

Open UNiverse

Space science data: open, transparent, for everyone

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In cooperation with
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University of Sheffield

Open UNiverse, an Italian initiative

“Open Universe” is an initiative under the auspices of COPUOS with the objective of stimulating a large improvement in the general accessibility to space science data (e.g. astrophysics, planetary science, cosmic rays), extending the potential of scientific discovery to new participants in all parts of the world.

Open Universe was proposed by Italy at the 2016 COPUOS session where the initiative was welcomed and included among the activities in preparation of UNISPACE+50, in line with the thematic priority “Capacity Building”.

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. Main principles

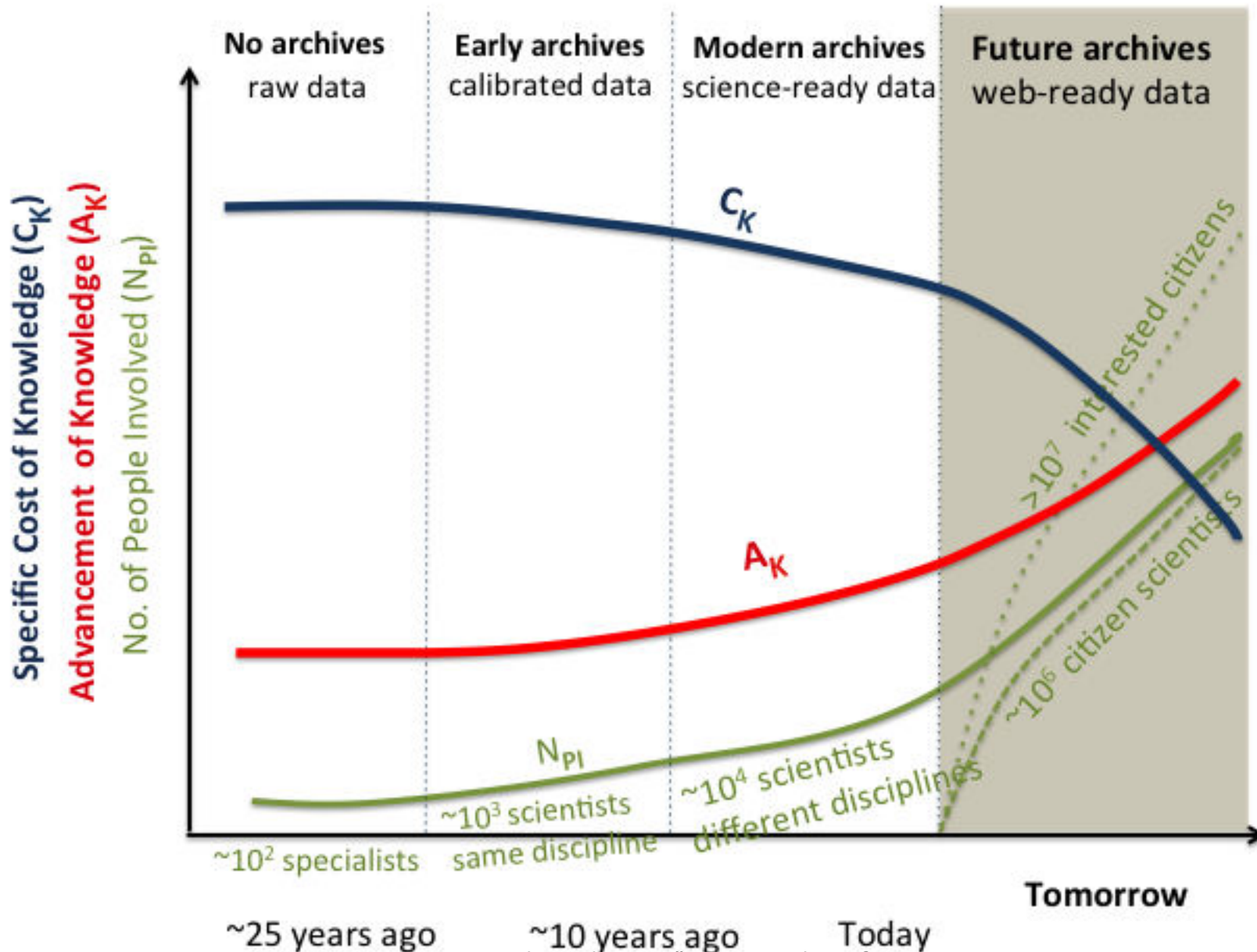
Space science data is extremely valuable. It should be considered as a public good and preserved as such.

