

ESASky, all skies in your browser

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On behalf of Fabrizio Giordano, Elena Racero, Henrik Norman, Deborah Baines, Belén López Martí, Jesús Salgado, Sara Alberola, Christophe Arviset & Guido de Marchi in the ESDC team.

ADASS 2017, 23rd Oct 2017

Goal: to facilitate data discovery and archival science for ALL users

- Multi-wavelength
- Project agnostic
- Exploration



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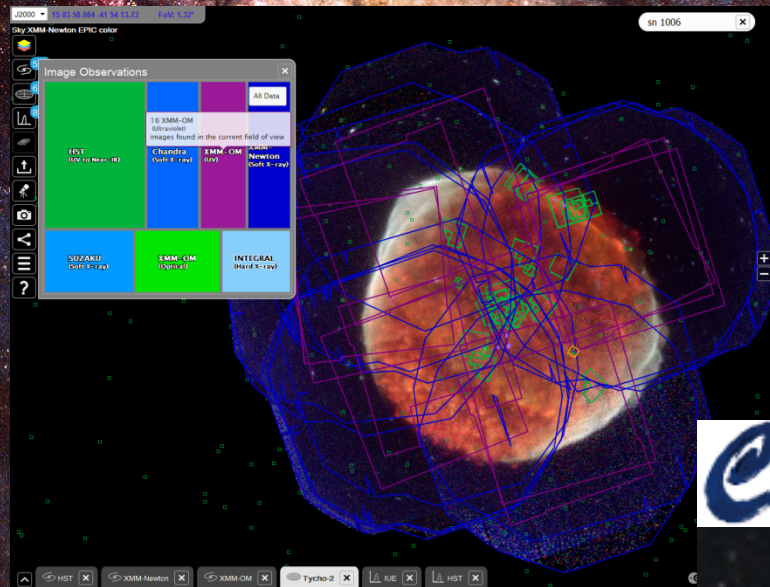
Interface “on top of” all ESA astronomy archives

