

The new HEK Search

This tool is intended to replace www.lmsal.com/isolsearch and be a tool for searching the event registry (HER), coverage registry (HCR), and both simultaneously (find events correlated with observations/data).

Some key caveats:

- The new tool is still in development, consider it a 'public beta'.
- The data is not complete. Currently this is running off of clones of our registries that have events and data through Oct. 11 2014. We hope to finalize transitioning to the new registries mid-Nov. 2014, after which they will be current.
- In addition, as we develop the correlated search capabilities we will run them only on data and events in the "IRIS era" (July 2013 onwards). The basic searches will still work for earlier events and data but they m. By end of 2014 we expect to have the correlated search capabilities finalized and enabled for older entries as well.

Please contact Ryan Timmons (ryan.p.timmons@lmco.com) with any comments, bug reports, or ideas for additional features.

Below is the manual for the IRIS search page . This is incomplete but a good start since the look and feel of the IRIS search tool was the model for www.lmsal.com/heksearch, and the new tool includes the IRIS search functionality.

Using the IRIS data search tool

The screenshot shows the IRIS Data Search interface. At the top, it says "INTERFACE REGION IMAGING SPECTROGRAPH IRIS DATA SEARCH". Below this are search filters for Raster, SJI, Cadence, Raster Step, Exposure Time, Spectral Lines, and Desc. A central image shows the Sun with numerous red and green boxes indicating observation locations. To the right is a table of search results. Below the table is a detailed view of a specific observation.

Time	Goal	OBS Desc.	X,Y	RX	RY	Raster Cad	Step Cad	Fast SJI	OBSID
2014-03-25 11:15-12:24	IHOP248 coronal rain, slit parallel to limb	Large slit-and-stare	978°,231°	0°	119°	9s	9s	2796: 19s	3800259353
2014-03-25 12:52-14:02	IHOP248 coronal rain, slit perp to limb	Large slit-and-stare	978°,226°	0°	119°	9s	9s	2796: 19s	3800259353
2014-03-25 14:36-17:31	IHOP251, flares with DST	Very large coarse 8-step raster	-28°,105°	14°	174°	75s	9s	2796: 19s	3860258481
2014-03-25 18:15-23:47	Flare watch, low data rate	Large sparse 8-step raster	6°,104°	7°	119°	248s	31s	1400: 62s	3860513227
2014-03-28 00:57-03:10	IHOP246 hot plasma	Very large sparse 64-step raster	50°,92°	63°	174°	1991s	31s	1400: 62s	3810263243
2014-03-28 05:10-05:28	Throughput monitoring	Large coarse 64-step raster	-33°,513°	127°	119°	1084s	17s	1330: 68s	3882010194
2014-03-28 08:37-07:41	Flare maps, with SOT	Sparse synoptic raster	114°,98°	35°	175°	109s	3s	1400: 12s	3800104498
2014-03-28 08:14-10:54	Raster scans of prominence	Large sparse 64-step raster	929°,303°	63°	119°	1065s	17s	1400: 33s	3820011492
2014-03-28 11:29-13:56	IHOP241 flare watch	Large slit-and-stare	186°,107°	0°	119°	9s	9s	1400: 19s	3860259253
2014-03-28 14:23-17:30	IHOP251, flares with Sac Peak	Very large coarse 8-step raster	178°,107°	14°	174°	75s	9s	2796: 19s	3860258481

Overview	Where	Raster	SJI wavel: cadence, # images	Data Links
2014-03-25 14:36:52-17:31:37	IHOP251, flares with DST	OBS 3860258481: Very large coarse 8-step raster		
	x,y: -28°,105° Max FOV: 181°x174° Target: AR Roll Angle: -90 deg	FOV: 14°x174° Steps: 8x2° Step Cad: 9.4s Raster Cad: 75s, 140 ras Linelist: x38_03	FOV: 167°x174° 1400: 26s, 419 imgs 2796: 19s, 560 imgs 2832: 75s, 140 imgs	Raster 2342 MB 1400 594 MB 2796 838 MB 2832 231 MB

The IRIS data search webpage (<http://iris.lmsal.com/search>) is designed to quickly guide researchers to IRIS datasets appropriate for their research. It consists of five graphical elements and three steps to the data.

