Heliophysics Event Catalogue

HEC User Guide

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HEC User Guide

Introduction

What is HEC

The Heliophysics Event Catalogue (HEC) is a HELIO service based on a data base management system, which allows to place complex searches about heliophysics events stored in a series of indexed catalogues relevant to heliophysics events.

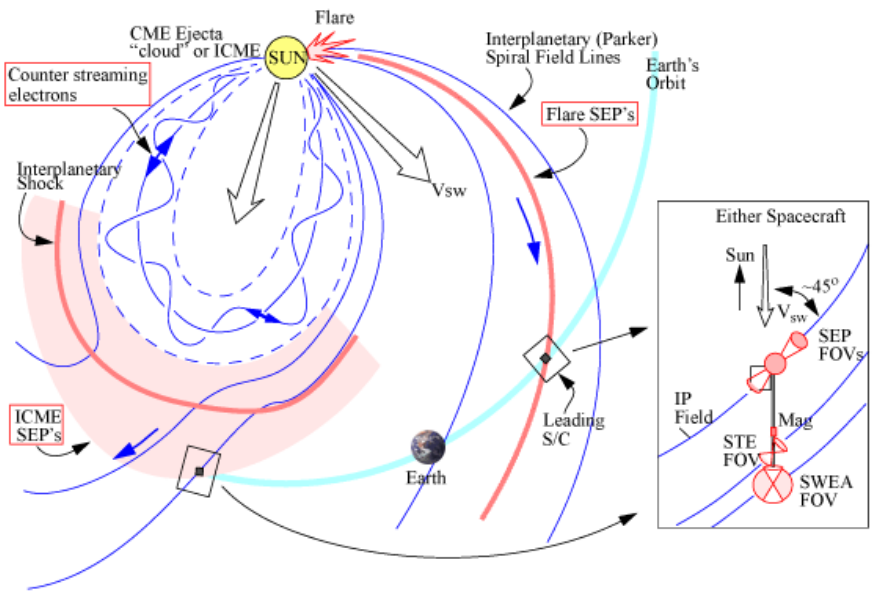
The catalogues have been generated and maintained by data providers like:

- organisations that operate ground- and space-based instruments (e.g. NASA, ESA);
- organisations that process data for specific purposes (e.g. for space weather as NOAA/SWPC);
- individuals for research goals.

"Heliophysics events" are a large variety of phenomena that:

- occur on or are originated at the Sun (e.g. solar flares, CMEs-Coronal Mass Ejections);
- propagate through the Interplanetary Medium (ICMEs-Interplanetary Coronal Mass Ejections);
- interact with the geospace and the planetary analogs (Solar Energetic Particles, Solar Wind shocks, ICMEs).

A Sample Heliophysics Event



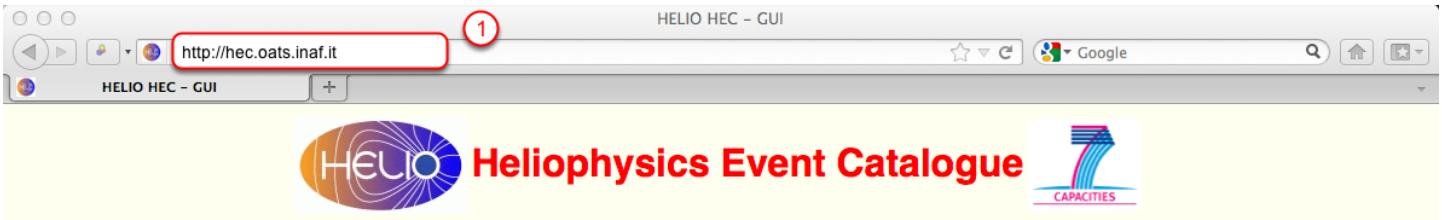
The Figure depicts a sample heliophysics event e.g. the propagation of an Interplanetary Coronal Mass Ejection (ICME) and related solar energetic particles (SEP) through the heliosphere. (Courtesy of the STEREO Team - NASA)

How to Access HEC

HEC can be accessed both at human-level via a web-based Graphical User Interface and at machine-level via a web-service.

The HEC homepage is available at the URL: http://hec.oats.inaf.it

Accessing HEC via Web



Enter the HEC URL in the address window of the browser (1).

Browser Compatibility

	Operating System					
	Ubuntu 11.04		Mac OS X 10.7.0		Windows 7	
Browser	Version	Status	Version	Status	Version	Status
Camino	-	-	2.0.7	OK	-	-
Firefox	5.0	OK	5.0.1	OK	5.0	OK
Chrome	13.0.782.107	OK	13.0.782.107	OK	13.0.782.107	OK
Internet Explorer	-	-	-	-	9.0.1	*
Opera	11.50.1074	OK	11.50.1074	OK	11.50.1074	**
Safari	-	-	5.1	OK		
SeaMonkey	2.0.13	OK	2.2	OK	2.2	OK
[OK] No issues [*] Minor issues [**] Major issues [-] Not available						
Last Tested: 06 August 2011						

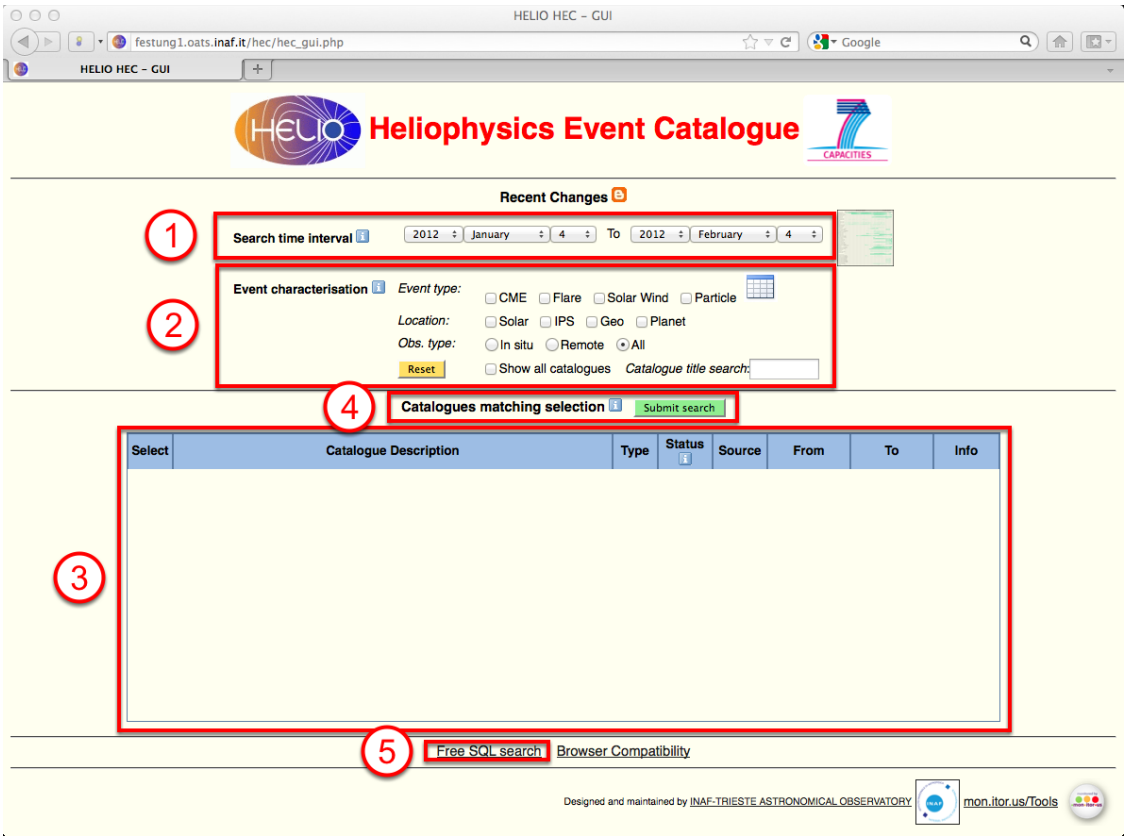
The HEC GUI is compatible with most browsers under most operating systems.

The Graphical User Interface

Structure of the GUI

The HEC GUI is organised in sections related to the relevant functionalities provided.

Functional Sections of the GUI

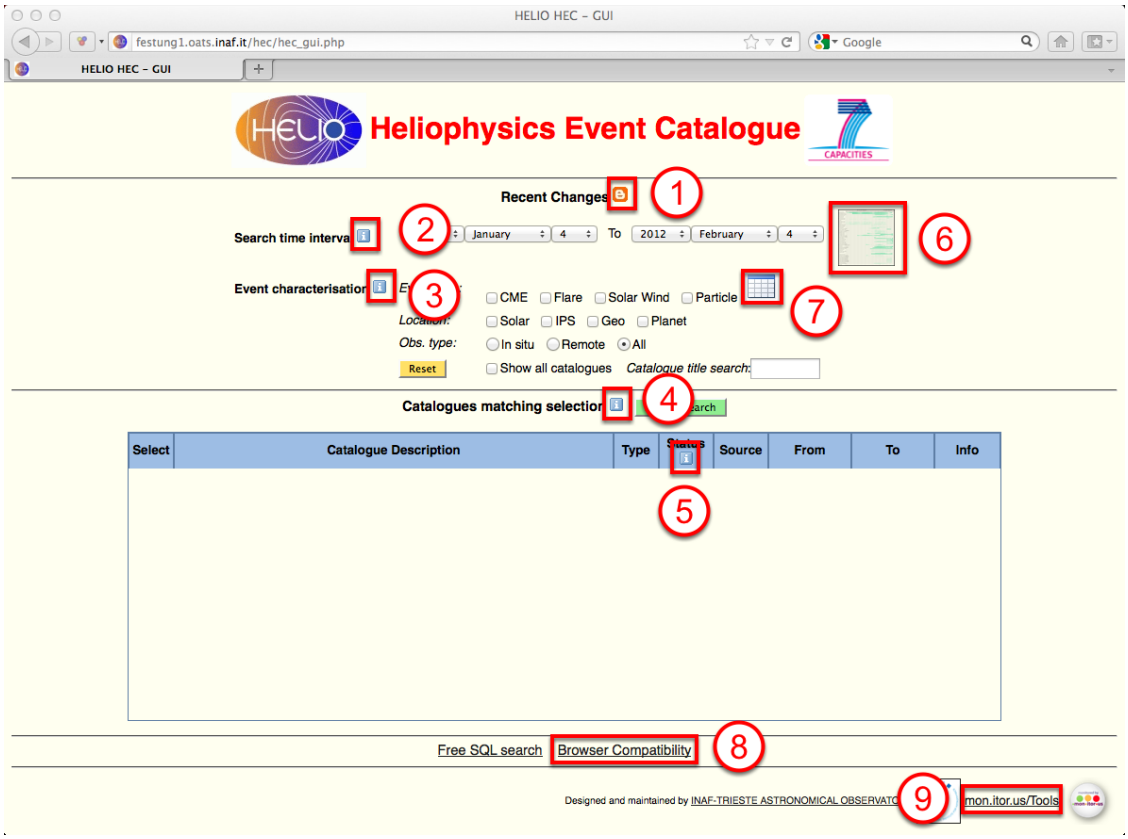


1. TIME INTERVAL SEARCH: allow entering start and end date for event searching.
2. EVENT CHARACTERISATION: allow restricting the search by specifying event categories.
3. CATALOGUE LIST DISPLAY AND SELECT: show the list of event catalogues matching the categories selected in (2), provide information on each catalogue and allow selecting the required ones from the displayed list.
4. SEARCH SUBMIT: submit search.
5. FREE SQL SEARCH: go to a page where it is possible to enter a custom SQL string.

Help System

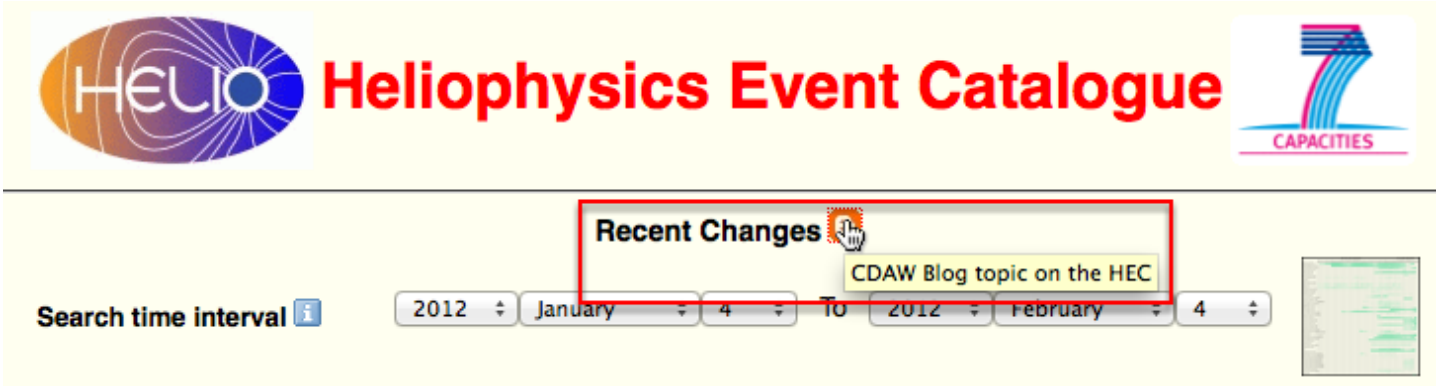
The Help System is organised as (a) hovering windows, that appear when the mouse pointer is positioned on the relevant icons, and/or (b) hyperlinks that open external web pages when they are clicked.

