

# TOPCAT Tutorial

## Useful Links:

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

<https://www.iers.org/ IERS/EN/Publications/TechnicalNotes/tn35.html;jsessionid=386A8E54D2DDF0393A4F3AD15EC51CA9.live2>

<http://hpiers.obspm.fr/webiers/icrf2/icrf2.html>

## Aim of the tutorial:

### 1. Plot the ICRF-2 catalog

Look for the most recent ICRF catalog

Download it using TOPCAT

Plot the sky distribution of sources using a Hammer Aitoff projection

note: check your axis carefully

Plot the formal errors in RA and DEC against the number of observations and number of experiments

Plot the number of observations and experiments against source declination

Conclude your findings

### 2. Repeat the above steps for the following:

For defining sources only

For non-defining sources only

For different subsets according to the declination error

What are your findings ?

### 3. Plot the Gaia DR1-ICRF2 transfer sources:

Now download the ICRF2-Gaia transfer sources catalog (195 sources), using TOPCAT

Plot the sky ditribution of sources using a Hammer Aitoff projection

Find the ICRF-2 defining sources that are also Gaia DR1 transfer sources

Are all the ICRF defining sources in the GAIA DR1 ? If not why ?

## Basic Steps:

1. Open TOPCAT: double-click on the icon OR in terminal type : `$ java -jar topcat-*.jar`
2. Look for catalogs: > Open a new Table > Access the Vizier Library
3. Then > Select **All Rows** > **By Keywords**
4. Type ICRF2 in **Keywords** and **Search Catalogues** > Import the one with **Fey+, 2015**
5. Check the catalog > **Display table cell data**
6. Create subsets with **defining** and **non-defining** sources > select all rows for the defining sources (first 295) > then **Create new subset** > **Name the subset**
7. Repeat step 6 for non-defining sources
8. A descripton of table columns can be viewed > **Display Column Metadata**
9. Plot the data > **Sky plotting window** > **Sky system: Equatorial** > **Aitoff projection**
10. Got to > **Subsets** and choose **defining** and **non-defining**
11. **Draw a region on the plot to create a new subset**
12. **Repeat steps 6-10, but create subsets according to Declination error (e\_DEJ2000),**  
use error > 1 mas, error between 0.2 and 1 mas, error < 0.2 mas

Load New Table

Format: (auto)

Location:  OK

Filestore Browser

System Browser

Loading Tables

TOPCAT

Table List

Current Table Properties

Label:

Location:

Name:

Rows:

Columns:

Sort Order:

Row Subset:

Activation Action:   Broadcast Row

SAMP

Messages:  Clients:

14 / 911 M

VizieR Catalogue Service

VizieR Server

Server:

Row Selection

Cone Selection

Object Name:  Resolve

RA:  degrees (J2000)

Dec:  degrees (J2000)

Radius:  degrees

All Rows

Maximum Row Count: 50000

Column Selection

Output Columns: standard

Catalogue Selection

By Category By Keyword Surveys Missions

Wavelength: Radio IR

Mission: AKARI ANS

Astronomy: Abundances Anns

Sub-Table Details  Include Obsolete Tables

Search Catalogues Cancel Search

Name Popularity Density Description Wavelengths Astronomy

OK

VizieR Server

Server:

Row Selection

Cone Selection

Object Name:  Resolve

RA:  degrees (J2000)

Dec:  degrees (J2000)

Radius:  degrees

All Rows

Maximum Row Count: 50000

Column Selection

Output Columns: standard

Catalogue Selection

By Category By Keyword Surveys Missions

Keywords: ICRF2

Sub-Table Details  Include Obsolete Tables

Table Browser for 2: JAJ\_150\_58\_icrf2

	_RAJ2000	_DEJ2000	reco	Source
1	1.34857	-47.68545	1	defining
2	2.62919	10.97486	2	defining
3	2.7552	-26.28927	3	defining
4	3.37971	40.86832	4	defining
5	4.8462	0.25346	5	defining
6	4.94078	73.45834	6	defining
7	5.63517	6.13452	7	defining
8	9.68351	41.61833	8	defining
9	12.67216	-9.48478	9	defining
10	12.78959	-42.44258	10	defining
11	15.69068	58.48309	11	defining

Sky Plot

Projection: aitoff

Reflect longitude axis:

Position: 23:09, -28:30

Count: 3,414 / 3,414

