

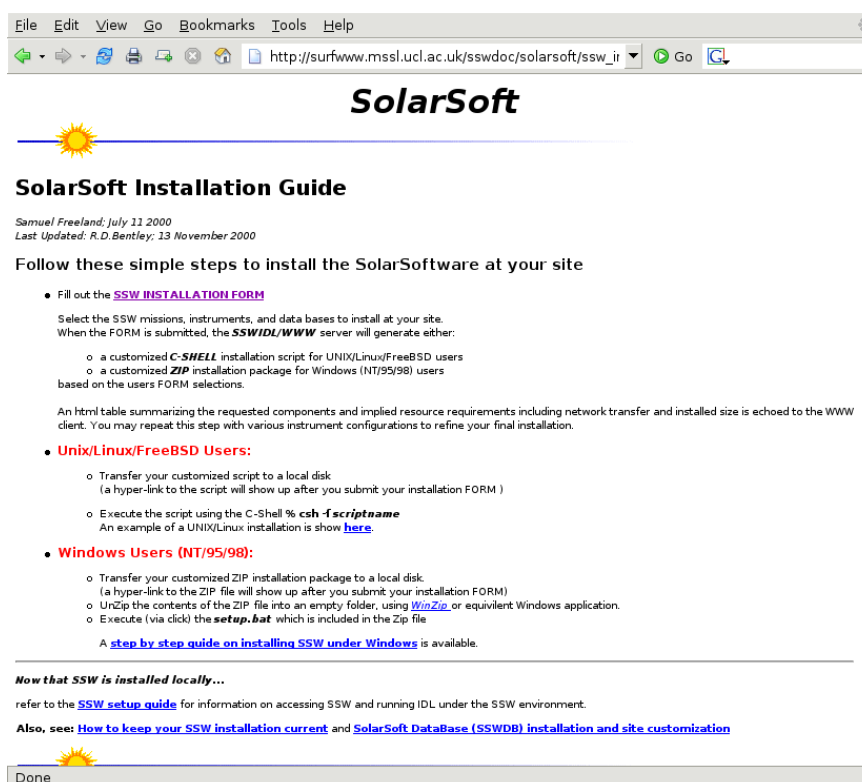
Chapter 6

Software and data archives

Solarsoft

The SolarSoft system is a set of integrated software libraries, data bases, and system utilities which provide a common programming and data analysis environment for solar physics. The SolarSoftWare (SSW) system is built from Yohkoh, SOHO, SDAC and Astronomy libraries and draws upon contributions from many members of those projects. It is primarily an IDL based system, although some instrument teams integrate executables written in other languages. Software is used either with command lines or widgets.

The SSW capabilities include: time series analysis, time conversions, UTPLOT, spectral fitting, image and image cube (movies) display, IDL data manipulation (structure, string, array, mathematics...), file I/O (generic binary, ascii), FITS, solar limb fitting, grid overlay, coordinate tranformations... Object oriented programming (OOP) is also widely used.



Keyword Standards for Events File Primary Headers

This file will contain examples of keywords found in typical FITS events files. Comments precede some keywords, and others are hotlinked to the appropriate section of OGIP FITS working group documents. Comments are italicized. There are often several examples for some of the keywords to give a feel for possible values as some keywords have been interpreted by developers in different ways.

Please refer to [OGIP 93 003](#) for full information about this type of file.

Events file [definition](#) from OGIP_93_003.

```
SIMPLE = T / file does conform to FITS standard
BITPIX = 32 / number of bits per data pixel
NAXIS = 0 / number of data axes
EXTEND = T / FITS dataset may contain extensions
```

These comments are automatically generated by FITSIO.

```
COMMENT FITS (Flexible Image Transport System) format defined in Astronomy and
COMMENT Astrophysics Supplement Series v44/p363, v44/p371, v73/p359, v73/p365.
COMMENT Contact the NASA Science Office of Standards and Technology for the
COMMENT FITS Definition document #100 and other FITS information.
```

DATE is also generated automatically by FITSIO among others.

```
DATE = ' 5/10/94' /FITS creation date (DD/MM/YY)
```

Content provides quicklook "HDUCLASS-like" information in the primary header.

```
CONTENT = 'BASIC' / file contains time intervals and events
CONTENT = 'EVENT LIST' / this is an event list file
CONTENT = 'RAW' / TARGET EVENTS
REVISION= 1 / revision number of processed data
```

The ORIGIN keyword is the original processing point. Subsequent processing and reduction is then kept in the REVISION and/or HISTORY and/or CREATOR keywords.

```
ORIGIN = 'ESA/SSD' / processing site
ORIGIN = 'HEASARC/GSFC' / origin of FITS file
ORIGIN = 'MPE Garching, FRG' / origin of processed data
ORIGIN = 'USRSDC' / origin of processed data
```

```
OBSERVER= 'ESA/ESTEC' / Principle Investigator
OBSERVER= 'MPE, ROSAT-TEAM' / PI name
OBSERVER= 'NONE' / Principal Investigator
OBSERVER= 'PSPC CAL TEAM' / PI name
```

```
OBS_ID = '41' / Observation ID 00-64
OBS_ID = 'CA999998P-3.N1' / observation ID
OBS_MODE= 'POINTING' / Observation mode
OBS_MODE= 'SCAN' / obs mode: POINTING, SLEW, OR SCAN
OBS_MODE= 'SLEW' / obs mode: POINTING, SLEW, OR SCAN
```

```
OBJECT = '2S2251-178' / Name of observed object
OBJECT = 'ALUMINUM 1.47 keV calibration' /name of object
OBJECT = 'CRAB' / Name of observed object
```

```
TELESCOP= 'ASCA' / Telescope (mission) name
```