Help System Icons and Hyperlinks



- (1), (2), (3), (4), (5), (6) are icons that activate hovering help windows.
- (1), (6), (7), (8), (9) are hyperlinks that open external help web pages.

Help on HEC (Hovering Window)

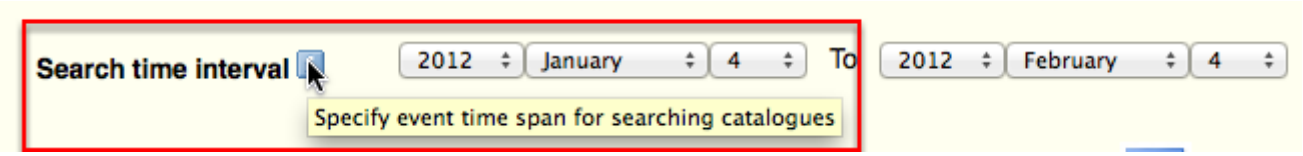


Hovering window icon (1)

Help on HEC (Hyperlink to Blog)

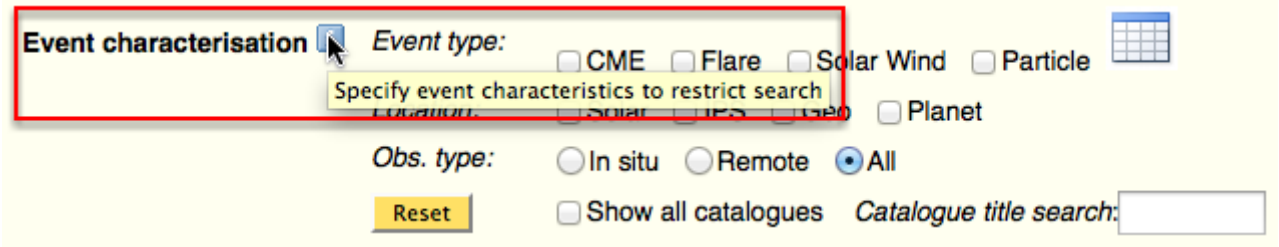
Hyperlink (1) to Blog

Help on Search Time Interval



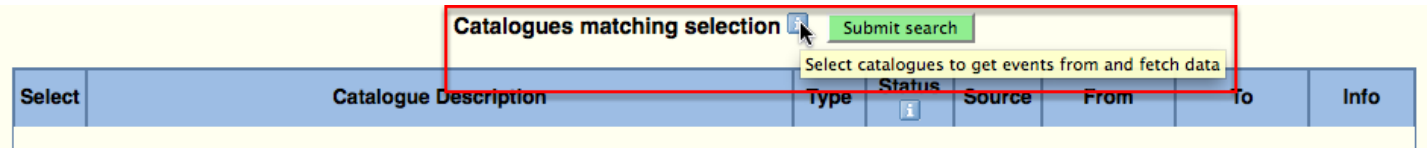
Hovering window icon (2)

Help on Event Characterisation



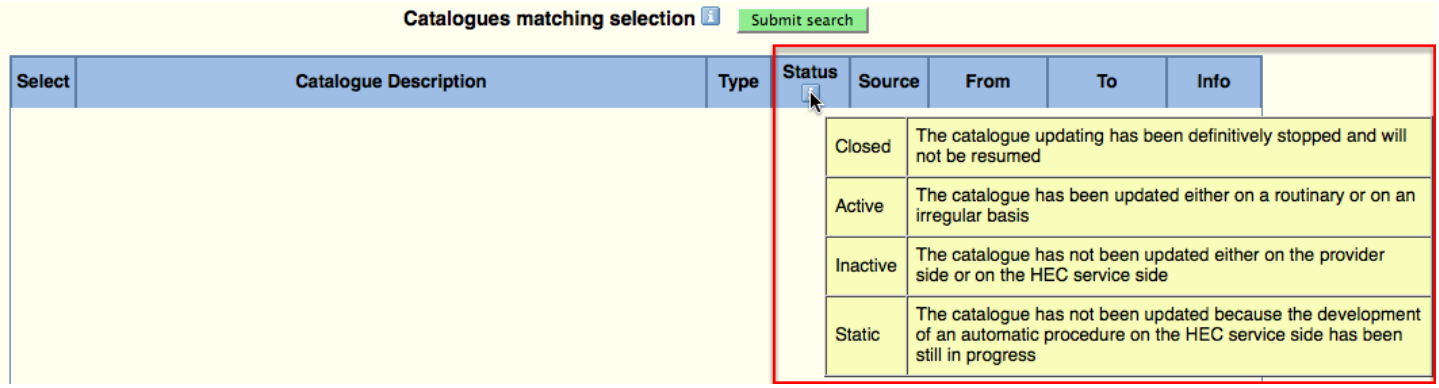
Hovering window icon (3)

Help on Catalogue Matching Selection



Hovering window icon (4)

Help on Catalogue Status

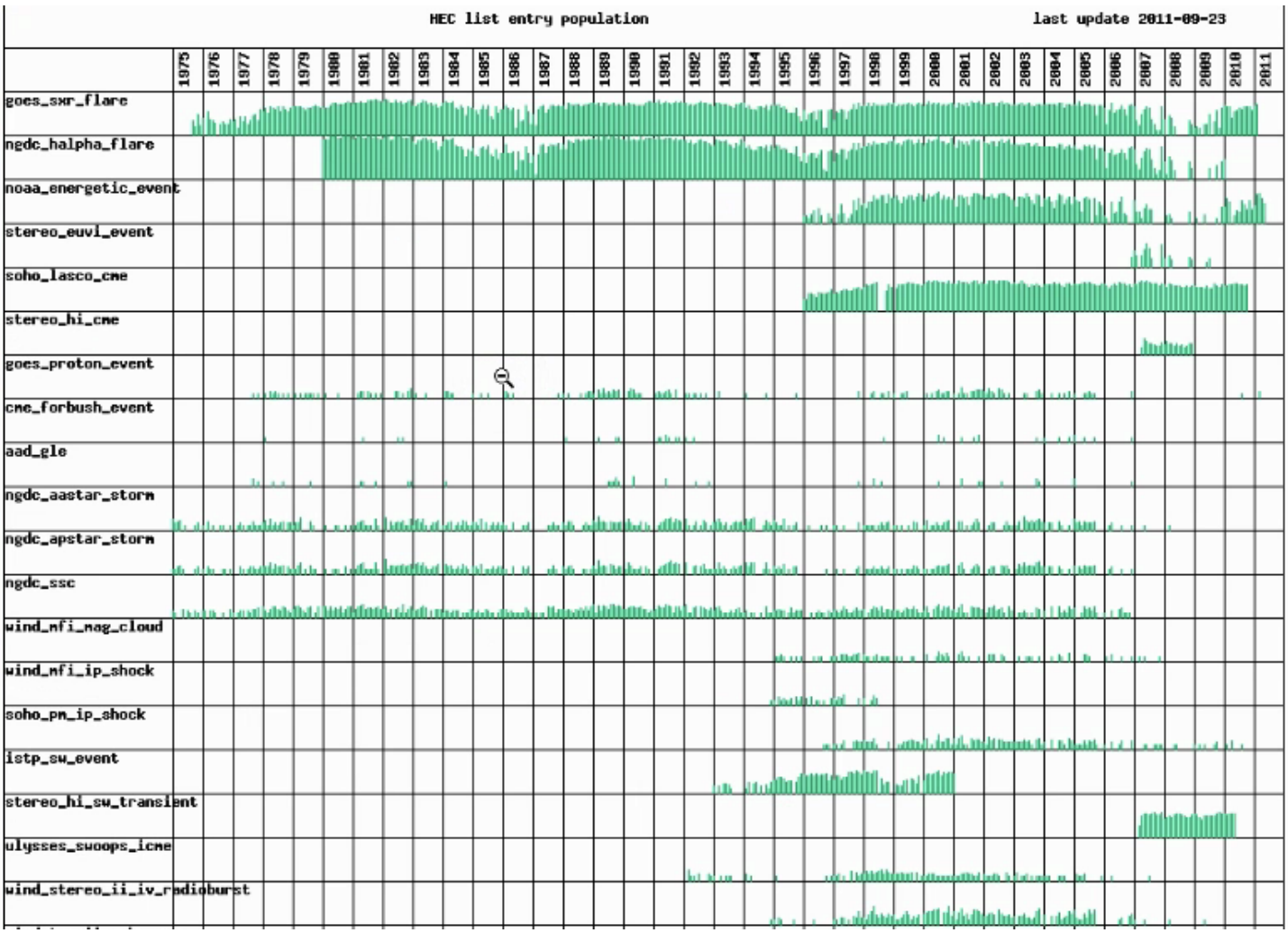


Hovering window icon (5)

Help on Time Coverage of Ingested Catalogues (Hovering Window)

Hovering window icon (6)

Help on Time Coverage of Ingested Catalogues (External Web Page)



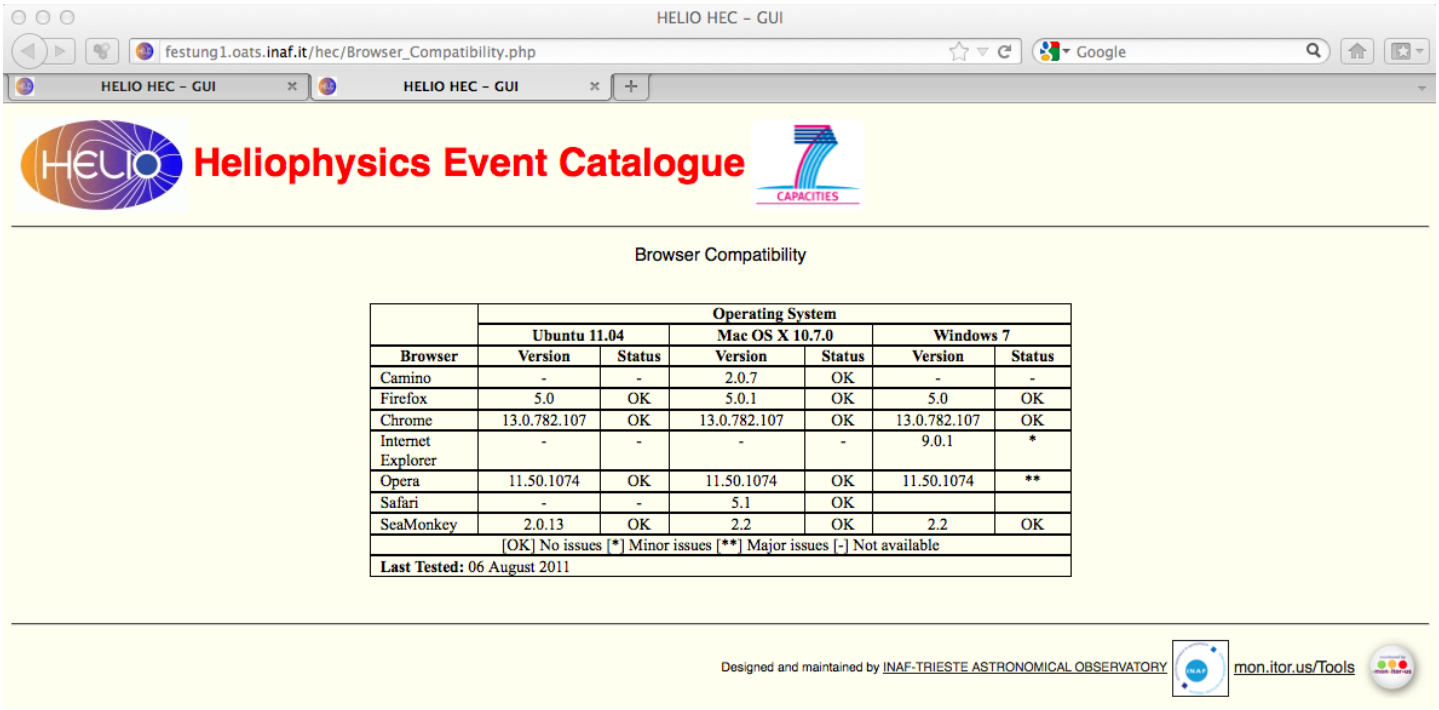
Click on hyperlink (6) to go to an external web page, that reports a graph with the time coverage of the ingested catalogues(i.e., the dates of available data) which is updated on a routinary basis.

Help on Categories of Ingested Catalogues (External Web Page)

Description	Flare	CME	Solar Wind	Particle	In situ/Remote	Solar	IPS	GEO	Planet
GOES Soft X-ray Flare List	•				R	•			
NGDC H-alpha Flare List	•				R	•			
NOAA Solar Energetic Event List	•				R	•			
STEREO/SECCHI/EUVI Event List	•	•			R	•			
SOHO/LASCO CME Event List		•			R	•			
STEREO Heliospheric Imager CME Event List [R. Harrison]		•			R		•		
GOES Proton Event List				•	I			•	
CME-related Forbush Decrease Event List [E. Eroshenko]				•	I			•	
AAD Ground Level Enhancement List				•	I			•	
NGDC AA* Major Magnetic Storm			•		I			•	
NGDC Ap* Major Magnetic Storm			•		I			•	
NGDC Storm Sudden Commencement List			•		I			•	
WIND/MFI Magnetic Cloud List			•		I				
WIND/MFI Interplanetary Shock List			•		I				
SOHO/CELIAS/MTOF/PM Interplanetary Shock List			•		I				
ISTP Solar Wind Candidate Event List			•		I			•	
STEREO/HI Solar Wind Transient List			•		R		•		
Ulysses/SWOOPS Interplanetary CME List [Ebert et al.,2009]		•			I		•		
WIND and STEREO Candidate Type II and IV Radio Burst List					R		•		
Type II Radio Burst (WIND) and Associated CME (SOHO) List		•			R		•		

Click on hyperlink (7) to go to an external web page, which displays a table reporting the characterisation of catalogue events according to a set of main event categories.

