ASVO TAO THEORETICAL ASTROPHYSICAL OBSERVATORY

Darren Croton

HOME | NEW CATALOGUE | PROJECTS | HISTORY | ADMIN | DOCUMENTATION | SUPPORT | ASVO NODES

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ASVO

Theoretical Astrophysical Observatory

Queryable Data from multiple popular cosmological simulations and galaxy formation models **which can be funneled through higher-level modules to build custom mock galaxy catalogues and images.**

Manodeep Sinha

DATA | QUERY | MODULES | MOCK

GET STARTED

Ray Seikel

* TAO is accessible from anywhere you can access the internet.

ACKNOWLEDGEMENTS

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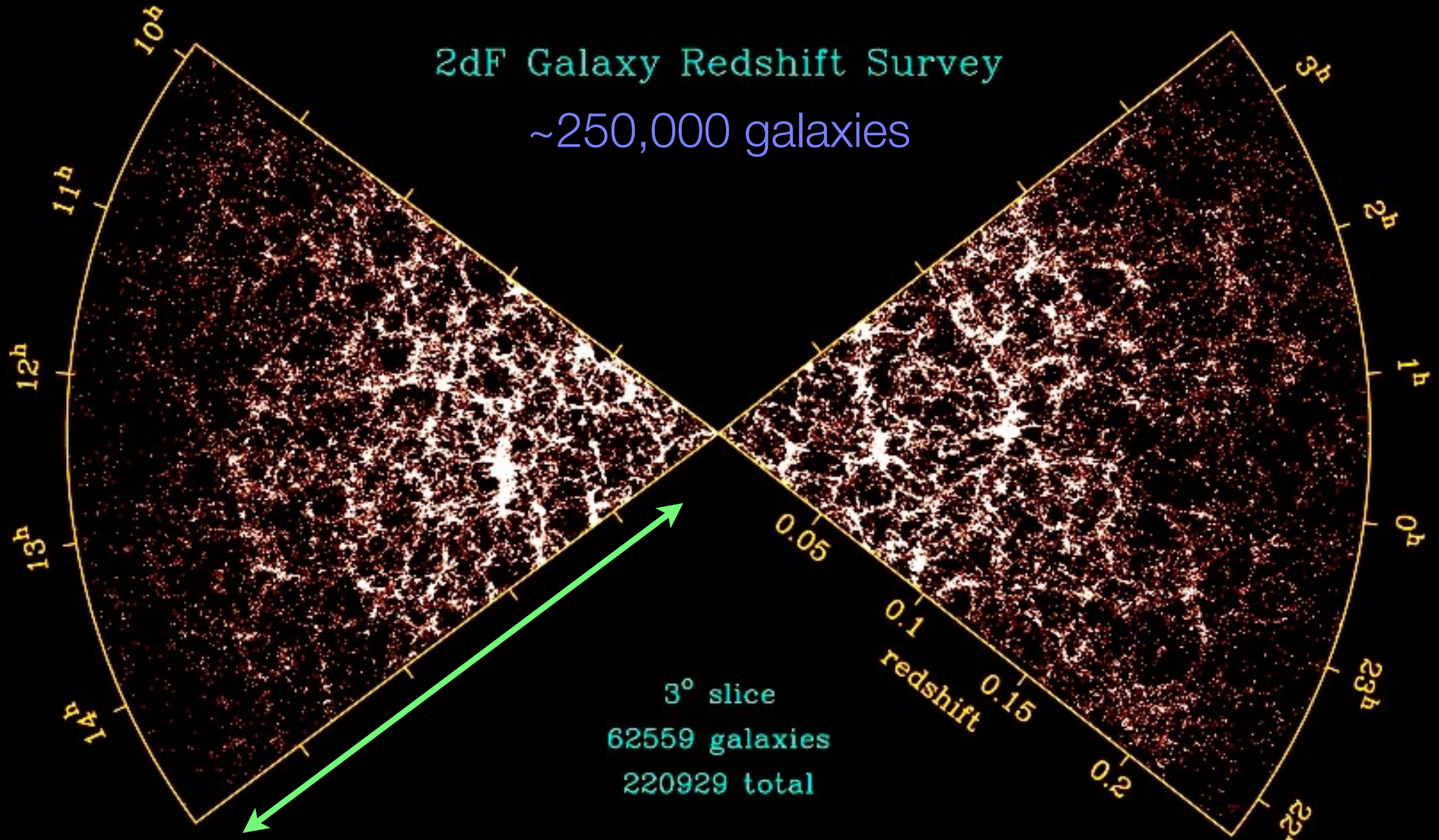
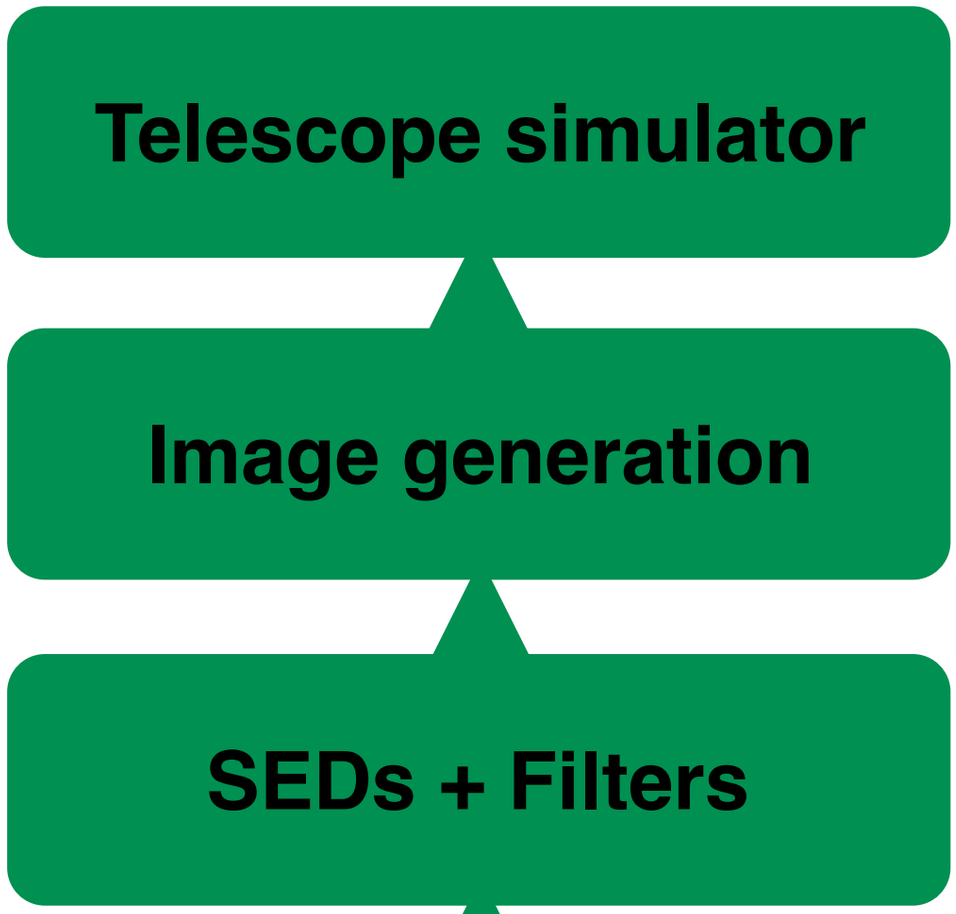
Astronomy Australia Ltd. | nectar | SWINBURNE UNIVERSITY OF TECHNOLOGY | Australian Government | ands AUSTRALIAN NATIONAL DATA SERVICE

