

ESO Science Archives

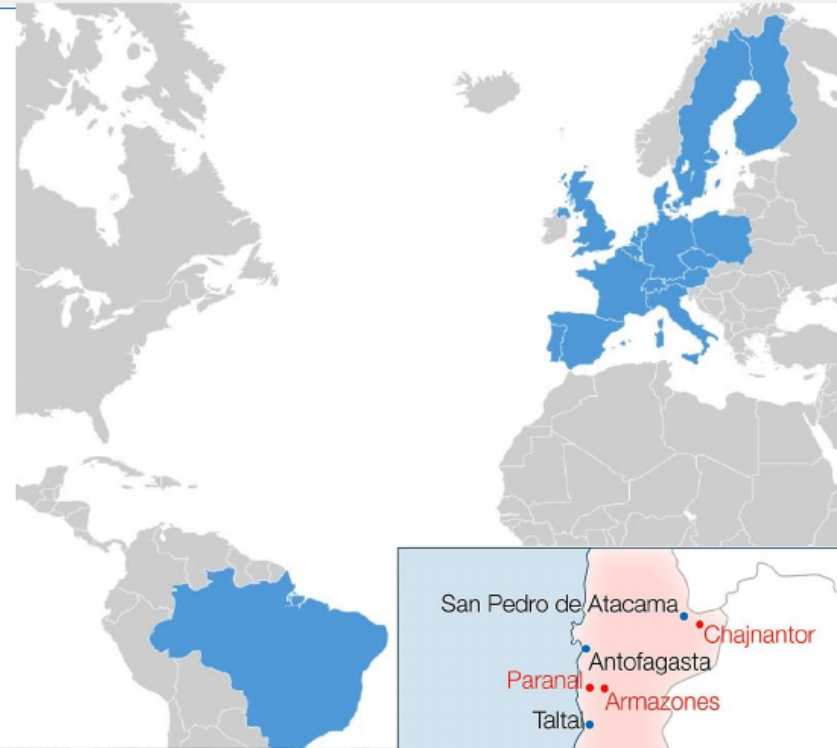


Felix Stoehr



European Southern Observatory

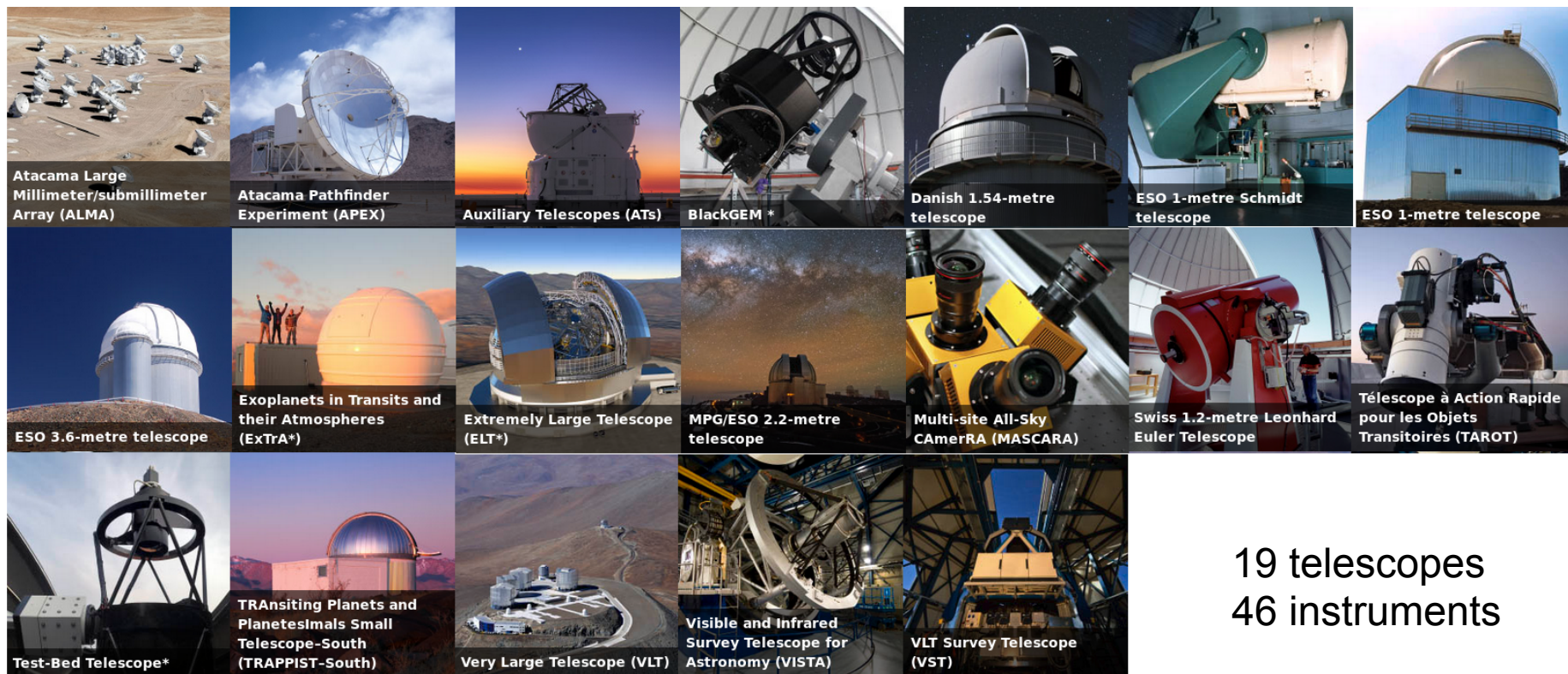
- European Organisation for Astronomical Research in the Southern Hemisphere
- 1962: 5 founding Member States
- 2017: 15 (+1) Member States
- Observatories located in Atacama desert, Chile