Help on Browser Compatibility



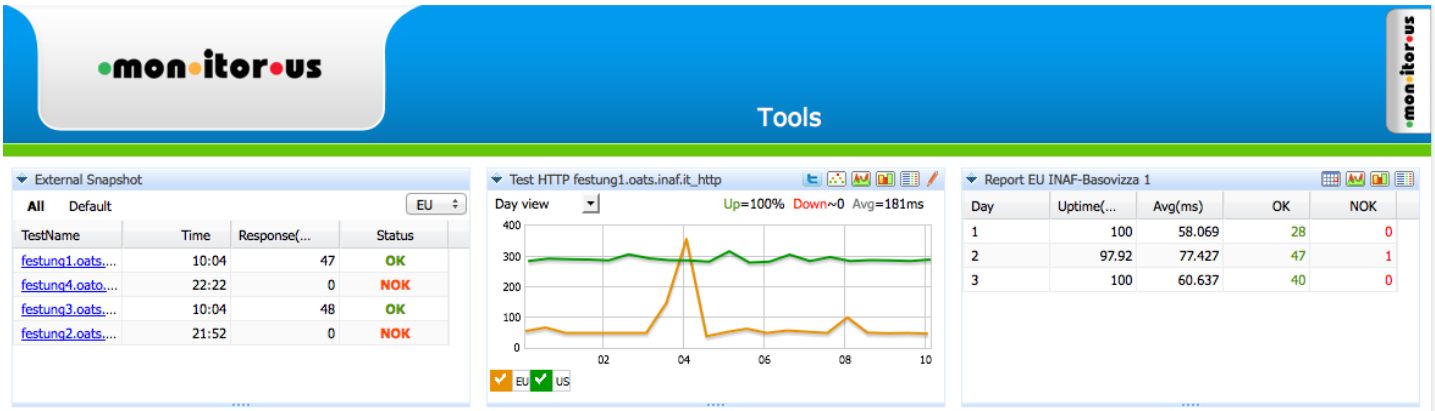
	Operating System					
	Ubuntu 11.04		Mac OS X 10.7.0		Windows 7	
Browser	Version	Status	Version	Status	Version	Status
Camino	-	-	2.0.7	OK	-	-
Firefox	5.0	OK	5.0.1	OK	5.0	OK
Chrome	13.0.782.107	OK	13.0.782.107	OK	13.0.782.107	OK
Internet Explorer	-	-	-	-	9.0.1	*
Opera	11.50.1074	OK	11.50.1074	OK	11.50.1074	**
Safari	-	-	5.1	OK		
SeaMonkey	2.0.13	OK	2.2	OK	2.2	OK
[OK] No issues [*] Minor issues [**] Major issues [-] Not available						
Last Tested: 06 August 2011						

Click on hyperlink (8) to go to an external web page, which reports a table with the browser compatibility tests.

Accessibility Monitor

An external free monitoring service ('mon.itor.us': http://www.monitor.us) is used to test the availability of HEC multiple instances.

Help on HEC Service Availability



Click on hyperlink (9) at the bottom right of the HEC GUI to go to an external web page, which reports the outcome of a continuous monitoring of the HEC multiple instances (access time, uptime percentage, etc.).

Sample Workflow

How to Use HEC

In heliophysics research, one can be interested in finding observations relevant to:

- a stationary event that occurred at a specific time and location;
- an event propagating through the heliosphere;
- a set of stationary and propagating events that can be correlated on a physical basis.

By means of HEC, it is possible to identify such observations by:

- interactively setting the properties that characterise the related events
- submitting the search to the HEC search engine, which will apply the search through the catalogues and will provide the list of existing observations.

Specifically, the following steps have to be carried out:

1. select date and time range of the events you are looking for;
2. characterise the events by selecting the event type and domain to optimise the search;
3. select from displayed list one or more catalogues to be searched for;
4. submit the search by clicking on the green button.

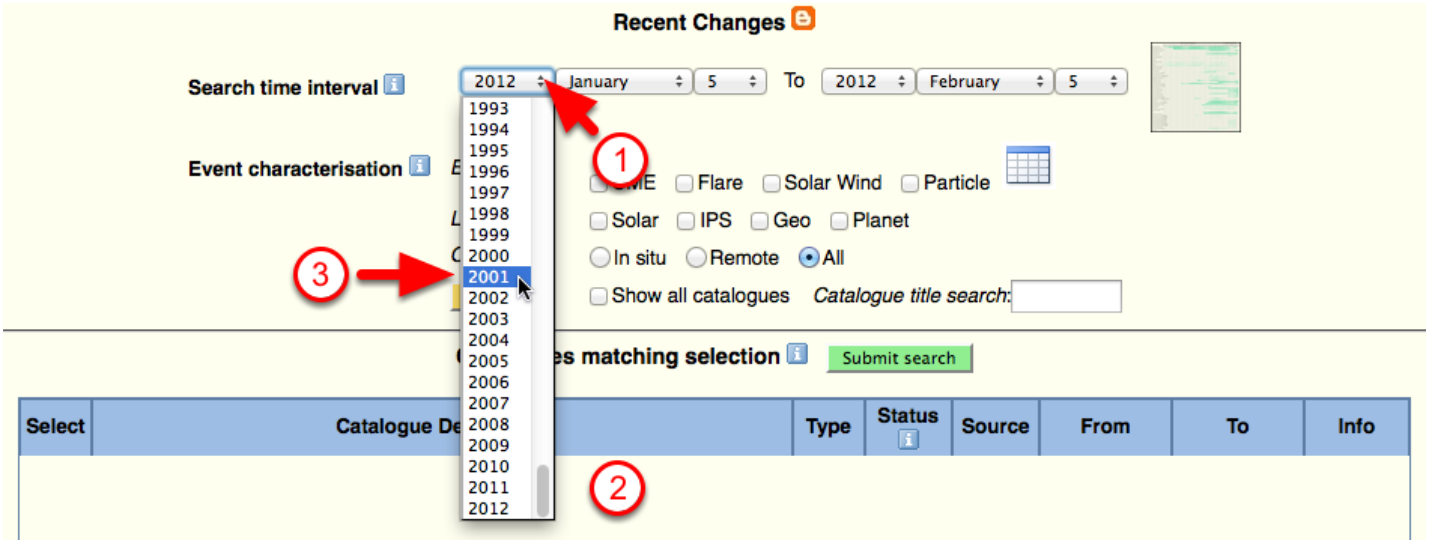
When the mouse pointer is moved over an "i"(nfo) icon, a hovering label appears to help understanding the aim of the selection blocks.

Furthermore, detailed information about each catalogue are provided in a pop-up window when clicking on the "Info" button associated with each catalogue in the displayed list.

Select Search Time Interval

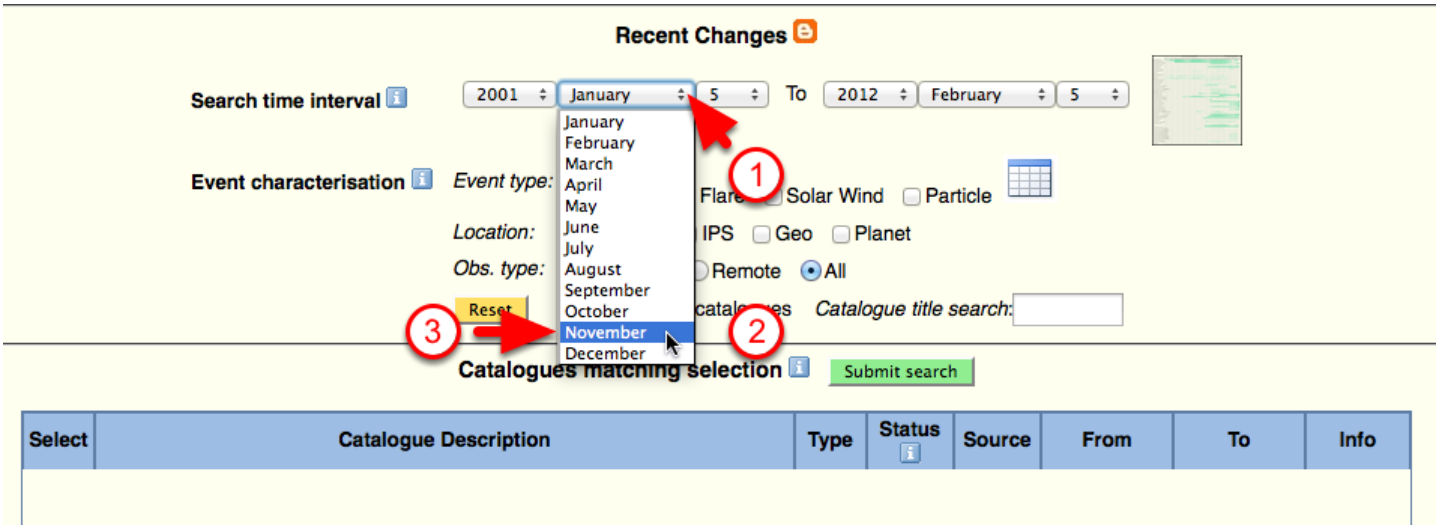
The primary parameters for searching events are the start and end dates, which the user has to select.

Select Start Year



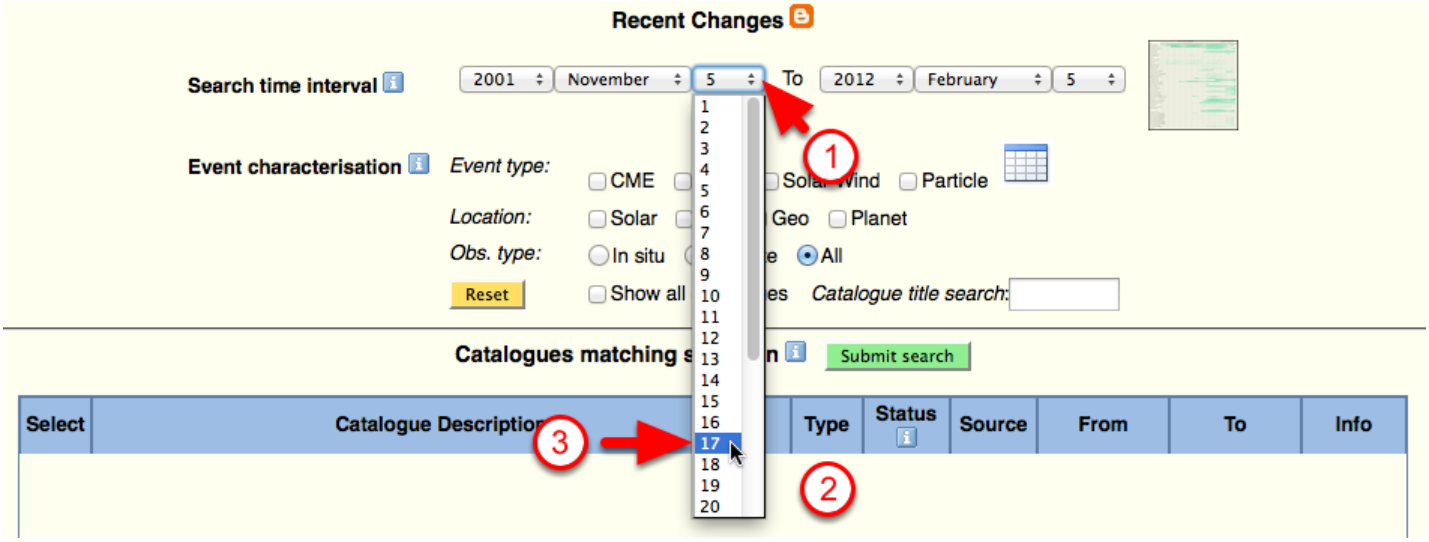
Click on the arrows (1) to display the drop-down menu (2), and click on the selected start year (3). E.g. '2001'.

