

Getting the CAT Up and Running

- Download CAT from: <http://geo.pds.nasa.gov/missions/mro/crism.htm>

At version 6.4 or later, you can download either:

CAT_vX.zip

Or

CAT_vX_codeonly.zip **AND** CAT_vX_aux.zip

where X is one or more characters indicating the CAT version.

The difference: The single file download (CAT_vX.zip) will unzip the entire CAT installation into a CAT_ENVI directory. The 2-file download allows users to split CAT's auxiliary data files (>400 MB at version 6.4) from the IDL/ENVI code (relatively small disk space requirement) in the event that the IDL/ENVI code needs to reside on a disk with limited available space. Versions prior to 6.4 were distributed as a single file only.

- Unzip file(s):

With CAT_vX.zip:

CAT_vX.zip unzips the entire CAT distribution into CAT_ENVI. Appropriate disk location for CAT_ENVI is platform specific; see following discussion.

With CAT_vX_codeonly.zip and CAT_vX_aux.zip:

CAT_vX_codeonly.zip unzips the IDL/ENVI code into CAT_ENVI. Appropriate disk location for CAT_ENVI is platform specific; see following discussion.

CAT_vX_aux.zip unzips to aux_files/. You may put this at a location of your choice.

Edit crismcat*.cfg text files in CAT_ENVI/catconfigs/ to set

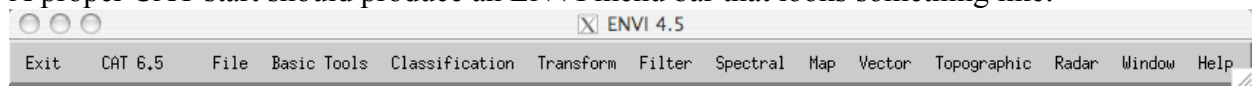
CAT_AUXFILES_PATH = the path to aux_files

(More detail on config files near the end of this document.)

Main top-level elements in the CAT distribution:

envi_unix.cfg	Sample UNIX configuration file; tells ENVI we will be personalizing it
envi_win.cfg	Sample WINDOWS configuration file
e_locate.pro	dummy file; allows ENVI to find the personal envi.cfg file
aux_files/	directory to hold auxiliary files needed by the CAT, like CDRs and the users' guide
catconfigs/	CAT configuration files
map_proj/	file with Mars info for ENVI projections
out/	ENVI's default output directory
save_add/	where all of our CAT routines live
spec_lib/	location of CRISM spectral library—updated upon changes
tmp/	a temporary directory used in processing

A proper CAT start should produce an ENVI menu bar that looks something like:



with the version number displayed beside "CAT."

Getting the CAT Started on UNIX Platforms (includes most Macs)

1. If you have customized your envi.cfg or catconfig files, and intend to overwrite your existing CAT installation, backup the config files you want to save.

2. You need CAT_ENVI in your login directory; either:

A. Unzip CAT_ENVI directly into your login directory, or

B. Unzip CAT_ENVI to a location of your choice, and then:

```
ln -s CATLOCATION ~/CAT_ENVI
```

(where CATLOCATION = path to the unzipped CAT_ENVI)

- This creates a symbolic link to the actual CAT_ENVI directory

C. If you got CAT_ENVI from CAT_vX_codeonly.zip:

- o unzip CAT_vX_aux.zip to aux_files/ at a location of your choice

- o change the CAT_AUXFILES_PATH parameter in relevant crismcat*.cfg files at CAT_ENVI/catconfigs/ to the selected aux_files path

3. In CAT_ENVI/, rename envi_unix.cfg to envi.cfg (can delete envi_win.cfg if desired). (If you've customized your envi.cfg, you can copy your old envi.cfg here instead.)

(Note: ENVI starts without the CAT menu if this step is omitted.)

4. If you backed up a customized catconfig file, copy it to CAT_ENVI/catconfigs. But check release notes for new config parameters before deleting crismcat_unix_default.cfg; the new default config file may provide a useful template for new parameter settings.

