



How can I tell CIAO to use a different HRMA effective area file?

The default HRMA effective area (EA) file is periodically updated in the CALDB. If you are working on a local network and share a CALDB installation, you may not have control over when this default file is changed. To avoid negatively impacting an analysis in progress, you can use the ardlib.par parameter file to tell CIAO to continue to use the previous version of the HRMA file.

In this example, we want to use the version 6 HRMA EA file (version 7 was released in CALDB 3.2.1 on 15 December 2005):

```
$CALDB/data/chandra/tel/hrma/bcf/effarea/hrmaD1996-12-20axeffa0006.fits
```

There are five parameters for the EA in `ardlib.par`:

```
unix% plist ardlib

Parameters for /soft/ciao/param/ardlib.par

...

#=====
# AXAF Mission Support
#=====
AXAF_EFFAREA_FILE_0001 = CALDB          Enter AXAF eff-area file 0001
AXAF_EFFAREA_FILE_0010 = CALDB          Enter AXAF eff-area file 0010
AXAF_EFFAREA_FILE_0100 = CALDB          Enter AXAF eff-area file 0100
AXAF_EFFAREA_FILE_1000 = CALDB          Enter AXAF eff-area file 1000
AXAF_EFFAREA_FILE_1111 = CALDB          Enter AXAF eff-area file 1111
...
```

First we need to determine which extension of the HRMA EA file is appropriate for each ARDLIB parameter. Note that we create a link to the CALDB file to simplify the commands:

```
unix% ln -s $CALDB/data/chandra/tel/hrma/bcf/effarea/hrmaD1996-12-20axeffa0006.fits .
unix% dmlist hrmaD1996-12-20axeffa0006.fits blocks

-----
Dataset: hrmaD1996-12-20axeffa0006.fits
-----
```

Block Name	Type	Dimensions
Block 1: PRIMARY	Null	
Block 2: AXAF_AXEFFA1	Table	4 cols x 1 rows
Block 3: AXAF_AXEFFA2	Table	4 cols x 1 rows
Block 4: AXAF_AXEFFA3	Table	4 cols x 1 rows
Block 5: AXAF_AXEFFA4	Table	4 cols x 1 rows
Block 6: AXAF_AXEFFA5	Table	4 cols x 1 rows

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```
unix% foreach f (1 2 3 4 5)
foreach? echo "AXAF_AXEFFA$f"
foreach? dmkeypar "hrmaD1996-12-20axeffaN0006.fits[AXAF_AXEFFA$f]" SHELL echo+
foreach? echo " "
foreach? end

AXAF_AXEFFA1
1111

AXAF_AXEFFA2
1000

AXAF_AXEFFA3
0100

AXAF_AXEFFA4
0010

AXAF_AXEFFA5
0001
```

The foreach command was used to loop through all the file extensions, but you could run each `dmkeypar` call individually, e.g.

```
unix% dmkeypar "hrmaD1996-12-20axeffaN0006.fits[AXAF_AXEFFA1]" SHELL echo+
1111
```

Now we can match the extension in the file to the correct ARDLIB parameter. Note that we also return to using the full path to the CALDB:

```
unix% pset ardlib AXAF_EFFAREA_FILE_0001="$CALDB/data/chandra/tel/hrma/bcf/effarea/hrmaD1996-12-20axeff
unix% pset ardlib AXAF_EFFAREA_FILE_0010="$CALDB/data/chandra/tel/hrma/bcf/effarea/hrmaD1996-12-20axeff
unix% pset ardlib AXAF_EFFAREA_FILE_0100="$CALDB/data/chandra/tel/hrma/bcf/effarea/hrmaD1996-12-20axeff
unix% pset ardlib AXAF_EFFAREA_FILE_1000="$CALDB/data/chandra/tel/hrma/bcf/effarea/hrmaD1996-12-20axeff
unix% pset ardlib AXAF_EFFAREA_FILE_1111="$CALDB/data/chandra/tel/hrma/bcf/effarea/hrmaD1996-12-20axeff
```

Check the results by `plist`-ing the parameter file:

```
unix% plist ardlib

Parameters for /home/username/cxcds_param/ardlib.par

...

#=====
# AXAF Mission Support
#=====
AXAF_EFFAREA_FILE_0001 = /soft/ciao/CALDB/data/chandra/tel/hrma/bcf/effarea/hrmaD1996-12-20axeffaN0006.
AXAF_EFFAREA_FILE_0010 = /soft/ciao/CALDB/data/chandra/tel/hrma/bcf/effarea/hrmaD1996-12-20axeffaN0006.
AXAF_EFFAREA_FILE_0100 = /soft/ciao/CALDB/data/chandra/tel/hrma/bcf/effarea/hrmaD1996-12-20axeffaN0006.
AXAF_EFFAREA_FILE_1000 = /soft/ciao/CALDB/data/chandra/tel/hrma/bcf/effarea/hrmaD1996-12-20axeffaN0006.
AXAF_EFFAREA_FILE_1111 = /soft/ciao/CALDB/data/chandra/tel/hrma/bcf/effarea/hrmaD1996-12-20axeffaN0006.
..
```

Remember to "punlearn" or delete your `ardlib.par` file when you are ready to start an analysis with the new default CALDB HRMA EA file.

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URL:
http://cxc.harvard.edu/ciao3.4/faq/different_hrma.html
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