Select Start Month



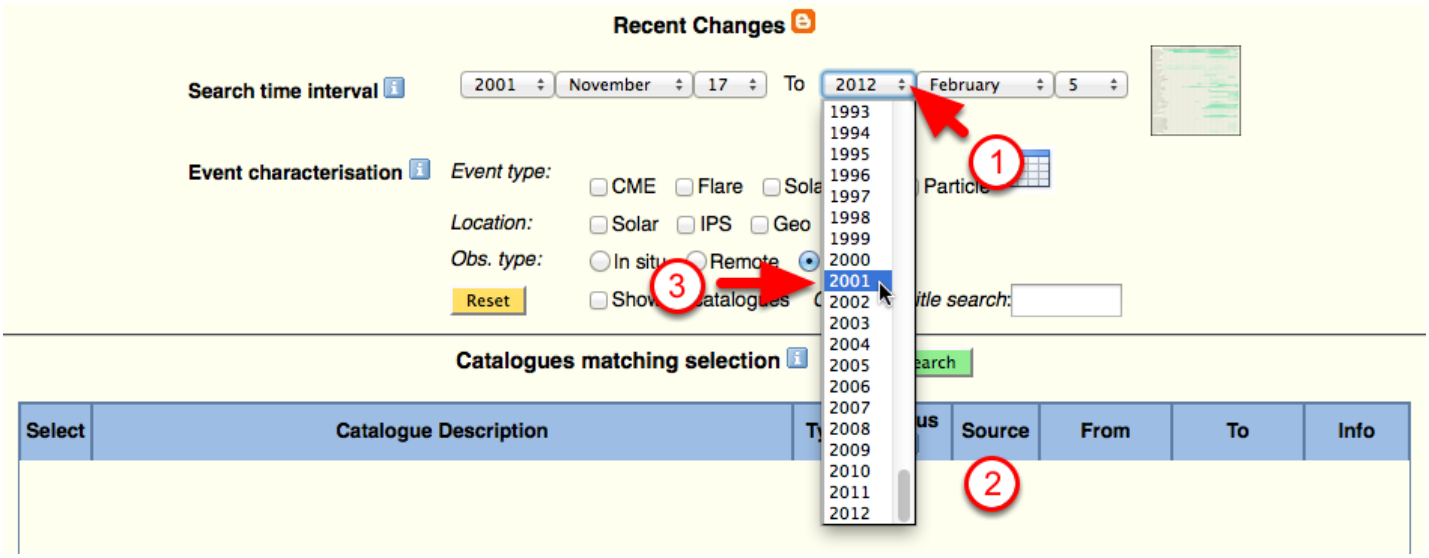
Click on the arrows (1) to display the drop-down menu (2), and click on the selected start month (3). E.g. 'November'.

Select Start Day



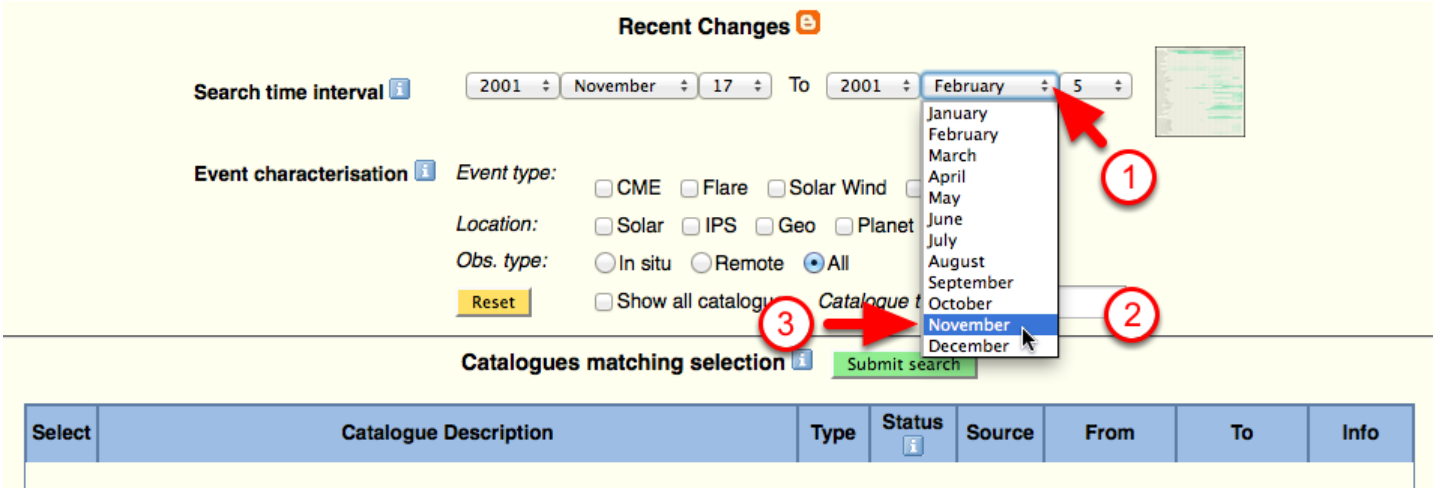
Click on the arrows (1) to display the drop-down menu (2), and click on the selected start day (3). E.g. '17'.

Select End Year



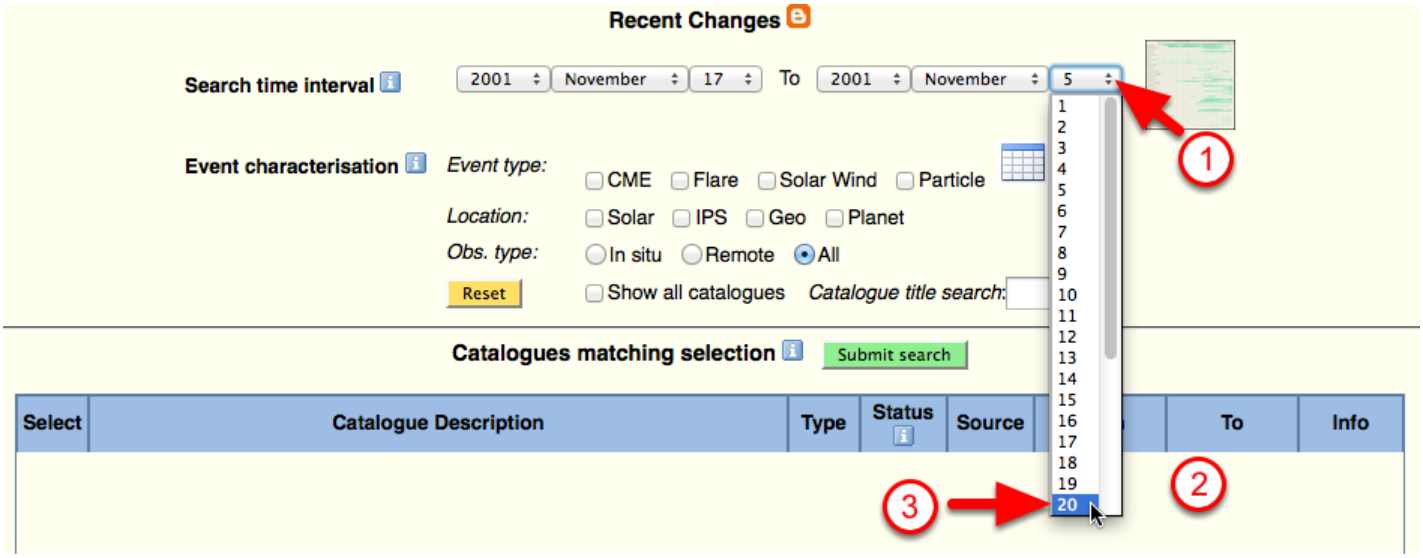
Click on the arrows (1) to display the drop-down menu (2), and click on the selected end year (3). E.g. '2001'.

Select End Month



Click on the arrows (1) to display the drop-down menu (2), and click on the selected end month (3). E.g. 'November'.

Select End Day

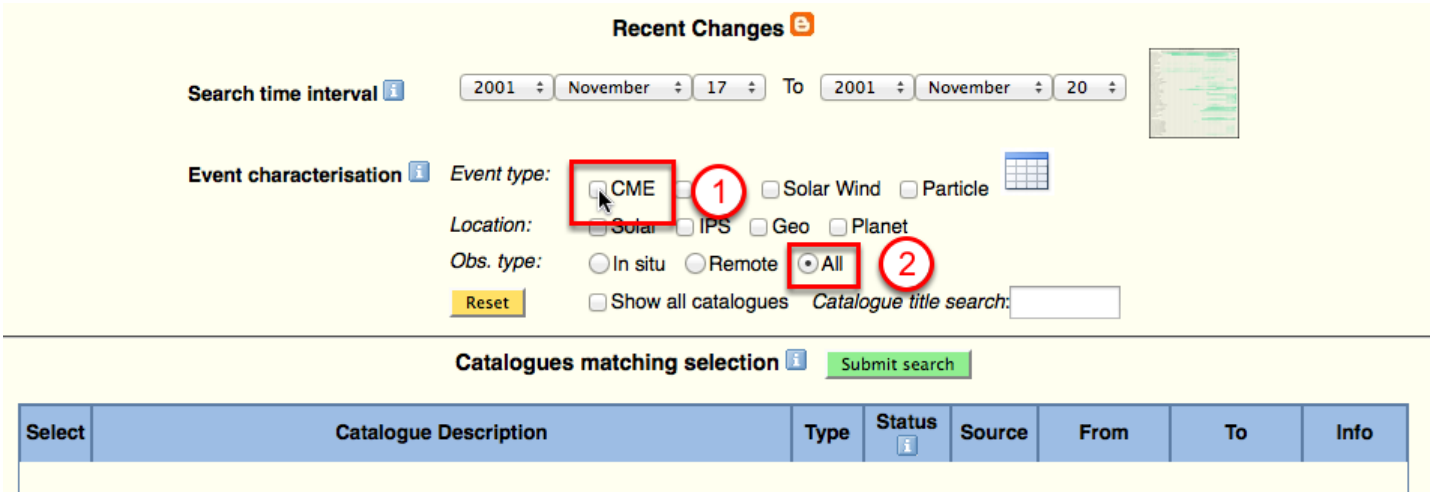


Click on the arrows (1) to display the drop-down menu (2), and click on the selected end year (3). E.g. '20'.

Characterise Event to Be Searched

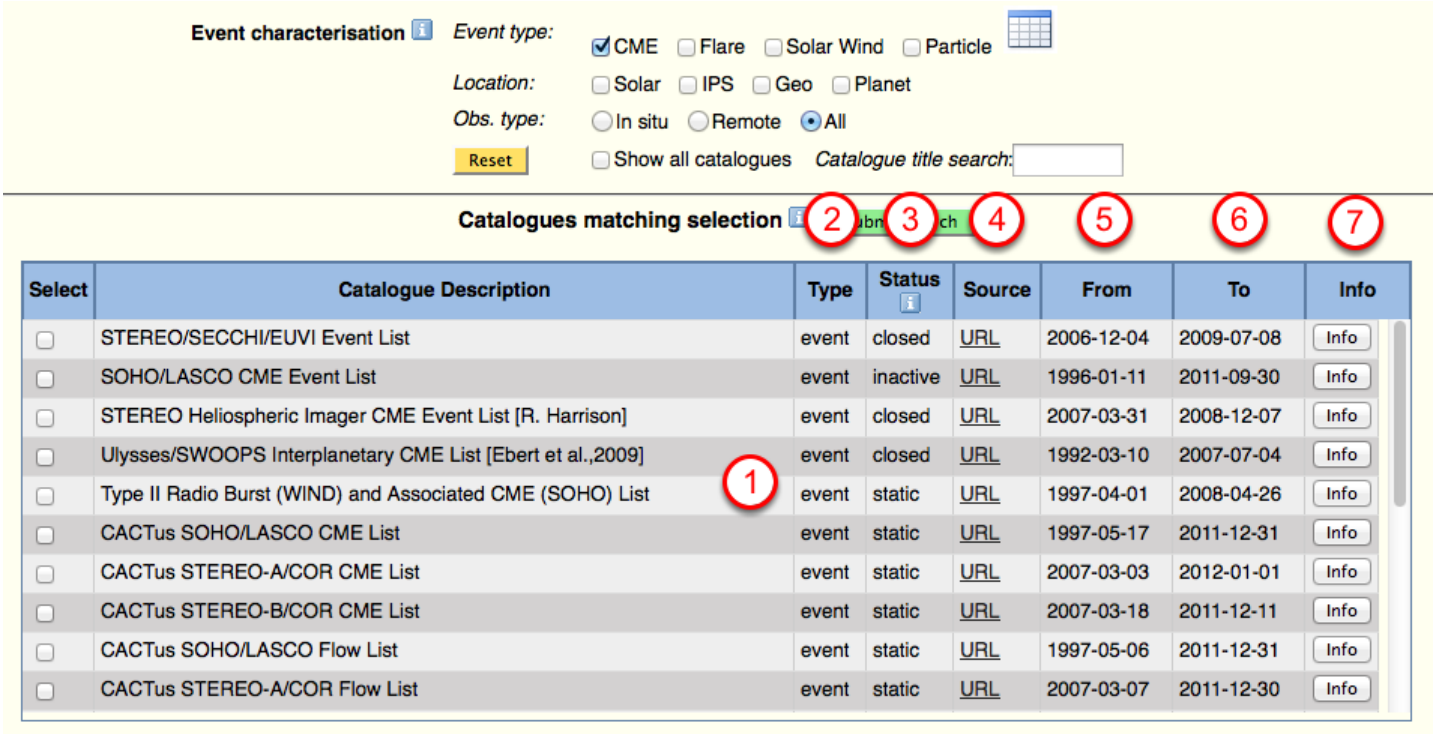
It is adisable to restrict the search only to catalogues that contain events relevant to the specific scientific goal. This can be achieved by characterising the searched events based on pre-selected event categories.

Select Event Type



Click on the relevant event type toggle icon(s) (1) to select one or more types, location and observation type (2). E.g. 'CME' and 'All'.