5. Add CAT_ENVI/ and subdirectories to the IDL path.

To PERMANENTLY add the CAT_ENVI/ directory to the IDL path on a UNIX NETWORK:

1a) Edit your configuration file to add CAT_ENVI/ to the IDL path.

For C-shell, use the syntax in the following example:

```
# Set up environment for ENVI and modify the IDL path:
```

```
source ../itt/idlXX/bin/idl_setup
```

```
source ../itt/idlXX/products/enviXX/bin/envi_setup
```

```
setenv IDL_PATH '+~/CAT_ENVI/:<IDL_DEFAULT>'
```

If IDL_PATH previously defined, use instead:

```
setenv IDL_PATH +~/CAT_ENVI/:$IDL_DEFAULT
```

(Paths may vary depending on your IDL/ENVI installation; here XX refers to IDL/ENVI versions that will change with updates, requiring edits.)

1b) Source login and configuration files for changes to take effect. For example, with C-shell, at the UNIX prompt:

```
> source .login
```

```
> source .cshrc
```

1c) Start ENVI by typing envi at the UNIX prompt:

```
> envi
```

To PERMANENTLY add the CAT_ENVI/ directory to the IDL path on a PERSONAL login on a Unix/Mac computer (or if you do not know how to edit your configuration file), choose ONE of the following three options:

1a) For IDL 6.2 and higher, edit the idl.pref file (below the comments) by adding the following line:

```
IDL_PATH : +~/CAT_ENVI/:<IDL_DEFAULT>
```

Note: This line can be added to one of two files:

```
itt/idlXX/resource/pref/idl.pref
```

(this will change the functionality of ENVI for ALL USERS on the system)

OR

```
~/idl/itt/pref-10-idl_X_X-unix/idl.pref
```

(this will change the functionality of ENVI for a SINGLE USER on the system)

(Filenames and paths may be IDL/ENVI version dependent. XX represents IDL version number.)

1b) Start ENVI by typing envi at the IDL command line.

OR

2a) Start IDL; execute the following command at the IDL command line:

```
IDL> PREF_SET, 'IDL_PATH', EXPAND_PATH('+~/CAT_ENVI/') +  
':<IDL_DEFAULT>', /commit
```

2b) Start ENVI by typing envi at the IDL command line:

```
IDL> envi
```

OR

3a) From the IDL Developer Environment

under the “File” pull down menu, select “Preferences”;

within the “Preferences” widget, select the “Path” tab and the “Insert” button;

navigate to ~/CAT_ENVI/ and select “OK”;

make sure the path has been added beneath <IDL DEFAULT> and make sure the box preceding the path is checked.

3b) Start ENVI by typing envi at the IDL command line:

```
IDL> envi
```

To TEMPORARILY add the CAT_ENVI/ directory to the IDL path:

1a) Start IDL; execute the following command at the IDL command line:

```
IDL> !PATH = EXPAND_PATH('+~/CAT_ENVI/') + ':' + !PATH
```

(This only changes the paths for the *CURRENT IDL/ENVI session*; if using this option, it has to be repeated every time you wish to open the CAT version of ENVI.)

1b) Start ENVI by typing envi at the IDL command line:

```
IDL> envi
```

Getting the CAT Started on WINDOWS Platforms

1. If you have customized your envi.cfg or catconfig files, and intend to overwrite your existing CAT installation, backup the config files you want to save.

2. Put CAT_ENVI/ in C:\Program Files\ (Apparently, this can not be a shortcut.)

The location of CAT_ENVI under Program Files on Windows is a hardcoded requirement. The ENVI configuration file looks for related info in these locations (which could be changed by the user) but CAT needs to know the location of the catconfigs directory and possibly CAT_ENVI\aux_files\ for seamless operation and the code looks in this location. Unfortunately, I do not believe the Windows IDL routines will support shortcuts.

