Serving a billion images CRTS-IUCAA

by

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IVOA Interop – 2014

Madrid, Spain

CRTS @ IUCAA

- VOI is hosting a web service where images taken from CRTS are served to the astronomical community
- Very soon, VOI will be the host to the photometric catalogues from the three Catalina surveys as well
- Data volume:
  - ~800K full sized images of size 4k X 4k pixel (3° on a side), ~5TB (in H compressed format)
  - ~1 billion cut-outs of size 120x120 pixel (5' on a side), ~20TB (in gzip compressed format)
  - ~9TB of catalogues
  - ~30 billions records in MySQL database

Introduction to CRTS

- Catalina Real-Time Transient Survey (CRTS)
- Covers thirty three thousand square degrees of the sky
- Survey collects data from three dedicated optical telescopes:
  - MLS (Mt. Lemmon Survey)
  - CSS (Catalina Sky Survey)
  - SSS (Siding Springs Survey) (until recently)
- Transients are published in real time
- Catalogs have been served from Caltech (now DR2)
- Survey images now available from VOI

Why?

- The sky is not static and many objects change their brightness over time
- These catalogues serve as a valuable repository that enables astronomers to study these variations
- Further, astronomers may use special techniques to study specific objects which may require direct access to images in addition to catalogs.

Serving the Images

- A Python based pipeline to cut each image into 1156 smaller image of 5 arc min each
- For each cut-out, central RA & DEC and basic image statistics are calculated and stored into database
- RA & DEC are combined into HTMID (Hierarchical Triangular Mesh ID)
- All above data populated into a MySQL database and indexed by HTMID for faster access
- Image data service is SIAP compliant.

Serving the Catalogues

- The image service was setup first as it was complimentary to the catalogue service already available at Caltech
- Catalogues are currently being loaded onto the IUCAA server
- Service will be available soon