https://tao.asvo.org.au

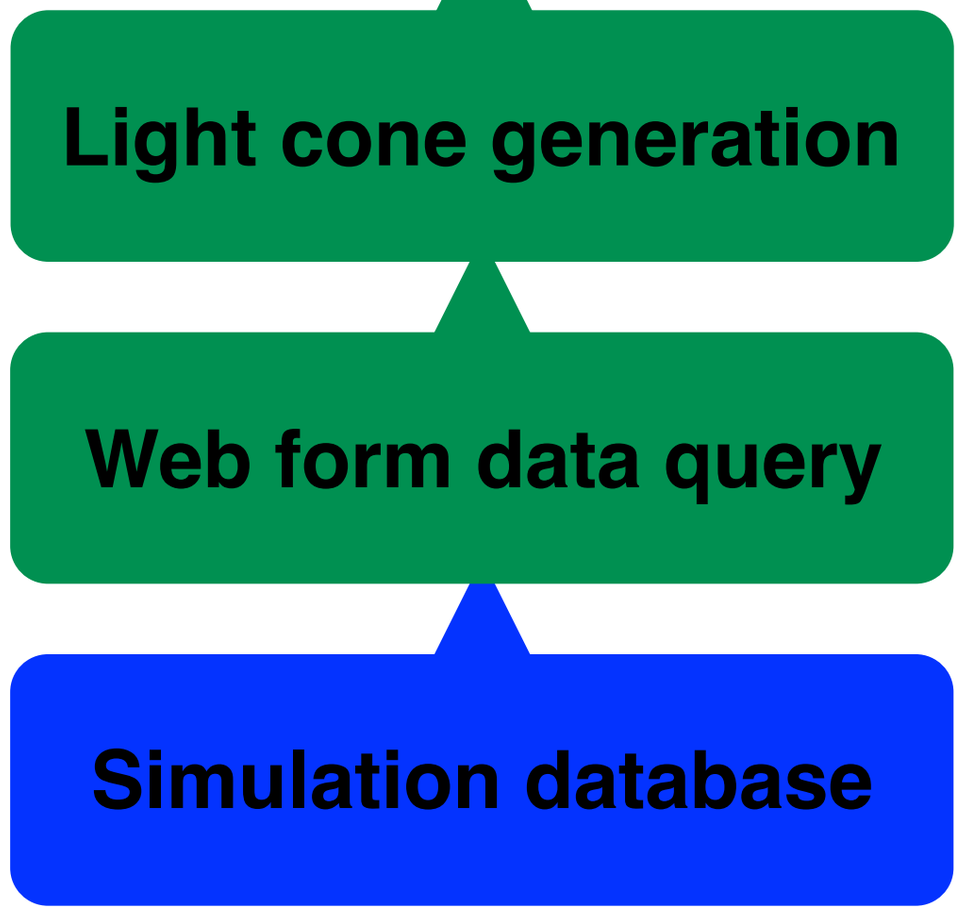


~3 billion light years

TAO



Traditional



Developer: Makes a simple, intuitive UI
Users

New Catalogue

START — GENERAL PROPERTIES — SPECTRAL ENERGY DISTRIBUTION — SELECTION — OUTPUT FORMAT — SUMMARY AND SUBMIT

< PREVIOUS NEXT >

Data Selection

Catalogue type *

Box

Simulation: Millennium

Galaxy Model: SAGE

Version: 2016

Box size (Mpc/h)*: 500

Redshift*: 0.0000

Output properties*

Available

TYPE TO FILTER

- **Galaxy Masses**
  - Total Stellar Mass
  - Bulge Stellar Mass
  - Black Hole Mass
  - Cold Gas Mass
  - Hot Gas Mass
  - Ejected Gas Mass
  - Intracluster Stars Mass
  - Metals Total Stellar Mass
  - Metals Bulge Mass
  - Metals Cold Gas Mass

Selected

TYPE TO FILTER

INFOBAR

Selected simulation details
Millennium

Cosmology
WMAP-1

Cosmological parameters
Ωm = 0.25, ΩΛ = 0.75, Ωb = 0.045, σ8 = 0.9, h = 0.73, n = 1

Box size
500 Mpc/h

Mass resolution
8.6x10^8 Msun/h

Force resolution
5 kpc/h

Paper
Springel et al. 2005

External link
The German Astrophysical Virtual Observatory

Selected galaxy model details
SAGE

The Semi-Analytic Galaxy Evolution (SAGE) model used in this work is a publicly available codebase that runs on the dark matter halo trees of a cosmological N-body simulation.

Paper

Viewing Catalogue 3262

DELETE IMAGE CONE REQUEST DOI LOAD AS TEMPLATE

SUMMARY

STATUS

Disk Usage	783MB
Number of Galaxies	1394191
Status	Completed

Description CLICK TO EDIT

SDSS preset cone

Projects >>

GENERAL PROPERTIES

Catalogue Geometry	Light-Cone
Dataset	Millennium / SAGE / 2016 >>
Dimensions	0° < RA < 90° 0° < Dec < 60° Redshift: 0 ≤ z ≤ 0.15
Number of Light-Cones	1 random light-cone
Output Properties	52 properties selected >>

