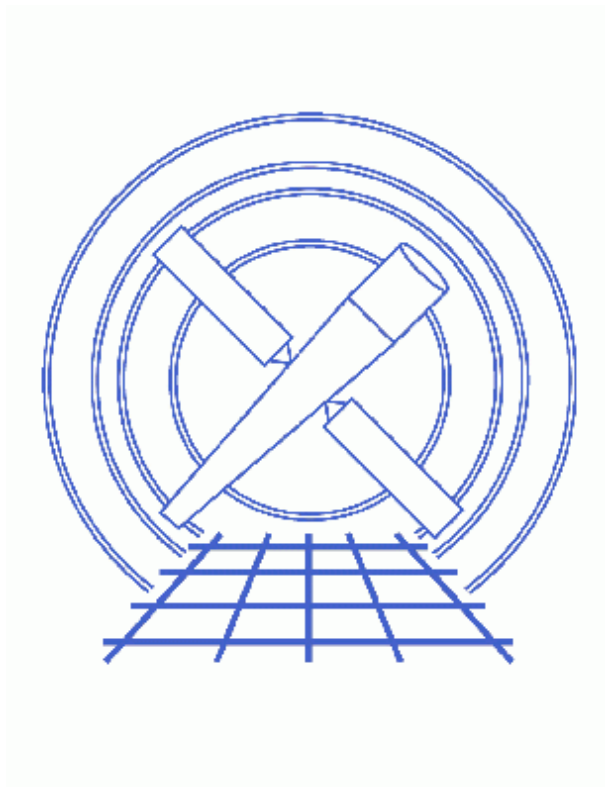


# How to Download Chandra Data from the Archive



## ***CIAO 3.4 Science Threads***

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# How to Download Chandra Data from the Archive

*CIAO 3.4 Science Threads*

## Overview

*Last Update:* 1 Dec 2006 – reviewed for CIAO 3.4: no changes

### *Synopsis:*

*ChaSeR* is a graphical user interface for browsing and/or obtaining data from the [Chandra Data Archive](#). The Archive contains over 800 public-domain datasets, which consist of all observations for which the proprietary period has expired, as well as calibration data. Note that proprietary data may also be accessed via *ChaSeR*, but it is password-protected from the general community.

### *Purpose:*

To download ObsID 1843 (ACIS-I, G21.5–0.9), which is used in all of the [Introductory CIAO Threads](#).

*Proceed to the [HTML](#) or hardcopy (PDF: [A4](#) | [letter](#)) version of the thread.*


---

## Launching ChaSeR

Before beginning, [download](#) and install the Java application.

Once installed, launch *ChaSeR* from the command line:

```
unix% chaser &
```

Figure 1  shows the GUI that will appear.

## WebChaSeR

If you do not wish to install *ChaSeR*, data may still be obtained through [WebChaSeR](#), a web version of *ChaSeR*. While it has the same search capabilities as *ChaSeR*, it is not possible to select individual files for download. Using this interface, you can only select complete packages of primary and secondary products; see the ["Select" step](#) for information on the different packages.

Due to the slightly different functionality, portions of this thread – mainly the [Three Steps to Using ChaSeR section](#) – do not apply to users of *WebChaSeR*. The two applications are similar enough, however, that the thread may serve as a helpful guide.

## The Three Steps to Using ChaSeR

Using *ChaSeR* to obtain data is a simple 3–step process:


### 1. Browse

Chandra Archive data may be browsed using any of the fields in the *ChaSeR* GUI, such as Instrument, Grating, ObsID, and Category. Since we are interested in an ACIS–I observation of G21.5–0.9, leave only the appropriate Instrument (ACIS–I) and Grating (NONE) options checked and enter the Target Name.



Figure 2  shows the completed form. Click the "Submit" button to enter the request.

---

### 2. Select

The Search Results window brings up all the observations that match our search criteria, as shown in Figure 3 . The "Order By..." menu can be used to sort the results; here we have ordered them by "Observation ID."

