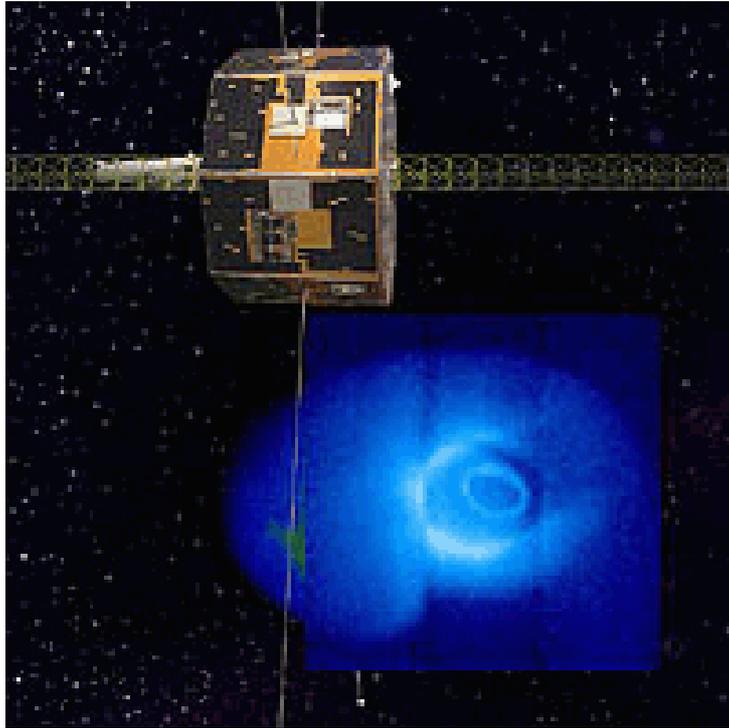


IMAGE DATA AT SHEFFIELD



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INTRO

The IMAGE EUV data can come in two different formats

1) FITS files

or

2) UDF files

FITS (Flexible Image Transport System) is a data format designed to provide a means for convenient exchange of *astronomical* data between installations whose standard internal formats and hardware differ. A FITS data file is composed of a sequence of Header Data Units (HDUs). The header consists of keyword=value statements, which describe the organization of the data in the HDU and the format of the contents. It may provide additional information, for example, about instrument status or the history of the data. The data follow, structured as the header specifies. The data section of the HDU may contain a digital image, but, except for the first HDU, *it doesn't have to*. For a more detailed description of FITS files please see http://fits.gsfc.nasa.gov/fits_intro.html, or, http://archive.stsci.edu/fits/users_guide/.

The UDF Data File is a collection of one or one or more **fixed length** records, the length of which is given in the contents of the VIDF Data Record Size field. Each **Data Record** represents a block of time and all the measurements returned in that time period.

ENVIRONMENTAL SETTINGS

Before we begin we need to make sure that your computer is looking in the correct place for files and programs, so open up your `.cshrcX` (located in your home directory)(where the X could be a number, e.g. mine is a `.cshrc5` file). You need to copy the following lines of code into your file:

```
setenv UDF_HOME /acms21_data2/IMAGE/UDF/udf
setenv GPH_HOME /acms21_data2/IMAGE/UDF/gph
setenv UDFTOOL_HOME /acms21_data2/IMAGE/UDF/udfTools
setenv UDF_DATA /acms21_data2/IMAGE/udfDatayourname
setenv XLIB -lm
setenv IDL_DIR /usr/local/rsi/idl_5.3/

setenv IDL_DLM_PATH "$UDF_HOME/lib:<IDL_DEFAULT>"
setenv PATH $PATH":$UDF_HOME/bin:$UDFTOOL_HOME/bin"
```

Once you have made the changes listed above, you need to make sure that you source the `.cshrcX` by typing

```
source .cshrc5
```

IMAGE FILES

All of the files that are used in the IMAGE software are located in the directory

```
/acms21_data2/IMAGE
```

The associated subdirectories contain the software necessary to read the FITS and UDF files, and also the FITS and UDF databases.

FITS DATABASE

If you download or create any FITS files they should be placed into the FITS database which can be found at

```
/acms21_data2/IMAGE/fits
```

UDF DATABASE

This is where the fun starts ☺! To say that importing data into the UDF database is not quite as easy as importing the FITS data is a bit of an understatement. If you have read the introductory blurb and followed the links provided you will now be aware that the UDF format is not an easy one to understand. Fortunately the nice people at

NASA have constructed a neat little program that installs IMAGE data into the UDF database, unfortunately you still have to do a bit of faffing

STEP 0

YOU ONLY NEED TO DO THIS ONCE

If this is the first time of downloading UDF data then you need to create your own UDF data tree. To do this you need to type

```
$UDFTOOL_HOME/bin/UDFAdmin
```

this will invoke the UDF admin tool – from here select

```
create udf data tree
```

now select

```
PROJET      -      IMAGE  
MISSION     -      IMAGE1
```

Then click on

```
PROCESS
```

You have now created your own UDF data tree in

```
/acms21_data2/IMAGE/udfDatayourname
```

STEP 1

Decide which day/days that you want to look at and go to

http://150.144.211.77/image/image_main.html

From this page you can type in which day/days you wish to look at. Select the UDF box (if you want to download the UDF data) and then select the **EU**V and **OA** boxes. The EUV is obviously the EUV data, OA is the orbit information of the satellite, this must be selected otherwise programs later on will not work!!

