

Open Universe initiative

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Open Universe initiative



“Open Universe” is an initiative proposed by Italy and approved by COPUOS in June 2016 at its 59th meeting in Vienna.

The main objective of Open Universe is to stimulate a dramatic increase of the utilization of space science data (e.g. astrophysics, planetary science, cosmic rays etc.), extending the potential of scientific discovery to new participants in all parts of the world.

A very wide range of communities will benefit from Open Universe: professional scientists, citizen scientists, teachers and students, potentially any citizen interested in space science.

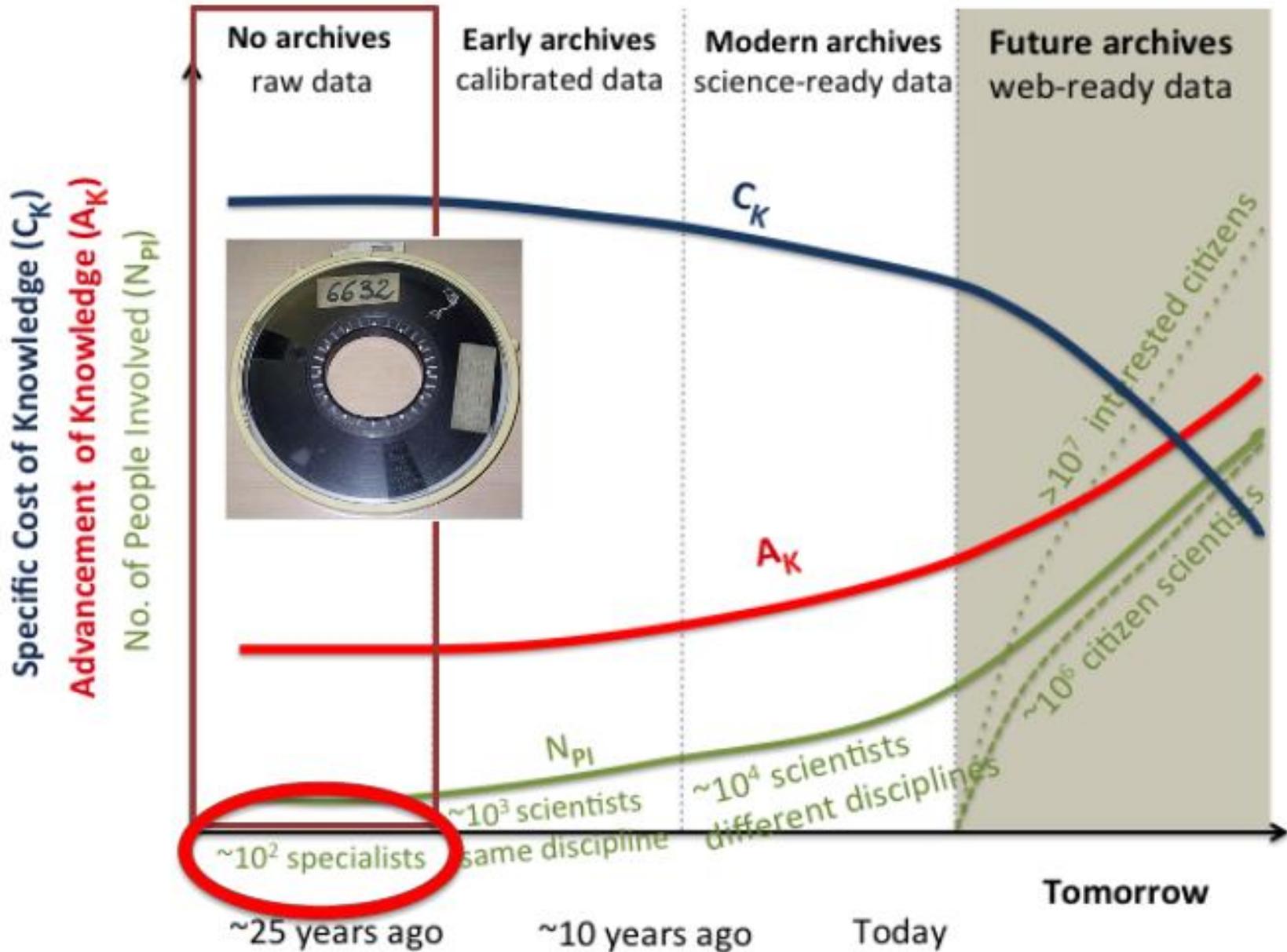
Open Universe is part of the activities in preparation for UNISPACE+50, in line with the thematic priority “Capacity Building”, with focus on Science, Technology, Engineering and Mathematics (STEM)

