

# The DES Science Release Process

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# Overview

- 
- **What is a Science Release?**
  - **What have we learned from SVA1?**
  - **What infrastructure do we have?**
  - **What infrastructure do we need?**
  - **Discussion/Brainstorming...**

# What is a Science Release?

- **DESDM production currently culminates in an “Annual” release (i.e., SVA1, Y1A1, etc.)**
- **Annual releases are intended to be the basis of data supported for publication.**
- **These releases represent a snapshot of the state-of-the-art DESDM processing software when the release processing began (months between start and finish).**
- **“A2” release may occur; however, current limitations in DESDM computing/human power make this difficult.**

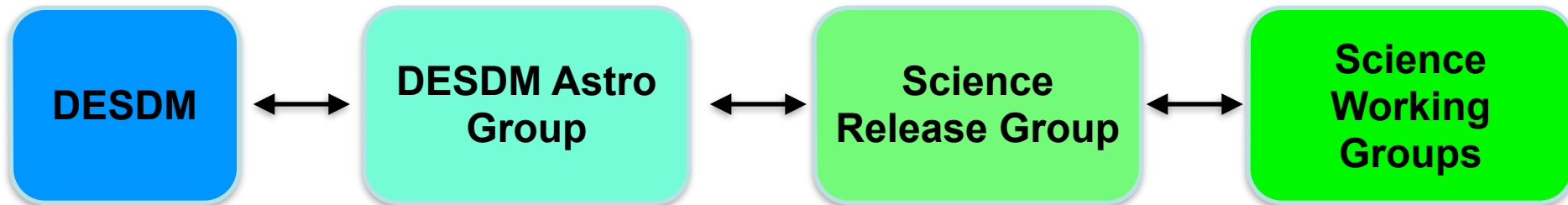
# What is a Science Release?

- **Our knowledge of DECam and the DES data are constantly improving.**
  - **We want this knowledge to diffuse between Science Working Groups**
  - **We want to feed this knowledge back to DESDM**
  - **We want to be able to act on this knowledge on timescales shorter than a year**
  - **We would like to quantify this knowledge (i.e., the systematics sections of science papers)**
- **The ultimate goal of the SR process is to make itself obsolete. Annual releases should eventually do everything!**

# The Information “Super-Highway”

*More  
DM-like*

*More  
Astro-like*



Telecon: Weekly, Wednesday 9AM  
Email: [des-astro@cosmology.illinois.edu](mailto:des-astro@cosmology.illinois.edu)

Telecon: Bi-Weekly, Monday 10AM  
Email: [des-sci-release@fnal.gov](mailto:des-sci-release@fnal.gov)

# What is a Science Release?

- **A Science Release process consists of:**
  - **Sub-Selection:** Creation of “official” subsets of an Annual release suitable for DES science (e.g. SVA1 Gold).
  - **Value-Added Catalogs:** To help coordinate the production and ingestion of high-level VACs (e.g., star/galaxy classification, photo-z, etc.)
  - **Ancillary Files:** To coordinate production of other ancillary files necessary for DES science (systematics maps, healpix footprints, etc.)
  - **Validation:** To validate Annual release products with respect to DES science (e.g., photometry, de-reddening, etc.)
  - **Selection Functions:** To coordinate the production of selection functions (e.g., what is the probability of an object making it into the SR catalog)

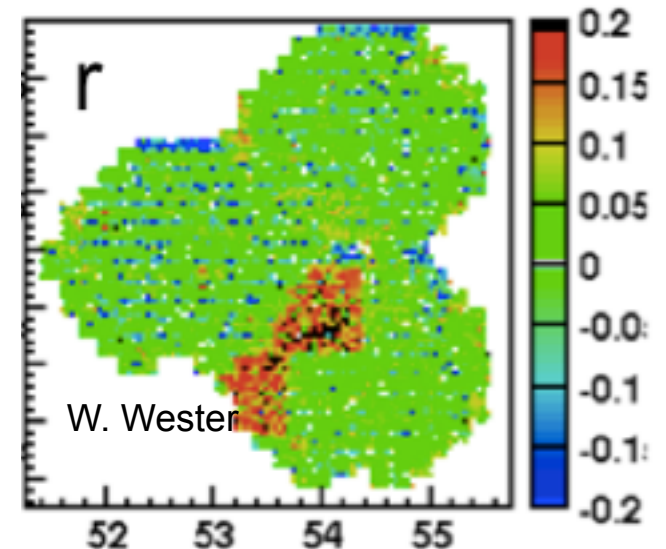
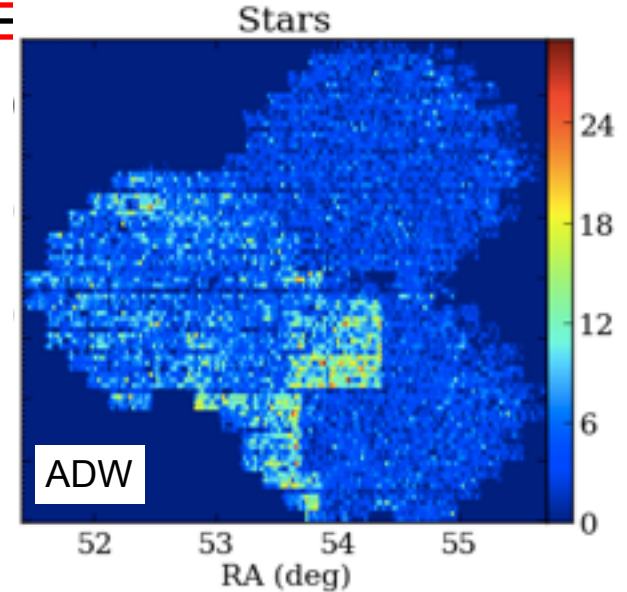
# What is a Science Release?