Click on ObsID 1843 to highlight the row. After doing so one may:

- Use the "Detail" button to display specifics about the observation; Figure 4 .
- Click on the "Images" button to see preview images; Figure 5 .
- Write the table information to a file ("Save").

Now the desired data products may be selected for download using the "Select primary products", "Select secondary products", and "Select supporting products" buttons.


*The data products are arranged such that all products necessary for most analyses (e.g. the CIAO threads) are in the primary directory. If you are interested in reprocessing your data, you will also need the level 1 files, which are in the secondary directory. Each of the threads also includes a list of the files needed to complete it.*


By default, all primary and secondary products are pre–selected. If you are only interested in downloading the specific files need for a thread, but need some help deterring what those are, check the Standard Data Distribution Contents webpage. These tables list the file extensions (aka "Type") and the "Content"; the content keyword is how the products are labeled in the *ChaSeR* interface.

The selections are submitted using the "Add to retrieval list" button. You can then highlight a different observation and add the same (or different) data products to the cart for it. Once you have selected all the data you are interested in, proceed to the next step.

---

### 3. Retrieve

Click on "View retrieval list" to view the observations and data products  submitted for selection.

One may see the list of data filenames and sizes  by clicking on the "Browse selected products" button. The total file size of the package list is listed at the top of the screen; use this information when considering available disk space.

## Download Chandra Data from the Archive – CIAO 3.4

The "Retrieve selected products" button is used to start the retrieval process. The files are compiled into a tarred package which is placed onto the anonymous FTP server (cda.harvard.edu) by default; the tarfile can also be saved directly to a local disk. When the download is complete, the *ChaSeR* window will look as shown in [Figure 8](#). Note that the location of the log file (chaser.log) and the FTP directory in which the tarfile was placed are both given at the bottom of the screen.

The name and location of the tarfile is recorded in chaser.log, along with the ObsID that was downloaded:

```
unix% more ~/chaser.log
[16/06/2005 09:53:39:463 EDT] Request retrieval of 1843
[16/06/2005 09:53:40:041 EDT] File(s) package_0_030616095338.tar.* will be
                             available at /pub/srftp/obs/1843 on cda.harvard.edu:
```

When you are finished with *ChaSeR*, use the "Exit" button to close the GUI.

---

## FTP and Unpack the Data

Get the data from the anonymous FTP server; note that the location of the tarfile will be different for your observation:

```
unix% ftp cda.harvard.edu
Connected to cda.
220 cda FTP server (Version wu-2.6.1(1) Mon Aug 7 15:20:43 EDT 2000) ready.
Name (cda.harvard.edu:username): anonymous
331 Guest login ok, send your complete e-mail address as password.
Password:
230-
230-   Welcome to the FTP server at the CXC Science Center
230-
230-           This server is cda.harvard.edu
230-
230-If your FTP client crashes or hangs shortly after login please try
230-using a dash (-) as the first character of your password. This will
230-turn off the informational messages that may be confusing your FTP
230-client.
230-
230-Publicly available files are in /pub
230-
230-Problems with this ftp site? Contact cxcftp@head-cfa.harvard.edu
230-
230- +-----+
230- | PLEASE NOTE:           (ChaSeR users only)
230- |
230- |   If the directory provided to you by ChaSeR appears
230- |   to be empty, this is a sign that your tar file is
230- |   not yet ready. Please try again in a little while.
230- |
230- |   If your directory seems to contain several tar
230- |   files, e.g., file.tar.0, file.tar.1, ...
230- |   retrieve all files, then untar as follows:
230- |       cat file.tar.* | tar xvf -
230- |   We are limiting the size of individual files to
230- |   less than 2 GB, but these files need to be
230- |   concatenated before submitting them to tar.
230- |
```

