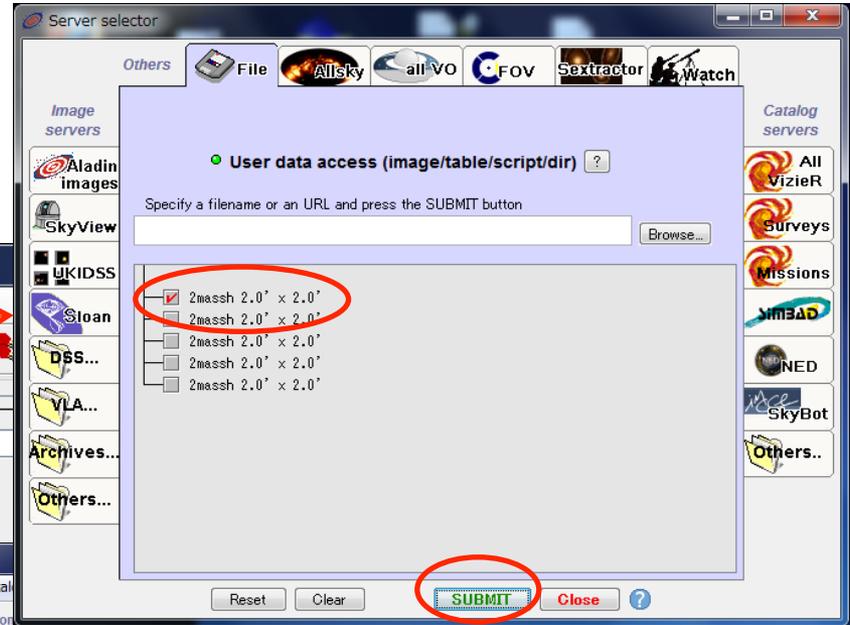
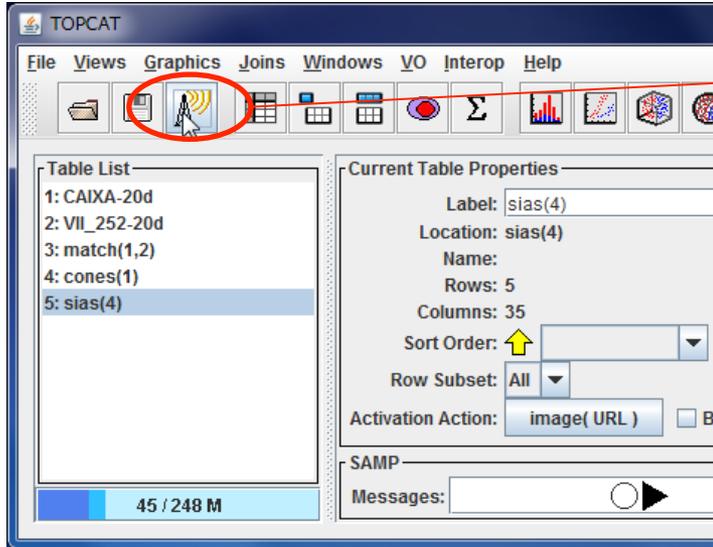
Target Application: All Clients

Executable Expression:

OK Cancel

Activate Action ボタンから、View URL as Image を指定すると、画像も見られる

SAMP



画像やスペクトルは、
他のVO tool に送って
利用することも可能。

画像 : Aladin, DS9
スペクトル: VOSpec, SPLAT

Set Activation Action

File Help

$f(x)$? X

No Action

Display Cutout Image

View URL as Image

View URL as Spectrum

View URL as Web Page

Transmit Row

Transmit Coordinates

Execute Custom Code

Cutout Service: SuperCOSMOS All-Sky Blue

RA column: ra degrees

Dec column: dec degrees

Width/Height in Pixels: 100 (0.67 arcsec)

Image Location column: download

Image Format: FITS

Image Viewer: Aladin

Basic viewer (internal)

All Clients (SAMP)

SAOImage DS9

Aladin

Spectrum Location column:

Spectrum View:

Web Page Location column:

Browser Type: basic browser

Target Application: All Clients

RA Column: ra degrees

Dec Column: dec degrees

Target Application: All Clients

Executable Expression:

