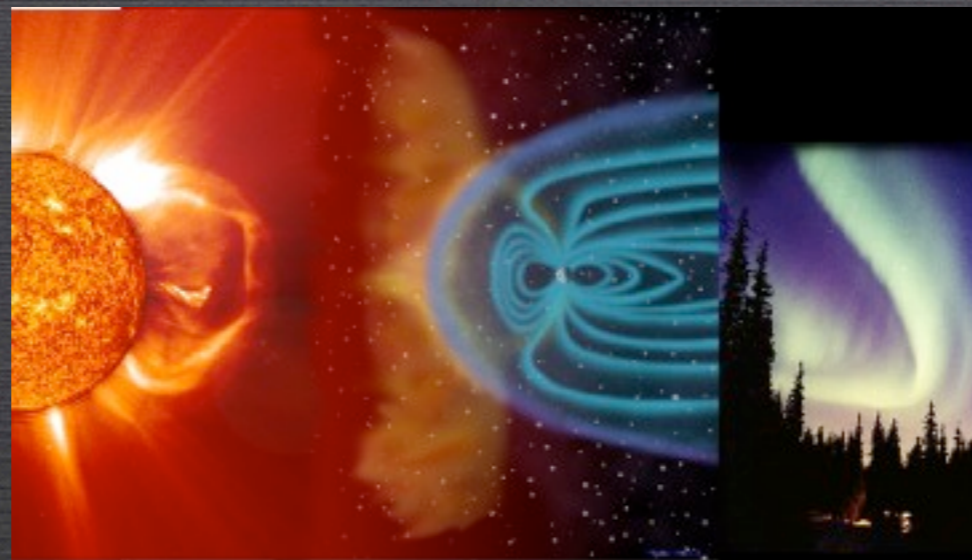




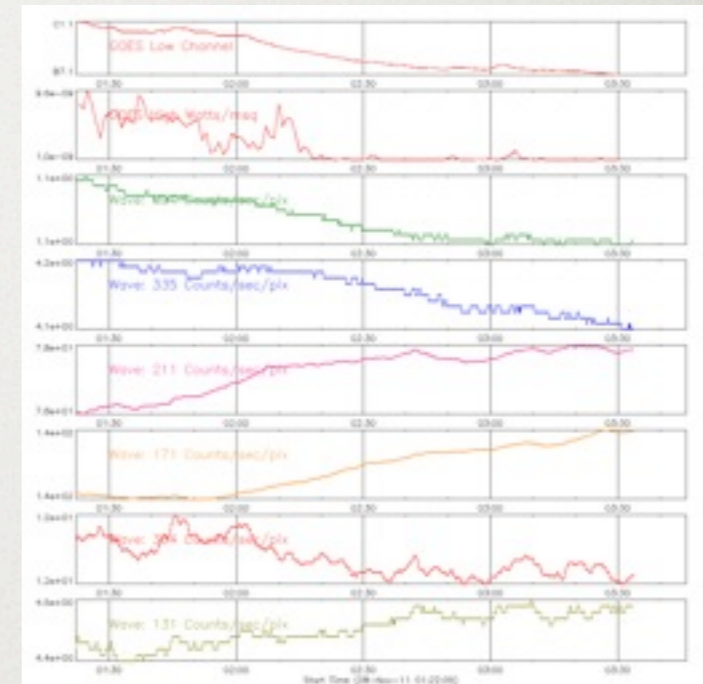
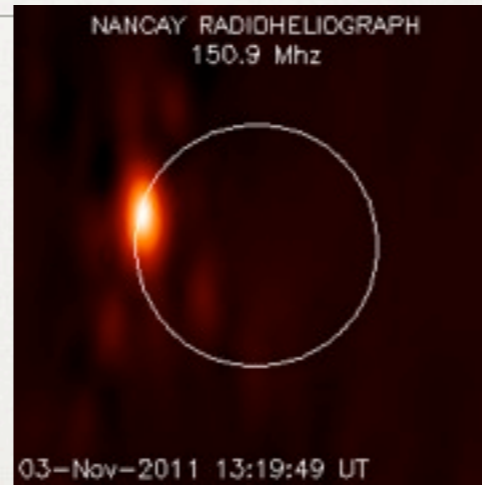
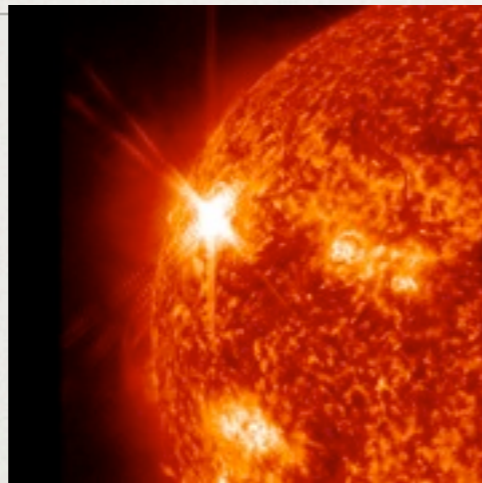
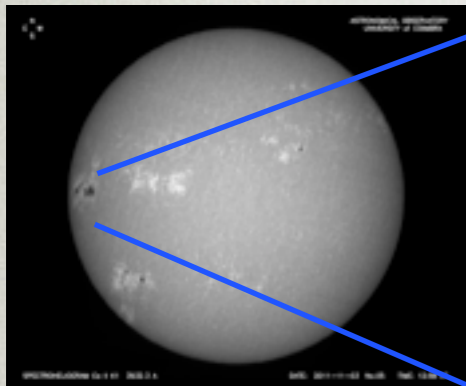
<http://www.helio-vo.eu>