ESO observatory sites



ESO Telescopes



19 telescopes
46 instruments

ESO commitment

- ESO is committed to **open data**
- policy: data are public after a proprietary period of 12 months
- ESO provides very extensive user-support
 - USD
 - ALMA Regional Centres
- Workshops
 - LSP Users workshop, ESO calibration workshop, NEON School, ALMA Band 5 workshop, ...
- Joint observing programs
 - (XMM-VLT/VLTI, ALMA VLBI)

Future challenges

■ So much data

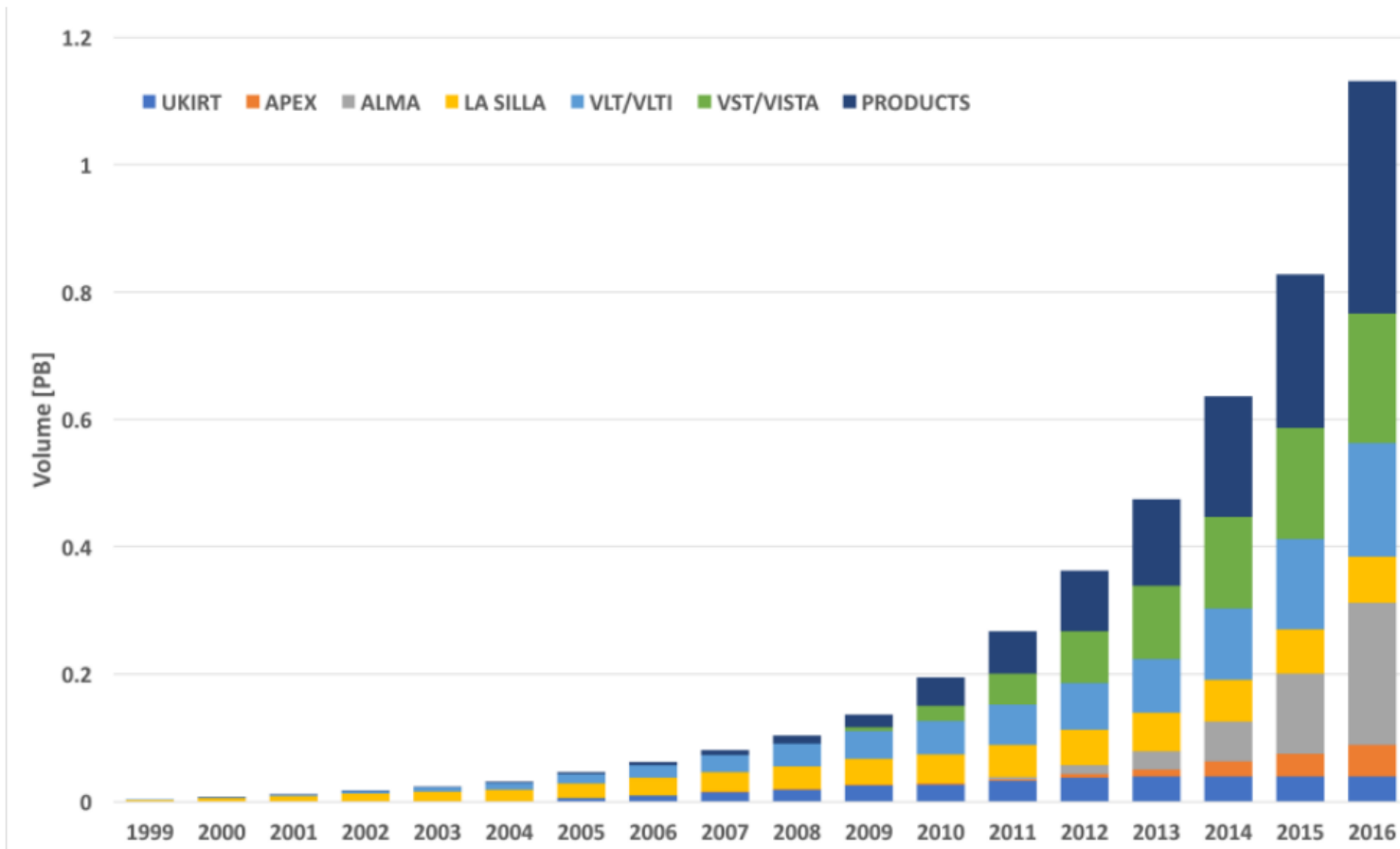
- SKA: up to 180TB/year/astronomer
- 2D images -> 3D data-cubes
- Most pixels will never be looked at by humans