Get List of Relevant Catalogues



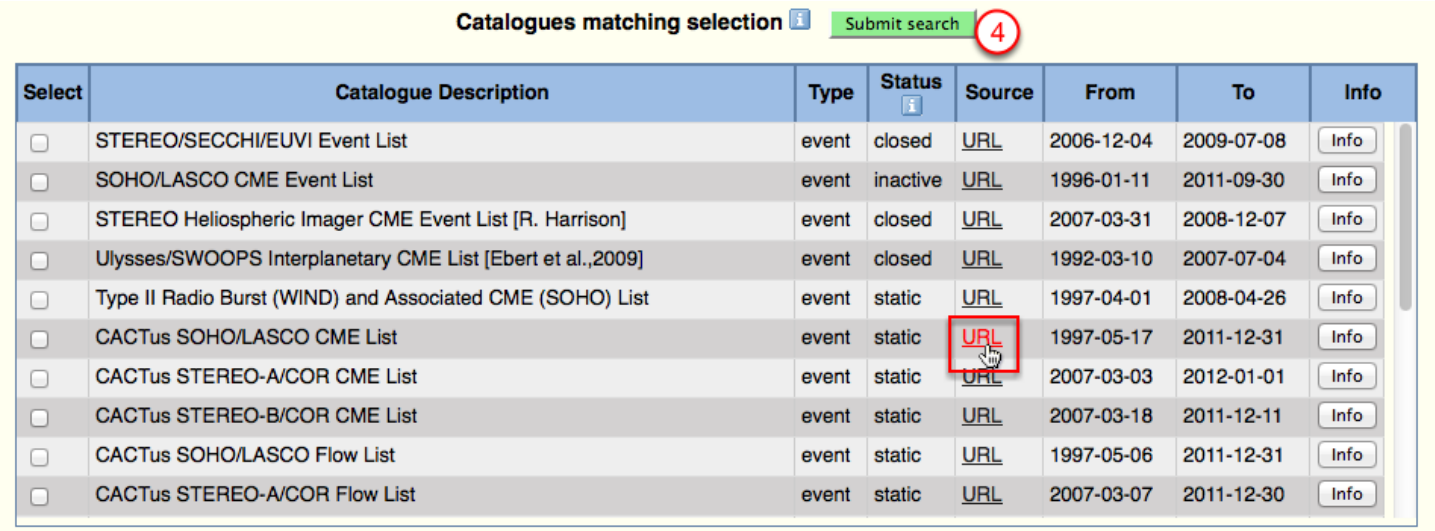
Select	Catalogue Description	Type	Status	Source	From	To	Info
☐	STEREO/SECCHI/EUVI Event List	event	closed	URL	2006-12-04	2009-07-08	Info
☐	SOHO/LASCO CME Event List	event	inactive	URL	1996-01-11	2011-09-30	Info
☐	STEREO Heliospheric Imager CME Event List [R. Harrison]	event	closed	URL	2007-03-31	2008-12-07	Info
☐	Ulysses/SWOOPS Interplanetary CME List [Ebert et al.,2009]	event	closed	URL	1992-03-10	2007-07-04	Info
☐	Type II Radio Burst (WIND) and Associated CME (SOHO) List	event	static	URL	1997-04-01	2008-04-26	Info
☐	CACTus SOHO/LASCO CME List	event	static	URL	1997-05-17	2011-12-31	Info
☐	CACTus STEREO-A/COR CME List	event	static	URL	2007-03-03	2012-01-01	Info
☐	CACTus STEREO-B/COR CME List	event	static	URL	2007-03-18	2011-12-11	Info
☐	CACTus SOHO/LASCO Flow List	event	static	URL	1997-05-06	2011-12-31	Info
☐	CACTus STEREO-A/COR Flow List	event	static	URL	2007-03-07	2011-12-30	Info

The selection of event type(s), location(s), and observation type results in the display of a list of relevant catalogues (1).
The table reports the data type (2) (e.g. 'event'), the catalogue status (3) (e.g. 'closed'), the source data URL ('URL') (4), the start date of the catalogue ('From') (5), the end date of the catalogue ('To') (6), a hyperlink button that points to an external web page with detailed information on the catalogue ('Info') (7).

Select Catalogues to Be Searched

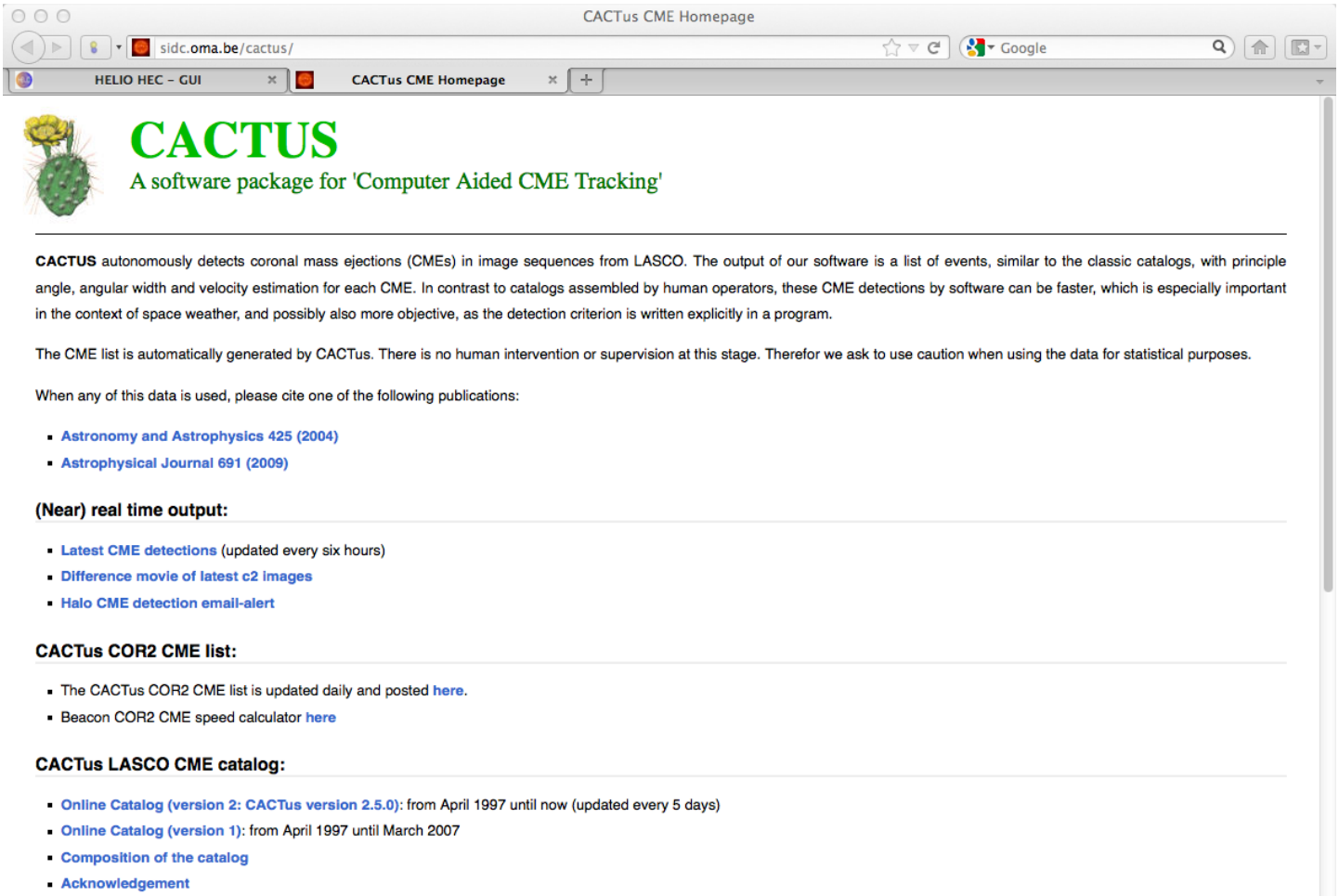
According to criteria relevant to the scientific goal, a subset of catalogues can be selected from the list in order to optimise the search.

Display Catalogue Source Data



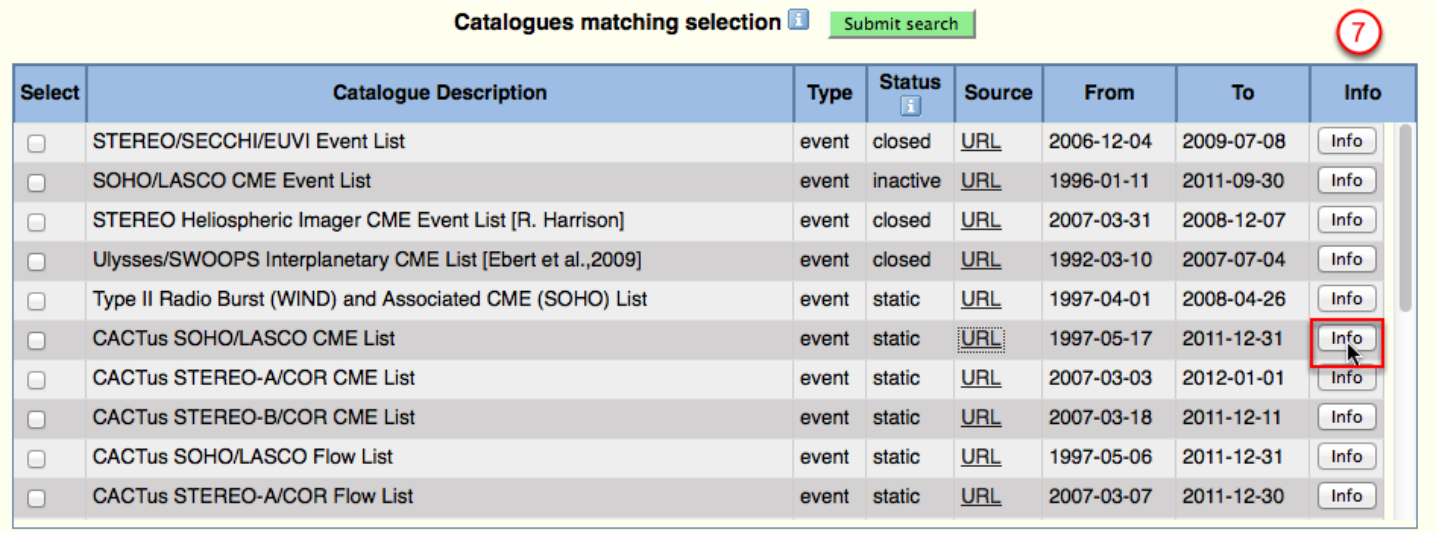
Click on the relevant hyperlink (4) to display the source data.

Examine Catalogue Source Data



Catalogue source data are display in a separate tab/window.