## Download Chandra Data from the Archive – CIAO 3.4

```
230- +-----+
230-
230 Guest login ok, access restrictions apply.

ftp> cd /pub/srftp/UoL7nEUa
250 CWD command successful.

ftp> binary
200 Type set to I.

ftp> get package_0_030616095338.tar
200 PORT command successful.
150 Opening BINARY mode data connection for package_0_030616095338.tar (65309184 bytes).
226 Transfer complete.
local: package_0_030616095338.tar remote: package_0_030616095338.tar
65309184 bytes received in 1.3e+02 seconds (484.05 Kbytes/s)

ftp> bye
221-You have transferred 65309184 bytes in 1 files.
221-Total traffic for this session was 65311557 bytes in 2 transfers.
221-Thank you for using the FTP service on cda.
221 Goodbye.
```

Unpack the tarfile:

```
unix% tar xvf package_0_030616095338.tar
x ., 0 bytes, 0 tape blocks
x ./1843, 0 bytes, 0 tape blocks
x ./1843/primary, 0 bytes, 0 tape blocks
x ./1843/primary/acisf01843N001_src2.fits.gz, 9665 bytes, 19 tape blocks
x ./1843/primary/acisf01843N001_evt2.fits.gz, 16289515 bytes, 31816 tape blocks
.
. (output omitted)
.
x ./1843/vv.1843.001.1.gz, 1985 bytes, 4 tape blocks
x ./1843/oif.fits, 25920 bytes, 51 tape blocks
x ./tar_030616095338.rpt, 66 bytes, 1 tape blocks

unix% ls
1843/                               tar_030616095338.rpt
package_0_030616095338.tar

unix% rm package_0_030616095338.tar
```

If you downloaded data from multiple ObsIds, a directory will be created for each of them.

The final step is to uncompress the files:

```
unix% cd 1843
unix% gunzip ./primary/*.gz
unix% gunzip ./secondary/*.gz

unix% ls *
oif.fits                vv.1843.001.1.gz

primary:
acisf01843N001_1_sum2.html      acisf01843N001_full_img2.jpg.log
acisf01843N001_1_sum2.html.log  acisf01843N001_src2.fits
acisf01843N001_2_sum2.html      acisf01843N001_src_img2.jpg
acisf01843N001_2_sum2.html.log  acisf01843N001_src_img2.jpg.log
acisf01843N001_3_sum2.html      acisf01843_000N001_bpix1.fits
```

## Download Chandra Data from the Archive – CIAO 3.4

```
acisf01843N001_3_sum2.html.log          orbitf082728300N001_eph1.fits
acisf01843N001_cntr_img2.fits          orbitf082987500N001_eph1.fits
acisf01843N001_cntr_img2.jpg          orbitf083333100N001_eph1.fits
acisf01843N001_cntr_img2.jpg.log      orbitf083592300N001_eph1.fits
acisf01843N001_evt2.fits              orbitf083937900N001_eph1.fits
acisf01843N001_full_img2.fits         orbitf084197100N001_eph1.fits
acisf01843N001_full_img2.jpg         pcadf084271087N001_asol1.fits

secondary:
acisf01843_000N001_aoff1.fits         acisf01843_000N001_soff1.fits
acisf01843_000N001_evt1.fits         acisf01843_000N001_stat1.fits
acisf01843_000N001flt1.fits         aspect/
acisf01843_000N001_msk1.fits         ephem/
acisf01843_000N001_mt11.fits

supporting:
```

---

## Summary

For a description of the files that you just downloaded, read the [Introduction to the Data Products thread](#).

