

# Observation Index Files

## SDS-13.0

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# 1 Observation Index File

The OIF is a file that will be used by GUI level software to map conceptual components of an observation (image, spectrum, lightcurve, aspect solution) to specific file names.

The revised OIF design will consist of a single table with at least three columns denoting the ‘file group’, (a FirstLook concept), the file’s conceptual name or Observation Component (CONTENT), and the actual filename.

This file is associated with an ‘observation’ as received by a user (either a principal investigator or an archival user) and should reflect the actual data as distributed.

We came up with the following scheme for creating the OIF:

A standard observation index configuration file, the OICF, will contain columns ObsGroup, CONTENT, and DistClass. The DistClass column will be a 12-byte (TBR) character column indicating which level of standard distribution the file is part of. Thus, EVT1 would have a DistClass of ‘Standard’, while ACACAL might have a DistClass of ‘OnRequest’. (There may a number of different values of DistClass).

We need to spec and write a tool, OIFCreate, which will read in the OICF and create an OIF. The OIF is a copy of the OICF but with an extra column called Filename, and with generic entries expanded (see below). Filename will be initialized to null or blank; OIFCreate will look at each file in a directory, read its CONTENT and other relevant keywords to determine its ObsCpt, and add its name to the relevant row of the Filename column.

## 2 Auxiliary columns

Some files are not unique in content, e.g. there may be many ‘BIAS’ files, one for each ACIS chip and science run in the observation. So we need for OIFCreate to know that the single ‘BIAS’ entry in the OICF needs to be replaced with multiple entries in the OIF. This could be achieved by adding extra columns to the OICF of OBL\_NUM, SRC\_NUM, SR\_NUM, CCD\_ID which would have null values when not needed and are initialized to 0 when they are needed. So for instance, when OIFCreate finds a file acis0013.sr2.1 with CONTENT = ‘BIAS’, it looks in OICF, and finds that the like with CONTENT = ‘BIAS’ there also has SR\_NUM = 0 and CCD\_ID = 0, indicating that it should look also for these two keywords and make an OIF entry replacing the zeroes with the values of those keywords from the (ASC principal HDU) header of acis0013.sr2.1.

## 3 Target of the Observation

We can filter on OIF columns to, for instance, pull out all the files relevant to a particular source. We’d only want these columns to be there when appropriate. FirstLook would key off SRC\_NUM = 1 to pick its favorite source, or else we’d need to put a TARG\_NUM keyword somewhere to denote which SRC\_NUM was the target. How will we figure out what the target was? Users propose with

a target RA and DEC, plus offsets for the instrument. F. Seward agrees in principle that both the **nominal pointing direction** and the **target position** should be available in the observation catalog. We should probably center the sky coordinate plane on the nominal pointing direction, and call that direction RA\_NOM and DEC\_NOM. The target position should be RA\_OBJ and DEC\_OBJ. For survey fields, RA\_OBJ and DEC\_OBJ may be omitted, but if they are there but meaningless it's not a disaster.

## 4 Relation to Data Distribution

This tool does not depend on the actual choice of distribution, and so can be run at the end of the standard processing pipelines.

At distribution time, we can then filter the OIF on the desired value of the column 'DistClass' to obtain the list of files which will actually be distributed. This filtered OIF will be added to the distribution. It could also be used as the source of the information used to do the actual packaging.

Unresolved questions:

- - What are the current plans for doing the distribution packaging? Will this scheme fit in to them?
- - What other keywords apart from CONTENT are needed to make the OIF? Are we making these keywords right now?