HELIO, A HELIOSPHERIC VIRTUAL OBSERVATORY

J. ABOUDARHAM, LESIA, PARIS OBSERVATORY, VO-PDC, FRANCE
R.D. BENTLEY, MSSL/UCL, UK
A. CSILLAGHY, FHNW, SWITZERLAND



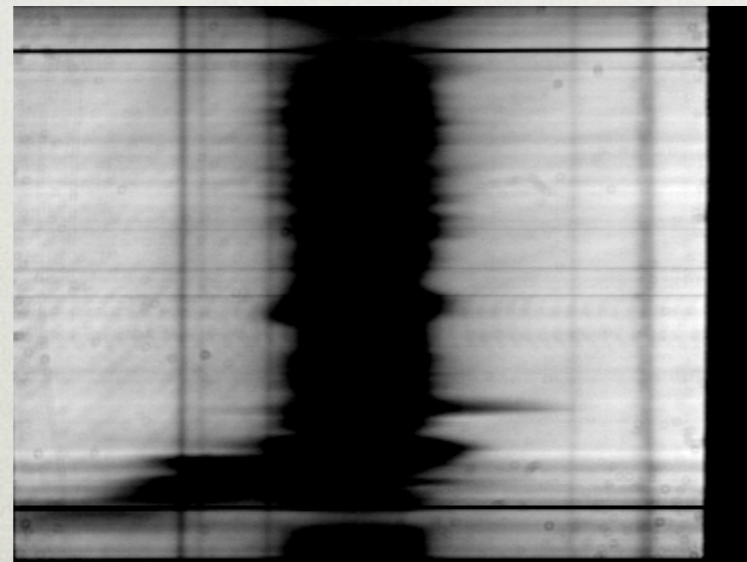
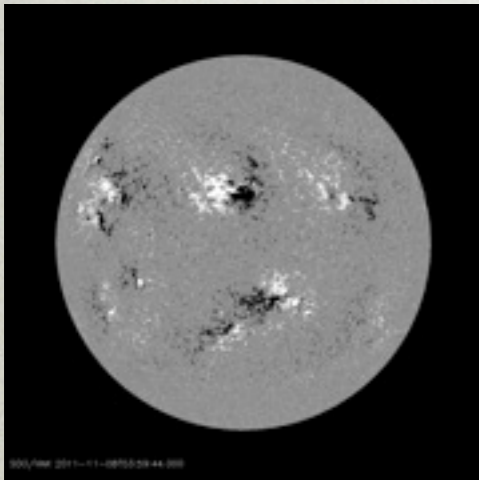
GREAT RANGE OF DATA