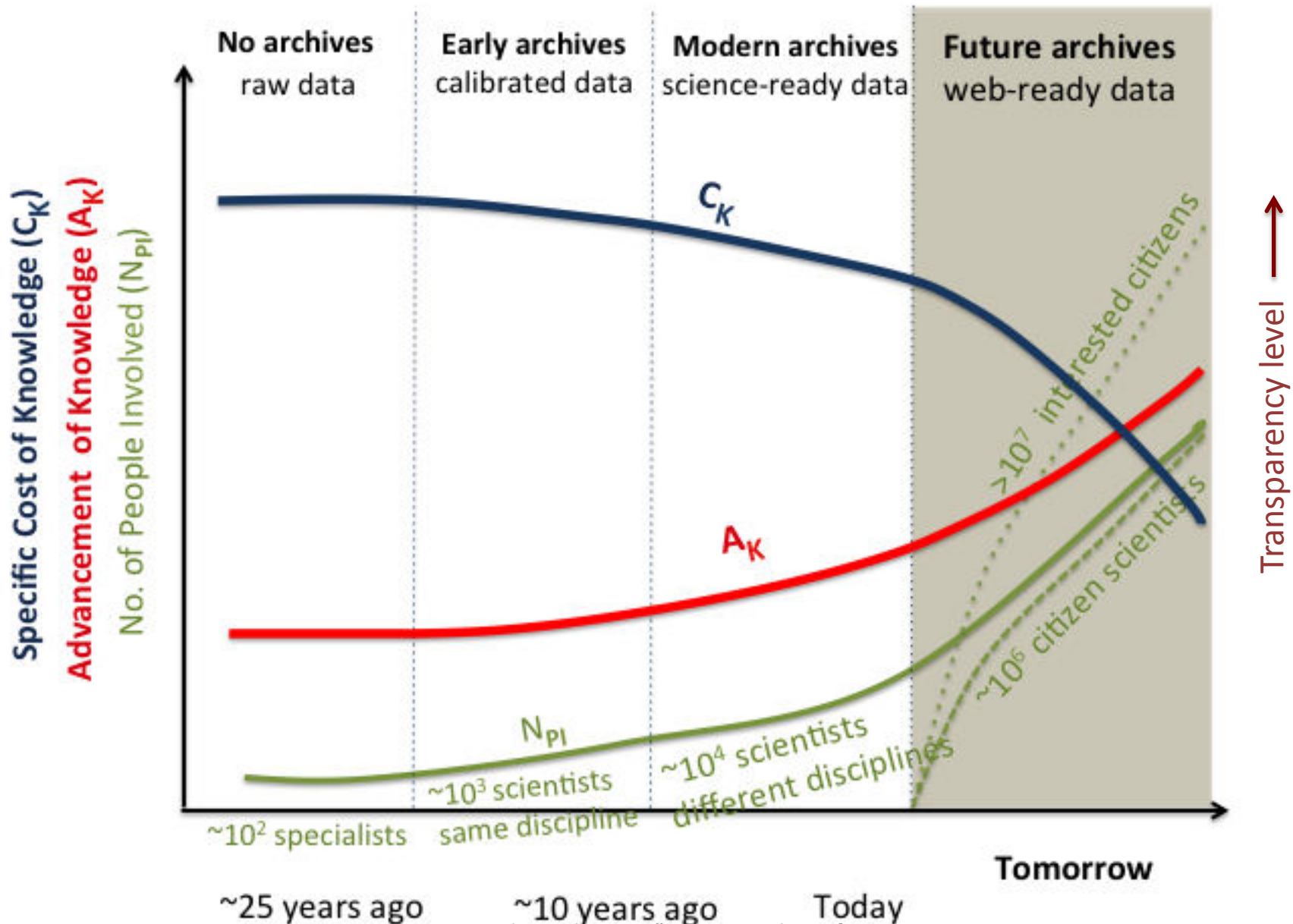
Space science data generated through public funding should eventually become openly available.

