The SCP Database

What is the Database?

- *Strictly speaking, it's how the SCP stores information it needs to find SNe*
- *It is NOT intended to do high precision photometry*
- *I will expand this lecture to cover code*

Why the Database

- *Image headers are very irregular*
- *Allows us to guarantee certain info is available*
- *The filesystem makes a poor database*

Tables in the database

- *Images*
- *Transformations between images*
- *Candidates*
- *Object information (not really in db)*
- *sntrak*
- *spectra*
- *other stuff (filelocks, subng, etc.)*

Different code bases

- *Deepidl (IDL code)*
  - *Many routines are wrappers around c routines (kept in deepsrc/idlcsrc)*
- *Deeplib (C++ (mostly) code)*
  - *Under development*
    - *cvs -d $dh/master checkout deeplib*

Anatomy of an image name

apr122002cfht12kk9703cln.fts

- *Date*
- *Telescope/Detector*
- *Chip ID (optional)*
- *Type of image (image extension)*

Image extensions

- *Several different types of images*
- *Surfacing removes background gradient*
- *Coadded images are used to find SNe*

cln/rdcd	Normal
csg/surf	Surfaced
com	compressed
sum	coadded
cry	cosmic ray cleaned

Guarantees about images

- *Read DRED (http://panisse.lbl.gov/groupwork/documentation/dred.pdf -- not totally current)*
- *Flatfielded, bias subtracted, etc.*
- *Gain is known (multiplied in when read by our code)*
- *We know how to get it into approximately N down, East left orientation*
- *image mode and standard deviation are known*
- *RA and DEC are known approximately, as is approximate pixel scale*
- *Date is known*

How to Load an image

- *Done with ltelescope*
- *Has to know where to look for information*
  - *In header*
  - *Supplied directly by user*
- *Renames images and loads info into db tables, but doesn't move images*

Working with images in IDL

- *read with freadimage2*
- *find objects and properties with freduceimage2*
  - *finds objects: isofind (must be surfaced with edgsurface)*
  - *aperture photometry: apercent*
  - *object id: fcatalog (sucks)*
- *Info read in as IDL structures (help /str)*

Transformations

- *Transformations are parameterized by trorder*
- *Transformations between different images stored in transformations table*
- *Transformations to USNO/ APM catalog are in images table and are used for astrometry*

0-4	Inter-image polynomials
100-104	HST WFPC2 transforms
200-204	APM
300-304	Inverse APM

Inter-Image Transformations from IDL

- *Info is in trns_struct*
- *Read with readtransimages*
- *Apply to positions with transpho2*
- *Apply to images with moveimage2 or moveimagespline2*
  - *moveimage preserves flux but blurs*
  - *moveimagespline prevents blurring, but doesn't preserve flux*
- *Calculate with ftransimages2*
- *evaluate with ftranseval2*

APM/USNO Transforms

- *Info stored in ims_struct from image table*
- *Calculated by apmmatch2 (automatically called from freduceimage2)*
- *Evaluate with apmeval2*
- *Make fake USNO images with getapmcatalog/makeapmimage*

Working with images in Deeplib

- *Mostly work the same way as the IDL routines*
- *Most have some additional features*
- *Still under development for upcoming HST search*

Getting more info

- *panisse.lbl.gov/groupwork/documentation*
- *structure fields in documentation/dbidl.html*