Critical juncture in the history of human civilization:

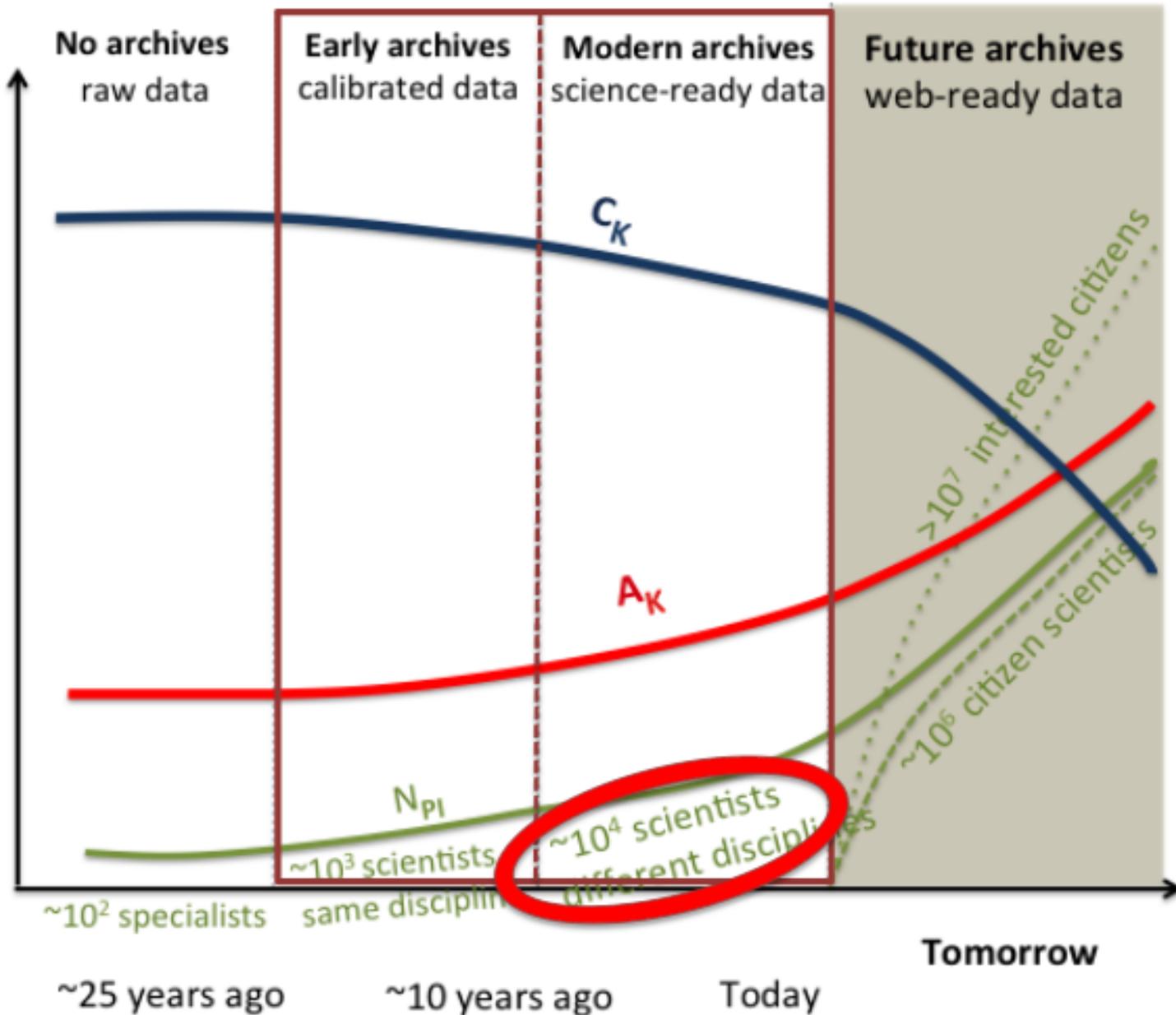
- computing power, data storage and interconnectivity have become nearly limitless resources potentially available to billions of people in the world;
- **open data access** is a well-established principle of every scientific discipline that drives innovation and productivity;
- **however there is still a considerable degree of unevenness in the services** currently offered by scientific data providers.