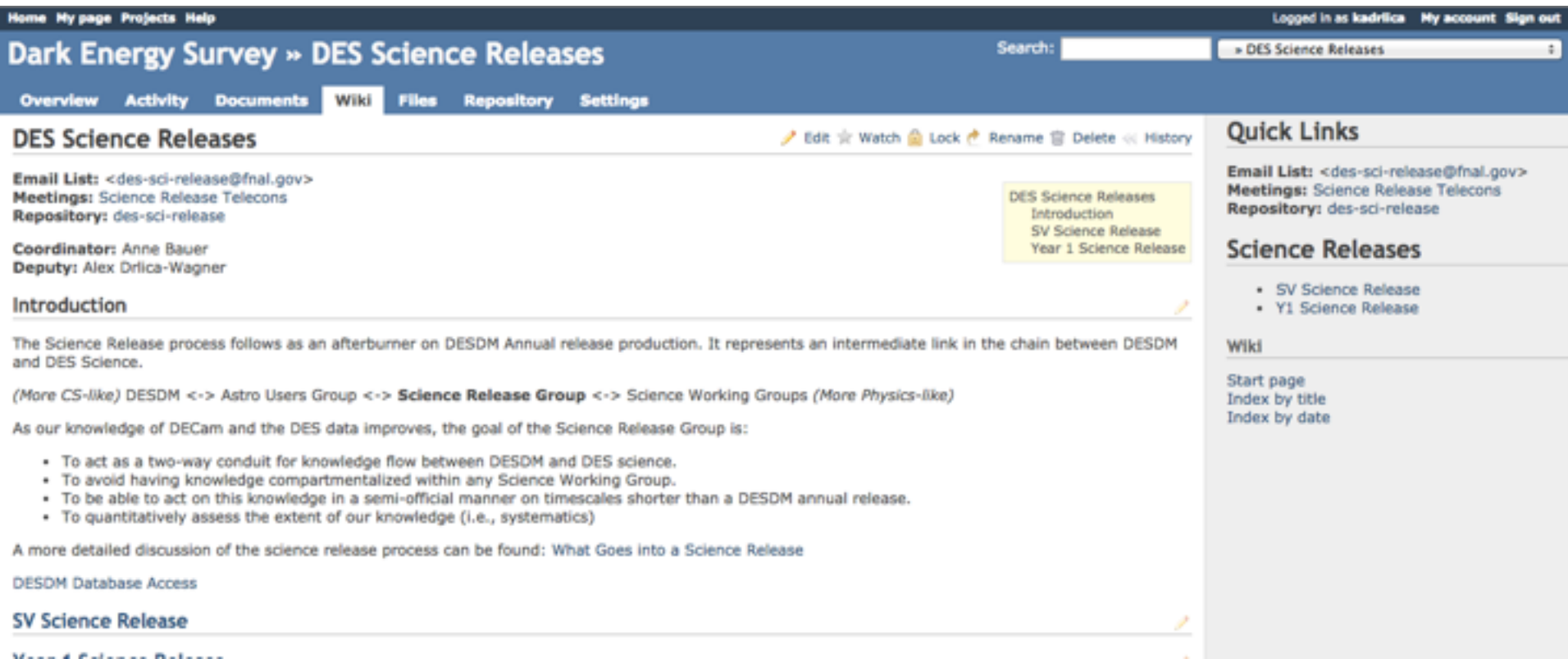
- To accomplish these goals we have started the Science Release Group.
- A natural evolution of the SVA1 working group (coordinated by E. Rykoff).
- Wiki Page: <https://cdcv.s.fnal.gov/redmine/projects/des-sci-release/wiki>
- Email List: [des-sci-release@fnal.gov](mailto:des-sci-release@fnal.gov)
- Meetings: Bi-weekly on Mondays alternating with the all-DES telecons.
- Repository: <https://cdcv.s.fnal.gov/redmine/projects/des-sci-release/repository>