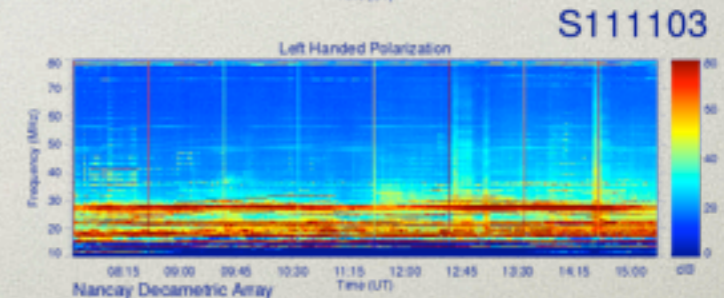
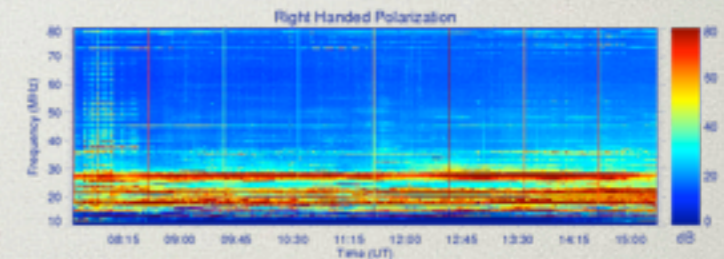
Detail

Radio imaging

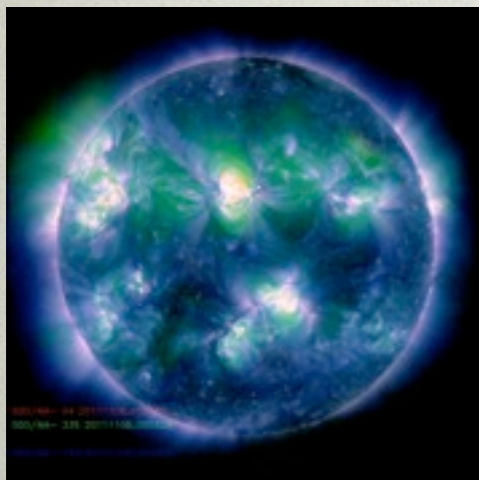
Flux, count rate, indices...



Position vs. wavelength
(with/ without
polarization)

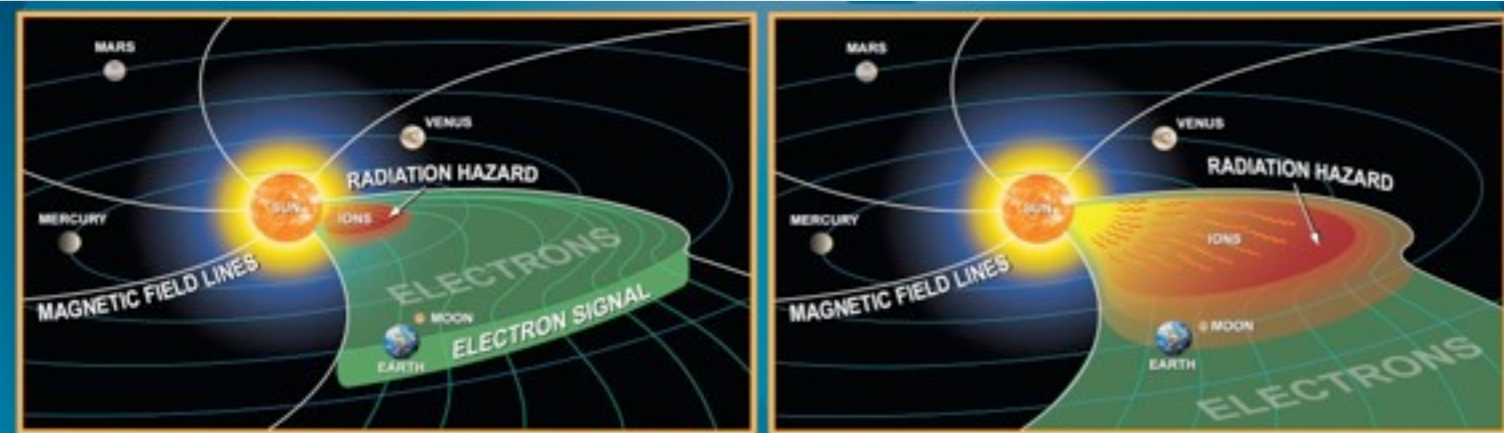


Dynamic spectra...