---

## History

03 Jan 2005 reviewed for CIAO 3.2: no changes

01 Dec 2005 reviewed for CIAO 3.3: no changes

01 Dec 2006 reviewed for CIAO 3.4: no changes

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URL: <http://cxc.harvard.edu/ciao/threads/archivedownload/>

Last modified: 1 Dec 2006

Image 1: The ChaSeR GUI

The image shows a web-based interface titled "Chandra Observation Search". It is divided into several sections:

- Search Options:** Includes checkboxes for Instrument (HRC-I, HRC-S, ACIS-I, ACIS-S) and Grating (HETG, LETG, NONE). There is a "File Input" checkbox and a text field.
- Search Criteria:** Text fields for Target Name, PI Name, Proposal Number, Sequence Number, Obsid, and Exposure (ks). Time Range (yyyy-mm-dd hh:mm:ss) with Start and Stop fields.
- Filters:** Dropdown menus for Status (All), Type (All), and Category (All).
- Search By Position:** Input and Output sections. Both have dropdowns for Coordinate System (Equatorial J2000) and text fields for Equinox (J2000). Radio buttons allow selection between "hh mm ss.s/ +/-dd mm ss" (selected) and "decimal degrees".
- Position Fields:** Text fields for RA, DEC, and Radius (arcmin).
- Display Options:** Radio buttons for Table (selected) and File. A dropdown for Summary. An "Order by:" dropdown set to RA.
- Buttons:** Submit, Clear, Use SIMBAD, Help, and Exit.



Image 2: The completed search form

The screenshot shows a web browser window titled "Chandra Observation Search". The form is divided into several sections:

- Search Options:** Includes checkboxes for Instrument (HRC-I, HRC-S,  ACIS-I, ACIS-S) and Grating (HETG, LETG,  N). There is also a "File Input" checkbox and an empty text field.
- Search Criteria:** Text input fields for Target Name (G21.5-0.9), PI Name, Proposal Number, Sequence Number, Obsid, and Exposure (ks). A Time Range section with Start and Stop fields.
- Filters:** Three dropdown menus for Status (All), Type (All), and Category (All).
- Search By Position:** Input and Output sections. Both have a Coordinate System dropdown (Equatorial J2000) and an Equinox text field (J2000). Below each are radio buttons for "hh mm ss.s/ +/-dd mm ss" (selected) and "decimal degrees".
- Position Fields:** Text input fields for RA and DEC, and a "Radius (arcmin)" label.
- Display Options:** Radio buttons for "Table" (selected) and "File". A dropdown menu for "Summary" and an "Order by:" dropdown menu for "RA".
- Buttons:** A row of five buttons: Submit, Clear, Use SIMBAD, Help, and Exit.