OK Cancel

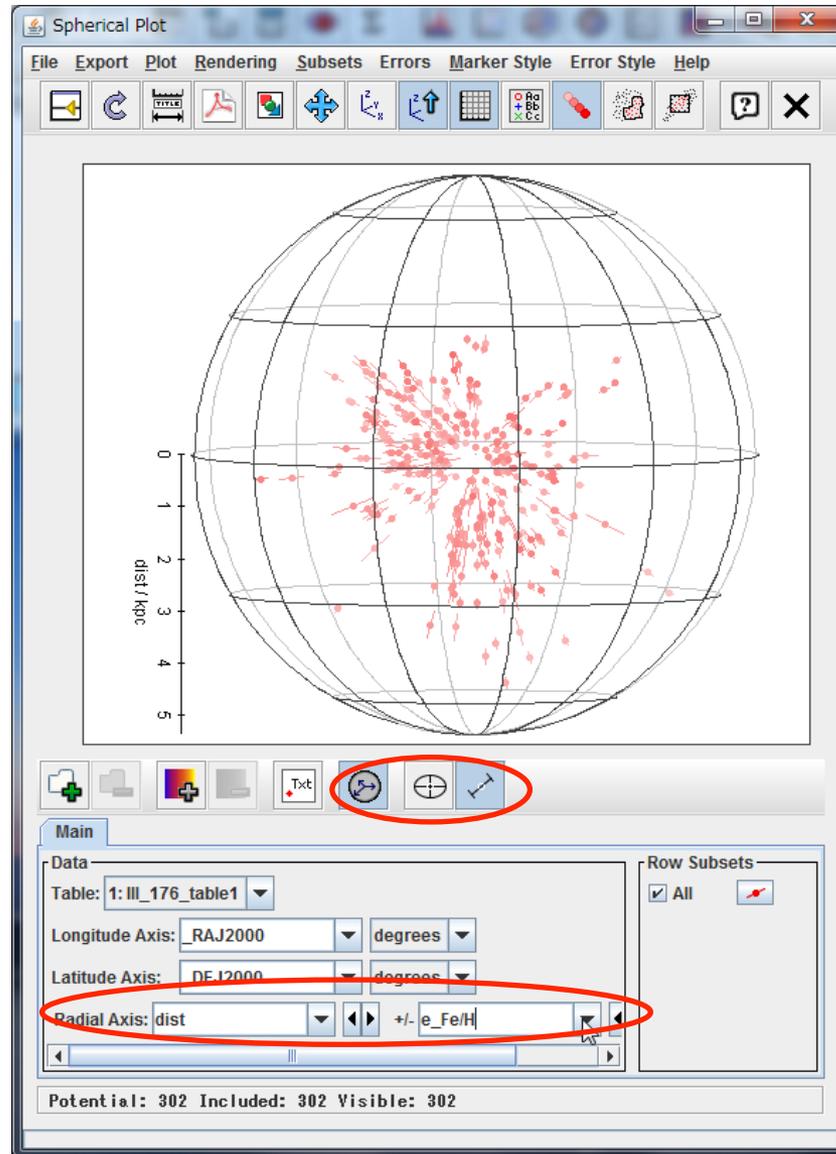
Browser

X

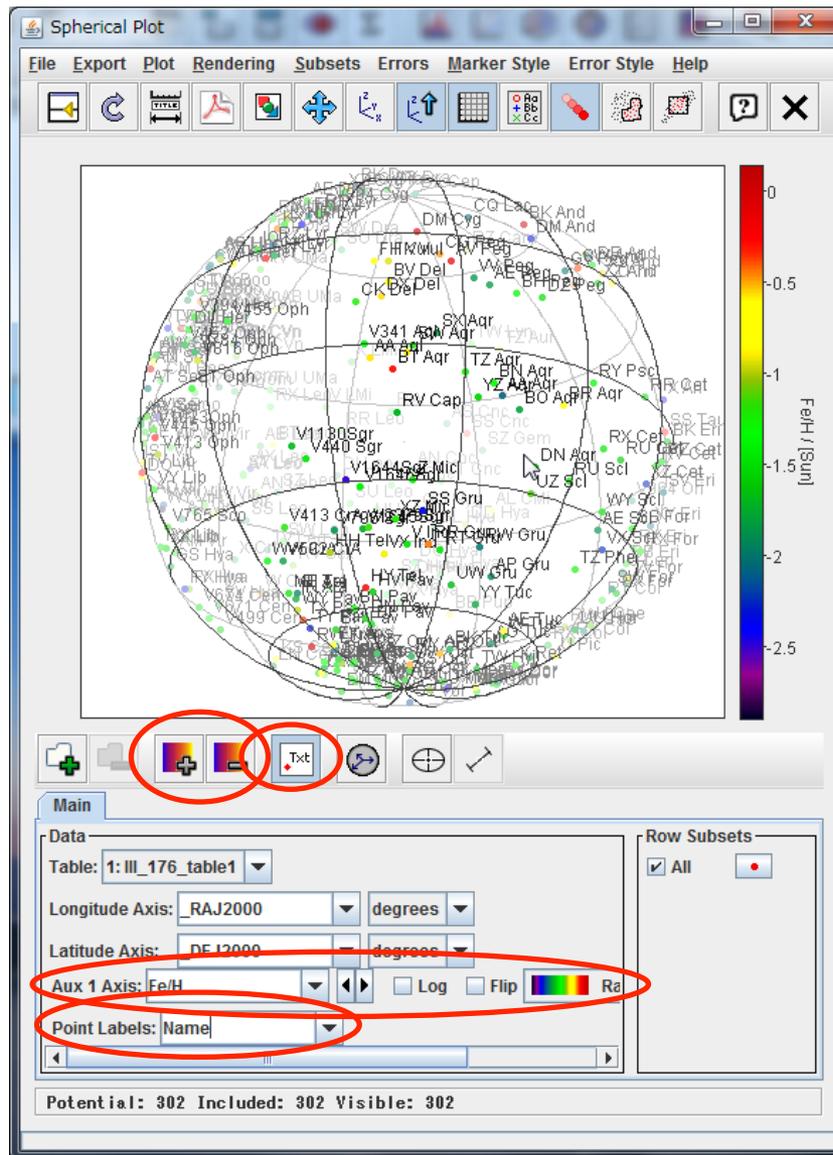
as(4)