Select Catalogue Info

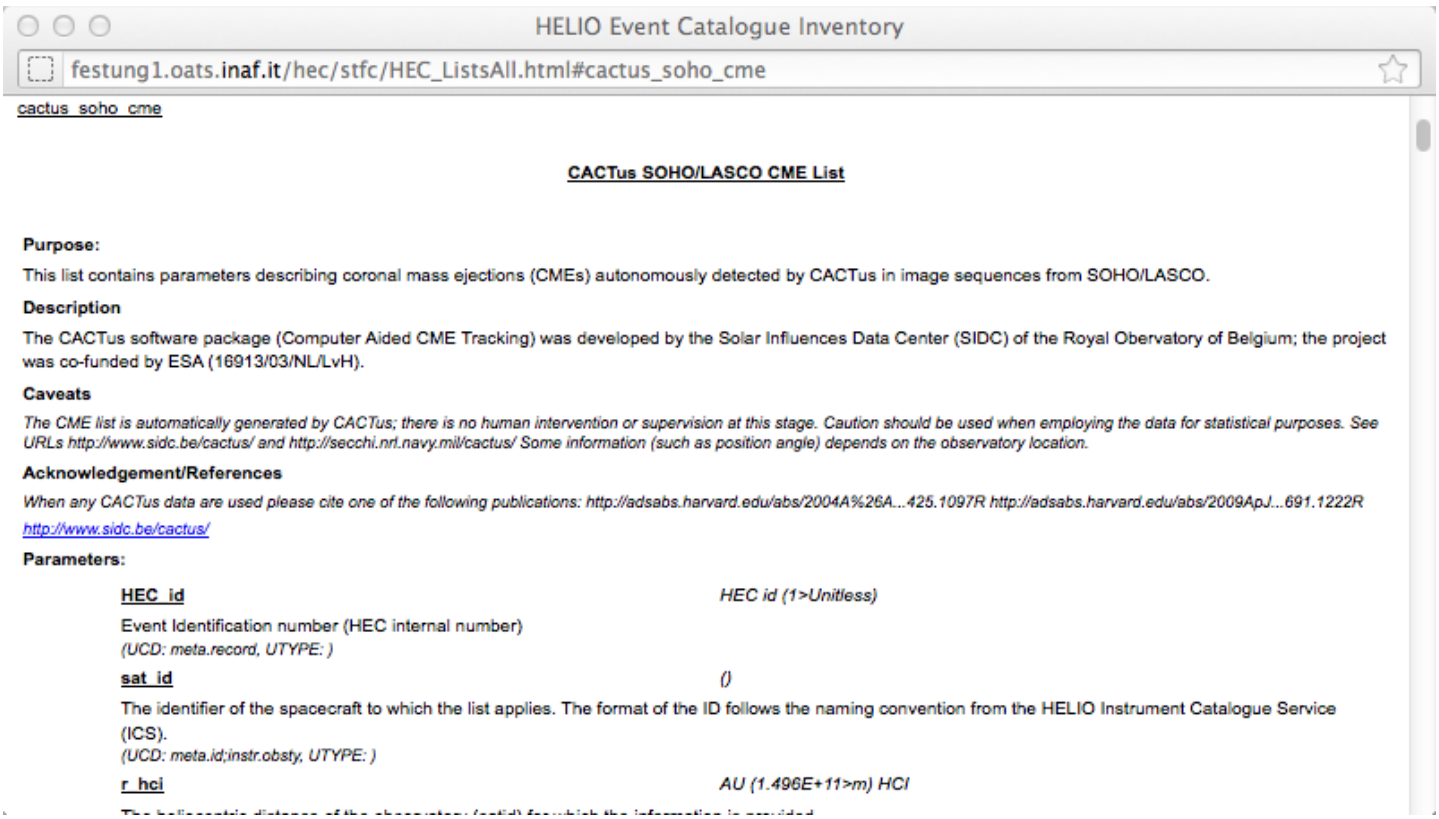


Catalogues matching selection | Submit search | 7

Select	Catalogue Description	Type	Status	Source	From	To	Info
☐	STEREO/SECCHI/EUVI Event List	event	closed	URL	2006-12-04	2009-07-08	Info
☐	SOHO/LASCO CME Event List	event	inactive	URL	1996-01-11	2011-09-30	Info
☐	STEREO Heliospheric Imager CME Event List [R. Harrison]	event	closed	URL	2007-03-31	2008-12-07	Info
☐	Ulysses/SWOOPS Interplanetary CME List [Ebert et al.,2009]	event	closed	URL	1992-03-10	2007-07-04	Info
☐	Type II Radio Burst (WIND) and Associated CME (SOHO) List	event	static	URL	1997-04-01	2008-04-26	Info
☐	CACTus SOHO/LASCO CME List	event	static	URL	1997-05-17	2011-12-31	Info
☐	CACTus STEREO-A/COR CME List	event	static	URL	2007-03-03	2012-01-01	Info
☐	CACTus STEREO-B/COR CME List	event	static	URL	2007-03-18	2011-12-11	Info
☐	CACTus SOHO/LASCO Flow List	event	static	URL	1997-05-06	2011-12-31	Info
☐	CACTus STEREO-A/COR Flow List	event	static	URL	2007-03-07	2011-12-30	Info

Click on the relevant hyperlink button (7) to display catalogue info.

Examine Catalogue Info



HELIO Event Catalogue Inventory

festung1.oats.inaf.it/hec/stfc/HEC_ListsAll.html#cactus_soho_cme

cactus_soho_cme

CACTus SOHO/LASCO CME List

Purpose:

This list contains parameters describing coronal mass ejections (CMEs) autonomously detected by CACTus in image sequences from SOHO/LASCO.

Description

The CACTus software package (Computer Aided CME Tracking) was developed by the Solar Influences Data Center (SIDC) of the Royal Obervatory of Belgium; the project was co-funded by ESA (16913/03/NL/LvH).

Caveats

The CME list is automatically generated by CACTus; there is no human intervention or supervision at this stage. Caution should be used when employing the data for statistical purposes. See URLs http://www.sidc.be/cactus/ and http://secchi.nrl.navy.mil/cactus/ Some information (such as position angle) depends on the observatory location.

Acknowledgement/References

When any CACTus data are used please cite one of the following publications: http://adsabs.harvard.edu/abs/2004A%26A...425.1097R http://adsabs.harvard.edu/abs/2009ApJ...691.1222R

http://www.sidc.be/cactus/

Parameters:

HEC_id — *HEC id (1>Unitless)*

Event Identification number (HEC internal number)
(UCD: meta.record, UTYPE:)

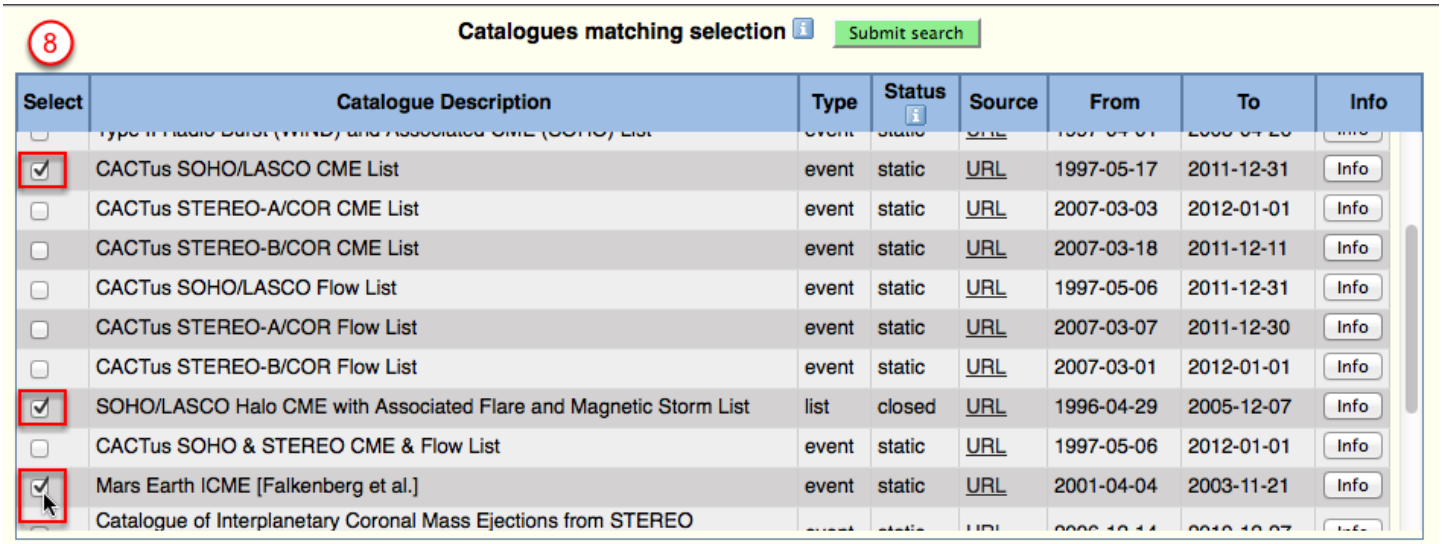
sat_id — *()*

The identifier of the spacecraft to which the list applies. The format of the ID follows the naming convention from the HELIO Instrument Catalogue Service (ICS).
(UCD: meta.id;instr.obsty, UTYPE:)

r_hci — *AU (1.496E+11>m) HCI*

Catalogue info is displayed in an external web page.

Select Catalogues to Be Searched

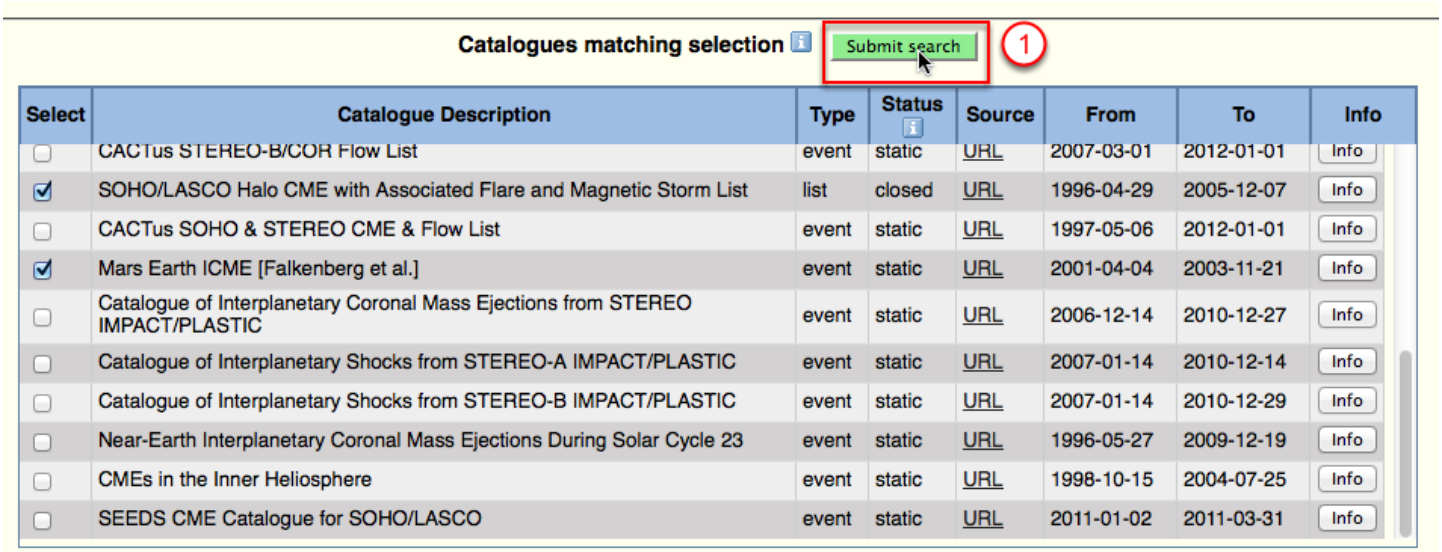


Identify the catalogues of interest by scrolling the catalogue list window, and select/deselect them by clicking on the leftmost toggle buttons (8).

Submit Search

The search that has been internally built up via the selected GUI options has to be submitted to the HEC search engine to be processed.

Activation of the HEC Search Engine

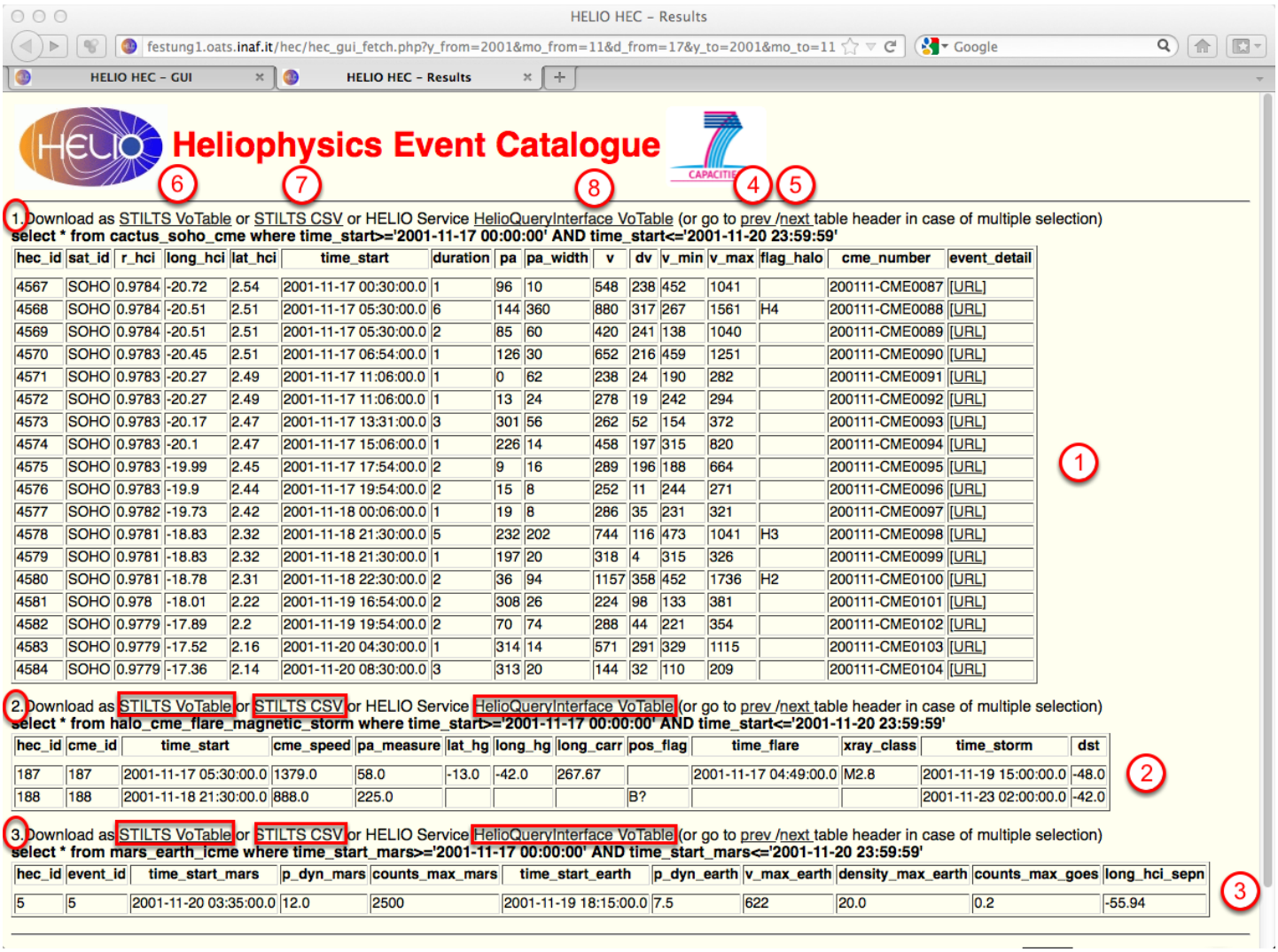


Click on the 'Submit Search' button (1) to submit search to the HEC search engine.