Image 3: The Search Results window

**Chandra Search Results**

SEQ_NUM	OBSID	INSTR	GRAT	APP_E...	EXP_TI...	TARGET_NAME	PI_NAME	RA	
590173	1720	ACIS-I	NONE	8	7.64	G21.5-0.9 [Chip...	CALIBRATION	18 33 33.50	-10 3
590174	1721	ACIS-I	NONE	8	7.67	G21.5-0.9 [Chip...	CALIBRATION	18 33 33.50	-10 3
590175	1722	ACIS-I	NONE	8	7.67	G21.5-0.9 [Chip...	CALIBRATION	18 33 33.50	-10 3
590176	1723	ACIS-I	NONE	8	7.67	G21.5-0.9 [Chip...	CALIBRATION	18 33 33.50	-10 3
590177	1724	ACIS-I	NONE	8	7.67	G21.5-0.9 [Chip...	CALIBRATION	18 33 33.50	-10 3
590178	1725	ACIS-I	NONE	8	7.67	G21.5-0.9 [Chip...	CALIBRATION	18 33 33.50	-10 3
590179	1726	ACIS-I	NONE	8	7.67	G21.5-0.9 [Chip...	CALIBRATION	18 33 33.50	-10 3
590198	1772	ACIS-I	NONE	8	7.51	G21.5-0.9 [Chip...	CALIBRATION	18 33 33.50	-10 3
590199	1773	ACIS-I	NONE	8	7.32	G21.5-0.9 [Chip...	CALIBRATION	18 33 33.50	-10 3
590200	1774	ACIS-I	NONE	8	7.32	G21.5-0.9 [Chip...	CALIBRATION	18 33 33.50	-10 3
590201	1775	ACIS-I	NONE	8	7.32	G21.5-0.9 [Chip...	CALIBRATION	18 33 33.50	-10 3
590202	1776	ACIS-I	NONE	8	7.32	G21.5-0.9 [Chip...	CALIBRATION	18 33 33.50	-10 3
590203	1777	ACIS-I	NONE	8	7.32	G21.5-0.9 [Chip...	CALIBRATION	18 33 33.50	-10 3
590204	1778	ACIS-I	NONE	8	7.32	G21.5-0.9 [Chip...	CALIBRATION	18 33 33.50	-10 3
590205	1779	ACIS-I	NONE	8	7.32	G21.5-0.9 [Chip...	CALIBRATION	18 33 33.50	-10 3
590221	1841	ACIS-I	NONE	8	8.10	G21.5-0.9 [Chip...	CALIBRATION	18 33 33.50	-10 3
590222	1842	ACIS-I	NONE	8	7.50	G21.5-0.9 [Chip...	CALIBRATION	18 33 33.50	-10 3
590223	1843	ACIS-I	NONE	8	7.96	G21.5-0.9 [Chip...	CALIBRATION	18 33 33.50	-10 3
590254	2865	ACIS-I	NONE	10	10.11	G21.5-0.9 [Chip...	CALIBRATION	18 33 33.50	-10 3
590261	2872	ACIS-I	NONE	10	9.97	G21.5-0.9 [Chip...	CALIBRATION	18 33 33.50	-10 3
590272	3473	ACIS-I	NONE	10	9.67	G21.5-0.9 [Chip...	CALIBRATION	18 33 33.50	-10 3

Order By...   Detail   Iimages   Save   Return to query form   Help   Exit

Select Products

<b>Primary</b>	All products selected	<b>Add to retrieval list</b>
<b>Secondary</b>	All products selected	<b>View retrieval list</b>
<b>Supporting</b>	No products selected	

Total rows = 31

### Image 4: Details of the observation

Use the "Save" button to write this information to a text file.