If you got CAT_ENVI from CAT_vX_codeonly.zip:

- o unzip CAT_vX_aux.zip to aux_files/ at a location of your choice
- o change the CAT_AUXFILES_PATH parameter in relevant crismcat*.cfg files at CAT_ENVI\catconfigs\ to the aux_files path

3. In CAT_ENVI\, rename envi_win.cfg to envi.cfg (can delete envi_unix.cfg if desired). (If you've customized your envi.cfg, you can copy your old envi.cfg here instead.)

(Note: ENVI starts without the CAT menu if this step is omitted.)

4. If you backed up a customized catconfig file, copy it to CAT_ENVI/catconfigs. But check release notes for new config parameters before deleting crismcat_unix_default.cfg; the new default config file may provide a useful template for new parameter settings.

5. Add CAT_ENVI\ and subdirectories to the IDL path.

To PERMANENTLY add the CAT_ENVI/ directory to the IDL path, choose ONE of the following three options:

1a) For IDL 6.2 and higher, edit the idl.pref file (below the comments) by adding the following line:

```
IDL_PATH : +C:\Program Files\CAT_ENVI;<IDL_DEFAULT>
```

Note: This line can be added to one of two files:

ITT\IDLXX\resource\pref\idl.pref

(this will change the functionality of ENVI for ALL USERS on the system)

OR

C:\Documents and Settings\UserName\.idl\itt\pref-10-idl_X_X-windows\idl.pref

(this will change the functionality of ENVI for a SINGLE USER on the system)

(Filenames and paths may be IDL/ENVI version dependent. XX represents IDL version number. *UserName* should be replaced by the appropriate name.)

1b) Start ENVI by double clicking ENVI icon.

OR

2a) Start IDL; execute the following command at the IDL command line:

```
IDL> PREF_SET, 'IDL_PATH', EXPAND_PATH('+C:\Program  
Files\CAT_ENVI\') + ';' <IDL_DEFAULT>', /commit
```

2b) Start ENVI by typing envi at the IDL command line:

```
IDL> envi
```

OR

3a) From the IDL Developer Environment

under the “File” pull down menu, select “Preferences”;
within the “Preferences” widget, select the “Path” tab and the “Insert” button;
navigate to C:\Program Files\CAT_ENVI\ and select “OK”;
make sure the path has been added beneath <IDL DEFAULT> and make sure the box
preceding the path is checked.

3b) Start ENVI by typing envi at the IDL command line:

```
IDL> envi
```

To TEMPORARILY add the CAT_ENVI directory to the IDL path:

1a) Start IDL; execute the following command at the IDL command line:

```
IDL>!PATH = EXPAND_PATH('+C:\Program Files\CAT_ENVI\') + ':' + !PATH
```

(This only changes the paths for the *CURRENT IDL/ENVI session*; if using this option,
it has to be repeated every time you wish to open the CAT version of ENVI.)

1b) Start ENVI by typing envi at the IDL command line:

```
IDL> envi
```

Things to watch out for on Windows CAT installations

System copies of old versions of CAT

At least one installation of CAT on a MS/Vista system has experienced a problem where parts of an old version of CAT ran, despite an update being the only obvious installation. Symptoms included a missing or out-of-date version number in the CAT menu label, and crashing on failure to find a function that was new in the updated CAT.

The cause of the problem was a Windows-generated copy of the older CAT installation under C:\Users\UserName\AppData\Local\VirtualStore\Program Files\ from which IDL was compiling some out-of-date code.

If you're running under Windows and seeing suspicious behavior, please look out for hidden copies of old code. You should be able to locate stray CATs with a file search for cat_version.pro.

ENVI 4.5 Icon doesn't start CAT (may also occur in later ENVI versions)

In version 4.5, starting ENVI by double clicking the "ENVI 4.5" icon started ENVI, but did not load CAT. The IDL path was not set to include CAT_ENVI, even after having been properly configured in login files. The problem was that there were two ENVI startup files:

C:\Program Files\ITT\IDL70\lib\hook\envi.sav (did *not* set IDL path)

C:\Program Files\ITT\IDL70\idlde\envi_idl.exe (*Did* set the IDL path)

The "ENVI 4.5" icon created on install, as well as Start/Programs/ENVI 4.5/ENVI, pointed at the first startup, and CAT failed to load after starting ENVI with either. On the other hand, Start/Programs/ENVI 4.5/ENVI + IDL pointed at the second and started CAT correctly.