ESASky - sky.esa.int



Collaboration is key

<http://sky.esa.int>



International Virtual
Observatory Alliance



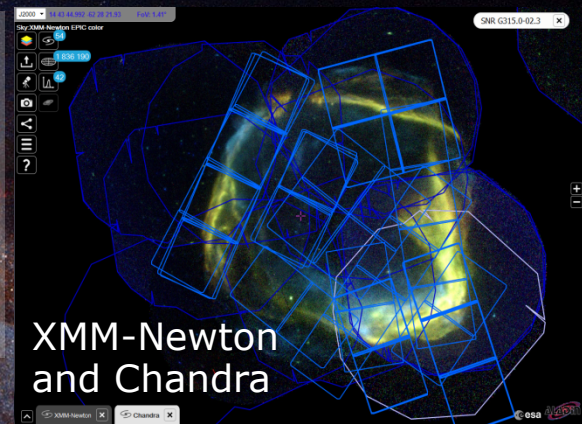
Standards: HiPS

SAMP

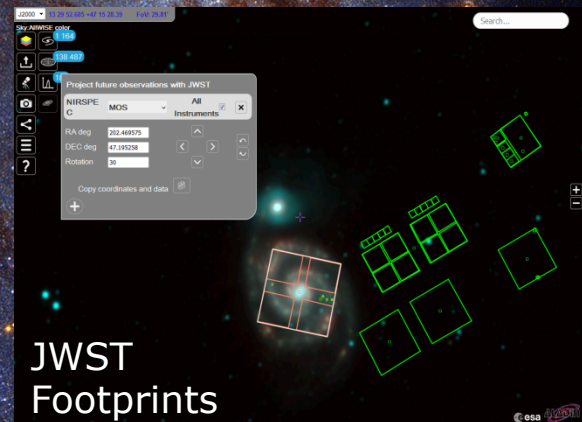


TAP

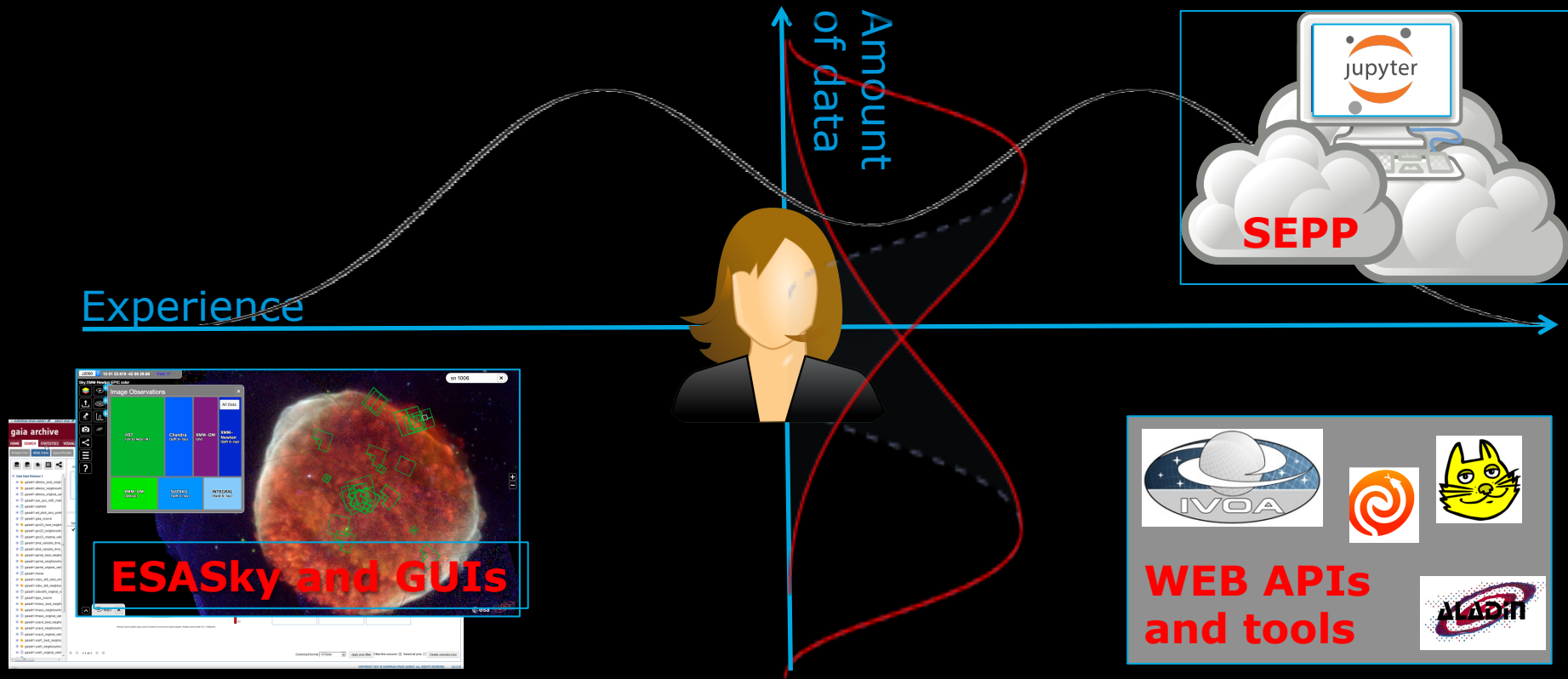