- **“Gold” catalog sub-selection is necessary**
- **Star-galaxy separation (E. Rykoff, N. Sevilla, et al.)**
  - **No matter how modest something is, people will use it if available**
- **Healpix mangle masks (A. Benoit-Levy, et al.; now produced by DESDM)**
- **Healpix systematics mask (B. Leistedt, et al.)**
- **Healpix limiting magnitudes**
- **Collections of photo-z (M. Carrasco, H. Lin, et al.)**



- An Example: PSF modeling with COADDs is hard.
  - Discontinuities in depth cause variations on scales that PSFex cannot handle
  - Causes special trouble with star/galaxy classification
  - Using single-epoch quantities will help
  - Eventually may need multi-epoch fits.





The screenshot shows a Redmine Wiki page titled "Dark Energy Survey » DES Science Releases". The page is viewed by a user named "kadrlica". The page content includes:

- Navigation:** Home, My page, Projects, Help. Search bar with "DES Science Releases" entered.
- Page Actions:** Edit, Watch, Lock, Rename, Delete, History.
- Metadata:** Email List: <des-sci-release@fnal.gov>, Meetings: Science Release Telecons, Repository: des-sci-release.
- Coordinator:** Anne Bauer, Deputy: Alex Drlica-Wagner.
- Introduction:** The Science Release process follows as an afterburner on DESDM Annual release production. It represents an intermediate link in the chain between DESDM and DES Science. (More CS-like) DESDM <-> Astro Users Group <-> **Science Release Group** <-> Science Working Groups (More Physics-like). As our knowledge of DECam and the DES data improves, the goal of the Science Release Group is:
  - To act as a two-way conduit for knowledge flow between DESDM and DES science.
  - To avoid having knowledge compartmentalized within any Science Working Group.
  - To be able to act on this knowledge in a semi-official manner on timescales shorter than a DESDM annual release.
  - To quantitatively assess the extent of our knowledge (i.e., systematics)A more detailed discussion of the science release process can be found: What Goes into a Science Release.
- Links:** DESDM Database Access, SV Science Release.
- Quick Links:** Email List, Meetings, Repository, Science Releases (SV Science Release, Y1 Science Release), Wiki (Start page, Index by title, Index by date).

- Redmine Wiki & ReadyTalk Telecons
- Fermilab email list

Home My page Projects Help Logged in as kadrlica My account Sign out

## Dark Energy Survey » DES Science Releases

Search:  » DES Science Releases

Overview Activity Documents Wiki Files **Repository** Settings

### root

Statistics | Revision:

Name	Size	Revision	Age	Author	Comment
papers		5	4 days	Alex Drlica-Wagner	Added papers and scratch directories; set .svni...
release		6	about 7 hours	Alex Drlica-Wagner	Adding README and release directory
scratch		5	4 days	Alex Drlica-Wagner	Added papers and scratch directories; set .svni...
users		5	4 days	Alex Drlica-Wagner	Added papers and scratch directories; set .svni...
README.txt	1.7 kB	6	about 7 hours	Alex Drlica-Wagner	Adding README and release directory

### Latest revisions

#	Date	Author	Comment
6	12/08/2014 10:46 am	Alex Drlica-Wagner	Adding README and release directory
5	12/04/2014 01:39 pm	Alex Drlica-Wagner	Added papers and scratch directories; set .svnignore on kadrlica
4	12/04/2014 01:27 pm	Alex Drlica-Wagner	Adding directories for Anne and Eli
3	12/04/2014 01:22 pm	Alex Drlica-Wagner	Initial users directory and example
2	12/04/2014 01:05 pm	Alex Drlica-Wagner	setup
1	12/04/2014 01:03 pm	Alex Drlica-Wagner	setup