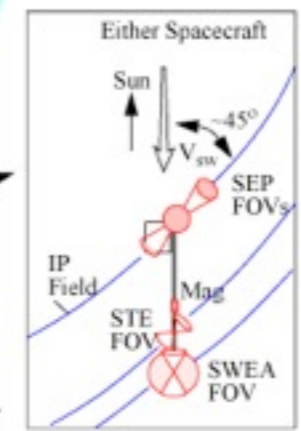
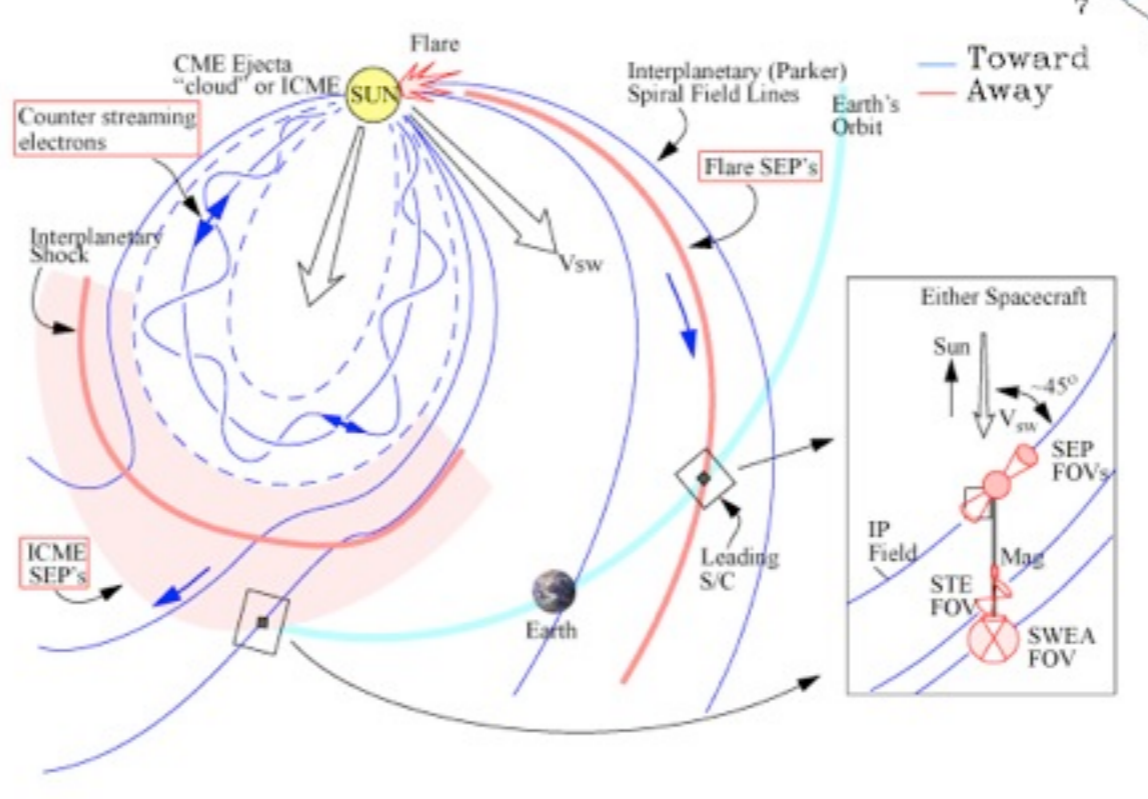