	Format	PixFlags	URL	Logical...	Separation
	image/fits	F	http://skyview.gsfc.nasa.gov/cgi-bin/images?position=...	1	0.
	image/fits	F	http://skyview.gsfc.nasa.gov/cgi-bin/images?position=...	1	0.
	image/fits	F	http://skyview.gsfc.nasa.gov/cgi-bin/images?position=...	1	0.
	image/fits	F	http://skyview.gsfc.nasa.gov/cgi-bin/images?position=...	1	0.
	image/fits	F	http://skyview.gsfc.nasa.gov/cgi-bin/images?position=...	1	0.

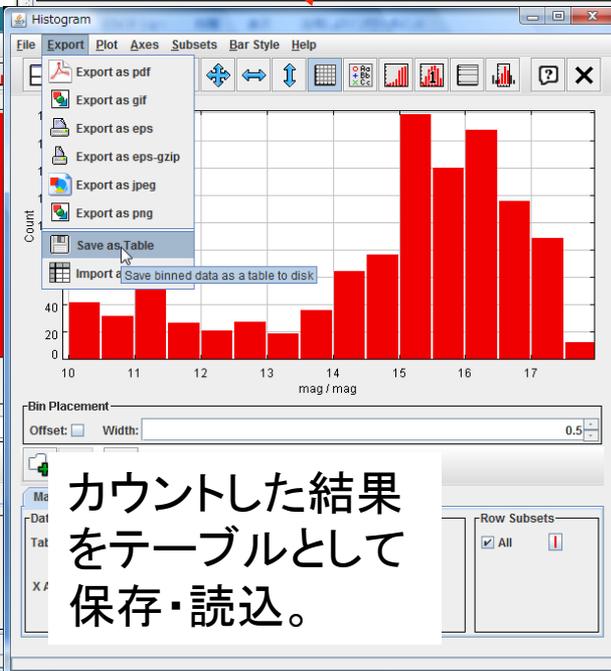
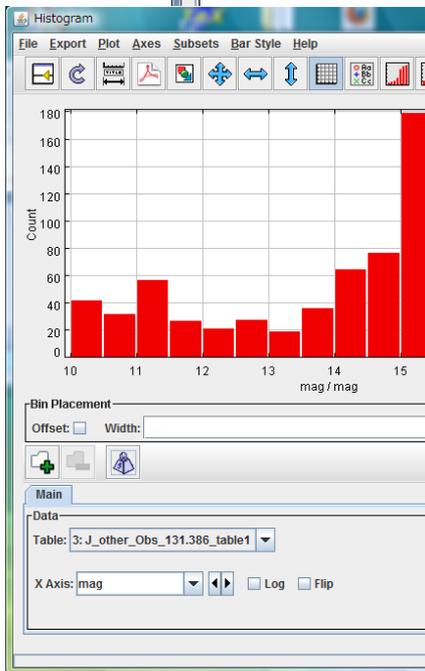
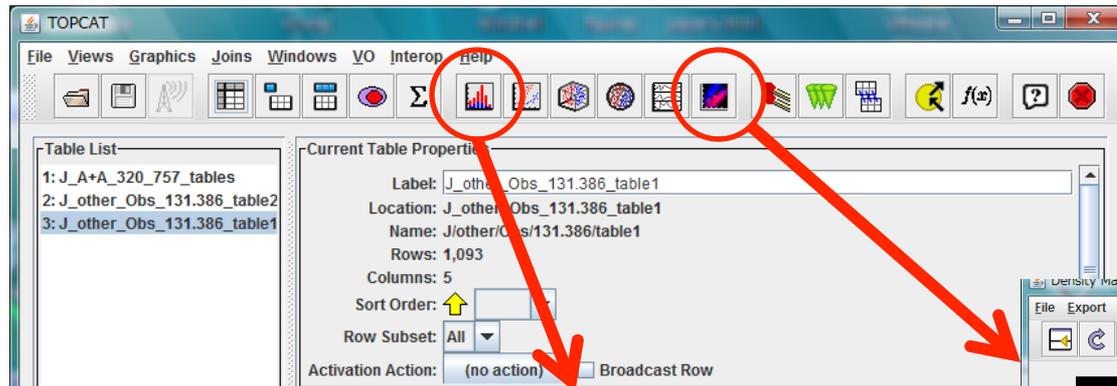
様々なplot