ObsCoreDM MOC



Dedicated Python
module to ESASky

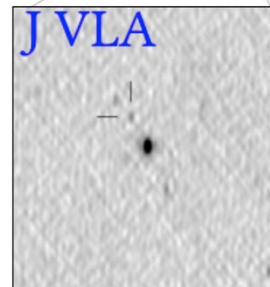
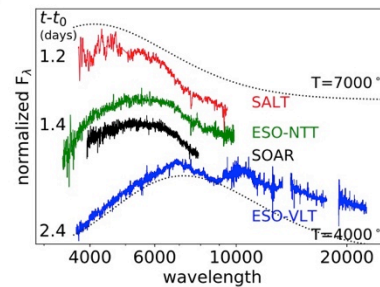
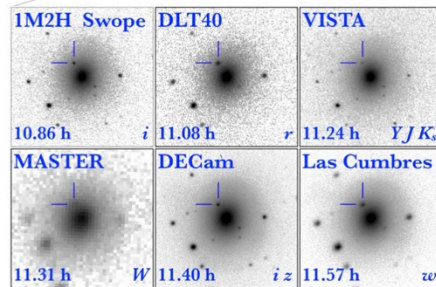
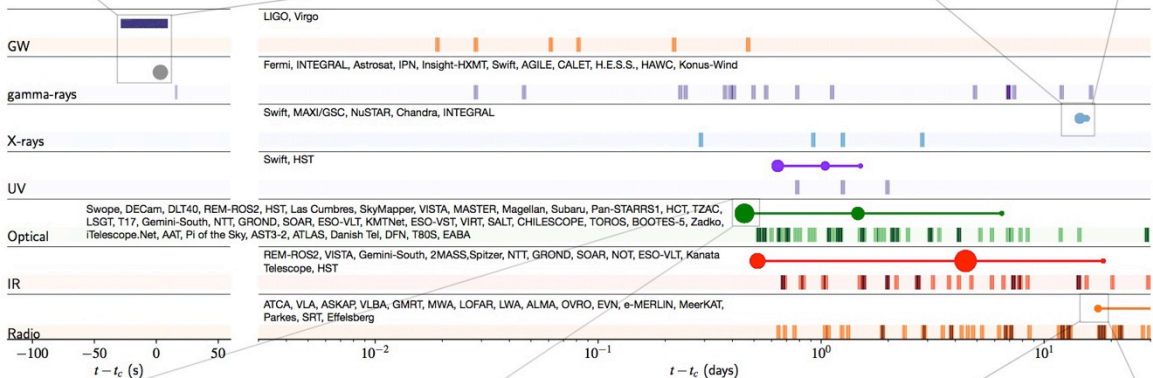
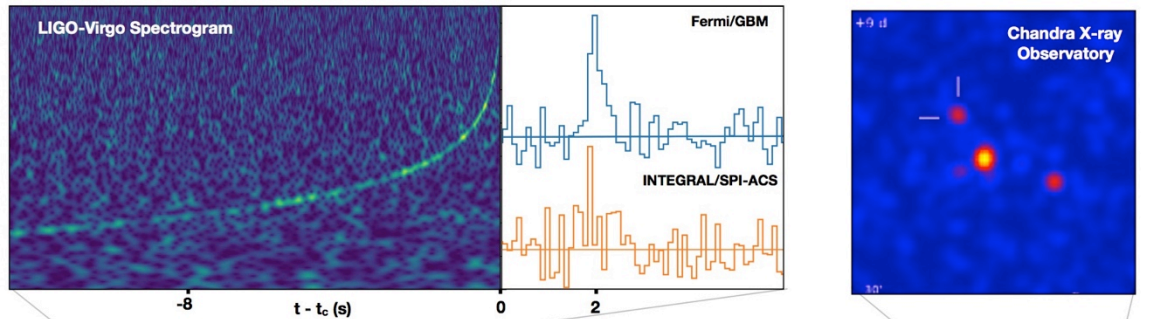


