

Export Versions

All versions of the GSC are available as SQL server databases, but GSC 1 through GSC 2.4.0 are also available as a hierarchy of FITS files for use by the HST ground system.

<https://archive.stsci.edu/missions/dss/GSC/>

- FITS files
- SQLserver Database backup

Export Catalog FITS File Format

The export catalog is a distributed FITS file system based on the linear quad-tree Hierarchical Triangular Mesh (HTM) sky partitioning scheme (see [HTM Reference](#)). GSC-2 catalog uses a level 6 HTM triangulation which results in each file containing roughly 1 square degree of sky data. The source numbers per file are not balanced at this time, but future options are available to extend this capability into the HTM access methods.

Each FITS file contains all calibrated celestial sources for a single triangular section of sky (HTM level 6 leafnode). The file names are the quad-tree representation of each triangular section, with the 1st character being either an 'N' or 'S' representing North or South.

A FITS file contains 1 primary HDU, a second HDU (1st extension) ASCII table, and a third HDU (2nd extension) binary table. HDU 2 is a fixed length 256 entry lookup table into a variable sized HDU 3. The HDU 3 is sorted into HTM level 10 cells, and thus the lookup points to the first record of each level 10 cell with the number of entries in that cell also included in the ASCII table. The level 10 provides an indexing resolution of approximately 18 square arc minutes.

Return to [top](#).

HDU 2, ASCII Table

Variable Type	Variable Name	Description
Integer	tfields=2	"Table fields" The table will contains 2 columns.
Long	nrows=256	"Number of Rows" Table will have 256 rows.
Char	extname[]="HTMLevel10Idx"	"Extension name" Name of the extension.
Char	*ttype[]={ "Freq", "L10Pointer" };	"Table Type"
Char	*tform[]={ "I10", "I10" };	"Table Form"
Char	*tunit[]={ " ", " ", " " };	"Table Unit"

Return to [top](#).

HDU 3, Export Binary Table Fields and Types

Field	Type	Form	Unit
1	gscID2	J	id
2	RightAsc	D	rad
3	Declination	D	rad
4	MeanEpoch	E	
5	RaEpsilon	E	rad
6	DecEpsilon	E	Rad
7	RaProperMotion**	E	mas/yr
8	DecProperMotion**	E	mas/yr
9	RaProperMotionErr**	E	
10	DecProperMotionErr**	E	
11	Fmag	E	mag
12	FmagErr	E	
13	Jmag	E	mag
14	JmagErr	E	
15	Vmag	E	mag

16	VmagErr	E	
17	Nmag	E	mag
18	NmagErr	E	
19	Classification	J	
20	SemiMajorAxis	E	pixels
21	Eccentricity	E	
22	Positionangle	E	deg
23	Source Status Flag	J	

** Available with release GSC2.3

Return to [top](#).

Future Release Enhancements

- Proper Motions will be computed for multi-epoch sources.
- Full suite of classified objects (see codes for future availability)

Return to [top](#).

Classification Codes

0	Star
1	Galaxy
2	Blend
3	Non-Star
4	Unclassified
5	Defect

Return to [top](#).

Source Status Flag Codes

The source status flag is a 10 digit field used to encode more detailed information about the properties of the catalog object and its calibrated values. Since no GSC-II processed data is included for Tycho or SkyMap objects, the value of the Source Status Flag for a Tycho object is 99999900, Skymap is 88888800. 2MASS is 77777700.

Digit (counting from the right)	Flag	0	1	2	3																
1	Number of plates on which this object appeared.	This may include plate observations that were excluded from the GSC2.3.	These two digits are read together as an ordinary base ten number, eg, 04 or 12.	-	-																
2																					
3	Centroider type associated with the exported position	<table><tr><td>0</td><td>Barycenter</td><td>4</td><td>multicircular</td></tr><tr><td>1</td><td>Circular Gaussian</td><td>5</td><td>multielliptical</td></tr><tr><td>2</td><td>Elliptical Gaussian</td><td>6</td><td>FPA + circular</td></tr><tr><td>3</td><td>FPA-applied barycenter</td><td>7</td><td>FPA + elliptical</td></tr></table>				0	Barycenter	4	multicircular	1	Circular Gaussian	5	multielliptical	2	Elliptical Gaussian	6	FPA + circular	3	FPA-applied barycenter	7	FPA + elliptical
0	Barycenter	4	multicircular																		
1	Circular Gaussian	5	multielliptical																		
2	Elliptical Gaussian	6	FPA + circular																		
3	FPA-applied barycenter	7	FPA + elliptical																		
4	Quality of exported J magnitude	not present	fit	extrapolated	-																
5	Quality of exported F magnitude	not present	fit	extrapolated	-																
6	Quality of exported V magnitude	not present	fit	extrapolated	-																
7	Classification unanimity	mixed vote	unanimous vote	unanimous defect	-																
8	Classification voters	More than one 15um scan	One 15um scan	More than one 25um scan	One 25um scan																
9	Incomplete processing	Completed processing on all plates	Object was too big to be cut out (> 256x256 pixels) on at least one plate	-	-																

10	Deblended object	Single object on all plates	Child (deblended) object on at least one plate	-	-
----	------------------	-----------------------------	--	---	---