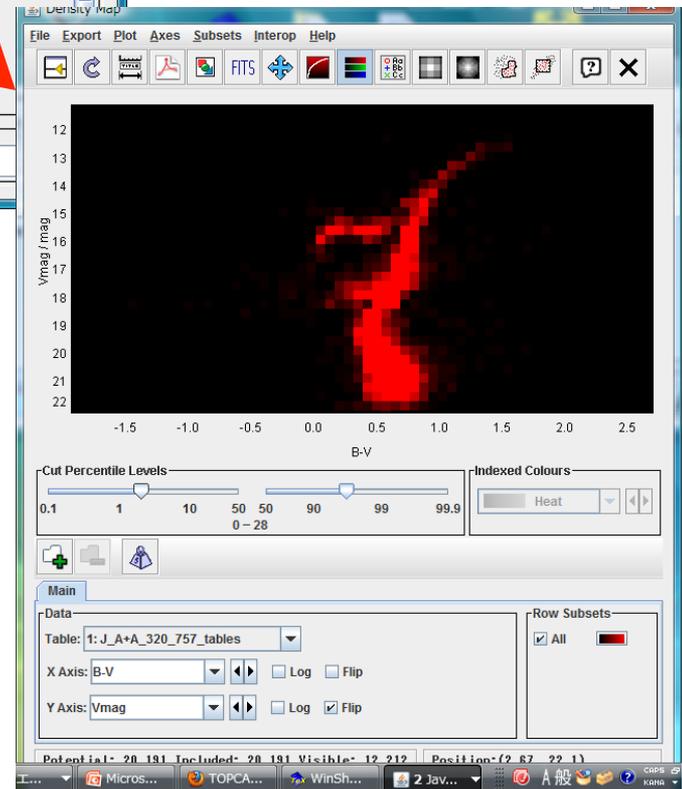
3次元極座標表示
Error bar



ヒストグラム、 density plot(2Dヒストグラム)



カウントした結果
をテーブルとして
保存・読込。



同じX軸で、複数のグラフをプロット

The image shows the TOPCAT software interface. The main window displays a 'Table List' with three tables and 'Current Table Properties' for the selected table. A red circle highlights a button in the toolbar, with an arrow pointing to the 'Plot' window. The 'Plot' window shows two vertically stacked scatter plots sharing the same X-axis (phase). The top plot shows Vmag / mag (red crosses) and the bottom plot shows B-V / mag (black dots). Both plots show a similar trend, peaking around phase 4.5.

Table List:

- 1: J_A+A_320_757_tables
- 2: J_other_Obs_131.386_table2
- 3: J_other_Obs_131.386_table1