Science-user driven archives



The story so far

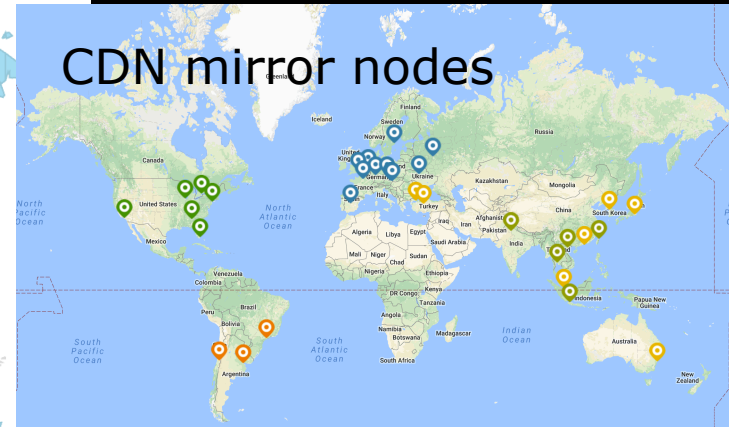
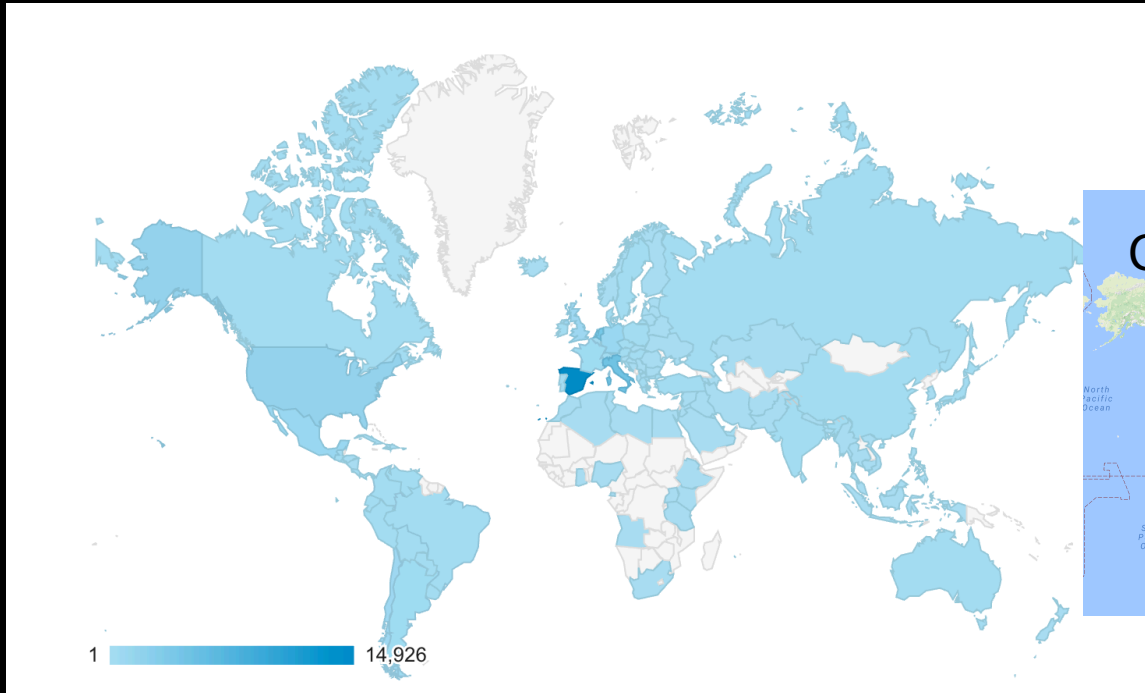
Used by 30,000 users, with



Reaching out to a truly global community



We reach all corners of the planet with a Content Delivery Network (CDN)



User feedback prioritized in development



General / ESASky

esasky.userecho.com

ESASky Knowledge base

ESASky user forum /

Welcome to the [ESASky](#) user forum! The aim of the forum is to allow conversations between users and the ESASky application. We welcome requests for the community, and any functionality which you think would be useful.

Please suggest and vote on feature requests below. Please see if the idea has already been posted. Please include a description of the feature request. Also consider if the request is feasible.

You can also use this forum to report bugs or request help.

Other places to get help and communicate with the team:

- [@ESAESDC](#) on Twitter
- The [ESASky newsletter](#)
- The team's info email address ([esaskyinfo@esa.esa.int](#))
- The ESASky [helpdesk](#) (requires registration)

The ESASky Project is dedicated to maintaining and improving the ESASky application. We observe the usual basic internet citizen rules before posting.

Enter your idea or search term here ...

UNMARKED TOPICS ACTIVE TOPICS

General / ESASky

esasky.userecho.com

ESASky Knowledge base

Recently updated topics 16

Data panel usability: Allow selecting unique catalogues and/or I... **Completed** 0

Pedro Gomez 3 weeks ago • updated by Bruno Merín 2 minutes ago • 3

Allow magnitude filtering in catalogues **Completed** 0

Pedro Gomez 3 weeks ago • updated by Bruno Merín 3 minutes ago • 4

Allow to search for Solar System Objects observed serendipito... **Completed** +5

Bruno Merín 7 months ago • updated 2 hours ago • 2

Mobile version **Completed** +6

Fab 7 months ago • updated by Bruno Merín 2 hours ago • 2

Inaccuracy in the description of the positional error in the Chandra c... **Fixed** 0