High-level "final" data products (e.g. calibrated images, spectra), should be transparent and usable by all:

Transparency and accessibility are key factors for

- The efficient conversion of data into knowledge**
- Democratising access to scientific information.**





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Indicators of transparency of space science data

preliminary and under discussion

Discoverable	Data must be easily found on the web
Open	Free of any legal restriction
Accessible	Simple and intuitive data access, no bureaucratic barriers
Understandable	No specialized knowledge required for high-level final data products. Effective documentation
Web ready	No further processing necessary, ideally downloadable with one click
Timely	Data available in a timely fashion

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Costs: minor modification of agencies cost-to-completion models

Open UNiverse

Preparatory Activities

- Open Universe Legal Aspects panel, 30 March 2017, on the margins of LSC, VIC, Vienna, Austria
- Expert Meeting on Open Universe, 11-12 April 2017, ASI HQ, Rome, Italy
 - ✓ Agencies, research community, major space data providers, data archive experts
 - ✓ http://openuniverse.asi.it/documents/ou_documents.php
 - ✓ Report and preliminary recommendations: <A/AC.105/2017/CRP.22>
- Briefing on the margins of COPUOS, 13 June 2017, VIC, Vienna, Austria
- UN / Italy Workshop on the Open Universe Initiative, 20-22 November 2017, VIC, Vienna, Austria
 - ✓ http://www.unoosa.org/oosa/en/ourwork/psa/schedule/2017/workshop_italy_openuniverse.html

Open Universe Expert Meeting















11-12 April 2017
ASI-HQ, Rome, Italy

Expert Meeting Programme  PDF



http://www.openuniverse.asi.it/documents/ou_documents.php

Meeting presentations

The Open Universe Initiative	P. Giommi - ASI	 PDF	
Inexorable Logic of the Open Universe	A. Pollock - University of Sheffield	 PDF	
Welcome ASI President		N/A	
Open Science at NASA Implementation and lessons learned	G. Allen - NASA	 PDF	
Space Science Data at ESA	C. Arviset - ESA	 PDF	
Space Science Data at JAXA	K. Masuda - JAXA/ISAS	 PDF	
Space Science Data at ASI	E. Russo - ASI	 PDF	N/A
Challenges of open data provision	J. Osborne - University of Leicester	 PDF	

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Preliminary Objectives

The various recommendations stemming from the celebrated meetings so far can be summarized into three broad priorities:



INCREASE TRANSPARENCY of already accessible resources: including promoting FAIR (Findable, Accessible, Interoperable, Reusable) guiding principles, promoting adoption of widely-used standards, processing from raw data to web-ready products, interfacing and facilitating cooperation between data providers and data centres and archives...



RESURFACE DATA and other hidden or otherwise hardly accessible resources: by identifying inaccessible data and working with national and regional entities to solve the challenges to make them public, as well as bringing new main players and actors in the international space science arena into the Initiative and in contact with other public data access solutions.



BROADEN THE USER-BASE of astronomy and space science data: to include as well the rapidly growing community of citizen scientists, by providing the necessary tools to use astronomy and space science data for a range of target groups, including educators and students in universities, schools, planetariums or any amateur scientists or other potential end-user

Open UNiverse

An ASI Web portal prototype

A prototype of a Open Universe web portal is being developed at the Italian Space Agency (ASI) as an example of a multi-discipline facility aimed at increasing the level of transparency of open space science data.

The portal concentrates access to many data services (thus increasing **discoverability**) and facilitates access to data and information (thus increasing **accessibility** and **understandibility**).

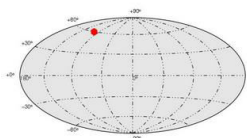
The portal is built on top of existing facilities and uses IVOA protocols, where possible.