INFOBAR

DOWNLOAD

TXT summary.txt

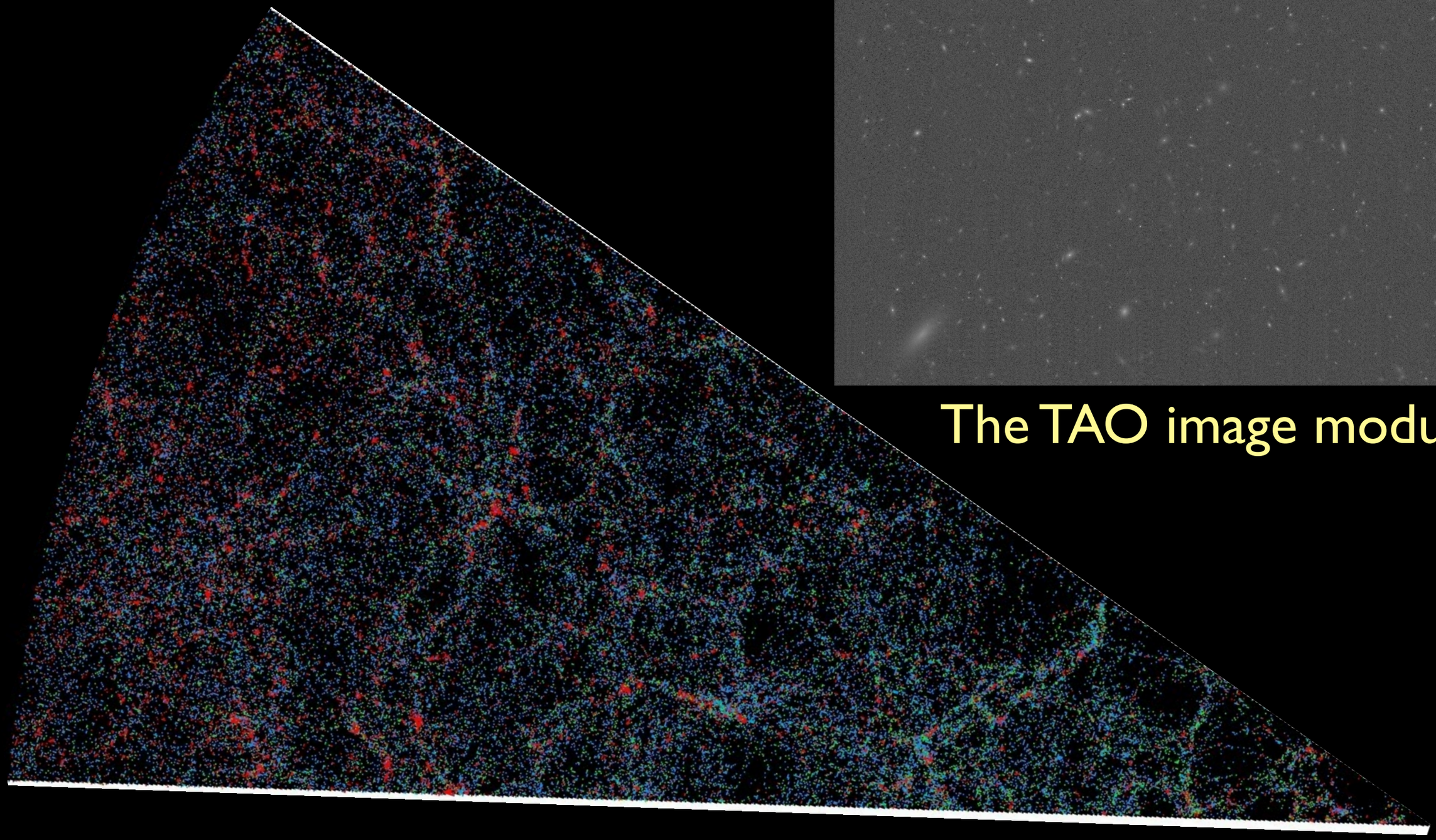
DOWNLOAD AS SINGLE FILE

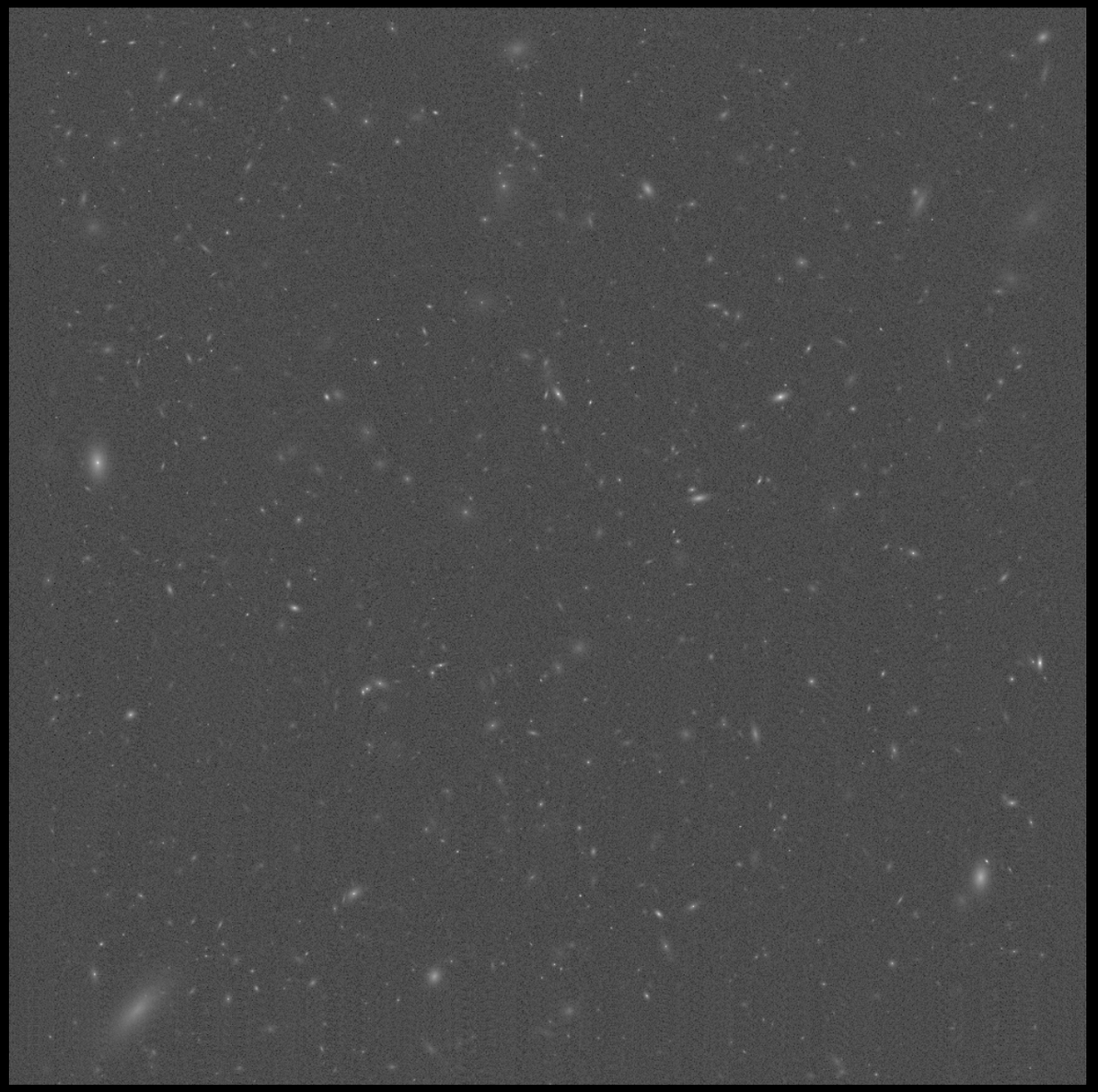
TAR Recommended

IMAGES FOR CATALOGUE 3262

ID	STATUS
3263	COMPLETED

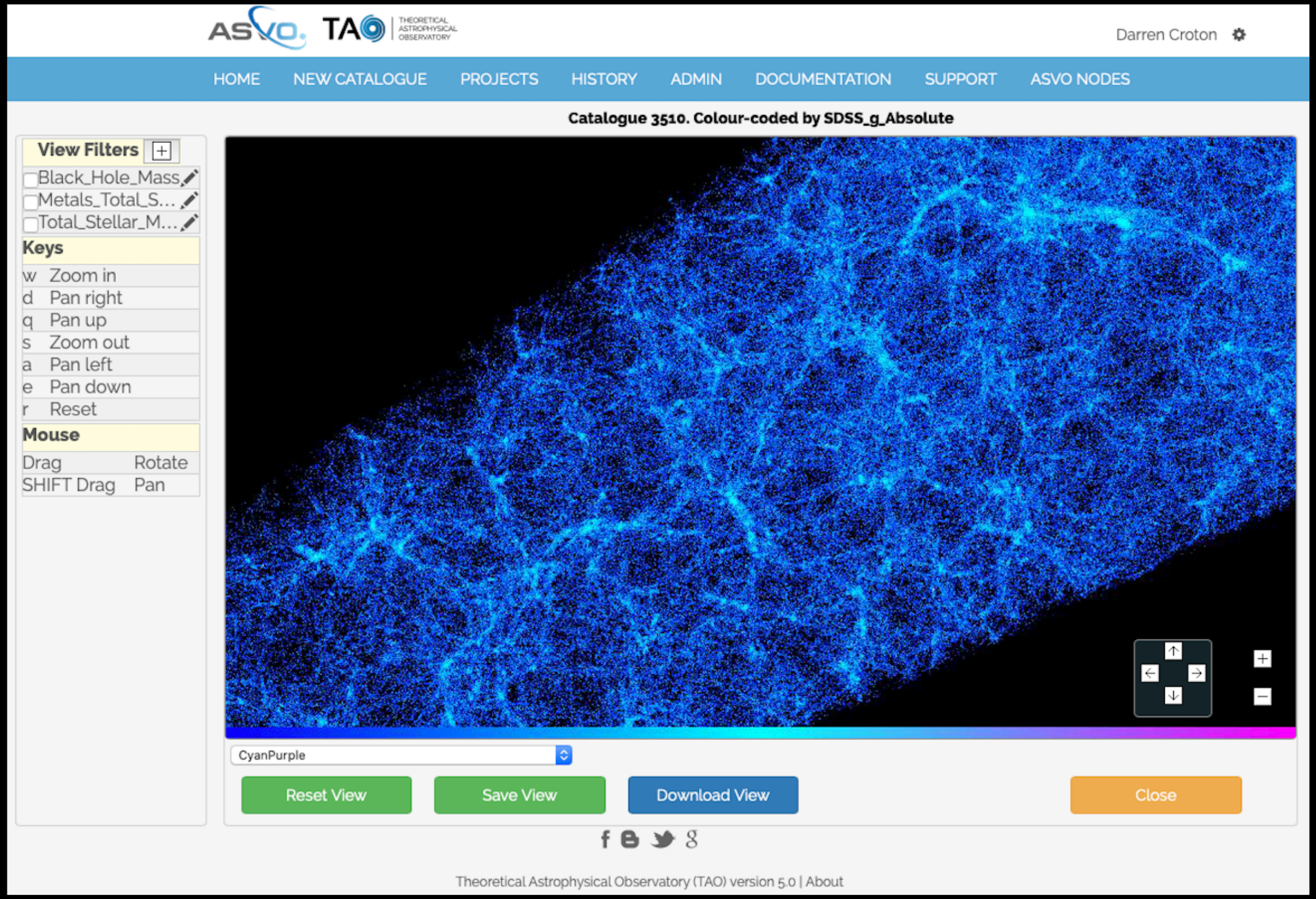
The TAO
light-cone module





The TAO image module

Data Visualisation with Vis3D



General Statistics

- TAO has been live since 2014, lives on OzStar/NT and GADI
- 15 different base catalogues built on 6 simulations
- 800+ total users, ~50 active users in the past 12 months producing 250+ mock catalogues
- 5TB total galaxy catalogues; 40+TB total user generated data
- TAO has been used in 12+ PhD theses
- Since 2015 has been referenced in at least 53 publications with 2400+ citations (ADS)

Findable, Accessible, Interoperable, Reusable

These are ideal goals we all aspire to …

… but mean very little without money to realise

And more importantly, the expertise + experience to build

1. How should projects be supported through their start-up and growth stages?
2. When growth levels out?
3. How do you know when it's time to retire a platform?

The Future

- Getting data in …
- Bringing users in …
- Connecting to other platforms …
- Funding … ?

The TAO project is part of the ASVO Virtual Laboratory, supported by

Swinburne University, Astronomy Australia Limited, and the Commonwealth Government

through NeCTAR (ARDC), NCRIS and EIF funding.

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