# Sim-Obs Interface: Experience with DES and Galaxy Clusters

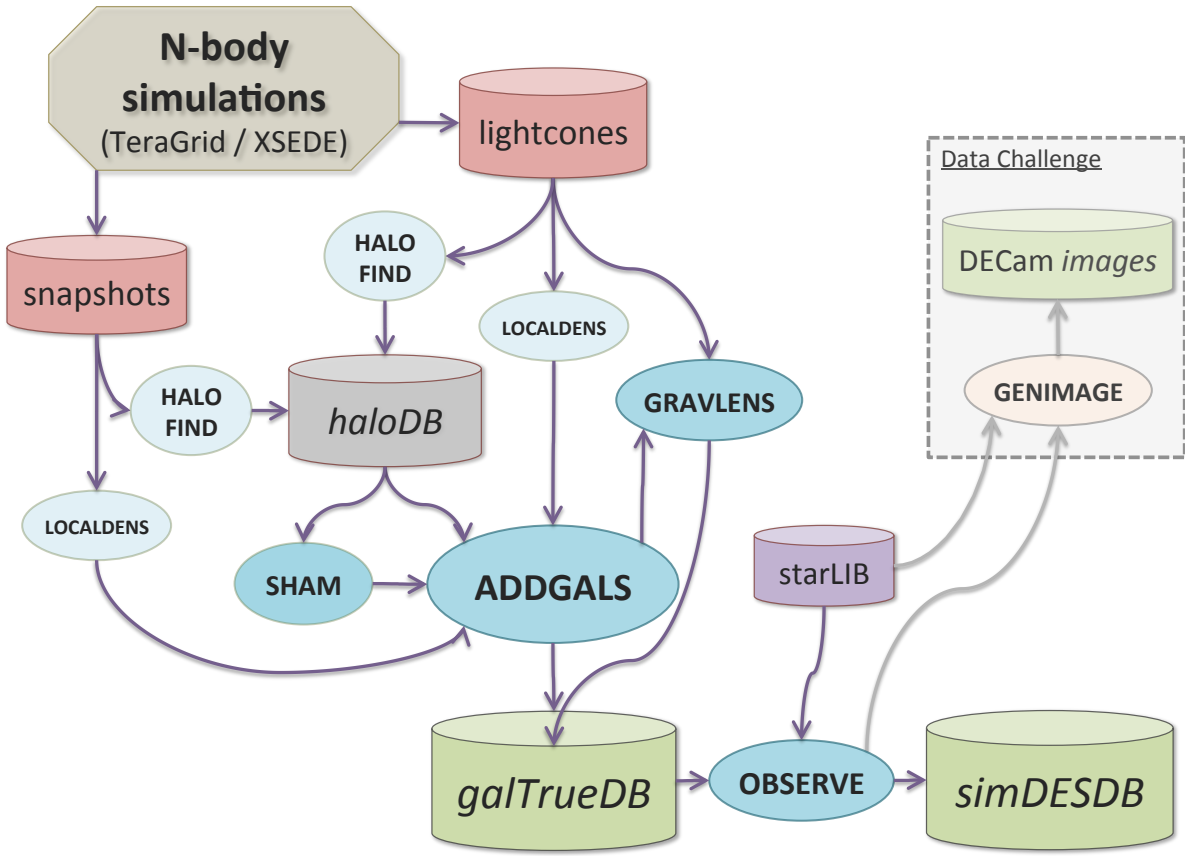
Gus Evrard (U. Michigan)

# philosophical overview

| DES needs: | Simulations offer: |
| --- | --- |
| 1) Trusted evidence | End-to-end tests of image data processing<br>*Data Challenge process – B. Yanny* |
| 2) Framework for analyzing the evidence | Science processing validation via realistic catalog-level expectations (aka, good *`mocks'*)<br>*BCC process – R. Wechsler*<br><br>Means to estimate (correlated) errors in regime of non-linear clustering<br>*TBD process – Wed. pm Sim parallel* |

# Cosmic Sky Machine (COSMA)

DARK ENERGY SURVEY




Not centrally funded activity:

NSF SI2 SSI (June 2010) ✗

$3.4M / 4 years, 5 co-PI's

NSF AAG EXC (Nov 2010) ✗

$2.2M / 4 years, 5 co-PI's

NSF SI2 SSE (July 2011) ?

$1.0M / 3 years, 2 co-PI's

Requested funds to:

- develop workflows,
- embed control within an extended Brazil portal,
- run workshops,
- build IVOA Sim standards

# BCC data flow

# DES SimWG experience

DARK ENERGY SURVEY

- rely on volunteer efforts by a core group of "heros":