■ Solutions:

- Processing to higher levels (pipelines)
- Data-mining and machine learning

■ Astronomers will become consumers of data

ESO Science Archives



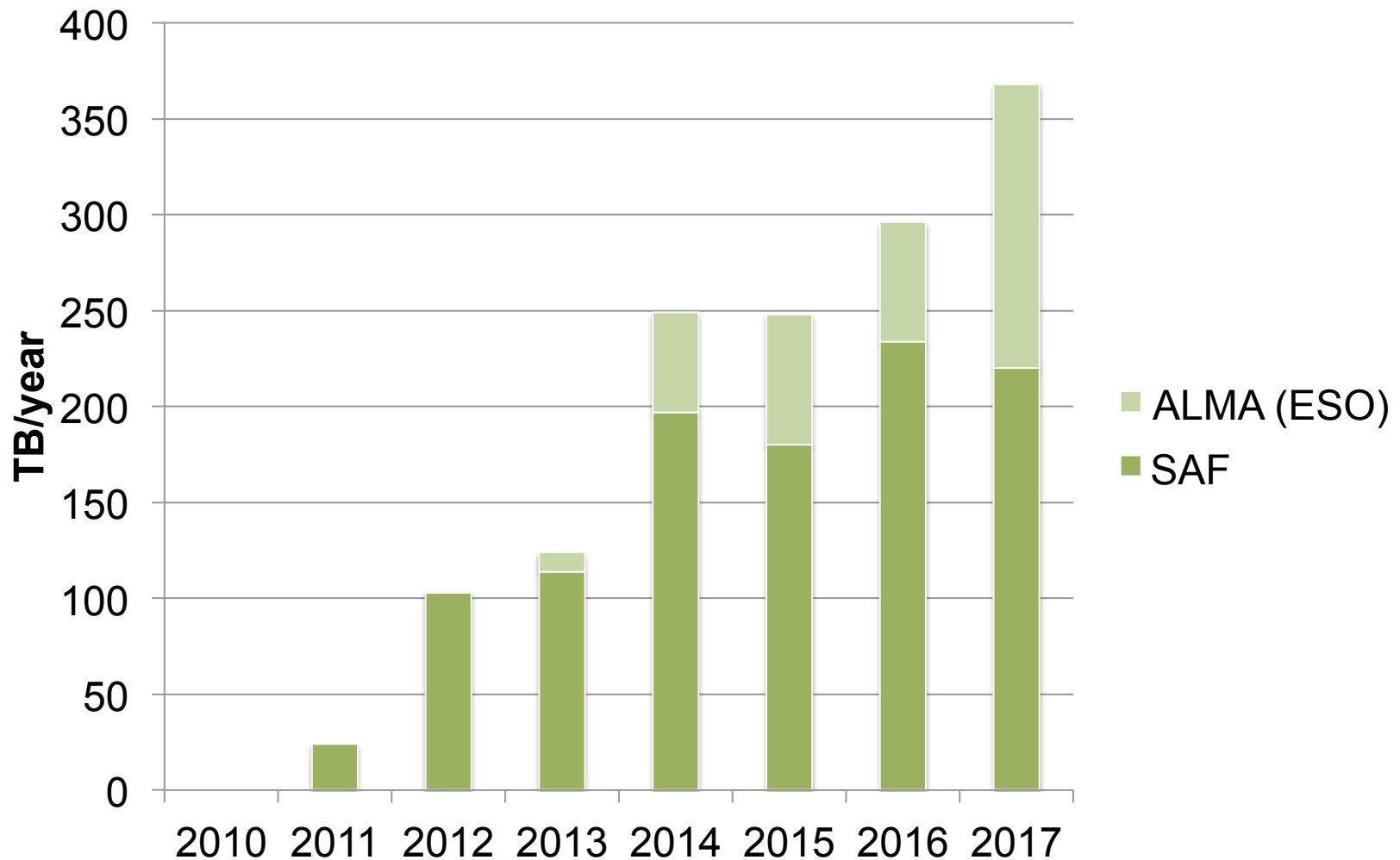
■ ~1200 TB / 50 million files

■ 24 Tb per month increase

Data volume / rates are not currently a problem...