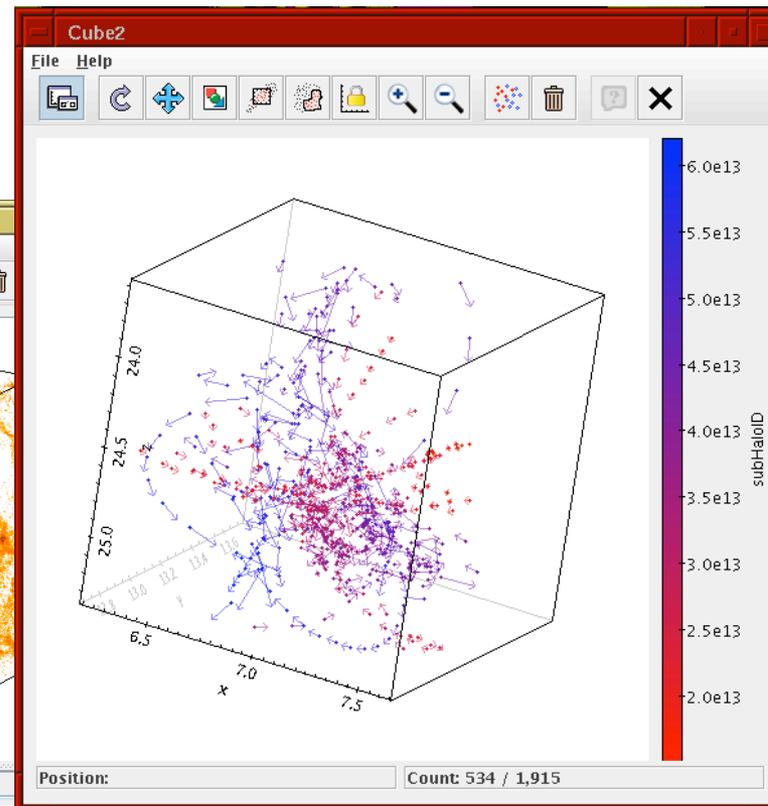
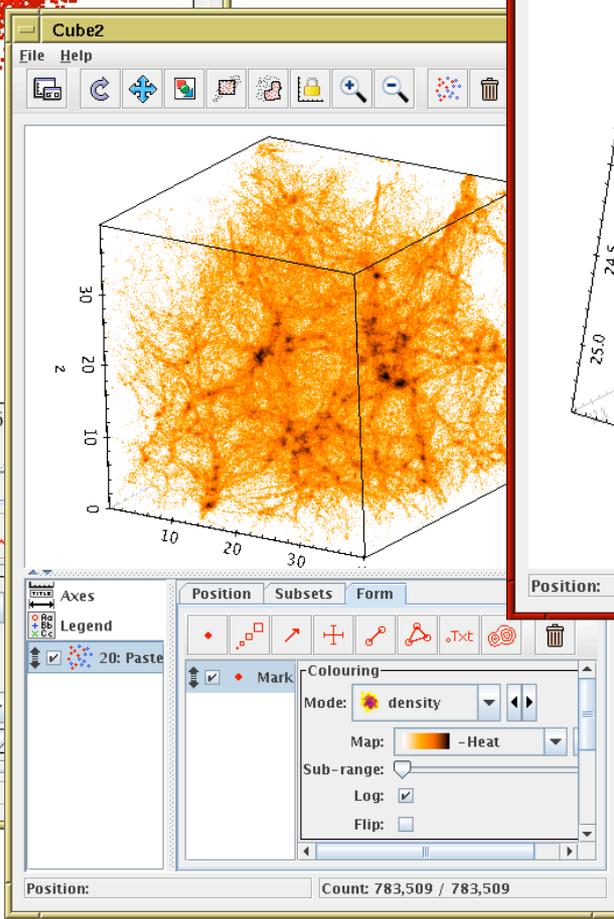
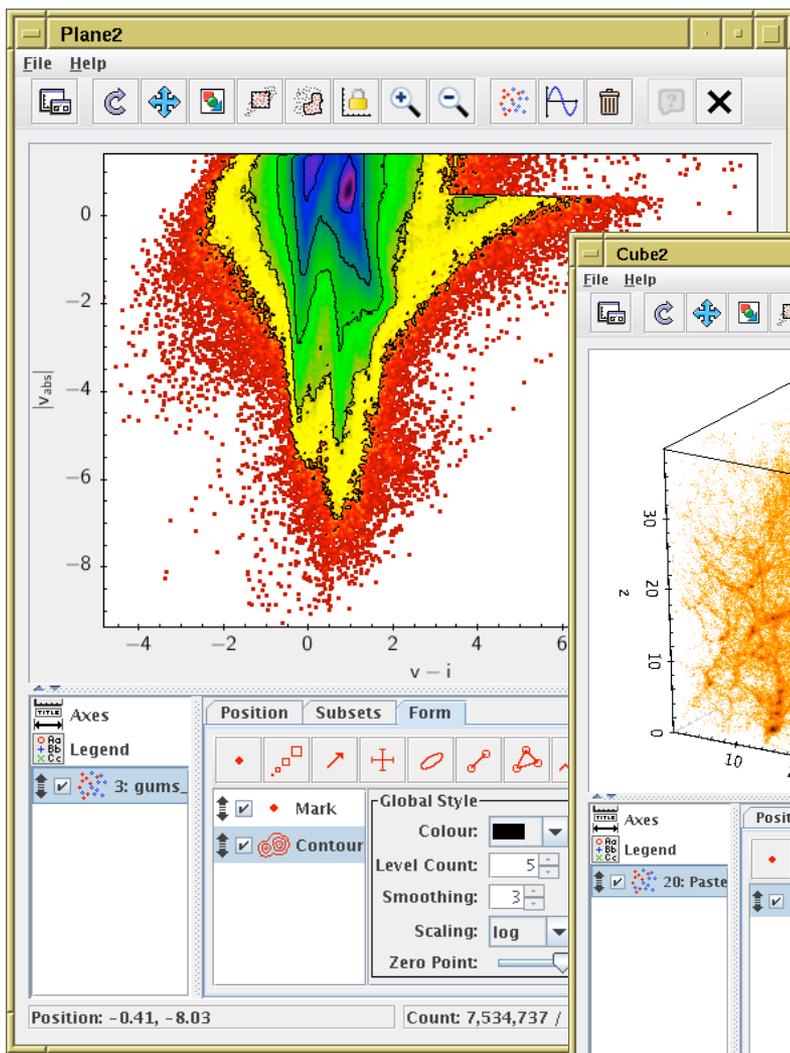
Current Table Properties:

- Label: J_other_Obs_131.386_table1
- Location: J_other_Obs_131.386_table1
- Name: J/other/Obs/131.386/table1
- Rows: 1,093
- Columns: 5
- Sort Order: ↑
- Row Subset: All
- Activation Action: (no action) Broadcast Row