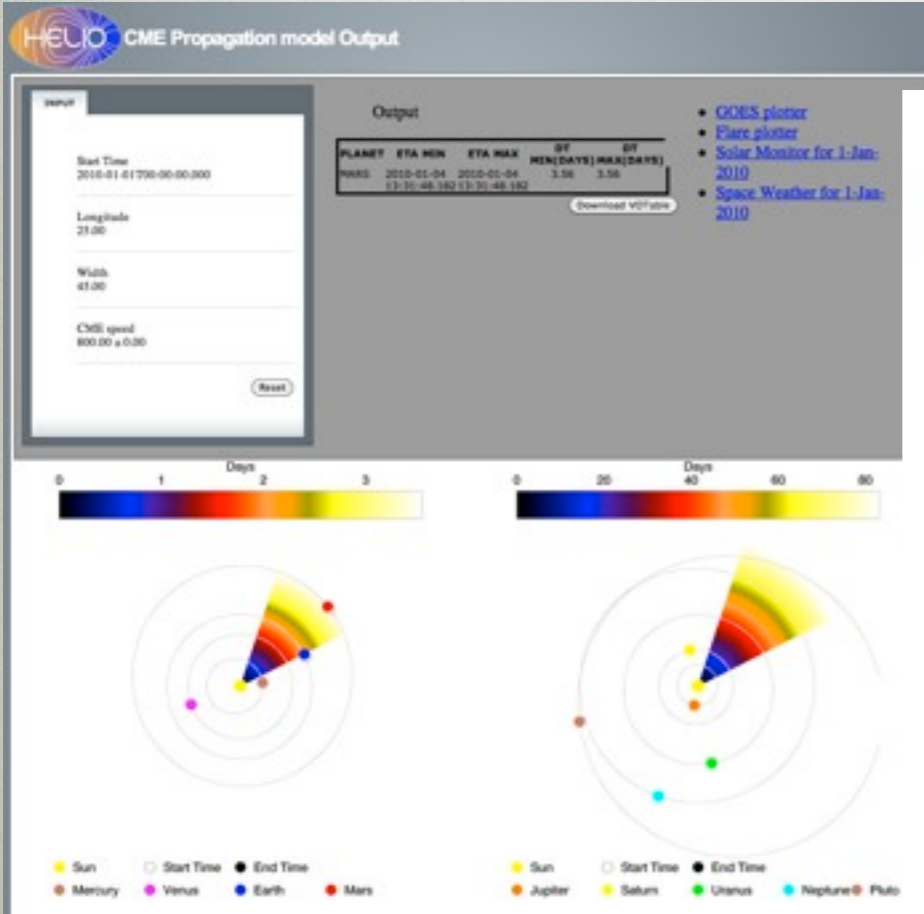
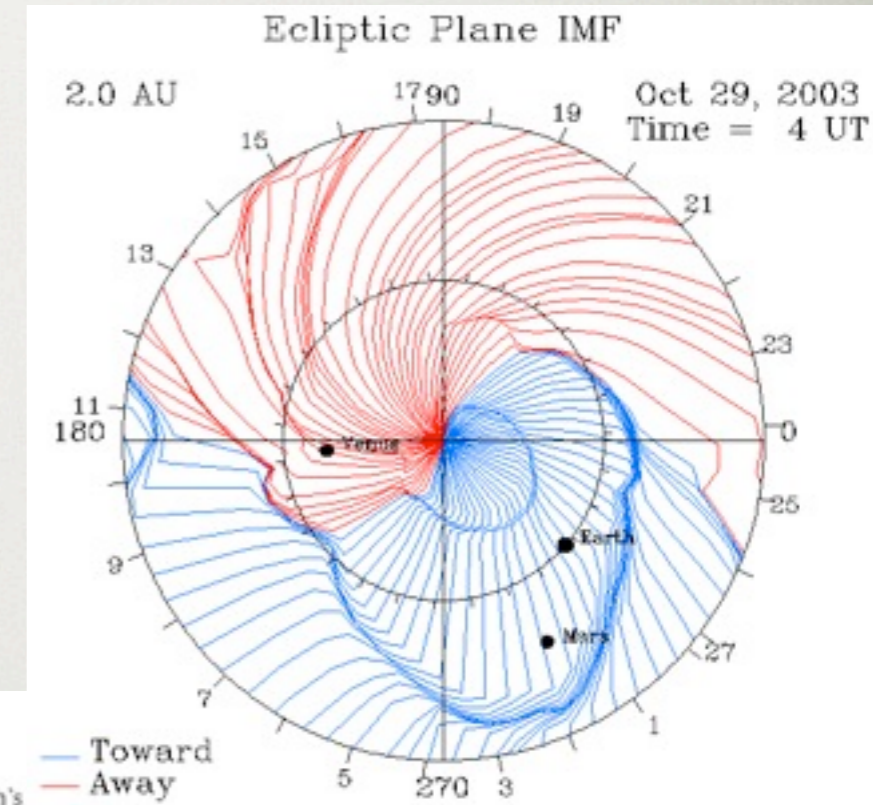
Full Sun