Solution: Use one of the following alternate methods to start ENVI, instead of the install-generated icon:

a) From startup menu, Programs/ENVI 4.5/ENVI + IDL
(note... not just "ENVI", "ENVI + IDL")

b) Put a shortcut to:

C:\Program Files\ITT\IDL70\idlde\envi_idl.exe

on the desktop as a CAT_ENVI icon

Corrupt CAT menu: Administrator Rights Required

Some users have reported that users running CAT/ENVI on Windows Vista workstations without administrator rights saw corrupted CAT menus.

It was necessary to give all users administrator rights, and start ENVI (every time) by right-clicking and selecting "Run as Administrator."

CAT Configuration File

CAT uses a configuration file to set several user-defined parameters.

CAT config files are located in CAT_ENVI/catconfigs. CAT looks for files in that directory with names like:

crismcat*.cfg

where * can be replaced by any filename-legal text or omitted. (You can have independent files for multiple users, for example.)

CAT is distributed with two sample config files, one for unix/Mac (crismcat_unix_default.cfg) and one for Windows (crismcat_win_default.cfg). They contain typical parameter values and serve as templates for customization of new config files.

CAT does not *require* a config file (unless you split aux_files from CAT_ENVI) but some functionality may be reduced if none are found.

When CAT starts, it finds all the available config files. If there's more than one, the user is prompted to select one. If there are none, CAT just continues without config parameters. If there's exactly one, CAT loads it silently. If you delete all but one CAT config file, you will not be prompted for selection.

The config file can be reloaded (to switch parameters) during a CAT/ENVI session using the "Reload CAT config file" CAT menu item.

Current config parameters:

CRISM_PDS_PATH

path to top of PDS tree; for alternate CDR/DDR search

CAT_AUXFILES_PATH

CAT aux files path – **REQUIRED** if aux_files not under CAT_ENVI

CAT_DFLT_VOLCANOSCAN

Default volcano scan for atmospheric correction; hex observation ID

DISPLAY_WAVELENGTHS_S

CAT will set "default bands" in header to bands corresponding to these wavelengths for VNIR data

DISPLAY_WAVELENGTHS_L

CAT will set "default bands" in header to bands corresponding to these wavelengths for IR data

DISPLAY_WAVELENGTHS_J

CAT will set "default bands" in header to bands corresponding to these wavelengths for joined data

Sample CAT config file parameter explanation

If config file parameters are:

```
CRISM_PDS_PATH = /Volumes/crism/flight/crism_pds_archive/  
CAT_AUXFILES_PATH = /disk2/cat_data/aux_files  
CAT_DFLT_VOLCANOSCAN = 61C4  
DISPLAY_WAVELENGTHS_S = 709.7,598.9,533.7  
DISPLAY_WAVELENGTHS_L = 2529.5,1506.6,1080.0  
DISPLAY_WAVELENGTHS_J = 859.8,683.6,533.7
```

Then:

If CAT is looking for a DDR and doesn't find it in the directory with the image file being processed, it will look under

```
/Volumes/crism/flight/crism_pds_archive/ddr/DDR/
```

CAT will also look for missing PDS labels under

```
/Volumes/crism/flight/crism_pds_archive/trdr/TRDR/
```

CAT will look in /disk2/cat_data/aux_files/CDRs/WA for WA CDRs.

If the user specifies default volcano scan for atmospheric correction, CAT will take transmission spectra from the VS ADR for observation ID 61C4.

When CAT writes ENVI headers for VNIR data, it will set "default bands" to bands as close as possible to wavelengths 709.7, 598.9, and 533.7 nm.