The first public version of the portal is available at openuniverse.asi.it and will be officially presented at the Vienna workshop on Open Universe on 20-22 November 2017

Open UNiverse for astronomy

Open Universe @ ASI Space Astronomy » Ground Astronomy » Planetary Science » ISS » VO and General services » Bibliographic services » Cosmic Rays » Astronomical tools » Image galleries » Other Initiatives » Educational contents »

Help



Source Name(s) : **M101**
 R.A.(J2000) = **14 03 12.0 (210.8 deg)**
 Dec.(J2000) = **+54 21 00.0 (54.35 deg)**

Prototype v.1.0

Object name or coordinates: M101 (ASDC)

M101

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Portal Simbad VizieR Aladin X-Match Other Help



Aladin Lite

Target:

210.8 54.35

Surveys:

Fermi

GALEXGR6/AIS

DSS2

DSS2/red

DSS2/blue

SDSS9

Mellinger

J2000 14 03 12.000 +54 21 0.00



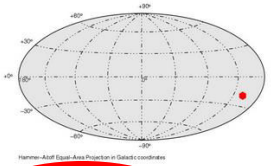
Dubai, 7 Nov 2017

sustainable development"

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Open UNiverse for astronomy



Source Name(s) : **orion**
R.A.(J2000) = **05 35 17.29 (83.822083 deg)**
Dec.(J2000) = **-05 23 27.99 (-5.391111 deg)**

Prototype v.1.0

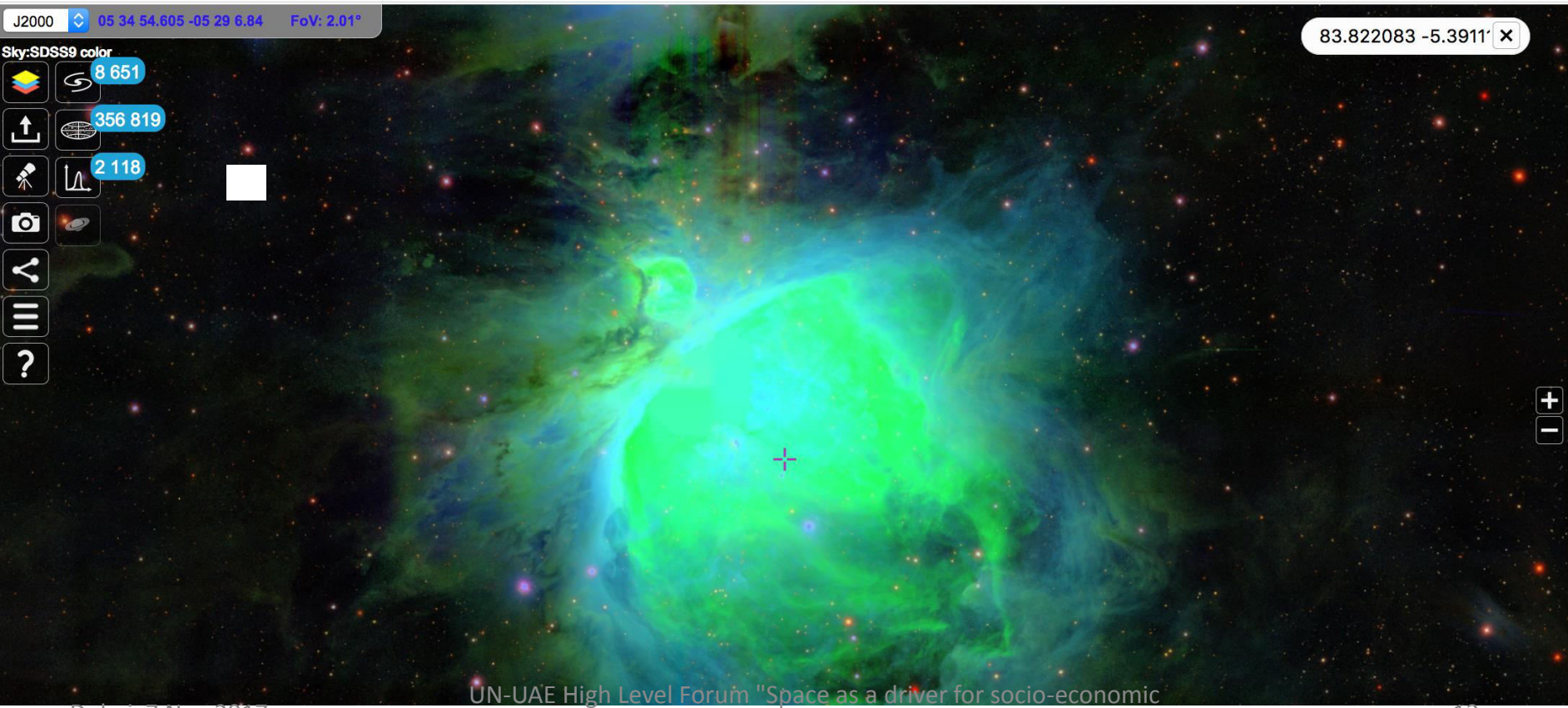
Object name or coordinates: **orion (SIMBAD)**