Image Service

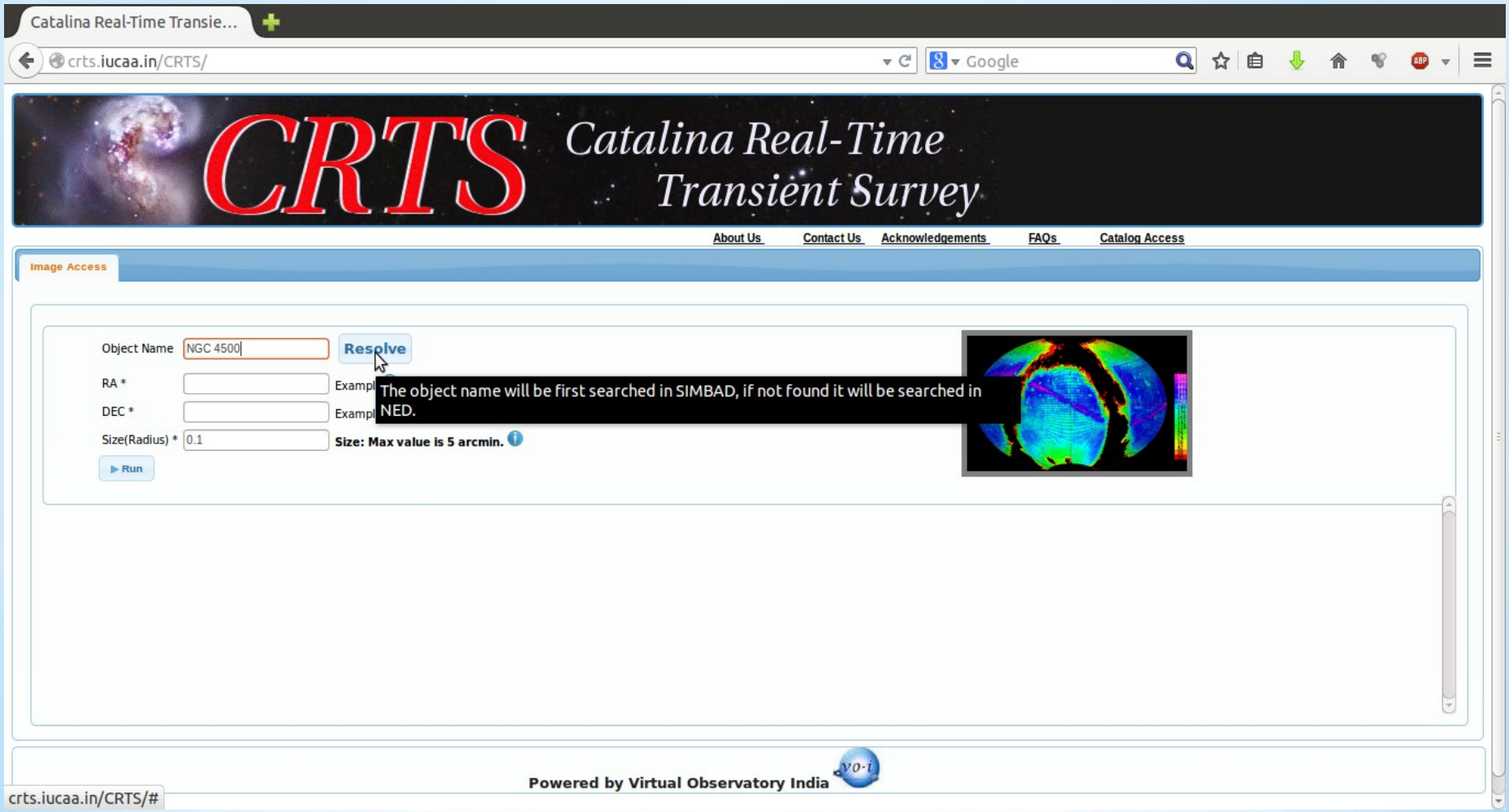

Image Service

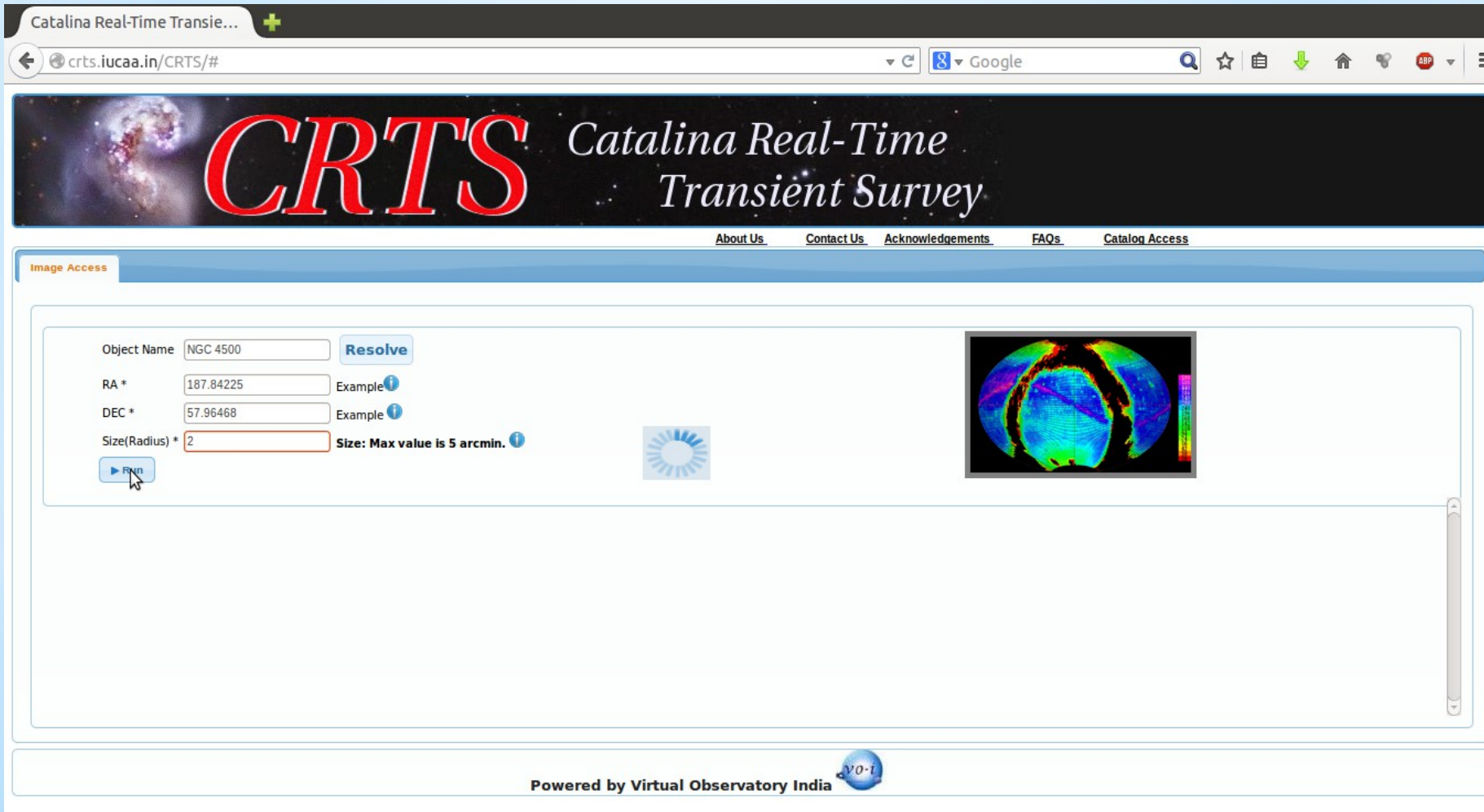

Image Service

PERSISTENT

Catalina Real-Time Transie...

crts.iucaa.in/CRTS/#

Google

CRTS Catalina Real-Time Transient Survey

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Image Access

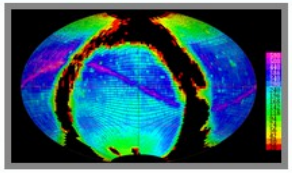
Object Name: NGC 4500 Resolve

RA *: 187.84225 Example

DEC *: 57.96468 Example

Size(Radius) *: 2 **Size: Max value is 5 arcmin.**

Run



RA : 187.84225 DEC : 57.96468 Radius : 2 arcmin Number of files : 159 Approximate size of files : 2.4 MB

