



open data in education: reflections from NYU Abu Dhabi

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*The Mission of **NYU Abu Dhabi** is to create and endow a new model of higher education for a global world at once dedicated to traditional academic excellence and to advancing cooperation and progress on humanity's shared challenges in the 21st century while actively and deeply contributing to the social and economic development of Abu Dhabi.*

- 010** - NYUAD opens Downtown Campus.
- 014** - NYUAD graduates inaugural class of 138 students.
- 014** - NYUAD opens permanent campus on Saadiyat Island
- 211** - NYUAD and the University of Sharjah (UOS) establish a joint law program.



Academic Divisions

Arts & Humanities | Arab Crossroads, Art & Art History, Film & New Media, History, Literature & Creative Writing, Music, Philosophy

Engineering | Civil, Computer, Electrical, General, Mechanical

Science | Biology, Chemistry, Computer Science, Mathematics, Physics, Psychology

Social Sciences | Economics, Politics, Social Research

Public Policy

Undergraduate Programs

Undergraduate Majors

Concentrations

Multidisciplinary Programs

Global Ph.D. Programs

Biology

Chemistry

Computer Science

Engineering

YUAD Students

BY the NUMBERS

ACADEMIC YEAR 16-17
(as of Oct. 10, 2016)



RALL STUDENT BODY

950+ students enter
Academic Year

% female

46% male



YUAD Students

OF 2020 APPLICATION CYCLE

000+
participants

402
offers of
admission

323
matriculants in
Class of 2020

4% admit rate
79% yield rate

greatest single nationality on campus

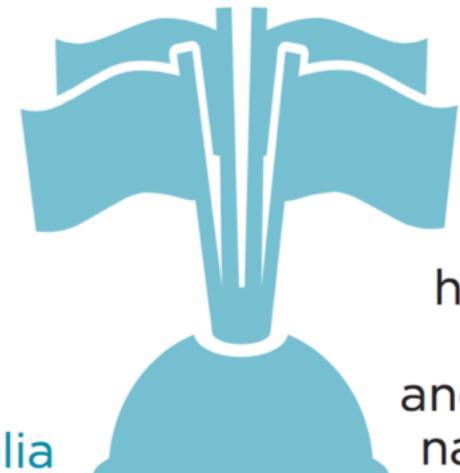
Emirati students,
which 43 in the
Class of 2020



After the UAE, the **next most represented countries** on campus by citizenship are:



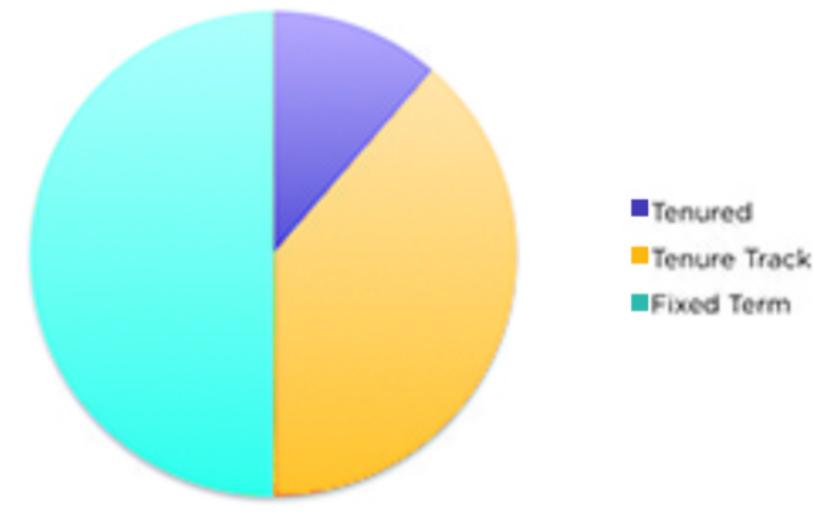
CLASS OF 2020



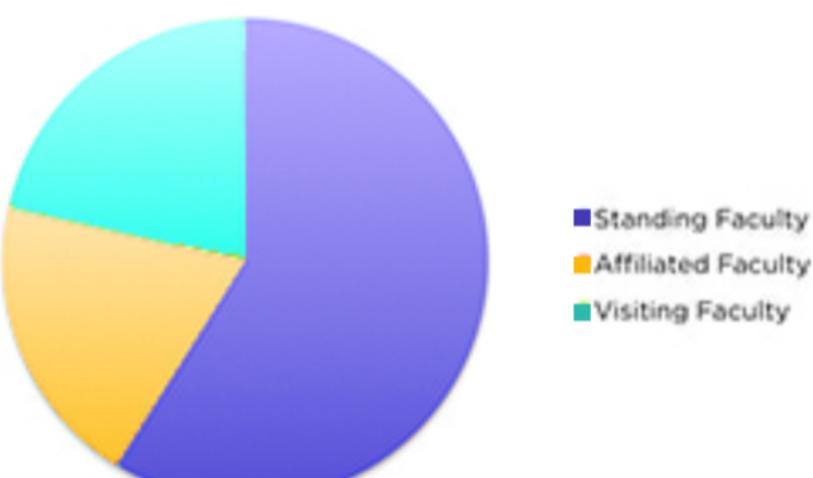
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c
and
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STANDING FACULTY OVERVIEW



TOTAL FACULTY COMPOSITION

**NYU ABU DHABI FACULTY PROFILE**

- 263** - Total Number of Faculty (Head Count)
- 144** - Standing Faculty
- 56** - Affiliated New York Faculty
- 48** - Visiting Faculty
- 18** - Tenured Faculty
- 68** - Tenure Track Faculty
- 454** - Total Faculty - Steady State Projection

DIVERSITY

Standing Faculty from 49 countries
Total Faculty coming from 60 countries

AWARDS & GRANTS (\$4.4 Million External)

Humboldt Research Award
National Science Foundation
National Institutes of Health
Max Planck Institute for Human Development Research Fellow
National Science Council - Republic of China

CAMPUS

SAADIYAT CULTURAL DISTRICT



NYU ABU DHABI



SAADIYAT ISLAND LOCATION

Saadiyat Cultural District Map
Neighbors include the Louvre,
the Guggenheim, and the Zayed
National Museum

Astronomy and Astrophysics @NYUAD

Galaxy formation

Exoplanets

Water masers

Supernova remnants

Dark Matter

...and moving the first steps

in space detectors

Astronomy and Astrophysics @NYUAE

courses

Astrophysics

Multi wavelength Astronomy

pace ("core")

Observing the Universe
("core")

...and outreach activities



Use of Astronomy data

Four levels of use (with increasing specialisation)

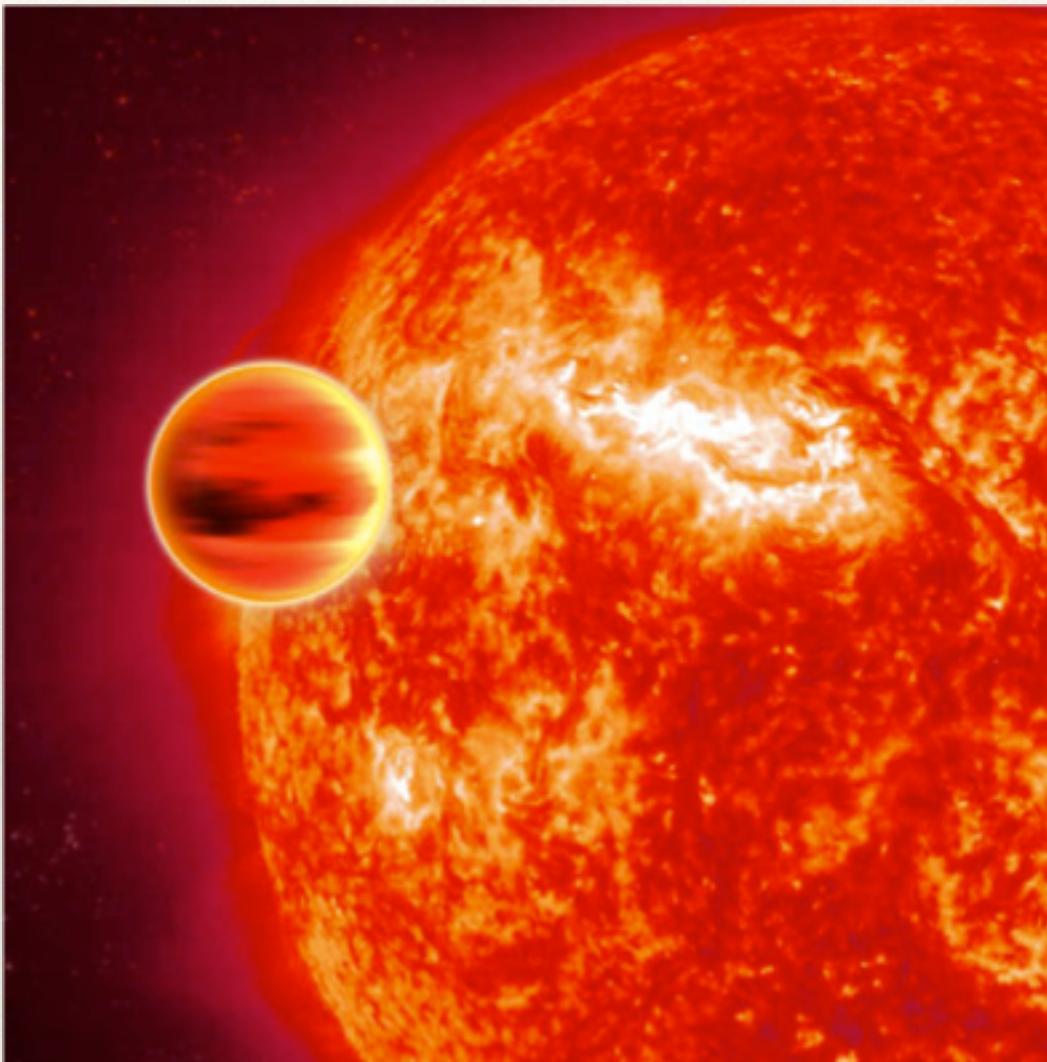
(we do not generate data)