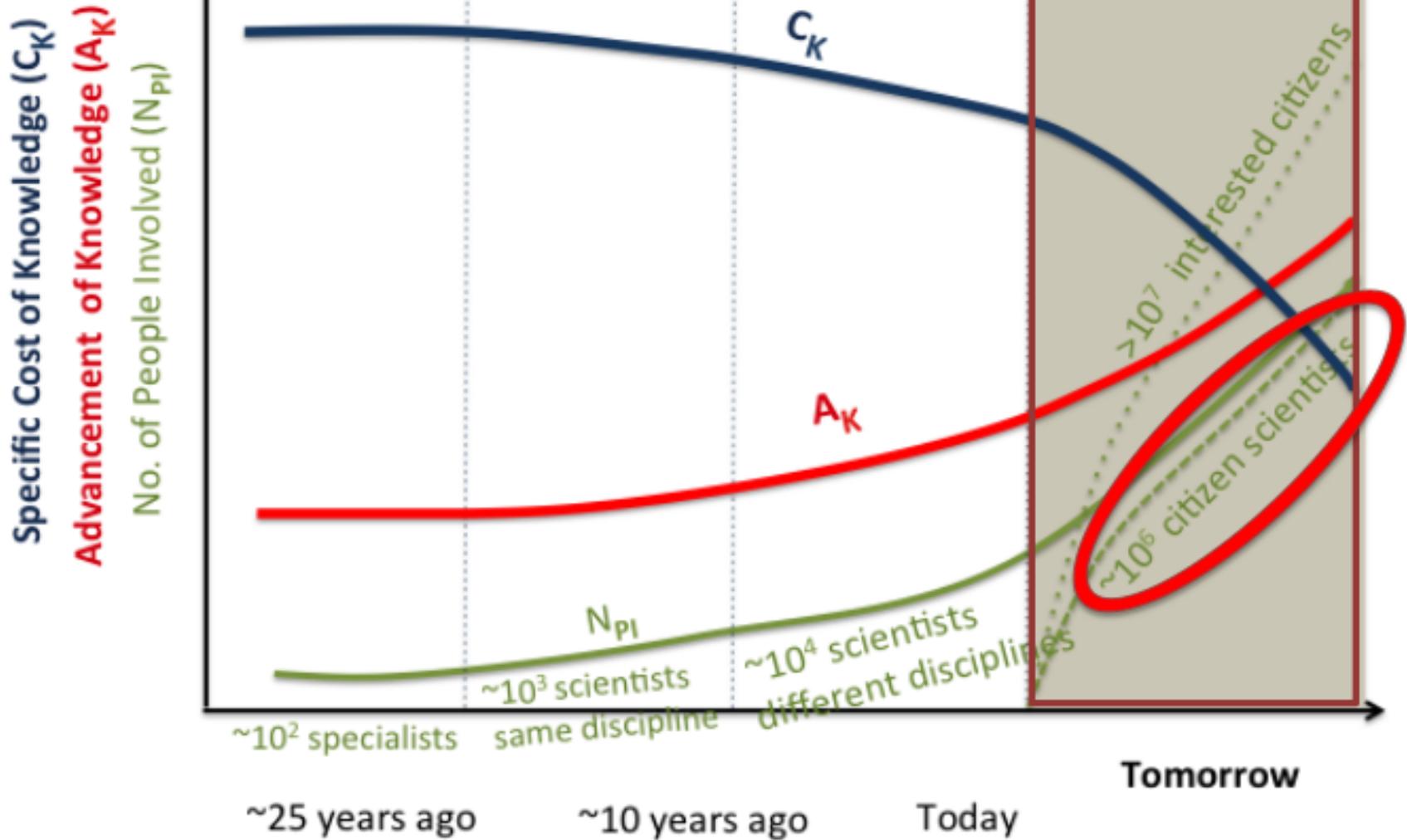
Initiatives are necessary to expand availability and accessibility to open source space science data:

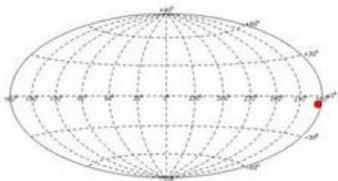
Open Universe



Specific Cost of Knowledge (C_K)
 Advancement of Knowledge (A_K)
 No. of People Involved (N_{PI})







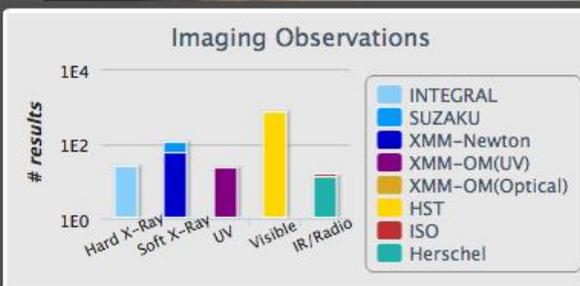
Current Source Names = **crab**
 R.A.(J2000) = **05 34 31.97 (83.633212 deg)**
 Dec.(J2000) = **+22 00 52.05 (22.01446 deg)**
 Source name resolved by: **NED**

- Astronomy
- Planetary
- Cosmic Rays
- Atmosphere-TGF

J2000 ▼ **05 34 31.940 +22 00 52.20** Search...

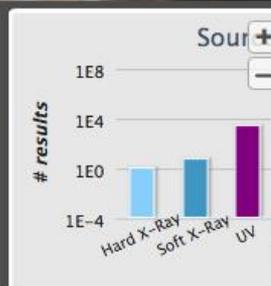
Sky:DSS2 color

Imaging Observations



Mission	Hard X-Ray	Soft X-Ray	UV	Visible	IR/Radio
INTEGRAL	~10 ¹				
SUZAKU	~10 ¹				
XMM-Newton	~10 ¹				
XMM-OM(UV)	~10 ¹				
XMM-OM(Optical)	~10 ¹				
HST	~10 ¹				
ISO	~10 ¹				
Herschel	~10 ¹				

Source Observations

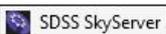


Wavelength	Hard X-Ray	Soft X-Ray	UV
INTEGRAL	~10 ⁰	~10 ⁰	~10 ⁰
SUZAKU	~10 ⁰	~10 ⁰	~10 ⁰
XMM-Newton	~10 ⁰	~10 ⁰	~10 ⁰
XMM-OM(UV)	~10 ⁰	~10 ⁰	~10 ⁰
XMM-OM(Optical)	~10 ⁰	~10 ⁰	~10 ⁰
HST	~10 ⁰	~10 ⁰	~10 ⁰
ISO	~10 ⁰	~10 ⁰	~10 ⁰
Herschel	~10 ⁰	~10 ⁰	~10 ⁰

Click on histograms bars to start retrieving metadata.