Sr. No.		Image Cutout
1	☑	01_08JUN13_N57038_0002_cutout_3119.fits.gz
2	☑	01_06MAY29_N57038_0002_cutout_3118.fits.gz
3	☑	01_06FEB01_N57038_0002_cutout_3119.fits.gz
4	☑	01_11APR02_N57037_0002_cutout_0018.fits.gz
5	☑	01_07JUN24_N57038_0003_cutout_3118.fits.gz
6	☑	01_07JUN24_N57038_0001_cutout_3118.fits.gz
7	☑	01_12APR28_FD2804_0003_cutout_1827.fits.gz

Download Checked

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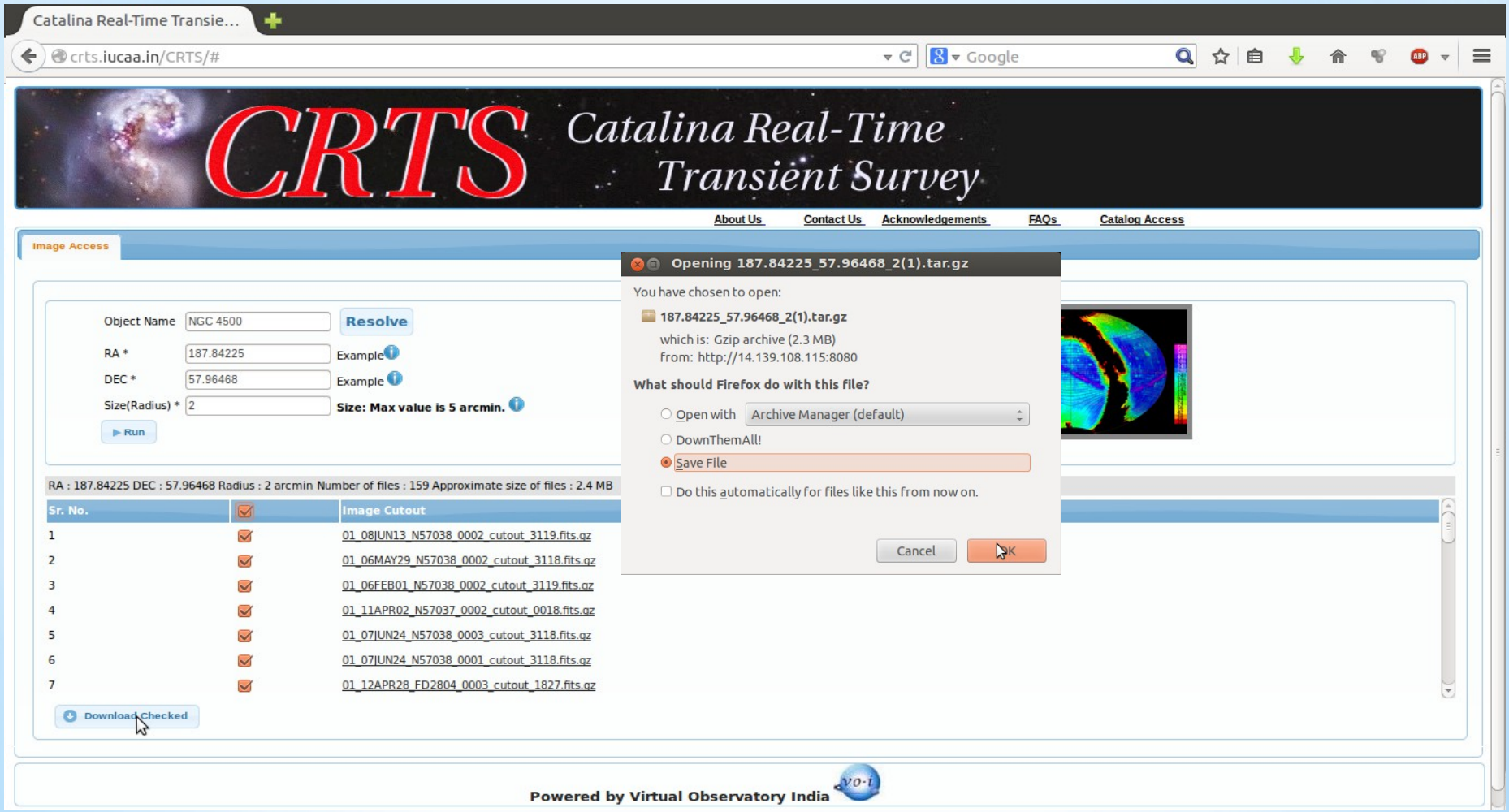
Image Service



Thank You

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Special Thanks

CRTS:
Andrew Drake
S George Djorgovski
Matthew Graham

CSS:
Eric Christensen
Steven Larson