Get Search Results

Search results are provided in a variety of formats.

Tabular Format on an External Web Page



The results matching the selected search parameters are displayed on an external wb page, organised in separate sections (1)-(2)-(3) for each catalogue that can be easily navigated by means of the navigation hyperlinks '**prev**'(ious) (4) and '**next**' (5), located at the top of each catalogue section.
Results in **VOTable** (**V**irtual **O**bservatory **T**able) format can be obtained via **STILTS** (**S**tarlink **T**ables **I**nfrastructure **L**ibrary **T**ool **S**et) by clicking on hyperlink (6) and via **HQI** (**H**ELIO **Q**uery **I**nterface) by clicking on hyperlink (8) at the top of each catalogue result section. Similarly, Results in **CSV** (**C**omma **S**eparated **V**alues) can be obtained via STILTS by clicking on hyperlink (7).

Get Results in VOTable Format Via STILTS


```
- <VOTABLE version="1.1" xsi:schemaLocation="http://www.ivoa.net/xml/VOTable/v1.1 http://www.ivoa.net/xml/VOTable/v1.1">
  - <!--
       !  VOTable written by STIL version 2.9-3x (uk.ac.starlink.votable.VOTableWriter)
       !  at 2012-02-05T16:56:03
       !
    -->
  - <RESOURCE>
    - <TABLE>
        <FIELD datatype="int" name="hec_id"/>
        <FIELD arraysize="*" datatype="char" name="sat_id"/>
        <FIELD datatype="float" name="r_hci"/>
        <FIELD datatype="float" name="long_hci"/>
        <FIELD datatype="float" name="lat_hci"/>
        <FIELD arraysize="*" datatype="char" name="time_start"/>
      - <FIELD datatype="int" name="duration">
          <VALUES null="-2147483648"/>
        </FIELD>
```

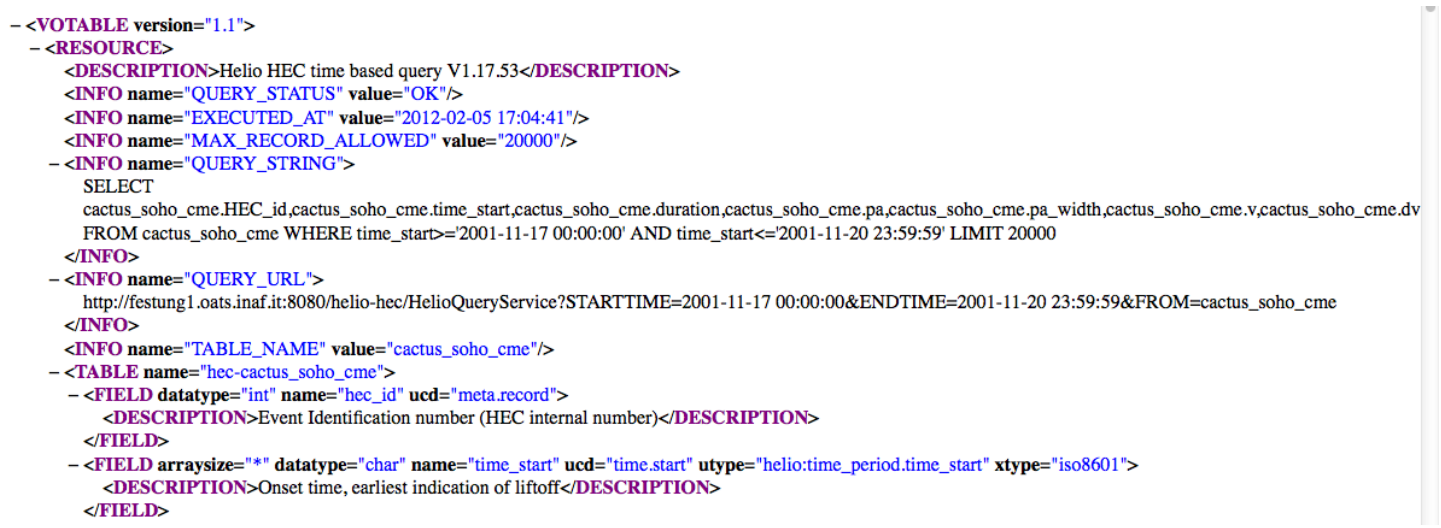

Click on hyperlink (6) for Catalogue no. 1.

Get Results in CSV Format Via STILTS


```
hec_id,sat_id,r_hci,long_hci,lat_hci,time_start,duration,pa,pa_width,v,dv,v_min,v_max,flag_halo,cme_number,event_detail 4567,SOHO,0.9784,-20.72,2.54,2001-11-17
00:30:00.0,1,96,10,548,238,452,1041,,200111-CME0087,http://sidc.oma.be/cactus/catalog/LASCO/2_5_0/2001/11/CME0087/CME.html 4568,SOHO,0.9784,-20.51,2.51,2001-11-17
05:30:00.0,6,144,360,880,317,267,1561,H4,200111-CME0088,http://sidc.oma.be/cactus/catalog/LASCO/2_5_0/2001/11/CME0088/CME.html
4569,SOHO,0.9784,-20.51,2.51,2001-11-17 05:30:00.0,2,85,60,420,241,138,1040,,200111-CME0089,http://sidc.oma.be/cactus/catalog/LASCO/2_5_0/2001/11/CME0089/CME.html
4570,SOHO,0.9783,-20.45,2.51,2001-11-17 06:54:00.0,1,126,30,652,216,459,1251,,200111-CME0090,http://sidc.oma.be/cactus/catalog/LASCO/2_5_0/2001/11/CME0090
/CME.html 4571,SOHO,0.9783,-20.27,2.49,2001-11-17 11:06:00.0,1,0,62,238,24,190,282,,200111-CME0091,http://sidc.oma.be/cactus/catalog/LASCO/2_5_0/2001/11/CME0091
/CME.html 4572,SOHO,0.9783,-20.27,2.49,2001-11-17 11:06:00.0,1,13,24,278,19,242,294,,200111-CME0092,http://sidc.oma.be/cactus/catalog/LASCO/2_5_0/2001/11/CME0092
/CME.html 4573,SOHO,0.9783,-20.17,2.47,2001-11-17 13:31:00.0,3,301,56,262,52,154,372,,200111-CME0093,http://sidc.oma.be/cactus/catalog/LASCO/2_5_0/2001/11/CME0093
/CME.html 4574,SOHO,0.9783,-20.1,2.47,2001-11-17 15:06:00.0,1,226,14,458,197,315,820,,200111-CME0094,http://sidc.oma.be/cactus/catalog/LASCO/2_5_0/2001/11/CME0094
/CME.html 4575,SOHO,0.9783,-19.99,2.45,2001-11-17 17:54:00.0,2,9,16,289,196,188,664,,200111-CME0095,http://sidc.oma.be/cactus/catalog/LASCO/2_5_0/2001/11/CME0095
/CME.html 4576,SOHO,0.9783,-19.9,2.44,2001-11-17 19:54:00.0,2,15,8,252,11,244,271,,200111-CME0096,http://sidc.oma.be/cactus/catalog/LASCO/2_5_0/2001/11/CME0096
/CME.html 4577,SOHO,0.9782,-19.73,2.42,2001-11-18 00:06:00.0,1,19,8,286,35,231,321,,200111-CME0097,http://sidc.oma.be/cactus/catalog/LASCO/2_5_0/2001/11/CME0097
/CME.html 4578,SOHO,0.9781,-18.83,2.32,2001-11-18 21:30:00.0,5,232,202,744,116,473,1041,H3,200111-CME0098,http://sidc.oma.be/cactus/catalog/LASCO/2_5_0/2001/11
/CME0098/CME.html 4579,SOHO,0.9781,-18.83,2.32,2001-11-18 21:30:00.0,1,197,20,318,4,315,326,,200111-CME0099,http://sidc.oma.be/cactus/catalog/LASCO/2_5_0/2001/11
/CME0099/CME.html 4580,SOHO,0.9781,-18.78,2.31,2001-11-18 22:30:00.0,2,36,94,1157,358,452,1736,H2,200111-CME0100,http://sidc.oma.be/cactus/catalog/LASCO/2_5_0
/2001/11/CME0100/CME.html 4581,SOHO,0.978,-18.01,2.22,2001-11-19 16:54:00.0,2,308,26,224,98,133,381,,200111-CME0101,http://sidc.oma.be/cactus/catalog/LASCO/2_5_0
/2001/11/CME0101/CME.html 4582,SOHO,0.9779,-17.89,2.2,2001-11-19 19:54:00.0,2,70,74,288,44,221,354,,200111-CME0102,http://sidc.oma.be/cactus/catalog/LASCO/2_5_0
/2001/11/CME0102/CME.html 4583,SOHO,0.9779,-17.52,2.16,2001-11-20 04:30:00.0,1,314,14,571,291,329,1115,,200111-CME0103,http://sidc.oma.be/cactus/catalog/LASCO
/2_5_0/2001/11/CME0103/CME.html 4584,SOHO,0.9779,-17.36,2.14,2001-11-20 08:30:00.0,3,313,20,144,32,110,209,,200111-CME0104,http://sidc.oma.be/cactus/catalog/LASCO
/2_5_0/2001/11/CME0104/CME.html
```


Click on hyperlink (7) for Catalogue no. 1.

Get Results in VOTable Format Via HQI



```
- <VOTABLE version="1.1">
  - <RESOURCE>
      <DESCRIPTION>Helio HEC time based query V1.17.53</DESCRIPTION>
      <INFO name="QUERY_STATUS" value="OK"/>
      <INFO name="EXECUTED_AT" value="2012-02-05 17:04:41"/>
      <INFO name="MAX_RECORD_ALLOWED" value="20000"/>
    - <INFO name="QUERY_STRING">
        SELECT
        cactus_soho_cme.HEC_id,cactus_soho_cme.time_start,cactus_soho_cme.duration,cactus_soho_cme.pa,cactus_soho_cme.pa_width,cactus_soho_cme.v,cactus_soho_cme.dv
        FROM cactus_soho_cme WHERE time_start>='2001-11-17 00:00:00' AND time_start<='2001-11-20 23:59:59' LIMIT 20000
      </INFO>
    - <INFO name="QUERY_URL">
        http://festung1.oats.inaf.it:8080/helio-hec/HelioQueryService?STARTTIME=2001-11-17 00:00:00&ENDTIME=2001-11-20 23:59:59&FROM=cactus_soho_cme
      </INFO>
      <INFO name="TABLE_NAME" value="cactus_soho_cme"/>
    - <TABLE name="hec-cactus_soho_cme">
      - <FIELD datatype="int" name="hec_id" ucd="meta.record">
          <DESCRIPTION>Event Identification number (HEC internal number)</DESCRIPTION>
        </FIELD>
      - <FIELD arraysize="*" datatype="char" name="time_start" ucd="time.start" utype="helio:time_period.time_start" xtype="iso8601">
          <DESCRIPTION>Onset time, earliest indication of liftoff</DESCRIPTION>
        </FIELD>
```

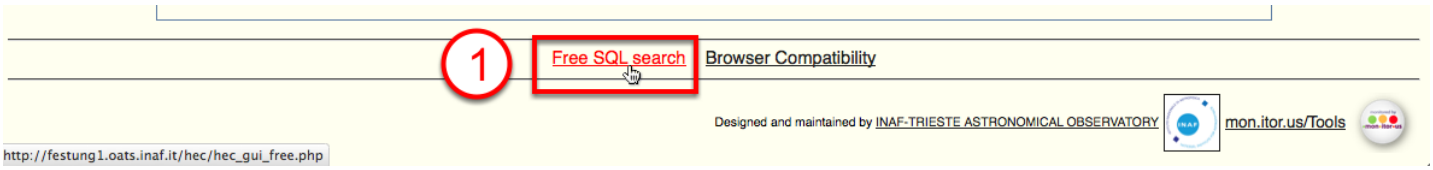
Click on hyperlink (8) for Catalogue no. 1.

Advanced Features

Free SQL Search

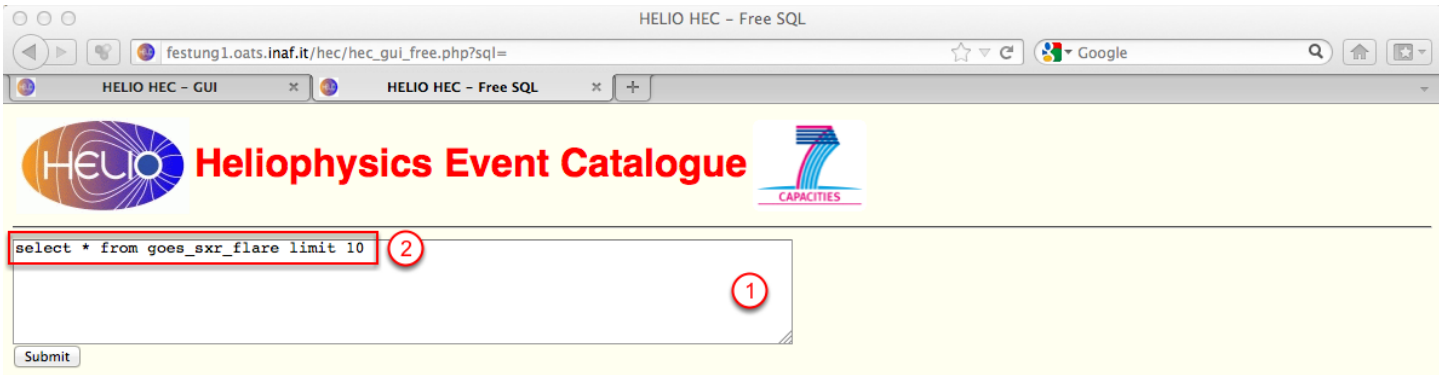
Advanced users who know SQL can place complex searches by entering SQL strings via the "Free SQL Search" GUI.