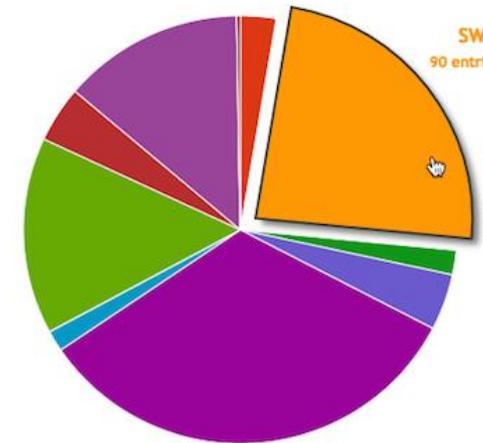
Close data panel

ESA Sky

-  ESASky
-  Google Sky
-  SDSS SkyServer

Data Archive for Astronomy

all missions



MISSION	ENTRIES
PLANCK	0
HERSCHEL	10
SWIFT	90
ASCA	7
BeppoSax NFI	16
BeppoSax WFC	124
EINSTEIN	6
EXOSAT	0
NUSTAR	56
ROSAT	16
AGILE	51
EGRET	0
FERMI	1

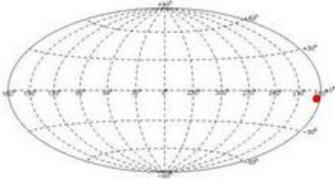
[Object name: crab] [Coordinate: 83.633212, 22.01446] [Resol...]

Submit Clear

- ▶ ASDC Catalogs
- ▶ ASDC SED Builder
- ▶ Bibliographic Search

Object name or coordinates: **83.633212, 22.01446 (NED) [1]** High Level Forum, Dubai

crab



Current Source Names = **m1**
R.A.(J2000) = **05 34 31.97 (83.633212 deg)**
Dec.(J2000) = **+22 00 52.05 (22.01446 deg)**
Source name resolved by: **NED**

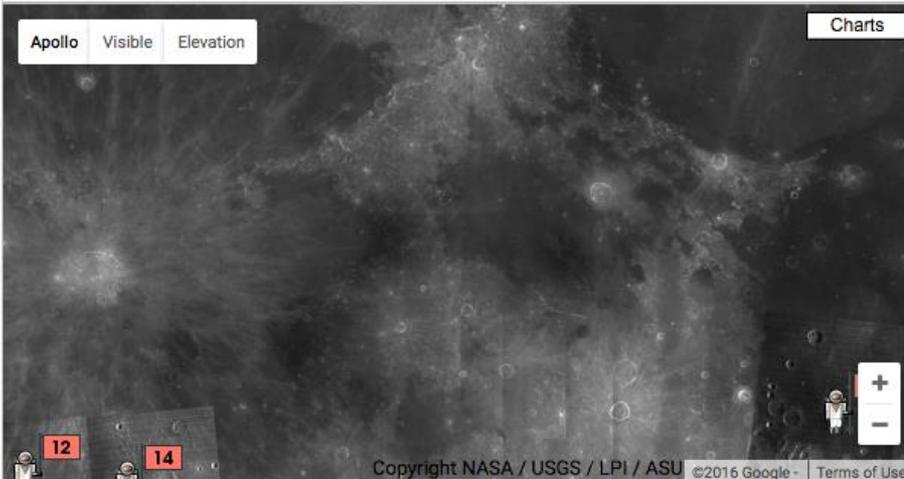
- Astronomy
- Planetary
- Cosmic Rays
- Atmosphere-TGF

Google Sky interface showing search results for 'm1' (Crab Nebula). The main image is a multi-wavelength view with 'Infrared', 'Microwave', and 'Historical' tabs. A 'Chandra X-Ray Showcase' is visible at the bottom.