Ricardo Pérez Martínez 4 weeks ago • updated by Bruno Merín 4 hours ago • 3

I would like to get footprint of PACS observations only, wit... **Completed** +4

Bruno Altieri 7 months ago • updated by Bruno Merín 4 hours ago • 7

How do you expect to add time to the tool? Time series foot... **Under review** +1

Bruno Merín

Topics 16

Comments 37

Votes 24

Support agents 2

Tweets by @ESAesdc

ESASky data contents roadmap



Prototype
(summer 2014)

- **All-sky HiPS mosaics:**
 - XMM-Newton (CDS)
 - HST (CDS)
 - Planck (CDS)
 - Herschel-SPIRE (ESA)
- **Science ready data (imaging):**
 - XMM-Newton
 - HST (core)
 - Herschel-SPIRE
- **Catalogs:**
 - 3XMM-DR4
 - XMM Slew
 - XMM OM

First Release
(May 2016)

- **All-sky HiPS mosaics:**
 - EXOSAT (ESA)
 - INTEGRAL (ESA)
 - XMM-Newton (ESA)
 - HST (ESA)
 - ISO (ESA)
 - AKARI (ESA)
 - Herschel (ESA)
 - Planck (ESA)
 - JAXA/SUZAKU
- **Science ready data (imaging):**
 - INTEGRAL
 - XMM-Newton
 - HST
 - ISOCAM
 - Herschel
 - JAXA/SUZAKU
- **Catalogs:**
 - 3XMM-DR5
 - XMM Slew
 - XMM OM
 - Hubble Source catalog
 - Hipparcos
 - Planck catalogs

Second release
(TODAY!!)

- **All-sky HiPS mosaics**
- **Science ready data (imaging and spectra):**
 - EXOSAT
 - INTEGRAL
 - XMM-Newton
 - NASA/Chandra
 - JAXA/Suzaku
 - IUE
 - HST
 - ISO
 - Herschel
- **Catalogs:**
 - 3XMM-DR7
 - XMM Slew
 - XMM OM
 - Hubble Source Catalog v2.1
 - Hipparcos
 - Gaia DR1
 - Herschel Point Source Catalogs
 - Planck catalogs

Aim: continuous integration, testing and releasing

Bruno Merín | ESASky | Open Universe UN Workshop | 20/11/2017 | Slide 9



European Space Agency

ESASky feature roadmap



Prototype (summer 2014)

- Web interface
- All-sky HiPS mosaics from CDS
- Detailed footprints (imaging)
- Multi-target functionality

First Release (May 2016)

- Scientific validation of footprints and ESA all-sky HiPS by ESA
- Download management
- Multi-target summary table
- Interoperability with VO tools
- Documentation
- Helpdesk Support
- Hardware scaling requirements
- Refactoring of prototype into robust and stable application

Second release (TODAY !!)

- Link to Vizier/Simbad
- Generation of detailed footprints (spectra)
- Imaging and spectroscopic data
- Online visualization of data
- Solar System Objects serendipitous search
- On demand overlaying of footprints for pre-planning

Third release (2018)

- Sample manipulation
- Time-series / time domain
- Observation planning
- State-fullness
- Massive data visualization
- Link to publications?
- Mobile app?

