# The SOLARNET project and the Solar Virtual Observatory (SVO)

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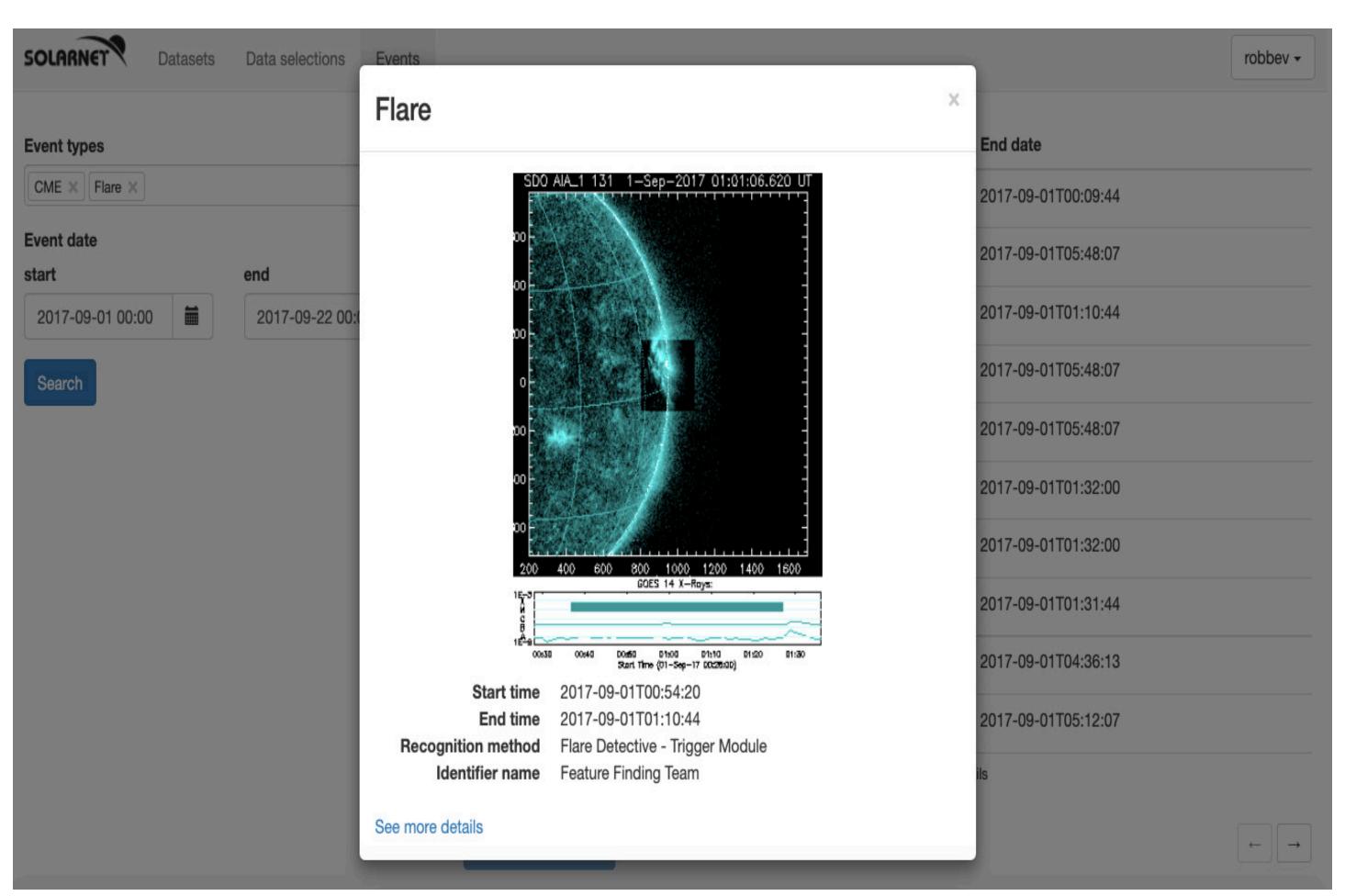
Developed in the framework of the H2020 SOLARNET project, the SOLARNET Virtual Observatory (SVO) aims at **making solar data more findable and accessible** to the solar physics community. The SVO lets you search across **multiple datasets** as well as the Heliophysics Event Database (HEK) and it lets you search for data that overlaps with **events** from the HEK.

