EVE Flare Catalog Webpage User Guide
Version 1.0 February 9, 2015

http://lasp.colorado.edu/eve/data_access/evewebdata/interactive/eve_flare_catalog.html

The EVE flare catalog provides a vast amount of information including plots, movies, analysis and data. The EVE flare catalog is designed to simplify the task of finding appropriate flare data.

Flare observations for specific months or years can be displayed by clicking on the appropriate year tab as indicated by the **orange oval** in Figure 1 below. When clicked, a drop down menu will be displayed as shown in Figure 2. Clicking on 'Full Year' will display all flare observations for that year. Click on any month to show observations for just that month.

Figure 1. The EVE Flare Catalog Webpage.

Two buttons are provided to display either all M or X class flares. As shown by the **red oval** in Figure 1, these buttons will display either all M or all X class flares for all years.

The arrows in the column labels, as shown in the **green oval** above, allow users to sort the table by the selected column. For example, pressing the down arrow (descending order sort) in the X-ray Flare Class column will sort the table by class from the largest flare to the smallest. The first three columns may be sorted in this manner. Likewise, pressing the up arrow (ascending order sort) will sort the table in ascending order.

Figure 2. Year Drop Down Menu can select Full Year or a single month for filtering the flares.

The **white rectangle** indicated by the **blue oval** in Figure 1 allows regular expressions to be used to sort the table. For example, entering MB in the Observing Instrument column will display only those flares that were observed by the MEGS B detector. Entering C5 in the Flare Class column will alter the table to only show C5 flares. More advanced regular expressions can be used to filter the table. Entering M[45] in the Flare Class column will alter the table to only show M class flares that contain a 4 or a 5.

The data link buttons in the far right column take the user to the directories containing the actual data. After pressing the button, a new window or tab will open displaying the directories containing

the data for that flare. See Figure 3 for an example listing of the data directories for a flare event.

Name	Last modified	Size
Parent Directory	10-Apr-2014 23:27	-
analysis/	10-Apr-2014 23:01	-
movies/	30-Dec-2014 12:23	-
plots/	23-Nov-2014 10:24	-
savesets/	23-Apr-2014 03:02	-

Figure 3. Flare Catalog Directory Listing.

The directory labeled 'movies' contains a mpeg movie of the flare. The movie is comprised of synchronized AIA images showing the full sun at 17.1nm, time-shifted 17.1 nm images for detection of waves and eruptions, and flare location zoomed images at 13.1, 33.5, 19.5 and 30.4nm. On the right right side are irradiance time series plots from EVE of 5 different wavelengths including GOES SXR flux, Fe XX 13.3nm, Fe XVI 33.5nm, Fe IV 17.1nm, and He II 30.4nm.

Note that the analysis directory is currently not being populated.

The 'plots' directory contains 3 files. The first file is the CME location in Encapsulated PostScript File (EPS) format. The second file ending in plots_catalog.pdf contains time series plots of various lines mainly derived from EVE instruments but also contains GOES and RHESSI data. The last file ending in plots.pdf contains time series plots of 57 lines derived from ESP, MEGS A/B and MEGS P measurements during the flare event.

The 'savesets' directory contains 10 separate IDL save files containing various flare information. For a complete description of what these files contain, please view http://lasp.colorado.edu/eve/data_access/evewebdata/Flare_Catalog/eve_flare_catalog.pdf

EVE Flare Catalog as IDL Save Set

http://lasp.colorado.edu/eve/data_access/evewebdata/Flare_Catalog/merged_flare_catalog.sav

The summary information from the EVE Flare Catalog is also available as an IDL save set. This summary information includes, for example, the time and intensity of the flare peak at several different wavelengths. With all the flare information combined into a structured array, it can be used to analyze the flares for systematic effects and sort / filter the flares for specific characteristics.

Once you restore the flare catalog save set, you can display the structure elements using the help command as shown in Figure 4.

```
IDL> restore,'merged_flare_catalog.sav'
IDL> help,flare_catalog,/str
** Structure <1930e08>, 10 tags, length=19440, data length=18983, refs=1:
   FLARE_ID          STRING    '2010121_01MAY_0139_C5.7'
   GOES              STRUCT    -> <Anonymous> Array[1]
   NOAA_EVENTS       STRUCT    -> <Anonymous> Array[1]
   AR                STRUCT    -> <Anonymous> Array[1]
   LOCATION          STRUCT    -> <Anonymous> Array[1]
   CME               STRUCT    -> <Anonymous> Array[1]
   PREFLARE          STRUCT    -> <Anonymous> Array[1]
   EVL               STRUCT    -> <Anonymous> Array[1]
   FLAGS             STRUCT    -> <Anonymous> Array[1]
   AIA_MOVIE_FLAGS   STRUCT    -> <Anonymous> Array[1]
IDL> help,flare_catalog.evl,/str
** Structure <163d878>, 4 tags, length=13456, data length=13456, refs=2:
   FLARE_ID          STRING    '2010121_01MAY_0139_C5.7'
   EVL_LINES         STRUCT    -> <Anonymous> Array[30]
   EVL_DIODES        STRUCT    -> <Anonymous> Array[6]
   EVL_BANDS         STRUCT    -> <Anonymous> Array[20]
IDL> help,flare_catalog.evl.evl_lines,/str
** Structure <163cdc8>, 21 tags, length=240, data length=240, refs=2:
   EVL_TAG           STRING    'MEGS_94'
   EVL_LABEL         STRING    'EVE Fe XVIII 9.4 nm (log T=6.8)'
   PREFLARE_IRRAD    DOUBLE       4.2367228e-06
   PEAK_IRRAD        DOUBLE       5.2920241e-06
   PEAK_TIME         STRING    '01-May-2010 01:41:00'
   PEAK_TIME_JD      DOUBLE           2455317.6
   RISE_25_TIME      STRING    '01-May-2010 01:37:00'
   RISE_25_TIME_JD   DOUBLE           2455317.6
   RISE_50_TIME      STRING    '01-May-2010 01:38:20'
   RISE_50_TIME_JD   DOUBLE           2455317.6
   RISE_75_TIME      STRING    '01-May-2010 01:39:30'
   RISE_75_TIME_JD   DOUBLE           2455317.6
   DECAY_25_TIME     STRING    '01-May-2010 02:07:30'
   DECAY_25_TIME_JD
                     DOUBLE           2455317.6
   DECAY_50_TIME     STRING    '01-May-2010 01:45:50'
   DECAY_50_TIME_JD
                     DOUBLE           2455317.6
   DECAY_75_TIME     STRING    '01-May-2010 01:43:30'
   DECAY_75_TIME_JD
                     DOUBLE           2455317.6
   ENERGY_25         DOUBLE        0.00086281012
   ENERGY_50         DOUBLE        0.00035665649
   ENERGY_75         DOUBLE        0.00022573313
```

Figure 4. Example help listing of the EVE Flare Catalog structure, *flare_catalog*.