GREAT RANGE OF LOCATIONS



This sketch images the inner solar system at the time the light and electrons from solar activity reach the Earth. Fast electrons and the slower ions follow magnetic lines of force. A newly discovered method now allows explorers to use the electron "signal" for their safety. In this situation, the arrival of hazardous radiation is imminent.

At the time the hazardous ions arrive, typically tens of minutes later, human explorers on the moon or on the way to Mars would have performed actions for their own protection. Equipped with a warning system, this method can, in extreme cases, prevent a mission-threatening health condition: Acute Radiation Sickness.













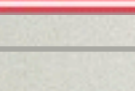




THE HELIO PROJECT



- EC FP7 funded for 3 years (e-Infrastructure)
- June 2010 -> May 2012
- 532 pm (\approx 15 FTE)
- Networking, Service and Research (including Ontologies) Activities

Country	Institution	Contact	Type
	University College London (MSSL)	R.D. Bentley (PI)	S/CS
	Fachhochschule Nordwestschweiz	A. Csillaghy	CS
	Observatoire de Paris (LESIA)	J. Abouadarham	S/PP
	Universite Paul Sabatier Toulouse (CESR)	C. Jacquy	PP
	Science and Technology Facilities Council (RAL)	M.A. Hapgood	PP/CS
	Universite Paris-Sud (IAS)	K. Bocchialini	S
	Istituto Nazionale di Astrofisica (Obs. Trieste)	M. Messerotti	S
	University of Manchester	J. Brooke	CS
	Trinity College Dublin	P. Gallagher	S/CS
	Rensselaer Polytechnic Institute	P. Fox	S/PP
	Lockheed Martin Space Systems Company (LMATC)	N. Hurlburt	S
	National Aeronautics and Space Administration (Heliophysics Science Division at GSFC)	D.A. Roberts	S/PP
	European Space Agency (Science Operations Dept., Space Environment & Effects Dept.)	L. Sanchez	S

PP =Plasmas Physics ; S = Solar ; CS = Computer Science

[Services](#)[Advanced](#)[User](#)[Search Events](#)[Search Data](#)[Search Instruments by Capability](#)[Search Instruments by Location](#)

Data Cart

Search Events

Query Form

Date Selection



Range: 2003-01-01T00:00:00 – 2003-03-01T00:00:00

[Clear](#)[Select](#)**Step 1**

Click on the 'Select' button to define the time range/s of interest.

Event Selection



'GOES Soft X-ray Flare List'

'STEREO/SECCHI/EUVI Event List'

'WIND/MFI Magnetic Cloud List'

'ISTP Solar Wind Candidate Event List'

'RHESSI Hard X-ray Flare List'

'Mars Earth ICME [Falkenberg et al.]'