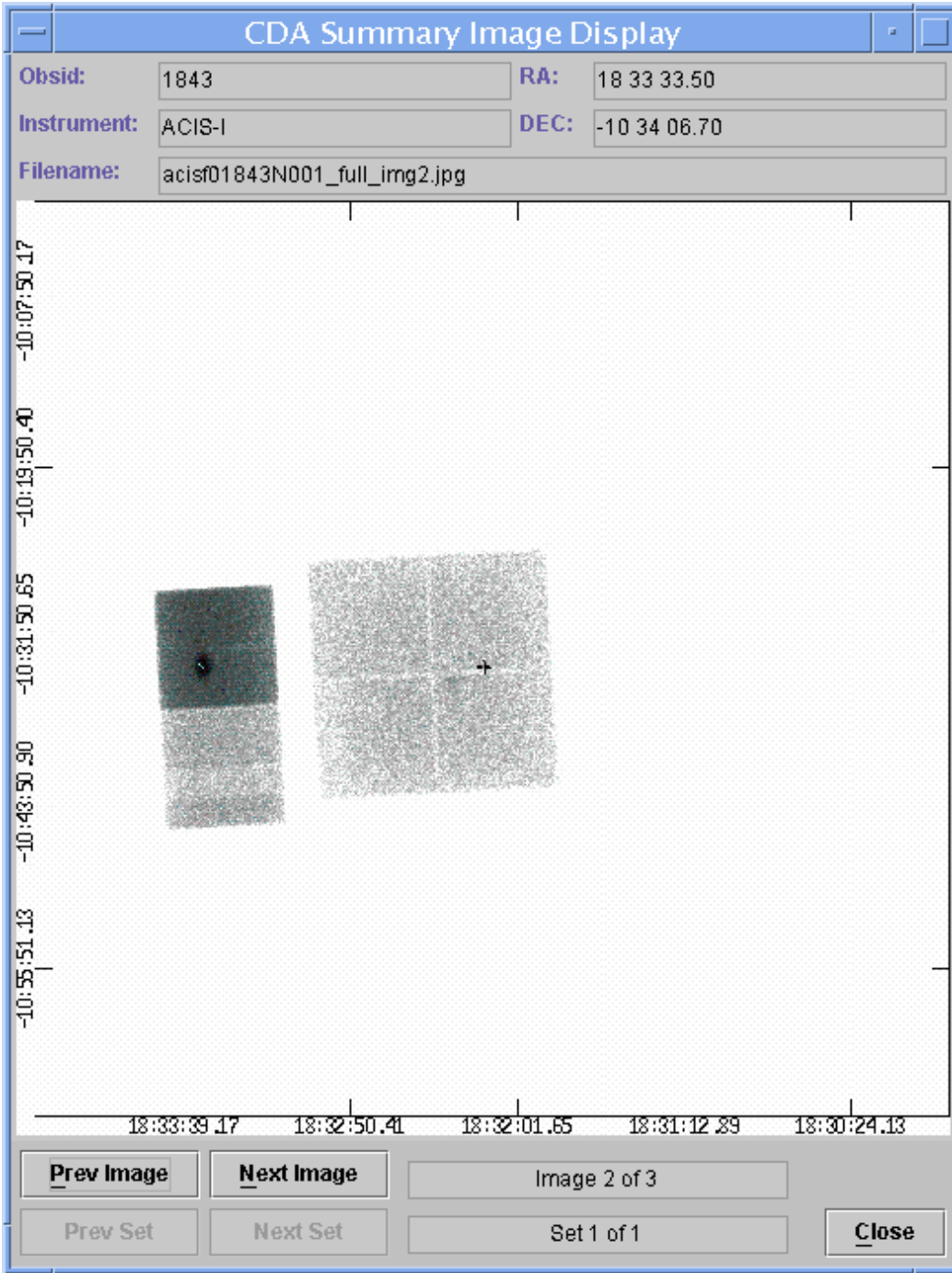
The screenshot shows a window titled "Observation Detail" with the following fields and values:

- Seq #: 590223
- Status: archived
- Obs\_ID: 1843
- Prop #: [empty]
- Target\_Name: G21.5-0.9 [Chip S3, T=120, Offsets=-1,20,-4]
- Instrument: ACIS-I
- Grating: NONE
- Type: CAL
- Start\_Da: [empty]
- Multiple Observatories: [empty]
- P.I.: CALIBRATION
- Observer: CALIBRATION
- Category: SN, SNR AND ISOLATED NS
- App\_Exp\_Time: 8.0
- Sched/Obs\_Time: 7.96
- RA: 18 33 33.50
- Dec: -10 34 06.70
- Equinox: J2000
- Coord System: Equatoria
- Offset: Y: -1.0, Z: 20.0, X-SIM-position: [empty], Z-SIM-position: 1
- Raster\_Scan: N
- SS\_Object: NONE
- Nudge: N
- Photometry y/n: N
- Vmag: [empty]
- Count\_Rate: 3.1
- 1st\_Ord\_Rate: [empty]
- Dither y/n: [empty]
- Roll y/n: N
- angle: [empty]
- tolerance: [empty]
- Roll 180: N
- uninterr: [empty]
- Window y/n: N
- Start Y: [empty] M: [empty] D: [empty] H: [empty] M: [empty]
- Stop Y: [empty] M: [empty] D: [empty] H: [empty] M: [empty]
- Monitor: N
- Number: [empty]
- Min int: [empty]
- Max int: [empty]
- Phase y/n: N
- epoch: [empty]
- period: [empty]
- Min: [empty] M: [empty]
- Max: [empty] M: [empty]

At the bottom of the window are four buttons: Next, Previous, Save, and Close.