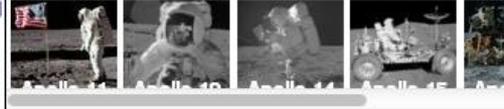
- ASDC SED Builder
- Bibliographic Search

Object name or coordinates: 83.633212, 22.01446 (NED) [1]
21 NOV 2016
m1

[Astronomy](#)[Planetary](#)[Cosmic Rays](#)[Atmosphere-TGF](#)
[Link this view](#)[Apollo](#) [Visible](#) [Elevation](#)[Charts](#)

Apollo Series

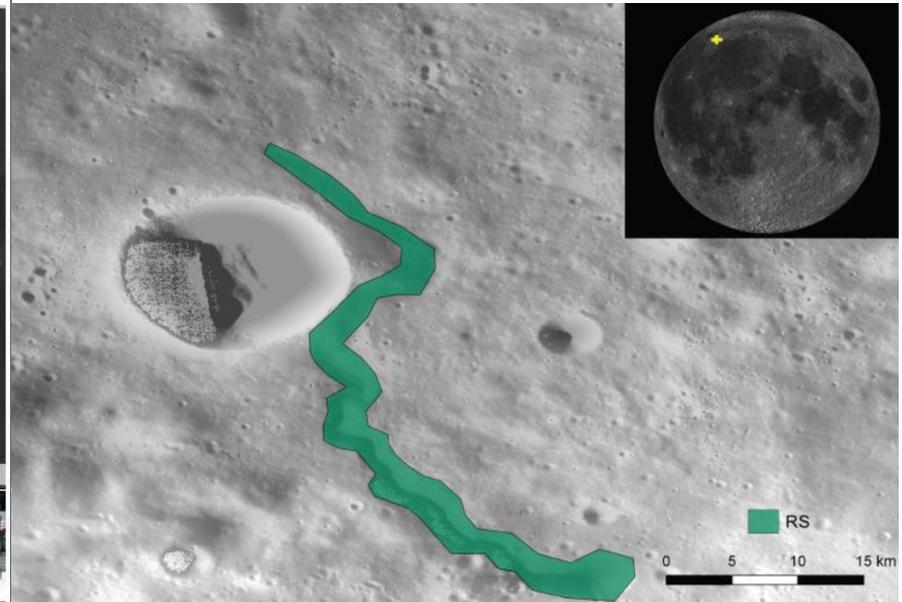
These six missions of the Apollo Program, which lasted from 1963 to 1972, were the first and last times that Mankind has set foot on another world.



Google Sky

Solar System - MATISSE

Moon-mapping Chang'e2 data



Open Universe @ ASI

ASDC

ESA Sky

Open Planetary

CDS

NED

IPAC

Heasarc

Google Sky

BSDC

MAST

Others sites

Multi-Mission Interactive Archive for Space Science Particle Astrophysics/Cosmic rays

Astronomy

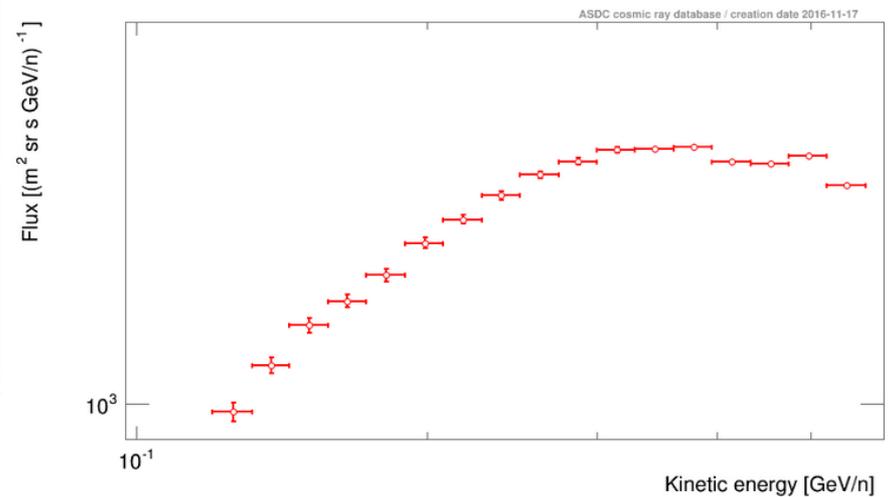
Planetary

Cosmic Rays

Atmosphere-TGF



1H PAMELA 2006-07 - 2007-12, ApJ(2013)