Aim: continuous integration, testing and releasing

Demos

Day 1: <https://youtu.be/WKVuF0ypLQM?t=1h41m43s>

Day 2: <https://youtu.be/eEBbqyagNUI?t=4h7m37s>

Try ESASky v2.0 yourself ! <http://sky.esa.int>

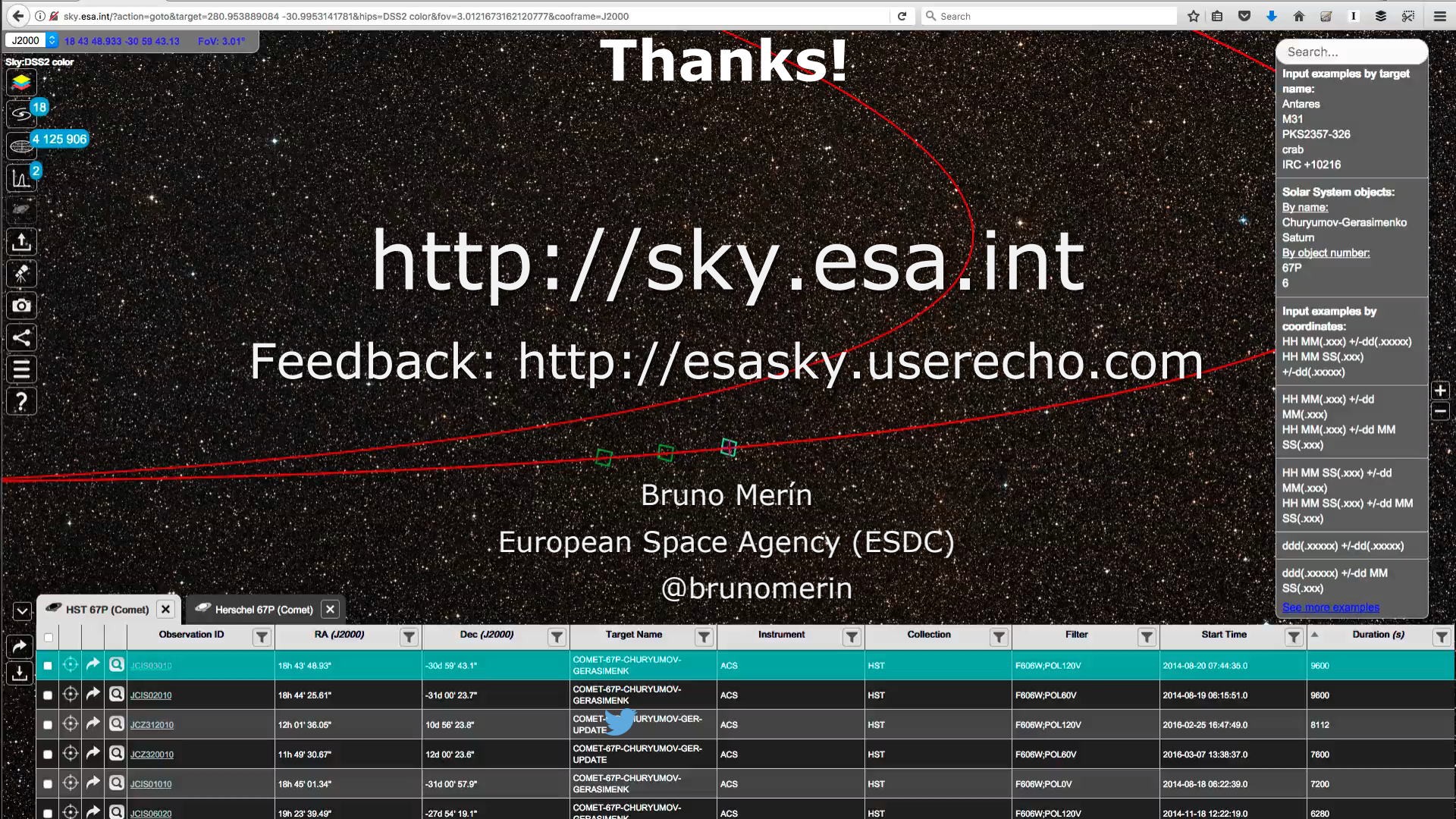
Credits:

- **Current ESASky team members:** Fabrizio Giordano, Maria Henar Sarmiento, Elena Racero, Jesús Salgado, Belén López, Bruno Merín, Henrik Norman, Debbie Baines, Raul Gutierrez, Pilar de Teodoro, Juan Gonzalez, Juan Carlos Segovia and Sara Nieto.
- **Former ESASky team members:** Andy Pollock, Michael Rosa, Iñaki Ortiz de Landaluce, Ignacio Leon and Javier Castellanos.
- **CDS:** Pierre Fernique, Thomas Boch and Mark Allen.
- **XMM-Newton Science Operations Centre:** Pedro Rodríguez, Nora Loiseau, Maria Santos-Lleo, Matthias Ehle and Norbert Schartel
- **INTEGRAL Science Operations Centre:** Guillaume Belanger, Erik Kuulkers and Peter Kretschmar.
- **Planck Science Office:** Marcos López-Caniego, Xavier Dupac and Jan Tauber.
- **Herschel Science Centre:** Pedro García Lario, Eva Verdugo, Ivan Valtchanov, Miguel Sánchez-Portal, Pilar Esquej and Göran Pilbratt
- **ESAC Computer Support Group:** Alejandro Lorca, Roberto Prieto and Ruben Álvarez.
- **Euclid Science Centre:** Bruno Altieri, John Hoar and René Laureijs.
- **HST/ESO:** Jonas Haase and Antonella Nota.
- **JWST:** Anthony Marston, Marco Sirianni, Macarena García-Marín
- **Canadian Astronomy Data Centre (CADAC):** Daniel Durand
- **Astropy / Astroquery :** Brigitta Sipocz, Matthew Graham, and Adam Ginsburg
- **Johns Hopkins University:** Tamás Budavári
- **Jet Propulsion Laboratory, Caltech:** Krzysztof Górski
- **ISAS, JAXA:** Ken Ebisawa
- **Chandra, NASA:** Janet Evans, Raffaele D'Abrusco, Yulie Zografou, Arnold Rots
- **Institute of celestial mechanics and ephemeris calculations (IMCCE), Paris:** Jérôme Berthier, Benoit Carry

Conclusions

Lessons learned from 1.5 years of ESASky 1.0 operations

- Users like simple interfaces even if they are limited
 - Different types of users need different interfaces (most need simplicity)
 - Development teams should prioritize for real the user feedback
 - Follow the user workflow all the way to the paper
-
- **ESASky v2.0 just released!**
 - Access to spectroscopic data from all missions
 - Improved usability, now also on mobile devices !
 - Access to Solar System Objects as observed by Astronomy missions
 - Talk to us if you want to collaborate!!



Thanks!

http://sky.esa.int

Feedback: http://esasky.userecho.com

Bruno Merín

European Space Agency (ESDC)

@brunomerin

Search...

Input examples by target

name:

Antares

M31

PKS2357-326

crab

IRC +10216

Solar System objects:

By name:

Churyumov-Gerasimenko

Saturn

By object number:

67P

6

Input examples by

coordinates:

HH MM(.xxx) +/-dd(.xxxxx)

HH MM SS(.xxx)

+/-dd(.xxxxx)

HH MM(.xxx) +/-dd

MM(.xxx)

HH MM(.xxx) +/-dd MM

SS(.xxx)

HH MM SS(.xxx) +/-dd

MM(.xxx)

HH MM SS(.xxx) +/-dd MM

SS(.xxx)

ddd(.xxxxx) +/-dd(.xxxxx)

ddd(.xxxxx) +/-dd MM

SS(.xxx)

[See more examples](#)

HST 67P (Comet)

Herschel 67P (Comet)

	Observation ID	RA (J2000)	Dec (J2000)	Target Name	Instrument	Collection	Filter	Start Time	Duration (s)
■	JCIS03010	18h 43' 48.93"	-30d 59' 43.1"	COMET-67P-CHURYUMOV-GERASIMENKO	ACS	HST	F606W/POL120V	2014-08-20 07:44:35.0	9600
■	JCIS02010	18h 44' 25.61"	-31d 00' 23.7"	COMET-67P-CHURYUMOV-GERASIMENKO	ACS	HST	F606W/POL60V	2014-08-19 06:15:51.0	9600
■	JCZ312010	12h 01' 36.05"	10d 56' 23.8"	COMET-67P-CHURYUMOV-GERASIMENKO UPDATE	ACS	HST	F606W/POL120V	2016-02-25 16:47:49.0	8112
■	JCZ320010	11h 49' 30.67"	12d 00' 23.6"	COMET-67P-CHURYUMOV-GERASIMENKO UPDATE	ACS	HST	F606W/POL60V	2016-03-07 13:38:37.0	7600
■	JCIS01010	18h 45' 01.34"	-31d 00' 57.9"	COMET-67P-CHURYUMOV-GERASIMENKO	ACS	HST	F606W/POL0V	2014-08-18 06:22:39.0	7200
■	JCIS06020	19h 23' 39.49"	-27d 54' 19.1"	COMET-67P-CHURYUMOV-GERASIMENKO	ACS	HST	F606W/POL120V	2014-11-18 12:22:19.0	6280