1. IRIS Banner
2. Selection widgets
3. Graphical display of search results on a solar image
4. Tabular display of search results
5. Dataset browser/inspector with links to download the data sets

The IRIS data search tool is optimized for use on landscaped displays of at least 1280x768 pixels. The banner and the solar image can be hidden (displayed) by clicking on the red (green) buttons in their upper right corners to accommodate smaller screens. The tool has been tested with recent versions Firefox, Safari and Chrome browsers. If you have difficulty with the tool, you might first try one of these.

Selection widgets

There are several widgets available for customized, dynamic, data searches. At the most basic this search consists of specifying the **start** and **end** of a time range of interest. When first loaded these default to select the a week surrounding the current date. The **start** and **end** times can be moved forward and back a day or a week by using the single and double arrow buttons. Specific dates can be entered directly into the text boxes or by using the calendars that popup when one clicks on them. The total **count** of datasets available within the time range appears at the bottom right of this selection area. By default, only datasets that are completely processed are displayed. If you wish to include ones that are still processing, uncheck the **only Obs with data** box below **count**.

The remaining widgets are used to filter the selections within the specified time range. The **count** of available data sets updates dynamically to reflect the effects of your selections. All filters you specify are combined by a logical AND.

Raster. Limit results to datasets with rasters within a (**min,max**) range of: fields of view in arcseconds; number of repeats (**count**); and of the **cadence** in seconds and with raster steps within a range of number (**count**); **size** in arcseconds and **cadence** in seconds.

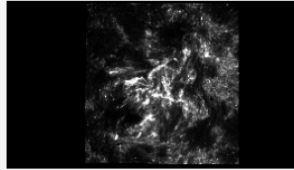
Slit Jaw Imager (**SJI**): Limit results to datasets with slitjaw images within a range of fields of view and **cadences** for each wavelength band. If you want to just specify that it has any SJI of a particular band, you can put a minimum cadence of 0 for that band.

Exposure time. Limit results to datasets within a range of minimum exposure and mean exposure times based on all images within the dataset.

Target. Limit results to a range of target positions relative to disk center in arcseconds either as a bounding box (**xcen,ycen**) or an annulus between radii. Limit sets to specific IRIS Observation IDs or **target**. The colors of these last two change to indicate the presence (green) or absence (red) of matching datasets based upon other selections.

The screenshot shows a web-based search interface with several sections:

- Start/End:** Two date/time pickers. Start is set to 2014-02-15T00:00 and End is set to 2014-05-08T00:00. Each has navigation arrows.
- Raster:** Fields for min/max FOV X, FOV Y, Count, and Cdnce.
- Raster Step:** Fields for Count, Size, and Cdnce.
- Exposure Time:** Fields for Min Exp and Exp Time.
- Spectral Lines:** A section with a search bar.
- Desc:** A search bar.
- Events:** A search bar.
- Summary:** Shows 'Count: 485', 'Search', 'Reset', '193', and a checked 'Boxes' checkbox.
- Filter:** A checked 'Only OBS with data' checkbox.
- SJI and Cadence:** Fields for min/max FOV X, FOV Y, and a table for Cadence with values 1330, 1400, 2796, and 2832.
- Target:** Fields for XCEN, YCEN, and Radius, plus dropdowns for OBSID and Target.