  M. Busha (Zurich postdoc, formerly Stanford)

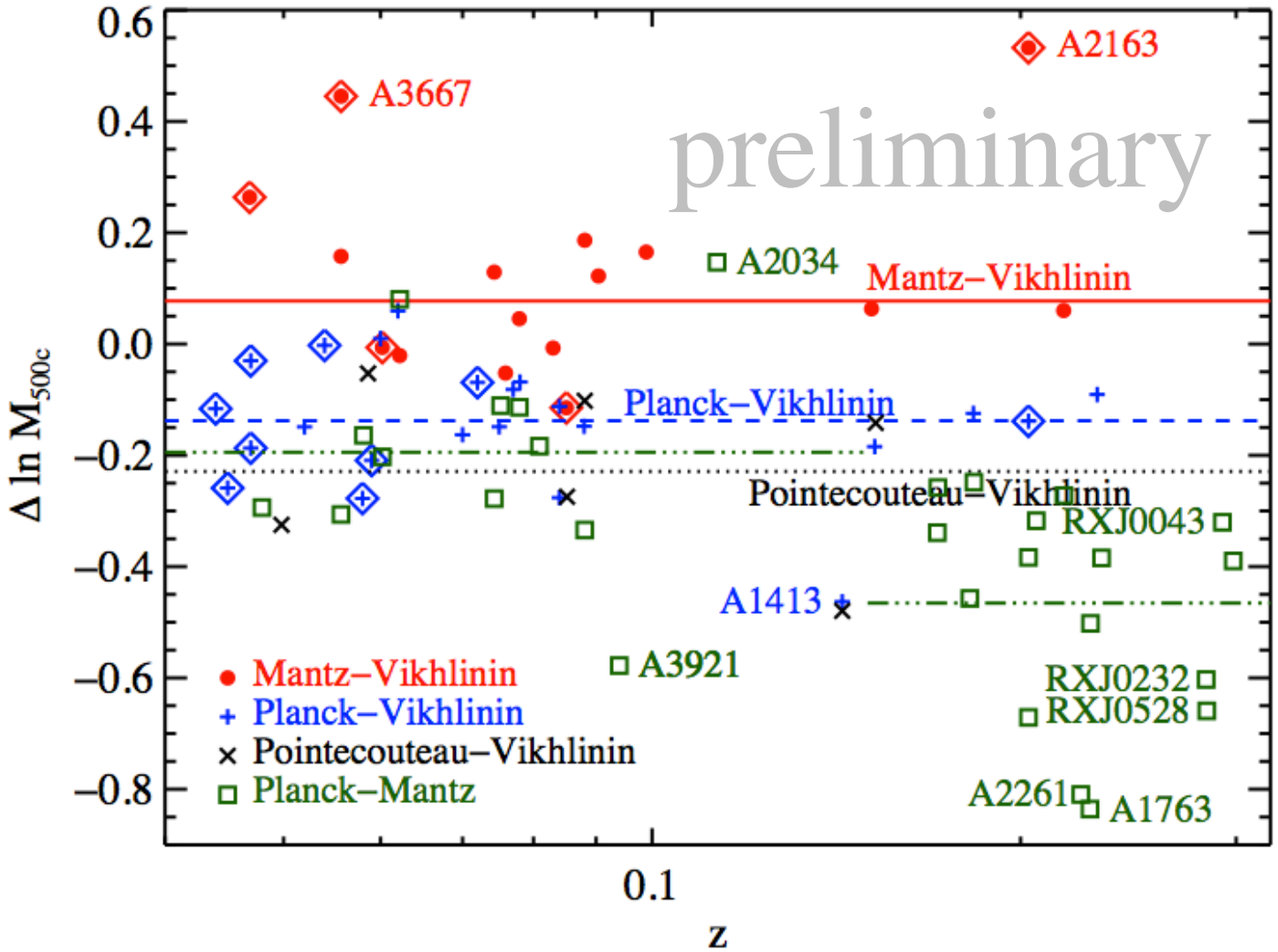
  M. Becker (Chicago grad student)

  B. Erickson (Michigan grad student)

- recently received AUSS support from XSEDE to
  - improve post-processing code performance
  - develop post-processing workflows with provenance, fault tolerance
  - embed within grid-enabled portal

- slow, but steady, progress
  - improved code development methodology would help (but personnel-limited)

# Galaxy clusters: need for standards




Mass estimate differences for clusters in common among 3 observational groups

Rozo et al in prep.

# `Santa Barbara cluster' standards movement

http://gclusters11.wikispaces.com/Santa+Barbara+Cluster+Standards

★ Santa Barbara Cluster Standards | PAGE | DISCUSSION | HISTORY | NOTIFY ME | EDIT

New Page
Recent Changes
Manage Wiki
Search

Home

Santa Barbara Cluster Standards Project

Talks & Discussion Schedule
Online talks
Reference Material
Big Questions in Cluster Research
Program Wrap Up Discussion
Topical Discussion Groups

- Nonthermal
- Stellar Content
- Planck SZ-Optical scaling relations

## Santa Barbara Cluster Standards Project

Rationale

Instructions

### Contributors

Dick Bond, Megan Donahue, Gus Evrard, Andrey Kravtsov, Surhud More, Eduardo Rozo, Mark Voit

### 1. Mass Definition Standards

1.1 Friends-of-Friends Masses

1.2 Spherical-Overdensity Masses

1.3 Algorithms for Centering and Mass Assignment of Spherical Halos

1.4 Mass-Definition References

### 2. X-ray Property Standards