| SOLARNET Datasets                                | Data selections E | Events |                 |         |            |           |                               | robbev <del>-</del> |
|--|-------------------|--------|-----------------|---------|------------|-----------|-------------------------------|---------------------|
| Telescopes                                       |                   |        | Dataset         | # Items | Instrument | Telescope | Characteristics               |                     |
| SDO × PROBA2 ×                                   |                   |        | AIA level 1     | 84      | AIA        | SDO       | space based, E.U.V., full sun |                     |
| Characteristics select or search characteristics |                   |        | HMI magnetogram | 10      | HMI        | SDO       | space based, full sun         |                     |
|  |                   |        | SWAP level 1    | 478     | SWAP       | PROBA2    | space based. E.U.V., full sun |                     |

It is designed so that other event databases may also be linked to the SVO in the future. These features will help researchers in **discovering and accessing solar datasets** from synoptic observations as well as solar data taken during short observation campaigns.

# Tags venus transit x Click on any row to see dataset content or refine search Observation date stat end Observation wavelength min max nm nm nm Search

### << Cross-dataset searches



In addition, you can search **single datasets** using search criteria specific to the dataset, and see quicklook images of the data as well as the FITS header and download your data selection by FTP.

from \_\_future\_\_ import print\_function
from SOLARNET import datasets

# See all available datasets
for dataset in datasets:
 print(dataset)

# Get a specific dataset
aia\_lev1 = datasets["aia\_lev1"]

# Filter the record in that dataset for June 2012 the 6th with a wavelength of 171A
filtered\_aia\_lev1 = aia\_lev1.filter("DATE-OBS", "2012 June 6", WAVELNTH = 171)

# Display the date of observation and the wavelength in that filtered dataset
for record in filtered\_aia\_lev1:
 print(record.meta\_data["DATE-OBS"], record.meta\_data["WAVELNTH"])

# Download the data from a record
record = filtered\_aia\_lev1[0]

# << Quicklook images

| SOLARNET         | Detecto  | Data coloctions | Evente |       |                     |                     | robbev - |
|------------------|----------|-----------------|--------|-------|---------------------|---------------------|----------|
| Sounder          | Datasets | Data selections | Events |       |                     |                     |          |
| Event types      |          |                 |        | Туре  | Start date          | End date            |          |
| CME × Flare ×    | )        |                 |        | Flare | 2017-09-01T00:06:44 | 2017-09-01T00:09:44 |          |
| Event date start |          | end             |        | CME   | 2017-09-01T00:48:08 | 2017-09-01T05:48:07 |          |
| 2017-09-01 00:0  | 00       | 2017-09-22 00:0 | 00     | Flare | 2017-09-01T00:54:20 | 2017-09-01T01:10:44 |          |
| Search           |          |                 |        | CME   | 2017-09-01T01:25:47 | 2017-09-01T05:48:07 |          |
|                  |          |                 |        | CME   | 2017-09-01T01:25:47 | 2017-09-01T05:48:07 |          |
|                  |          |                 |        | Flare | 2017-09-01T01:26:00 | 2017-09-01T01:32:00 |          |
|                  |          |                 |        | Flare | 2017-09-01T01:26:00 | 2017-09-01T01:32:00 |          |
|                  |          |                 |        | Flare | 2017-09-01T01:28:32 | 2017-09-01T01:31:44 |          |
|                  |          |                 |        | CME   | 2017-09-01T01:36:13 | 2017-09-01T04:36:13 |          |

record.download("/tmp")

# Get the data as a BytesIO [1] without saving to disk
data = record.data()

# Open the data as a fits file (see astropy.io.fits [2])
hdus = record.HDUs()

## << Python Client

| □         CME         2017-09-01T01:36:15         2017-09-01T05:12:07           Click on any row to see event details           Click on any row to see event details | 0                                     | 02          |                     |                     |                            |  |  |  |  |
|---|---------------------------------------|-------------|---------------------|---------------------|----------------------------|--|--|--|--|
|   |                                       | CME         | 2017-09-01T01:36:15 | 2017-09-01T05:12:07 |                            |  |  |  |  |
| Search overlapping $\leftarrow$   | Click on any row to see event details |             |                     |                     |                            |  |  |  |  |
|   | Search                                | overlapping |                     |                     | $\leftarrow  \rightarrow $ |  |  |  |  |

### << Event-based searches

http://solarnet.oma.be/



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