Outreach

Core courses (typical of a liberal arts college)

Astronomy courses

Research



The Context

AE very keen on space development

need/desire/opportunity to build a strong(er) education system in the region

Mars probe will be launched in 2020 (for 50th anniversary of the country)

Data from the mission will be made publicly available after some months

Space Agency has been created
2015

Strong collaboration NYUAD - UAESA

could be a 'laboratory' to
develop&test Open Universe
solutions

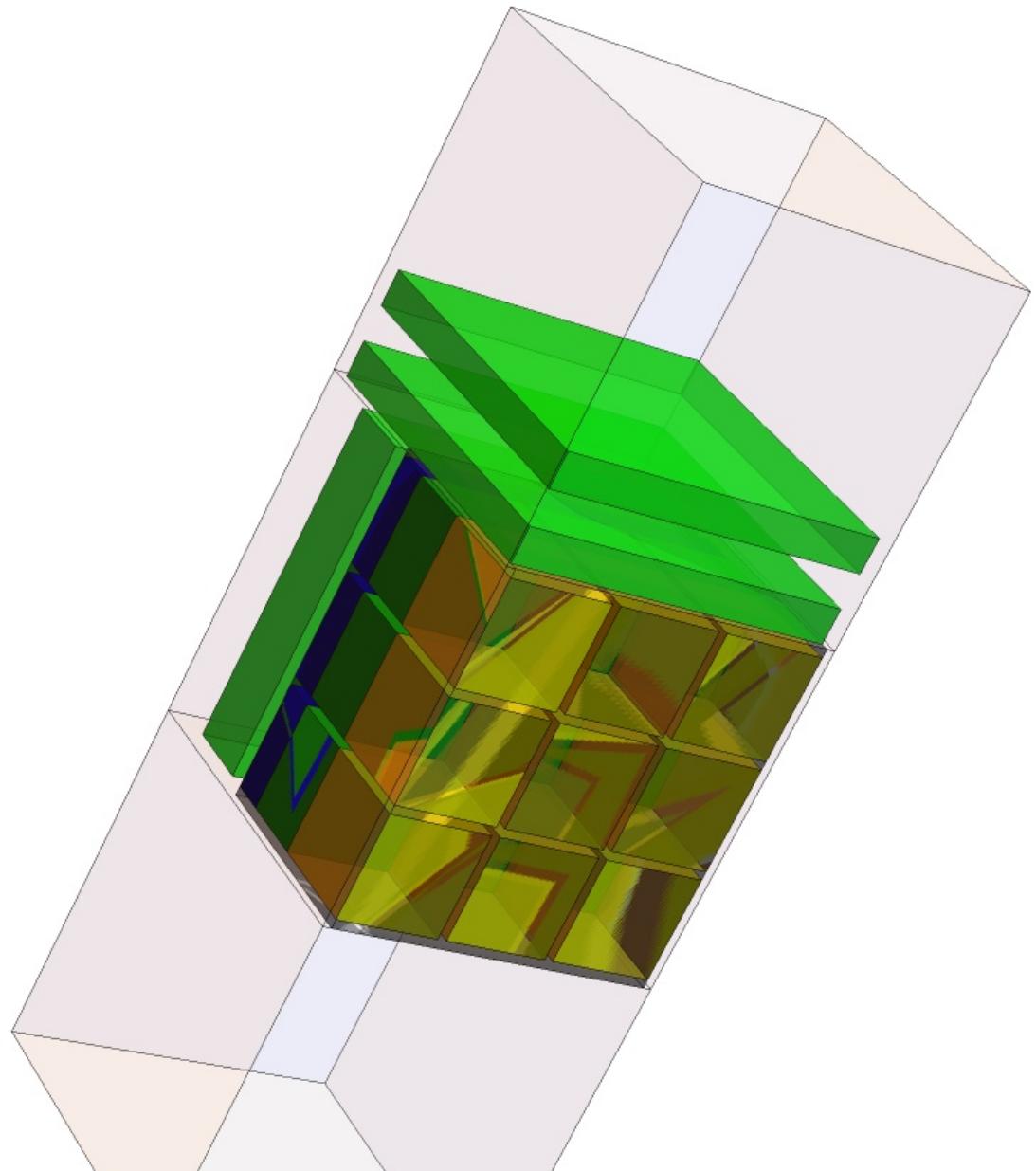