Access the Free SQL Search GUI from the HEC Homepage



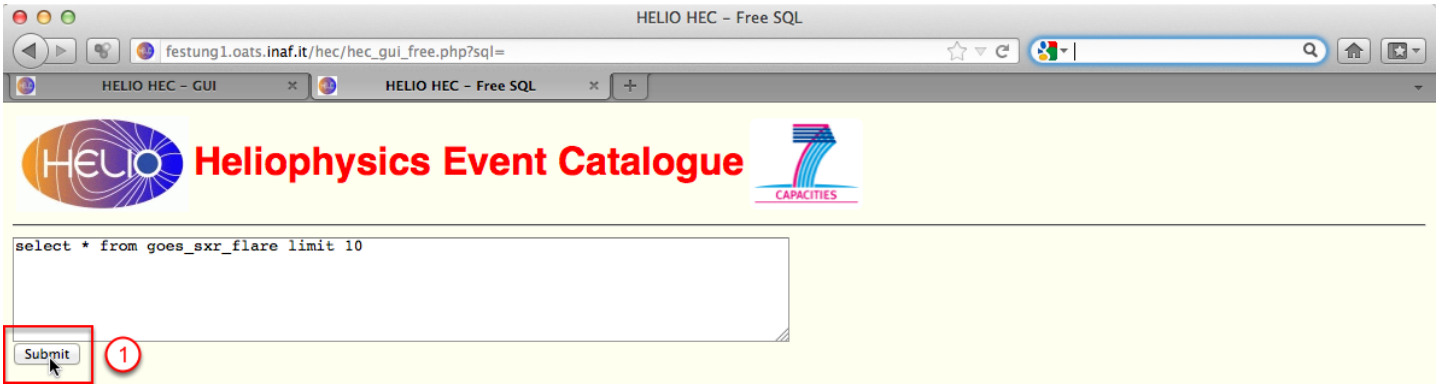
Click on the "Free SQL Search" hyperlink (1) at the bottom of the HEC homepage.

Enter an SQL string



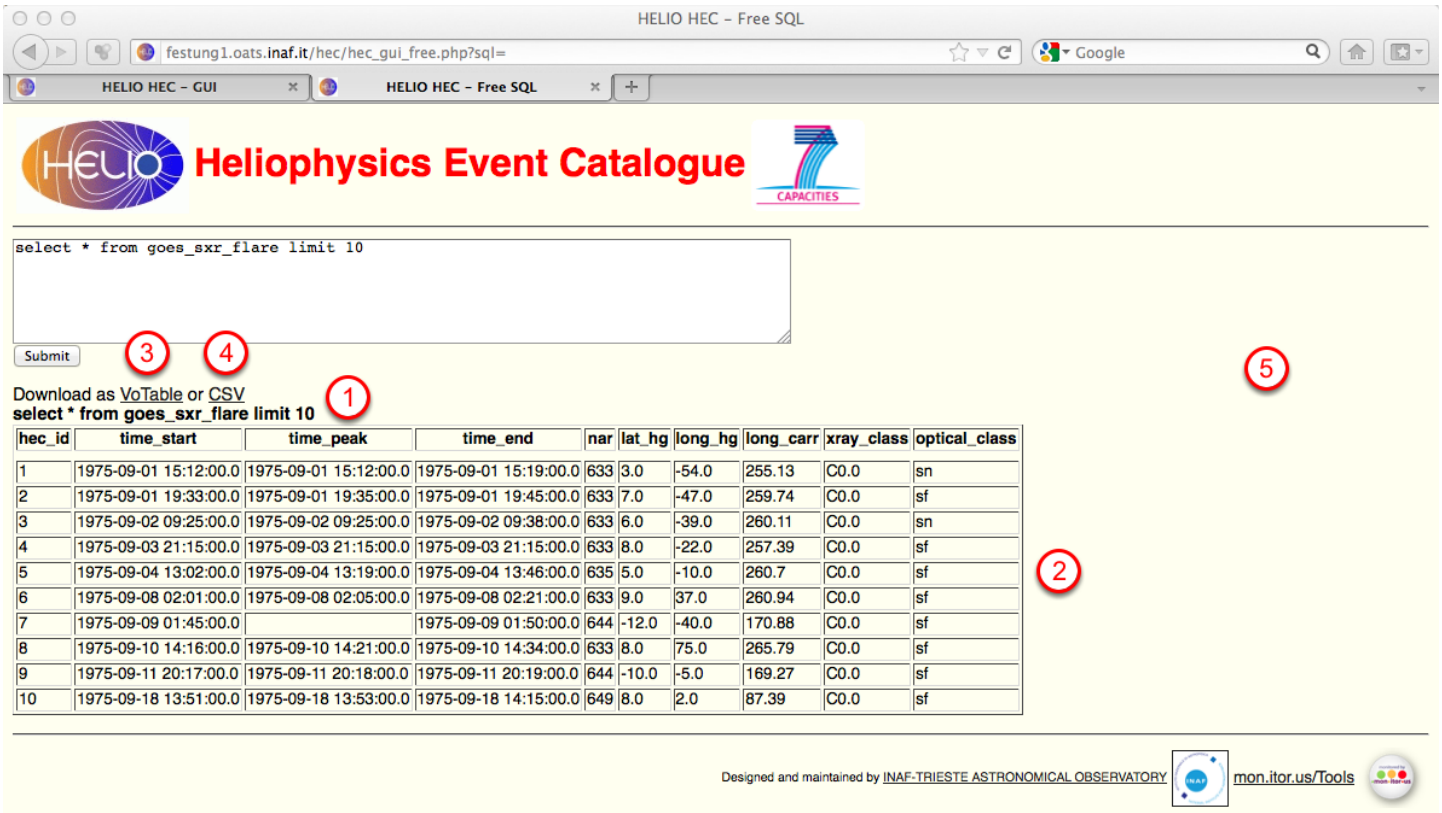
Click on the text window (1) and enter a valid SQL string as (2) in the Figure. This sample SQL string launches a search ('select') of all entries (' * ') from ('from') the SXR GOES catalogue ('goes_sxr_flare') and limits ('limit') the output to 10 results ('10').

Submit the Search



Click on the "Submit" icon (1) to submit the search.

Get the Results



hec_id	time_start	time_peak	time_end	nar	lat_hg	long_hg	long_carr	xray_class	optical_class
1	1975-09-01 15:12:00.0	1975-09-01 15:12:00.0	1975-09-01 15:19:00.0	633	3.0	-54.0	255.13	C0.0	sn
2	1975-09-01 19:33:00.0	1975-09-01 19:35:00.0	1975-09-01 19:45:00.0	633	7.0	-47.0	259.74	C0.0	sf
3	1975-09-02 09:25:00.0	1975-09-02 09:25:00.0	1975-09-02 09:38:00.0	633	6.0	-39.0	260.11	C0.0	sn
4	1975-09-03 21:15:00.0	1975-09-03 21:15:00.0	1975-09-03 21:15:00.0	633	8.0	-22.0	257.39	C0.0	sf
5	1975-09-04 13:02:00.0	1975-09-04 13:19:00.0	1975-09-04 13:46:00.0	635	5.0	-10.0	260.7	C0.0	sf
6	1975-09-08 02:01:00.0	1975-09-08 02:05:00.0	1975-09-08 02:21:00.0	633	9.0	37.0	260.94	C0.0	sf
7	1975-09-09 01:45:00.0		1975-09-09 01:50:00.0	644	-12.0	-40.0	170.88	C0.0	sf
8	1975-09-10 14:16:00.0	1975-09-10 14:21:00.0	1975-09-10 14:34:00.0	633	8.0	75.0	265.79	C0.0	sf
9	1975-09-11 20:17:00.0	1975-09-11 20:18:00.0	1975-09-11 20:19:00.0	644	-10.0	-5.0	169.27	C0.0	sf
10	1975-09-18 13:51:00.0	1975-09-18 13:53:00.0	1975-09-18 14:15:00.0	649	8.0	2.0	87.39	C0.0	sf

The SQL search string is displayed in bold font (1), and the search results are displayed in tabular format (2).
The results can be obtained also in VOTable format by clicking on hyperlink (3), and in CSV (Comma Separated Values) format by clicking on hyperlink (4).

Examples of How to Use SQL in a Free SQL Search

A basic tutorial about the use of SQL for Free SQL Search is available for the EGSO SEC (Solar Event Catalogue) server (the predecessor of HELIO HEC) at the URL:
http://sec.ts.astro.it/sec_idiots_sql.html
This tutorial will be updated to HELIO HEC as soon as possible.

Appendix

Appendix

Useful ancillary information.

List of HEC Catalogues

Description	Flare	CME	Solar Wind	Particle	In situ/Remote	Solar	IPS	GEO	Planet
GOES Soft X-ray Flare List	•				R	•			
NGDC H-alpha Flare List	•				R	•			
NOAA Solar Energetic Event List	•				R	•			
STEREO/SECCHI/EUVI Event List	•	•			R	•			
SOHO/LASCO CME Event List		•			R	•			
STEREO Heliospheric Imager CME Event List [R. Harrison]		•			R		•		
GOES Proton Event List				•	I			•	
CME-related Forbush Decrease Event List [E. Eroshenko]				•	I			•	
AAD Ground Level Enhancement List				•	I			•	
NGDC AA* Major Magnetic Storm			•		I			•	
NGDC Ap* Major Magnetic Storm			•		I			•	
NGDC Storm Sudden Commencement List			•		I			•	
WIND/MFI Magnetic Cloud List			•		I				
WIND/MFI Interplanetary Shock List			•		I				
SOHO/CELIAS/MTOF/PM Interplanetary Shock List			•		I				
ISTP Solar Wind Candidate Event List			•		I			•	
STEREO/HI Solar Wind Transient List			•		R		•		
Ulysses/SWOOPS Interplanetary CME List [Ebert et al.,2009]		•			I		•		
WIND and STEREO Candidate Type II and IV Radio Burst List					R		•		
Type II Radio Burst (WIND) and Associated CME (SOHO) List		•			R		•		
Yohkoh/HXT Hard X-ray Flare List [Sato et al.,2006]	•				R	•			
RHESSI Hard X-ray Flare List	•				R	•			
Kanzelhoehe Solar Observatory H-alpha Flare List	•				R	•			
Trieste Solar Radio System (TSRS) Solar Radio Event List					R	•			
SOHO/EIT Wave Transient List [B. J. Thompson and D. C. Myers,2009]					R	•			
CACTus SOHO/LASCO CME List		•			R	•			
CACTus STEREO-A/COR CME List		•			R	•			
CACTus STEREO-B/COR CME List		•			R	•			
CACTus SOHO/LASCO Flow List		•			R	•			
CACTus STEREO-A/COR Flow List		•			R	•			
CACTus STEREO-B/COR Flow List		•			R	•			
Ulysses/GRB X-ray Flare List [Tranquille et a.,2009]	•				R	•			
SOHO/LASCO Halo CME with Associated Flare and Magnetic Storm List	•	•			R	•		•	
CACTus SOHO & STEREO CME & Flow List		•			R	•			
NOAA/USAF Solar Active Region Summary List					R	•			
NOAA Daily Solar Data List					R	•			
Mars Earth ICME [Falkenberg et al.]		•			R	•	•	•	•
Stream Interaction Regions from Wind and ACE data [Jian et al.,2011]			•		I	•		•	
GOES strong flare and SEP list [Klein et al.,2011]	•			•	I	•		•	
TIMED-SEE Flare Catalog	•				R	•			
WIND/Waves Type III Radio Bursts (HELIO HFC)					R	•			
Ulysses Catalog of Solar Hard X-Ray Flares	•				R	•			
Ulysses Catalog of Solar Hard X-Ray Flares on the Far-side of the Sun	•				R	•			
GOES stong flare with no SEP radio and CME associations	•				R	•			
Catalogue of Interplanetary Coronal Mass Ejections from STEREO IMPACT/PLASTIC		•	•		I	•	•		
Catalogue of Stream Interaction Regions (SIRs) from STEREO-A IMPACT/PLASTIC			•		I	•	•		
Catalogue of Stream Interaction Regions (SIRs) from STEREO-B IMPACT/PLASTIC			•		I	•	•		
Catalogue of Interplanetary Shocks from STEREO-A IMPACT/PLASTIC		•	•		I	•	•		
Catalogue of Interplanetary Shocks from STEREO-B IMPACT/PLASTIC		•	•		I	•	•		
Near-Earth Interplanetary Coronal Mass Ejections During Solar Cycle 23		•			R	•			
CMEs in the Inner Heliosphere		•			R	•			
SEEDS CME Catalogue for SOHO/LASCO		•			R	•			

To date (5 Feb. 2012) 53 heliophysics event catalogues have been ingested into HEC. The Figure reports the full list that can be obtained by clicking the relevant icon in the main HEC GUI.