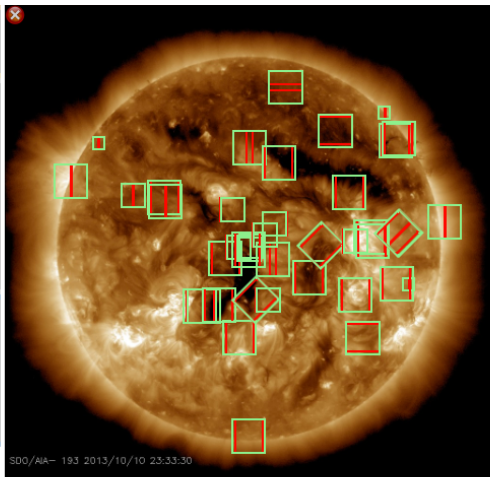
Overview	Where	Raster	SJI wavelength: cadence, no. of images	Data Links
<p>2013-10-12 20:01:44-21:01:44</p> 	<p>Sunspot/Penumbra Observations OBS 3860258246: Very large dense raster</p>			
	<p>x,y: 34",-257"</p> <p>Max FOV: 306"x174"</p> <p>Target: AR</p> <p>Roll Angle: 45 deg</p>	<p>FOV: 141"x174"</p> <p>Steps: 400x0.35"</p> <p>Step Cad: 9s</p> <p>Raster Cad: 3,600s, 1 ras</p> <p>Linelist: v38_03</p>	<p>FOV: 166"x174"</p> <p>1330: 23s, 157 imgs</p> <p>1400: 18s, 195 imgs</p> <p>2832: 90s, 39 imgs</p>	<p>Raster 800 MB</p> <p>1330 231 MB</p> <p>1400 301 MB</p> <p>2832 65 MB</p>

Spectral Lines: Select one or more lines that must be in the spectrograph windows. (Multiple selections are combined with a logical AND).

Events: Select one or more event types from the Heliophysics Events Registry (HER, see <http://www.lmsal.com/hek/her?cmd=home>). Again multiple selections are logically ANDED. If used, only results intersecting at least one HEK event of all type(s) you choose in space and time will be returned.

Description (**Desc**): Performs a free text search of both the OBS description and the planner annotation.

When all selections are made, clicking the search button refreshes the results in the display area. **Note that the display does not update while you are constructing a search (only the count field).** A range of background SDO/AIA images of the sun corresponding to the start time of query can be selected for the display. All filters (other than dates) and displays are cleared by clicking the reset button.



Time	Goal	OBS Desc.	X,Y	RX	RY	Raster Cad	Step Cad	Fast SJI	OBSID
2013-10-12 12:20-15:52	Coronal Hole Hinode/IRIS Coordination	Very large dense raster	311",-152"	141"	174"	12674s	32s	1400: 64s	3820013446
2013-10-12 20:01-21:01	Sunspot/Penumbra Observations	Very large dense raster	34",-257"	141"	174"	3600s	9s	1400: 18s	3860258246
2013-10-12 21:34-01:29 +1d	AR Context Raster	Large coarse 64-step raster	101",-262"	127"	119"	2006s	31s	1400: 31s	3820113644
2013-10-13 01:49-02:51	Prominence/Filamer Near W Limb	Very large dense raster	760",557"	141"	174"	3678s	9s	1400: 9s	3820259646
2013-10-13 04:00-04:18	Throughput Monitoring (Near Disk Center)	Large coarse 64-step raster	-84",200"	127"	119"	1082s	17s	1330: 68s	3882010144
2013-10-13 04:29-04:32	Full Mosaic Primer	Very large coarse 64-step raster	-3",-1"	127"	175"	170s	3s	1400: 43s	3821104045
2013-10-09 23:26-02:56 +1d	Context Raster Low-Latitude Coronal Hole	Very large dense raster	513",284"	141"	174"	12614s	32s	1330: 132s	3820012146
2013-10-10 04:20-04:38	Throughput Monitoring (Near Disk) Center	Large coarse 64-step raster	89",69"	127"	119"	1082s	17s	1330: 68s	3882010144

Display Widgets

The results of a search are displayed on a co-temporal AIA image that is selectable from the search widget. The default setting displays the bounding boxes for the slit jaw (raster) image as green (red) rectangles on an 193A AIA image. Unchecking the boxes button in the search widget displays IRIS logos instead of bounding boxes. A sortable list of IRIS observations on the right presents details of the dataset including the time interval, short descriptions, pointing, fields of view, cadences and observation IDs. Clicking on an entry in either widget, highlights the selection in the table (and in the image when logos are displayed) along with a detailed description in the inspection widget.

Inspection Widget

The inspection widget shows more details of the dataset, including a thumbnail slitjaw image, pointing information and links to and sizes of the data products (when they become available). Clicking on the image or title will bring up a separate details page with summary movies, paths to the data and links to the AIA cutout service. Clicking on the data links will immediately download the corresponding gzipped dataset.