Projects NYUAD-UAESA

CubeSat for TGFs example of first
collaboration between NYUAD
and UAESA

Idea born here at ASI Data
Center (thanks to Carlotta
Pittori and Paolo Giommi)

3m radio dish for
communications with Mars
mission & radioastronomy



Astronomy and Astrophysics @NYU

sources used for courses

Optical/infrared data from the digital sky survey

Various catalogues such as 2MASS & SDSS,

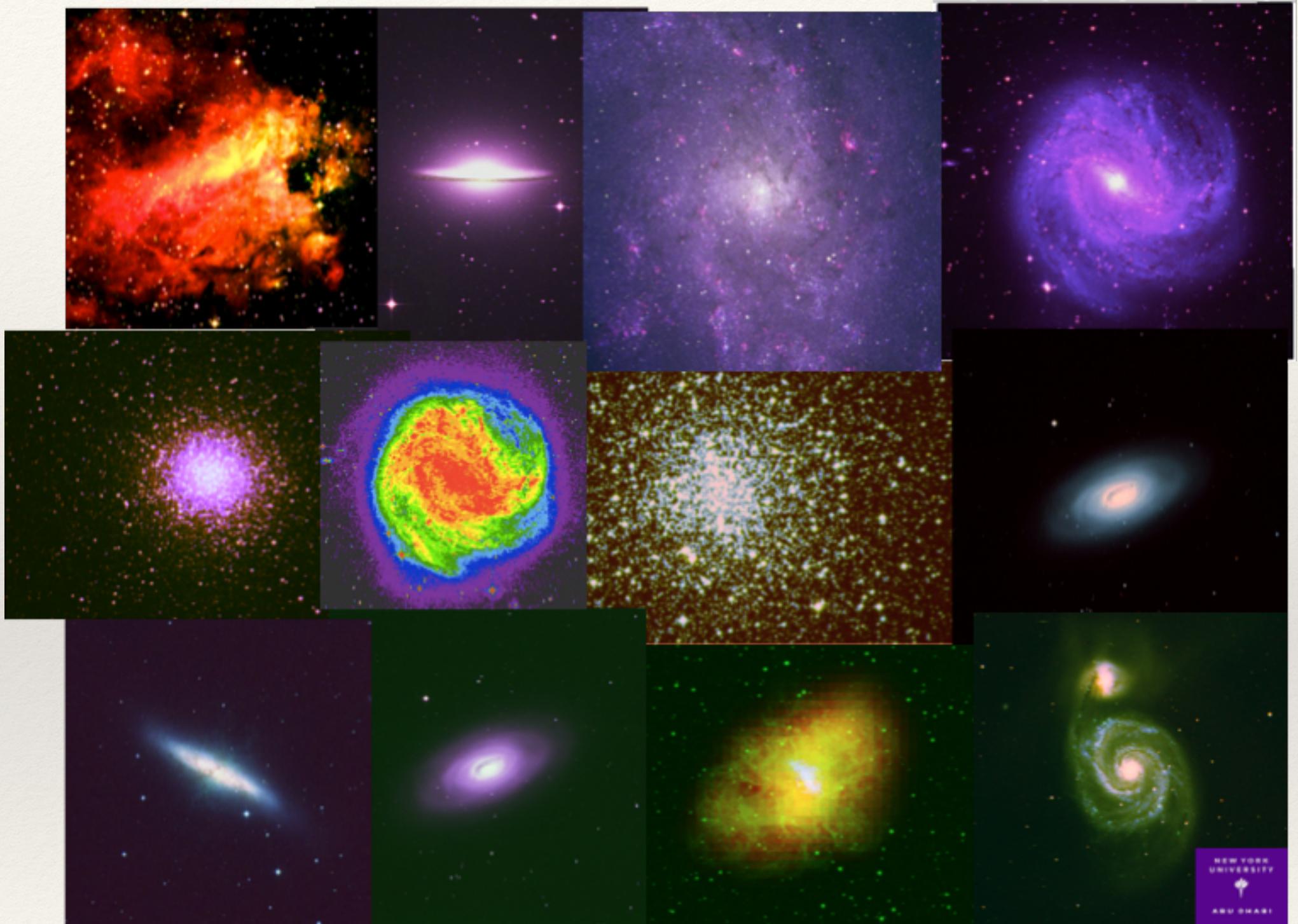
The HEASARC Skyview databases (repositories of multi-wavelength data)