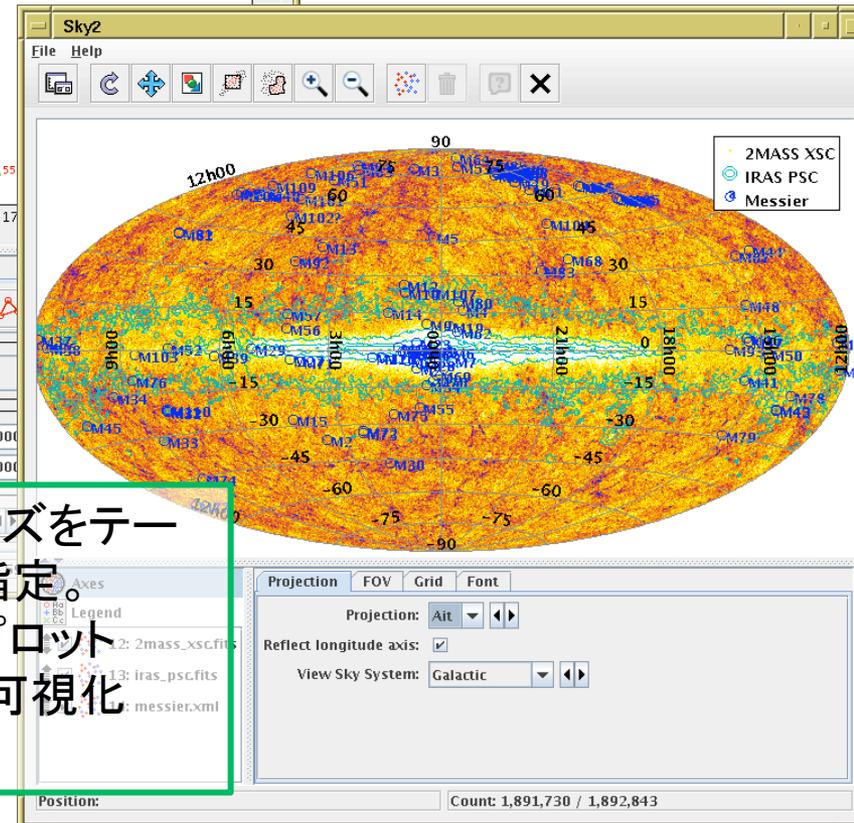
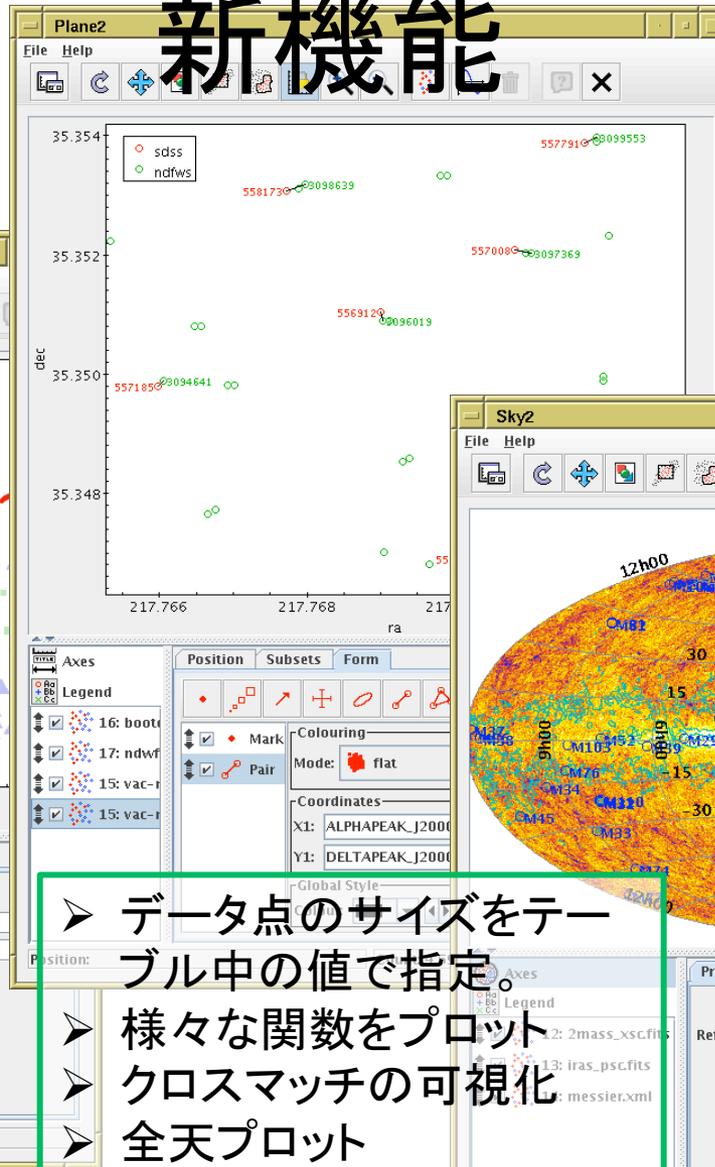
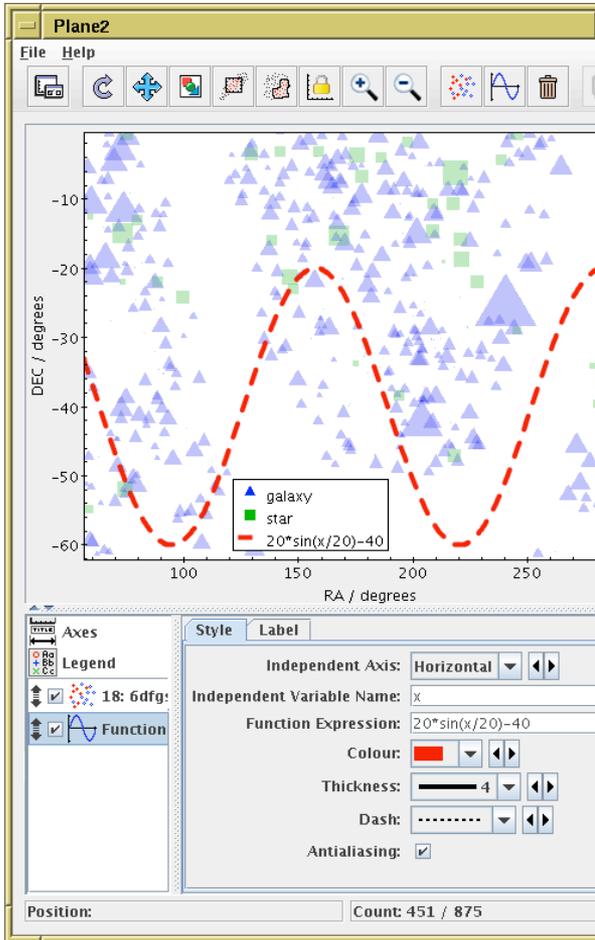
Plot Window:

- Table: 3: RRU-aql
- X Axis: phase
- Y Axis: Vmag
- Row Subsets: All
- Position: (5.57, 1.260)

Version 4.0 の新機能



新機能



- データ点のサイズをテーブル中の値で指定。
- 様々な関数をプロット
- クロスマッチの可視化
- 全天プロット

Table Join(縦に)

The image shows the TOPCAT software interface with the 'Concatenate Tables' dialog box open. The dialog box is titled 'Concatenate Tables' and has a 'File' menu and a 'Help' button. It contains the following fields and options:

- Base Table:** 1: J_A+A_320_757_tables
- Appended Table:** 3: J_other_Obs_131.386_table1
- Column Assignments:** A table with two columns: 'Base Table' and 'Appended Table'. The rows are as follows:

Base Table	Appended Table
recno:	recno
Name:	
Vmag:	
Bmag:	
Imag:	
Xpos:	
Ypos:	
Star:	

At the bottom of the dialog is a 'Concatenate' button. In the background, the TOPCAT main window is visible, showing a 'Table List' with three tables and 'Current Table Properties' for 'J_other_Obs_131.386_table1'. A red circle and arrow point to the 'Concatenate Tables' icon in the TOPCAT toolbar.

座標系の変換

分点の変更
銀河座標
黄道座標

The image shows a sequence of three overlapping windows from the TOPCAT software, illustrating the process of changing coordinate systems. Red circles and arrows highlight the specific actions being taken.

Window 1: TOPCAT
The main interface shows a menu bar with 'File', 'Views', 'Graphics', 'Joins', 'Windows', 'VO', 'Interop', and 'Help'. A red circle highlights the 'VO' menu, with an arrow pointing to the 'Sky Coordinate Columns' dialog.

Window 2: TOPCAT(3): Table Columns
This dialog shows a table of columns for 'J_other_Obs_131.386_table1'. A red circle highlights the 'Add' button (a green plus sign with a globe), with an arrow pointing to the 'Sky Coordinate Columns' dialog.

Window 3: Sky Coordinate Columns
This dialog allows for the configuration of coordinate systems. It features two main sections: 'Input Coordinates' and 'Output Coordinates'.
- **Input Coordinates:** System: FK5 J2000.0, Units: degrees, Right Ascension: _RAJ2000, Declination: _DEJ2000.
- **Output Coordinates:** System: IAU 1958 Galactic, Units: degrees, Longitude: GAL_LONGx, Latitude: GAL_LATx.
Buttons for 'OK' and 'Cancel' are at the bottom.