'NOAA Daily Solar Data List'

'Ulysses Catalog of Solar Hard X-Ray Flares'

[Clear](#)[Select](#)**Step 2**

Click on the 'Select' button to define the event catalogues of interest

Result Overview

* Observation coverage
* in-situ data mining



Heliophysics Event Catalogue



Recent Changes

Search time interval

2011 October 8 To 2011 November 8



Event characterisation

Event type:

CME Flare Solar Wind Particle

Location:

Solar IPS Geo Planet

Obs. type:

In situ Remote All

Show all catalogues Catalogue title search:

Catalogues matching selection

Select	Catalogue Description	Type	Status	Source	From	To	Info
<input type="checkbox"/>	GOES Soft X-ray Flare List	event	active	URL	1975-09-01	2011-02-28	<input type="button" value="Info"/>
<input type="checkbox"/>	NGDC H-alpha Flare List	event	inactive	URL	1980-01-01	2010-01-31	<input type="button" value="Info"/>
<input type="checkbox"/>	NOAA Solar Energetic Event List	event	active	URL	1996-01-01	2011-05-29	<input type="button" value="Info"/>
<input type="checkbox"/>	STEREO/SECCHI/EUVI Event List	event	closed	URL	2006-12-04	2009-07-08	<input type="button" value="Info"/>
<input type="checkbox"/>	Yohkoh/HXT Hard X-ray Flare List [Sato et al.,2006]	event	closed	URL	1991-10-01	2001-12-13	<input type="button" value="Info"/>
<input type="checkbox"/>	RHESSI Hard X-ray Flare List	event	active	URL	2002-02-12	2011-05-29	<input type="button" value="Info"/>
<input type="checkbox"/>	Kanzelhoehe Solar Observatory H-alpha Flare List	event	active	URL	1984-01-02	2011-05-12	<input type="button" value="Info"/>
<input type="checkbox"/>	Ulysses/GRB X-ray Flare List [Tranquille et a.,2009]	event	closed	URL	1990-11-11	2003-11-03	<input type="button" value="Info"/>
<input type="checkbox"/>	SOHO/LASCO Halo CME with Associated Flare and Magnetic Storm List	list	closed	URL	1996-04-29	2005-12-07	<input type="button" value="Info"/>



i The **Heliophysics Feature Catalogue** (HFC) provides access to existing solar and heliophysics feature data, extracted from images by automated recognition codes.

The catalogue contains geometrical (e.g., gravity center coordinates, contours, area, etc.) and photometric feature parameters (e.g., average, minimum, and maximum intensity, etc.) , but also tracking information to identify co-rotating feature on the solar disc.

Query form

1 - Date and time selection

2 - Features selection

3 - Output options

Filament Active region Sun spots Coronal hole Type III

Extended criteria

Ignore date selection

Choose a filament characteristic Orientation

Orientation in degrees
(0, 360)

Min.:

Max.:

i Orientation query allows the user to select filament of specific orientations.

Orientation corresponds to the global orientation of the filament counterclockwise from Ox axis (ie E-W axis).

If 'Ignore date selection' is checked, query will apply on the whole database.

Min and Max orientation currently in the database: -90/89

Submit





Heliophysics Feature Catalogue



Query results

i Requesting several types of features between begin and end dates

Your query:

Date selection: from 2001-06-14 00:00 to 2001-06-19 00:00

Features selection: | Filaments | | Active regions | | Sun spots | | Coronal holes | | Types III |

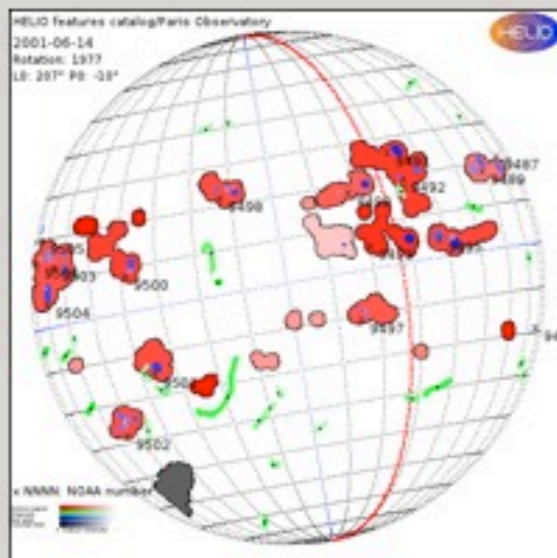
Ouput format: | XML | Maps: | PIXEL | | CARRINGTON |

i Number of features retrieved: **Filament: 125** [VOTable](#) | **Active region: 1467** [VOTable](#) | **Sun spot: 1394** [VOTable](#) | **Coronal hole: 3** [VOTable](#) | **Types III: 462** [VOTable](#)