Next select

interactive request

This will bring up a list of files corresponding to the days that you have selected. In this list you should see files with

```
UDFp  
UDFv  
UDFE
```

UDFO

NB If this is the first time installing the UDF data then you need to select the UDF_p and UDF_v files – THIS ONLY NEEDS TO BE DONE AT THE INITIAL INSTALL. On further downloads of UDF data you can ignore the UDF_p and UDF_v files!

The UDFE files correspond to the EUV instrument data, and the UDFO files correspond to the satellite orbit data.

Click on the boxes by the side of the IMAGE data that you are interested in, being sure to click on the corresponding UDFO files.

Then click on batch request – this then bundles the files that you have requested into one easily downloadable file. To download the file just click on the link.

The file needs to be downloaded into

/acms21_data2/IMAGE/udfDatayourname/PKGS/

If you do download it to somewhere else it needs to be moved to the above directory before you do anything to it!

Health warning 1 – the data files that you see should have the form

IMAGE.IMAGE1.blahblahblah

If you see IMAGE1Q instead of IMAGE1 – then please don't download this file. If this file is really necessary then please see me.

Health warning 2 – if you want to download UDF data from any other instrument please see me first!!

STEP 2

Now you have successfully downloaded the file you need to unpack it and store it in the database. The downloaded file will look something like

IMAGE30259-36971.tar.gz

First you need to unzip it, type

```
gunzip IMAGE30259-36971.tar.gz
```

which leaves a file like IMAGE30259-36971.tar, this file needs to be untarred, do this by typing

```
tar -xvf IMAGE30259-36971.tar
```

This will then unpack a number of files (the number is dependent on the number that you specified during the download process), it will also leave the original tar file, remove this by typing

```
rm IMAGE30259-36971.tar
```

STEP 3

OK you are now ready to install the data into the UDF database. To do this you need to type

```
$UDFTOOL_HOME/bin/UDFAdmin
```

This will invoke an interactive menu. Next select

```
ADD UDF DATA
```

NB If this is the first UDF install then you need to install the UDFv and UDFp files first. Do this by clicking on them one at a time and then clicking process. When the files have been processed it is safe to delete them and forget about them.

This will bring up another menu that lists the data that you have just unpacked. Select one of the data files then click on

```
PROCESS
```

This will then process the data and put it into the relevant databases. Once the data has been processed (there is no visible sign that it has finished – shouldn't take longer than a minute though) you can delete the original file by pressing delete. Repeat until you have processed and deleted all files.

Now all being well you should have created a database of UDF data. If you want to see where the data is you need to go to

```
/acms21_data2/IMAGE/udfDatayourname/IMAGE/IMAGE1/
```

The UDF data needs to be unpacked and placed into a specific UDF tree which can be seen when you look through the data directory. If you want to know more about the UDF data tree and database then take a look at

<http://mena.lanl.gov/udf/udf-layout.html>

for a quick intro.

IDL SOFTWARE

The IMAGE EUV IDL software can be found in

```
/acms21_data2/IMAGE/imtool/euv_imtool/
```

First we need to check whether we are able to load udf data so at the UDL prompt type

```
IDL> help, 'udf', /dln
```

If you see this

```
** UDF - Support (read-only) for UDF file format (not loaded)
   Version: 0.70, Build Date: 2002-08-24, Source: esm@pobox.com
   Path: /acms21_data2/IMAGE/UDF/udf/lib/udf.so
```

you are ready to rock and roll. If you don't then go back and check that your environment variables are set correctly – if you are still having problems then see me.

To compile the euv_imtool you just need to type (in IDL)

```
@compile_euv_imtool
```

to run the euv_imtool, type

```
euv_imtool
```

This will invoke an interactive menu from which you can load FITS or UDF data. The interactive menu is pretty self-explanatory and should be reasonably automated unless you do something very very wrong!!

MISC NOTES

If it is grumbling about udf_time not existing then you could try

```
cd $UDF_HOME/src/ud_time
rm *.o *.a
make CADD="-Wall -fsigned-char -D_UnIx" RANLIB=:
make CADD="-Wall -fsigned-char -D_UnIx" RANLIB=: udf_time
make release
```

please only try this as a last resort!!!

CONCLUSIONS

Hopefully these inane ramblings have guided you successfully through the installation process of the IMAGE data and software – it is now up to you ☺.