関数一覧



Available Functions

File Functions Help

+ [?] X

- Arithmetic
- Arrays
- Conversions
- CoordsDegrees
 - f() degreesToDms(deg)
 - f() **degreesToDms(deg, secFig)**
 - f() degreesToHms(deg)
 - f() degreesToHms(deg, secFig)
 - f() dmsToDegrees(deg, min, sec)
 - f() dmsToDegrees(dms)
 - f() hmsToDegrees(hour, min, sec)
 - f() hmsToDegrees(hms)
 - f() skyDistanceDegrees(ra1, dec1, ra2, dec2)
- CoordsRadians
- Distances
- Fluxes
- Formats
- Maths
- Strings
- Tilings
- Times
- TrigDegrees
- Activation Functions

Function `degreesToDms(deg, secFig)`

Description:
Converts an angle in degrees to a formatted degrees:minutes:seconds string with a given number of decimal places in the seconds field.

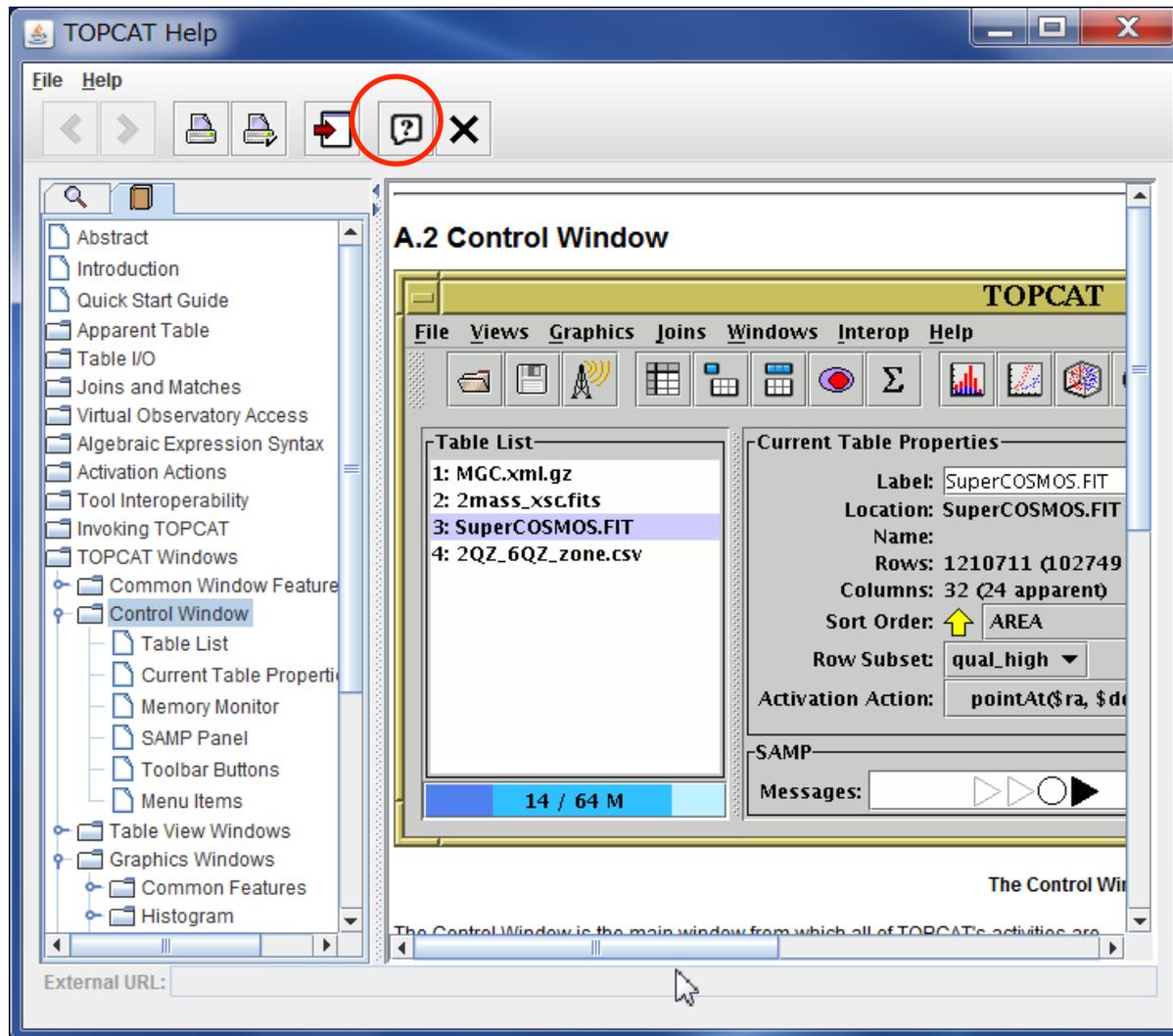
Parameters:

- deg** (floating point)
angle in degrees
- secFig** (integer)
number of decimal places in the seconds field

Return Value (String):
DMS-format string representing `deg`

Signature:
String degreesToDms(double, int)

Help



STILTS

- コマンドラインでのテーブル操作ツール
- <http://www.star.bristol.ac.uk/~mbt/stilts/>
- クロスマッチ、検索、plot