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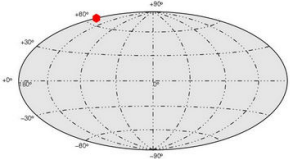


Navigation menu with buttons for various astronomical data sources:

- ESASky (highlighted with a red circle)
- SKY-MAP.ORG
- Google Sky
- SDSS SkyServer
- Aladin Lite
- MAST Archive
- SuperCOSMOS
- Radio Surveys
- ASDC Catalogs
- Astronomical Catalogs
- ESO Archive
- NRAO Archive
- ALMA Archive
- ISDC - HEAVENS
- ASDC Archive
- Radio Telescope DC
- INAF IA2
- Multi-freq. Explorer
- SED* builder
- SED* movie
- Bibliographic Search



Open UNiverse for astronomy



Source Name(s) : **MKN421**
 R.A.(J2000) = **11 04 27.34 (166.11392 deg)**
 Dec.(J2000) = **+38 12 32.4 (38.209 deg)**

Prototype v.1.0

Object name or coordinates: MKN421 (ASDC)

MKN421

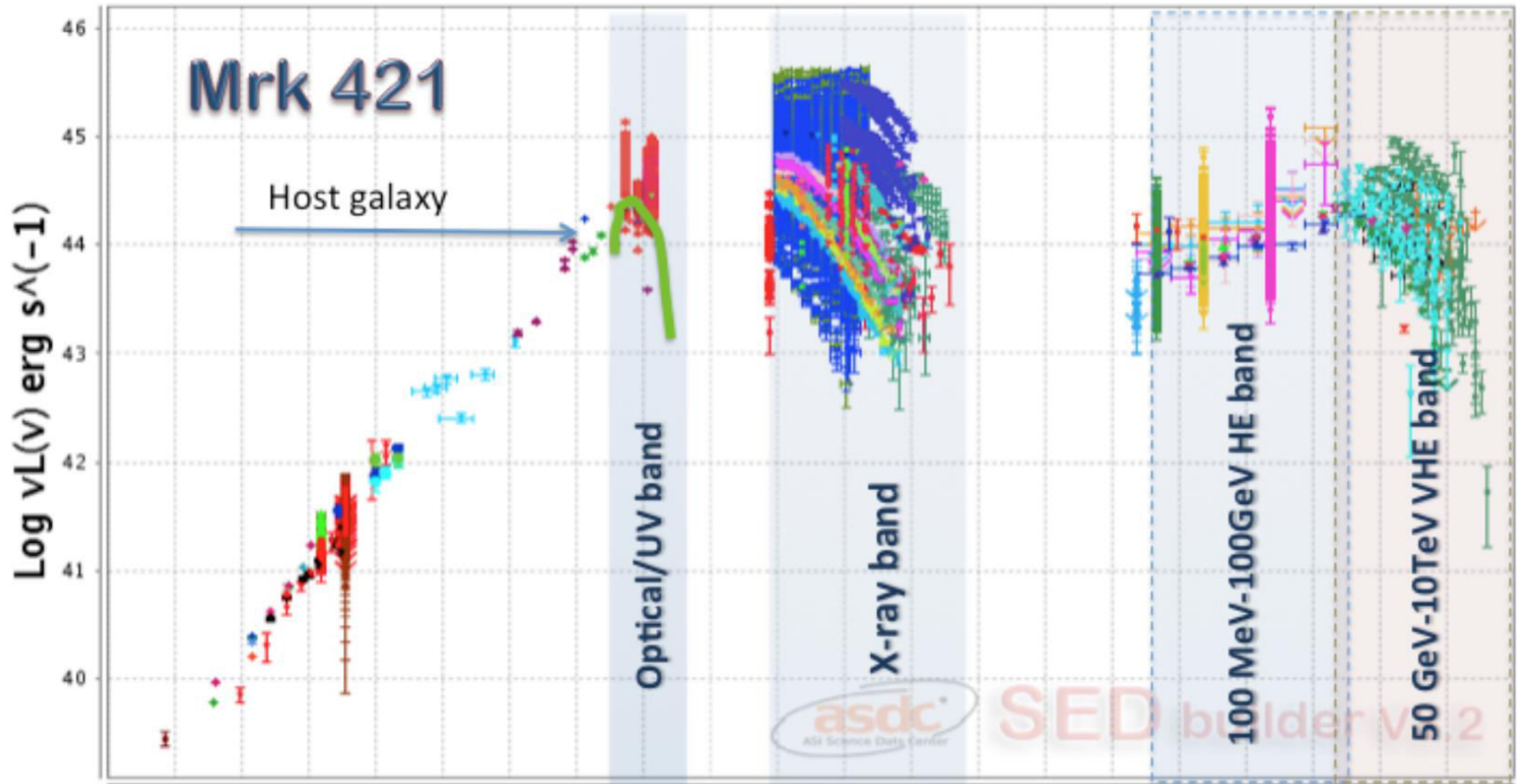
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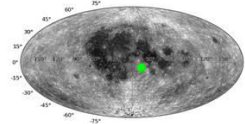
Data intensive tools