Image 4: Details of the observation

**Image 5: The second of three preview images**



## Image 6: The Retrieval List

Since *all* the primary and secondary products were selected for retrieval, only the categories are listed. If specific files are chosen, they are listed individually.

Chandra Retrieve List

SEQ_NUM	OBSID	LEVEL	DETECTOR	DATA PRODUCT
590223	1843			
590223	1843			

Stage in anonymous ftp area  Download via application Place files in

**Image 7: Browse Results window**

The total file size of the package (115 MB in this example) is listed at the top of the screen. Use this information to make sure there is sufficient disk space to download and unpack the data.

List of files associated with package list (total: 114758221 bytes)

FILENAME	FILESIZE	TIMESTAMP	BECOMES PUBLIC ON
acisf01843N001_src2.fits	40320	2000-09-04 05:09:46	2000-09-12 00:00:00
acisf01843N001_evt2.fits	28635840	2000-09-04 05:09:46	2000-09-12 00:00:00
acisf01843N001_1_sum2.html	1443	2000-09-04 05:20:43	2000-09-12 00:00:00
acisf01843N001_2_sum2.html	3956	2000-09-04 05:20:43	2000-09-12 00:00:00
acisf01843N001_3_sum2.html	2877	2000-09-04 05:20:43	2000-09-12 00:00:00
acisf01843N001_cntr_img2.fits	4268160	2000-09-04 05:09:46	2000-09-12 00:00:00
acisf01843N001_full_img2.fits	4268160	2000-09-04 05:09:46	2000-09-12 00:00:00
acisf01843N001_src_img2.jpg	129960	2000-09-04 05:20:43	2000-09-12 00:00:00
acisf01843N001_1_sum2.html.log	218	2000-09-04 05:20:43	2000-09-12 00:00:00
acisf01843N001_2_sum2.html.log	218	2000-09-04 05:20:43	2000-09-12 00:00:00
acisf01843N001_3_sum2.html.log	218	2000-09-04 05:20:43	2000-09-12 00:00:00
acisf01843N001_cntr_img2.jpg	767795	2000-09-04 05:20:43	2000-09-12 00:00:00
acisf01843N001_full_img2.jpg	128322	2000-09-04 05:20:43	2000-09-12 00:00:00
acisf01843N001_src_img2.jpg.log	218	2000-09-04 05:20:43	2000-09-12 00:00:00
acisf01843N001_cntr_img2.jpg.log	218	2000-09-04 05:20:43	2000-09-12 00:00:00
acisf01843N001_full_img2.jpg.log	218	2000-09-04 05:20:43	2000-09-12 00:00:00
pcadf084271087N001_asol1.fits	4550400	2000-09-04 03:36:44	
acisf01843_000N001_bpix1.fits	109440	2000-09-04 03:54:53	
orbitf082728300N001_eph1.fits	336960	2000-09-13 21:07:53	
orbitf082987500N001_eph1.fits	336960	2000-09-19 18:26:51	

Close

### Image 8: Completed download screen

The location of the logfile (chaser . log) and the ftp directory in which the tarfile was placed are both given at the bottom of the screen.

Chandra Retrieve List

SEQ_NUM	OBSID	LEVEL	DETECTOR	DATA PRODUCT	PROD
590223	1843				priman
590223	1843				second

Delete selected

Delete all

Login

Return to search results

Help

Exit

Browse selected products

Retrieve selected products

Cancel Browse/Retrieve

Stage in anonymous ftp area   
  Download via application   
 Place files in

File(s) package\_0\_030616095338.tar.\* will be available at cda.harvard.edu:/pub/srftp/UoL7nEUa

Logged in file /home/egalle/chaser.log

Download Chandra Data from the Archive – CIAO 3.4