URL: http://cxc.harvard.edu/ciao3.4/faq/different_hrma.html
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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/hrmaD1996-12-20axeffaN0006.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/hrmaD1996-12-20axeffaN0006.fits .
unix% dmlist hrmaD1996-12-20axeffaN0006.fits blocks

--------------------------------------------------------------------------------
Dataset: hrmaD1996-12-20axeffaN0006.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

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/hrmaD1996-12-20axeffaN0

unix% pset ardlib AXAF_EFFAREA_FILE_0010="$CALDB/data/chandra/tel/hrma/bcf/effarea/hrmaD1996-12-20axeffaN0

unix% pset ardlib AXAF_EFFAREA_FILE_0100="$CALDB/data/chandra/tel/hrma/bcf/effarea/hrmaD1996-12-20axeffaN0

unix% pset ardlib AXAF_EFFAREA_FILE_1000="$CALDB/data/chandra/tel/hrma/bcf/effarea/hrmaD1996-12-20axeffaN0

unix% pset ardlib AXAF_EFFAREA_FILE_1111="$CALDB/data/chandra/tel/hrma/bcf/effarea/hrmaD1996-12-20axeffaN0
```

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.fit
AXAF_EFFAREA_FILE_0010 = /soft/ciao/CALDB/data/chandra/tel/hrma/bcf/effarea/hrmaD1996-12-20axeffaN0006.fit
AXAF_EFFAREA_FILE_0100 = /soft/ciao/CALDB/data/chandra/tel/hrma/bcf/effarea/hrmaD1996-12-20axeffaN0006.fit
AXAF_EFFAREA_FILE_1000 = /soft/ciao/CALDB/data/chandra/tel/hrma/bcf/effarea/hrmaD1996-12-20axeffaN0006.fit
```

```
AXAF_EFFAREA_FILE_1111 = /soft/ciao/CALDB/data/chandra/tel/hrma/bcf/effarea/hrmaD1996−12−20axeffaN00
..
```

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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