ESASky	SKY-MAP.ORG	Google Sky	SDSS SkyServer	Aladin Lite	MAST Archive	SuperCOSMOS	Radio Surveys	ASDC Catalogs	Astronomical Catalogs
CADCArchive	ESO Archives	NRAO Archive	ALMA Archive	ISDC - HEAVENS	ASDC Archive	Radio Telescope DC	INAF IA2		
Multi-freq. Explorer	SED[®] builder	SED [®] movie	Bibliographic Search						



Open UNiverse for planetary science

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Entry : **MOON LANDER Apollo16LM-11Orion**
Long = **15.5002**
Lat = **-8.973**

Prototype v.0.8.6

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Object name or coordinates: **MOONLANDERApollo16LM-11Orion** [2]

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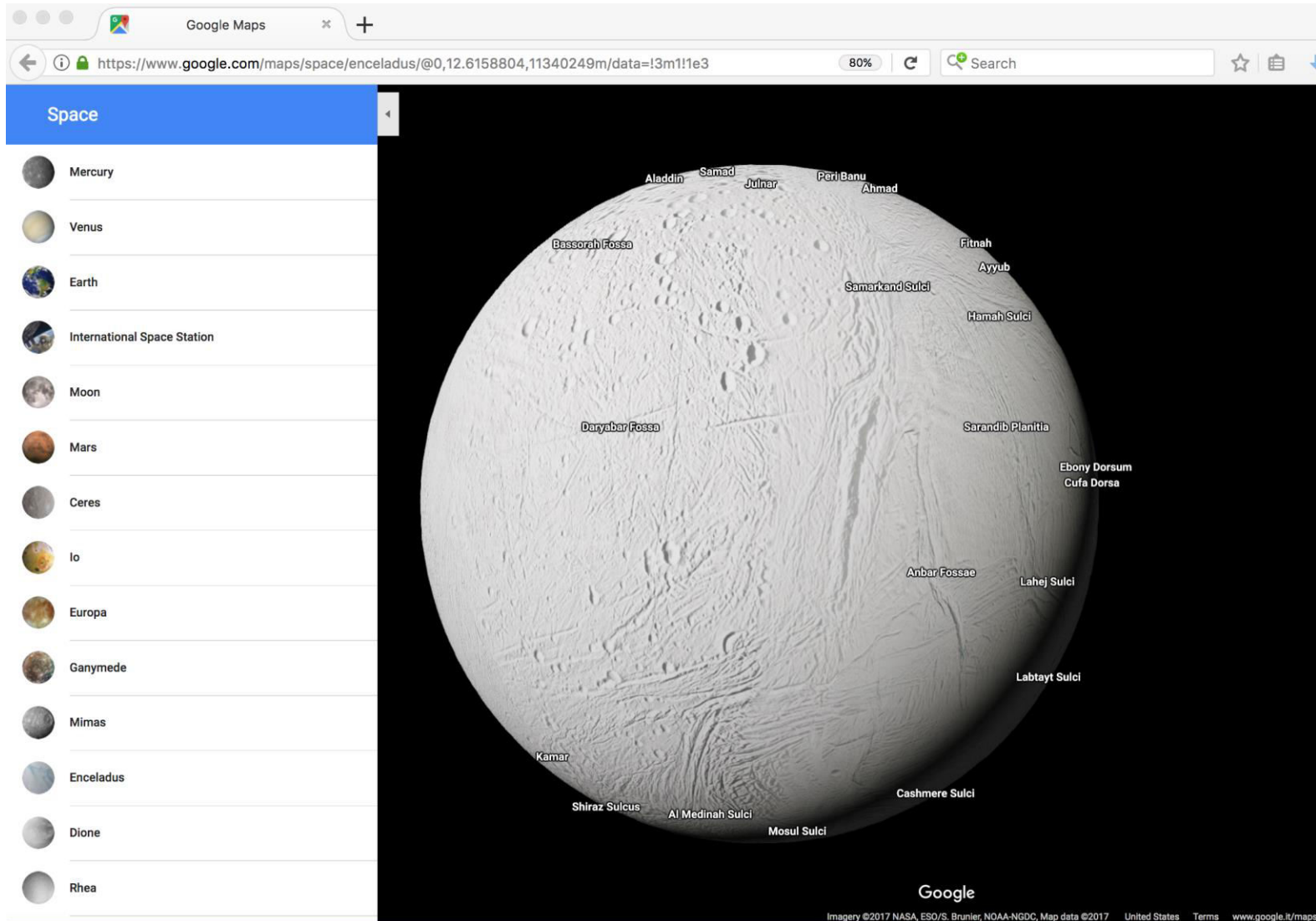
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One video a month. Quality > Quantity



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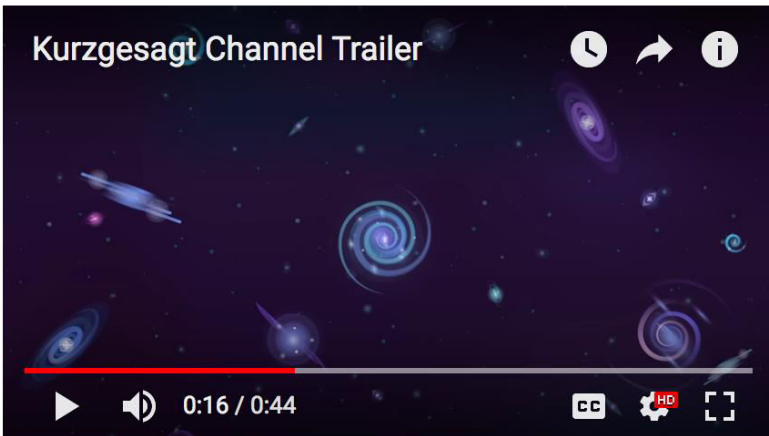
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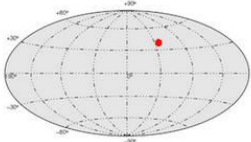
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Source Name(s) : **NGC4993**
R.A.(J2000) = **13 09 42.16 (197.425689 deg)**
Dec.(J2000) = **-23 23 46.01 (-23.396115 deg)**

Prototype v.1.0

Object name or coordinates: N

NGC4993



- Chandra
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- HST**
- NOAO
- NASA
- Astr. Soc. Pacific
- SDSS

HST

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Aug 22, 2017

Aug 26, 2017

Featured Image:

Gravitational Wave Source in NGC 4993

News release ID: **STScI-2017-41**

Release Date: Oct 16, 2017



United Nations / Italy Workshop on the Open Universe Initiative

VIENNA, AUSTRIA, 20-22 NOVEMBER 2017

Organized by the United Nations Office for Outer Space Affairs and
The Italian Space Agency, on behalf of the Government of Italy