X-ray public data from the Swift and MAXI satellites.

Data collected with time purchased at various telescopes

With the LSST telescope we will be able to observe millions of objects to

observe



Space Center

Goals

Study the structure and dynamics of the Sun
and stars

Align, as far as possible, with the new space
aspirations of UAE

Personnel

K.R. Sreenivasan, University Professor and
Eugene Kleiner Chair, NYU, New York (PI)

Laurent Gizon, Director of Max Planck
Institute for Solar System Research, Göttingen
(co-PI)

Shravan Hanasoge, Reader, Tata Institute of
Fundamental Research, Mumbai (co-PI)

Michael Bazot (Research Associate)

Othman Benomar (Research Associate)

Martin Bo Nielsen (Post-doc)

Data Management:

**Intend to build a large Data Center in
Abu Dhabi for helio seismology data**

dvantages of public data in the classroo

- Cheap
- Cool
- Gives the students the impression they do `real science'
- Even more so when they take data themselves having purchased telescope time.
- Prepares interested students to further work with faculty

Example: accessing the SDS

I think the main challenge is not to make the data public, but to make the resources easy to find and use for students and public. Sometimes, only the raw products are available, so it's important to teach students how to reduce and analyse data. It would be great if all telescope data were pipeline reduced and made available to the public - this UN initiative could help with that. David Russell.

Accessing the Data

Data Release 13 includes five types of data: **images**, **optical spectra** (SDSS/SEGUE/BOSS/SEQUELS/eBOSS), **infrared spectra** (APOGEE), **IFU spectra** (MaNGA), and **catalog data** (parameters measured from images and spectra, such as magnitudes and redshifts).

The SDSS offers several different online data access tools, each suited to a particular need:

Website	Purpose
DR13 Science Archive Server	Interactive spectra and image mosaics
DR13 SkyServer	Browser-based access to the Catalog Archive Server (CAS) database, with resources for learning SQL and projects to teach science
CasJobs	Flexible advanced SQL-based interface to the CAS, for all data releases (quick registration required)
DR13 FITS	Direct download access to DR13 FITS data files for experts
Data Model	Details of the Science Archive Server (SAS) directory structure, file formats, and the contents of each file

a few examples

World Wide Telescope (<http://www.worldwidetelescope.org/>)

Google Sky <https://www.google.com/intl/it/sky/>

http://vo-for-education.oats.inaf.it/eng_download.html

long list of resources

http://nitarp.ipac.caltech.edu/page/other_epo_programs

Opportunities

the educational world offer a potential vast amount of human resources (think about Computer Science students coding protocols for Open Universe)

“Hackatons”?

educational institutions of emerging countries might have an even stronger potential (everything is new)

Middle East seems particularly keen on astronomy

NYUAD as an extremely diverse academic environment is ‘by design’ interested in initiative such as Open Universe

Science made too easy?