Open Universe

Object name or coordinates: 0.0, 0.0 (ASDC) [3]

Protons

Reset

Links to Open Universe documents

21-Nov-2016

Multi-Mission Interactive Archive for Space Science Earth's Atmosphere/Terrestrial Gamma-Ray Flashes

[Astronomy](#)[Planetary](#)[Cosmic Rays](#)[Atmosphere-TGF](#)

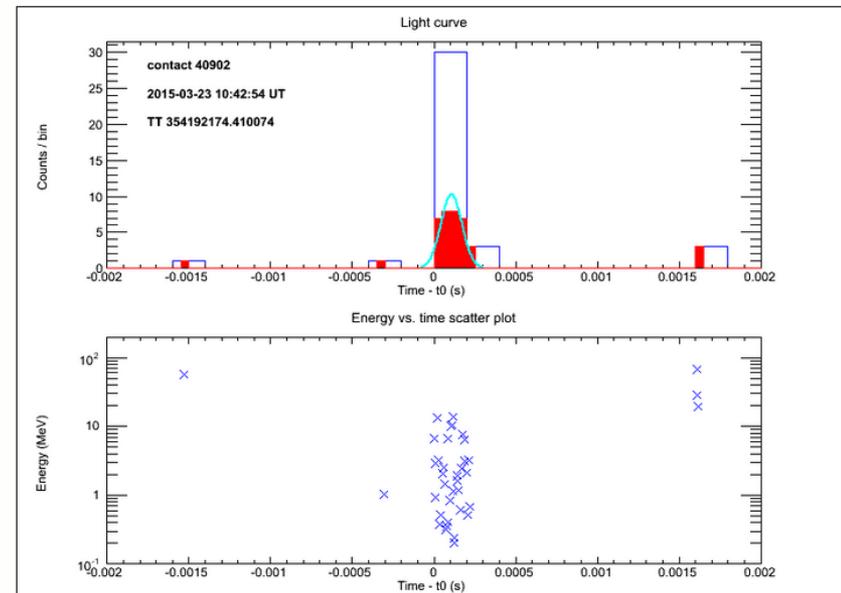
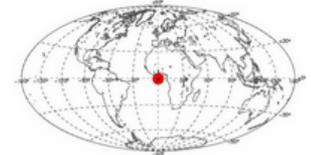
Standard Products

Light Curve Legend:

Blue histogram: 200 microsec time bin

Red filled histogram: finer binning 50 microsec

Cyan curve: maximum likelihood Gaussian fit



Open Universe

Object name or coordinates: 0.0, 0.0 (ASDC) [4]

Reset

Links to Open Universe documents

21 Nov 2016

High Level Forum, Dubai

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Open Universe |



Review of space science data services

- Objective criteria
- Technical expertise
- Best practice

Data revolution

- Award of UN Open Data Index
- Technical recommendations for improvement

Open Universe

World-wide objectives

Avalanche of new open data web services for space science

- Education
- Training
- Research
- Science

Beneficiaries

- Research organizations
- Data custodians
- Universities
- Schools
- Citizens

United Nations (UNOOSA)/ASI workshop

Rome, 10-12 April 2016

Open to experts and data providers from all interested countries.

The outcome would be part of the process leading to

UNISPACE + 50

Thematic priority “Capacity building”

with focus on

Science, Technology, Engineering and Mathematics