Page: | 1

2001-06-14 2001-06-15 2001-06-16 2001-06-17 2001-06-18 2001-06-19

Daily Synoptic map



Index of the feature during a rotation Click for tracking info	Id of filament's component(s)	Phenomen	X coordinate of skeleton centre in arcsec	Y coordinate of the skeleton centre in arcsec	Length of the filament in degrees	Orientation of the filament	Area of the feature in square degrees
34808	35137 35139	-	798.87 798.87	-473.03 -432.58	4.89 4.12	55.61 70.25	7 8.1
34831	35153 35156	-	733.7 578.64	502.24 652.8	5.25 9.89	-67.33 53.05	9.43 9.64
34874	35134 35135	-	383.14 484.26	-506.73 -479.77	4.18 9.57	-20.05 17.06	2.86 8.13
35020	35140 35143	-	-282.02 -520.22	-385.39 -315.73	22.86 4.32	46.02 -29.72	18.62 3.93
35029	35150	-	-248.31	144.94	9.03	-84.9	9.03
35040	35154 35155	-	-192.13 -108.99	603.36 614.6	4.64 4.98	16.54 9.36	6.05 6.62
35059	35151	Disappearance before the west limb	729.2	153.93	5.5	-27.77	4.77
35084	35149	Disparition brusque	-243.82	32.58	1.54	-50.37	1.41
35096	35130	-	-230.33	-846.06	6.75	61.67	8.18
35119	35152	Disappearance before the west limb	477.52	250.56	3.37	-72.92	2.52
35131	35131	Abnormal behavior	-160.67	-659.54	3.43	-41.49	4.55



Propagation model

SELECT A TAB

CME

SOLAR WIND

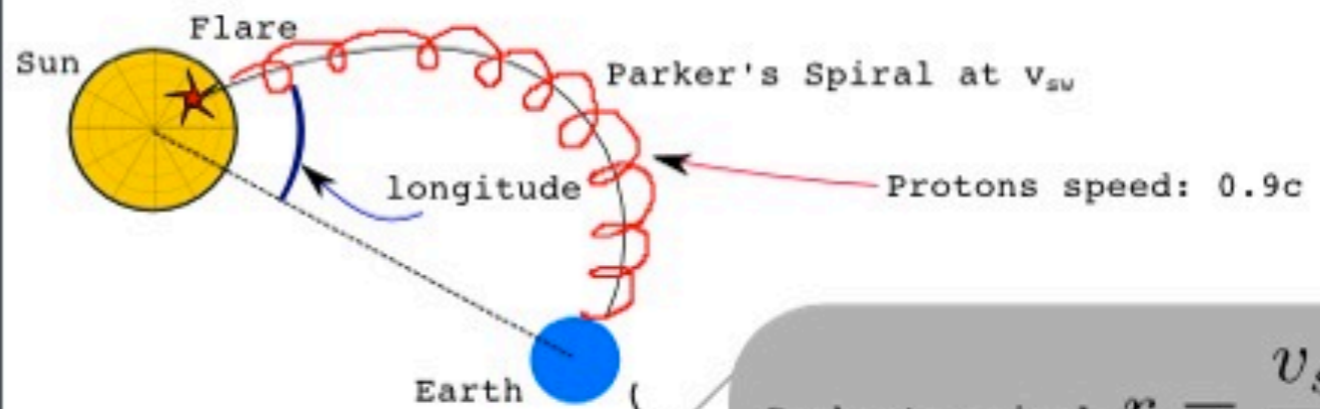
SEP

Start Time [date]

Longitude [angle]

SW velocity ± [km/sec]

RUN MODEL



$$\text{Parker's spiral } r = \frac{v_{sw}}{\Omega_{\odot}} \theta$$



flare longitude

Thank you for you attention!



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