### Repositories

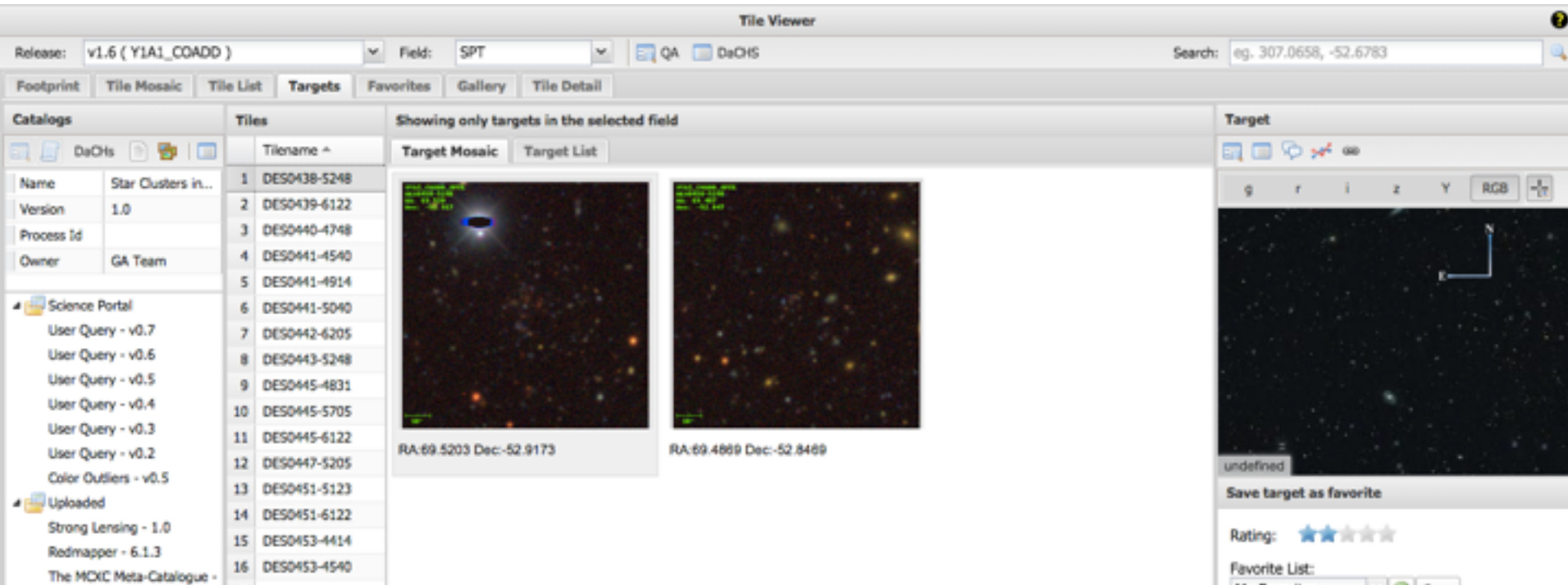
Main repository  
sva1-paper  
svn-test

- **Redmine Code Repository: For collecting code necessary to generate a Science Release**
- **Hopefully easily collaborative.**

# Infrastructure: Needed

- **Mechanism to work with the DESDM database.**
  - **trivialAccess not sufficient (not intended to be)**
  - **SVA1 Gold was distributed as flat FITS files**
  - **Non-optimal due to replication of data, non-standardization, difficult to extend, etc.**
  - **Improved tools necessary for uploading/downloading from DESDM**
- **Felipe should be talking about this next...**

- Visual inspection tools
  - Need to be able to easily inspect and understand regions with “issues”.
  - Cutouts are coming from the Brazil Portal!



The screenshot shows the 'Tile Viewer' web application interface. At the top, there are dropdown menus for 'Release' (v1.6 (Y1A1\_COADD)) and 'Field' (SPT), along with search and filter buttons (QA, DaOS) and a search bar containing 'eg. 307.0658, -52.6783'. Below this is a navigation bar with tabs: Footprint, Tile Mosaic, Tile List, Targets, Favorites, Gallery, and Tile Detail. The main content area is divided into several panels:

- Catalogs:** A sidebar on the left showing a tree view of data sources, including 'Science Portal' (with various 'User Query' versions) and 'Uploaded' (with 'Strong Lensing', 'Redmapper', and 'The MOC Meta-Catalogue').
- Tiles:** A central table listing 16 tiles with their IDs (e.g., DES0438-5248, DES0439-6122, etc.).
- Target Mosaic:** Two side-by-side astronomical images showing star fields. The left image is labeled 'RA:69.5203 Dec:-52.9173' and the right is 'RA:69.4869 Dec:-52.8469'. Both images have green text overlays.
- Target:** A panel on the right showing a zoomed-in view of a target star field with a coordinate system (g, r, i, z, Y) and 'RCB' label.

# Discussion

- **The Science Release process is driven by science**
  - **If you find something strange when doing your analysis, share it with the group.**
- **So far, focused mostly on wide-field survey:**
  - **How can we interface with SN?**
  - **Difference imaging in general?**
- **So far, focused mostly on COADDs:**
  - **Is this a place to interface with multi-epoch fits?**
  - **Interesting to many science topics, knowledge currently condensed in WL (WL-test) WG.**



# Brainstorming