Other telescope values for [CGRO](#), [ROSAT](#), [EXOSAT](#), [HEAO 1](#), [XTE](#)

```
INSTRUME= 'GIS2' / Instrument name
INSTRUME= 'LECS' / instrument name
INSTRUME= 'PSPCB' / instrument name
```

```
EQUINOX = 2000.0 / equinox
RADECSYS= 'FK4' / Stellar reference frame in use
RADECSYS= 'FK5' / World Coordinate System
```

```
RA NOM = 8.429000E+01 / nominal RA (deg)
```

File Edit View Go Bookmarks Tools Help

http://www.lmsal.com/solarsoft/ssw_install.html

How do I use this form to install the SolarSoftWare (SSW) on my machine?

Desired SSW Host	Installation Type	Installation Source	Firewall Constraints
sohoftp.nascom.nasa.gov	New Installation	Internet	None

Enter desired local path for top level SSW tree. You may select one of suggested locations from menu or enter an explicit path if you don't like any of those options. If this is an **Upgrade** rather than a **New Installation** then your path *must* match your existing SSW top level path.

SSW Path Suggestions -OR- Explicit Path

SSW Site email contact (USER@HOSTNAME)

Windows Options: Perl is installed on my PC at: ☐ Enable daily upgrade task (NT Only for now)

Select those SolarSoft instruments which you plan to analyze at your site:

SOHO: ☐ EIT ☐ LASCO ☐ CDS ☐ SUMER ☐ MDI ☐ UVCS ☐

Yohkoh: ☐ SXT ☐ BCS ☐ HXT ☐ WBS ☐

Orbital Observatories: ☐ SXI-GOES12 ☐ TRACE ☐ HESSI ☐ SMEI ☐ HXRS ☐ BATSE ☐ SPARTAN ☐

Optical Observatories: ☐ SOON ☐ NSO ☐ MEES ☐ LaPalma SVST ☐

Radio Observatories: ☐ ETHZ ☐ NRH ☐ NoRH ☐ NoRP ☐ OVSA ☐

Virtual Observatories: ☐ CoSEC ☐ EGSO ☐ VSO ☐

Solar-B: ☐ EIS ☐

STEREO: ☐ SECCHI ☐ SSC ☐

Packages: ☒ BINARIES ☐ SPEX ☐ CHIANTI ☐ PINTofALE ☐ XRAY ☐ PFSS ☐ HYDROSTATIC ☐ FINDSTUFF ☐ ANDRIL ☐ LPARL ☐ VDEM ☐ ANA ☐ ZTOOLS ☐ MJSTEREO ☐ NGDC ☐ CMES ☐ NLFFF ☐ PDL ☐

SMM: ☐ XRP ☐ UVSP ☐ HXRBS ☐ CP ☐ GRS ☐ HXIS ☐ ACRIM ☐

(to re-initialize all fields)

Done

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http://trace.lmsal.com/trace_cat.htm

TRACE DATA CENTER

[Home](#) [Data Policy](#) [Data Catalog](#) [Help](#)

[Summaries Page](#)
[Most Recent 24 hour TRACE Movie Sampler \(JavaScript, MPEG, and GIF-Animation\)](#)
[Missing Data](#)
[Data Analysis Software \(solarsoft\)](#)
[Image History](#)

TRACE Catalog Search

Select times and image parameters and then press when ready or to clear.

UT time 

Start Time: : : Date: Mar 2006

Stop Time: : : Date: Mar 2006

wavelength 

ALL ☒ 171Å ☐ 195Å ☐ 284Å ☐ 1216Å ☐ 1550Å ☐ 1600Å ☐ 1700Å ☐ WL ☐ TEST ☐ PREV ☐

image identification and description 

Observing Program **Wild Cards OK**

NX **NY** **Pixel Size"** **EW" (W+)** **EW FOV Tolerance** **NS" (N+)** **NS FOV Tolerance**

Done

```

File Edit View Terminal Tabs Help

> mreadfits,'/sswdata/lz/2004/10/efz20041030.042410',index,data
> eit_prep,index,data=data,eind,edat
> index2map,eind,edat,map0424
> plot_map,map0424,/log
> xloadct ; change color scale

alternative way to do it (ok for some image data):
> fits2map,'smdi_maglc_fd_19980331_1117.fts',map,header=header
> loadct,0
> plot_map,map

> doc_library,'fits2map'; see documentation on the procedure

> help,map0424,/st ;prints structure of map
> dmap=drot_map(map0424,2,/days) ;corrects for differential rotation
> sub_map,map0424,smap,xrange=[200,500],yrange=[300,600] ;sub image in arc sec
> dmap=diff_map(map1,map2,/rotate) ; rotates to same time before differencing
> plot_map, map1
> plot_map, map2, /over, levels=[100,200,300] ; overplotting in contours

> earth0248=map2earth(m0248) ; SOHO L1 view to Earth view, need to do it
                                ; when overplotting with ground based data
                                ; (program should complain if forgotten)

Plotting on white background:
> !p.color=0
> !p.background=255

Plotting multiple images:
> !p.multi=[0,2,2]
and back
> !p.multi=[0,1,1]

Size of plot:
> xs=768
> ys=256
> wdef,0,xs,ys

```