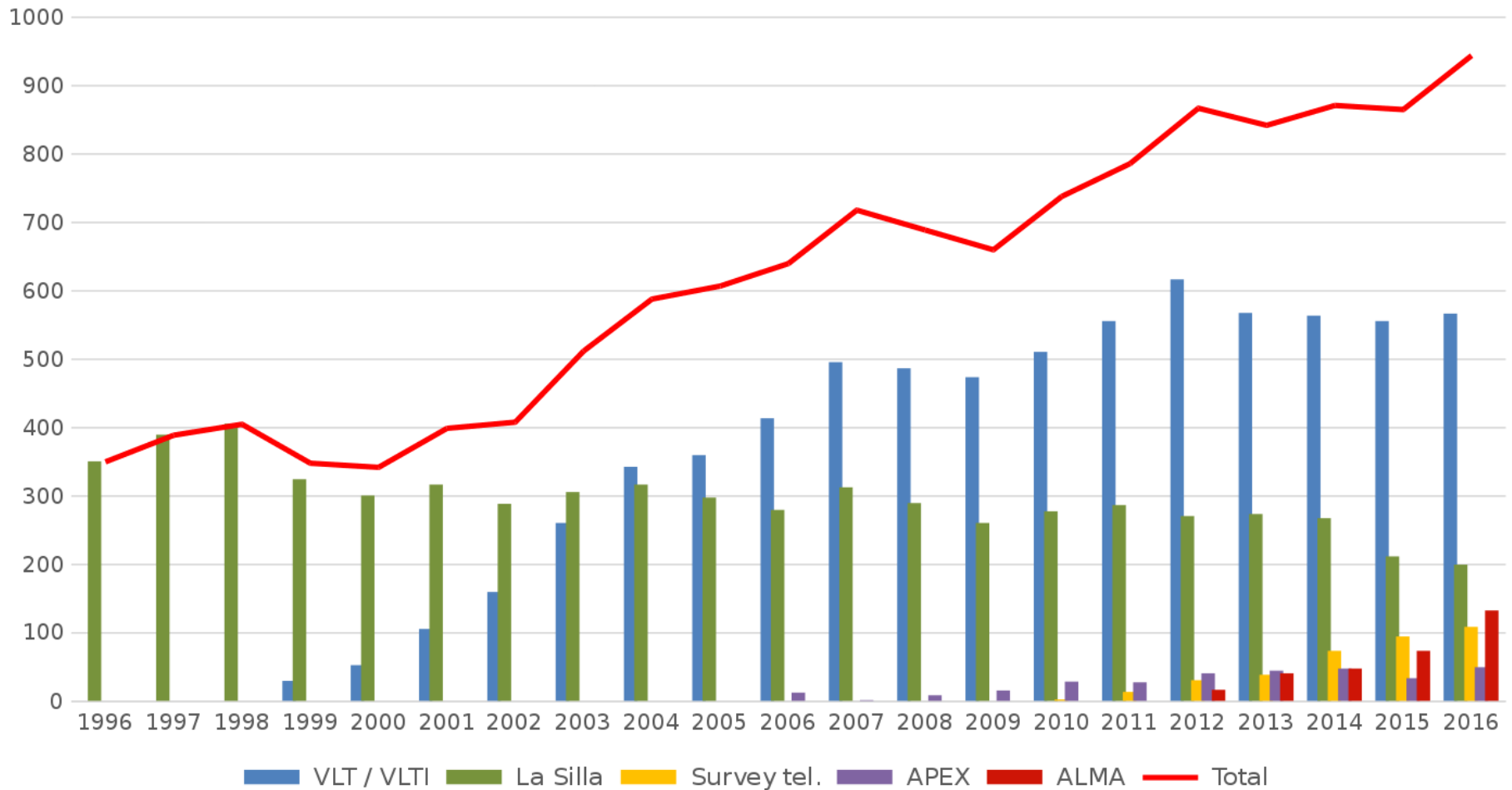
-- **Labour & \$\$\$ & Brainpower**

Data downloads

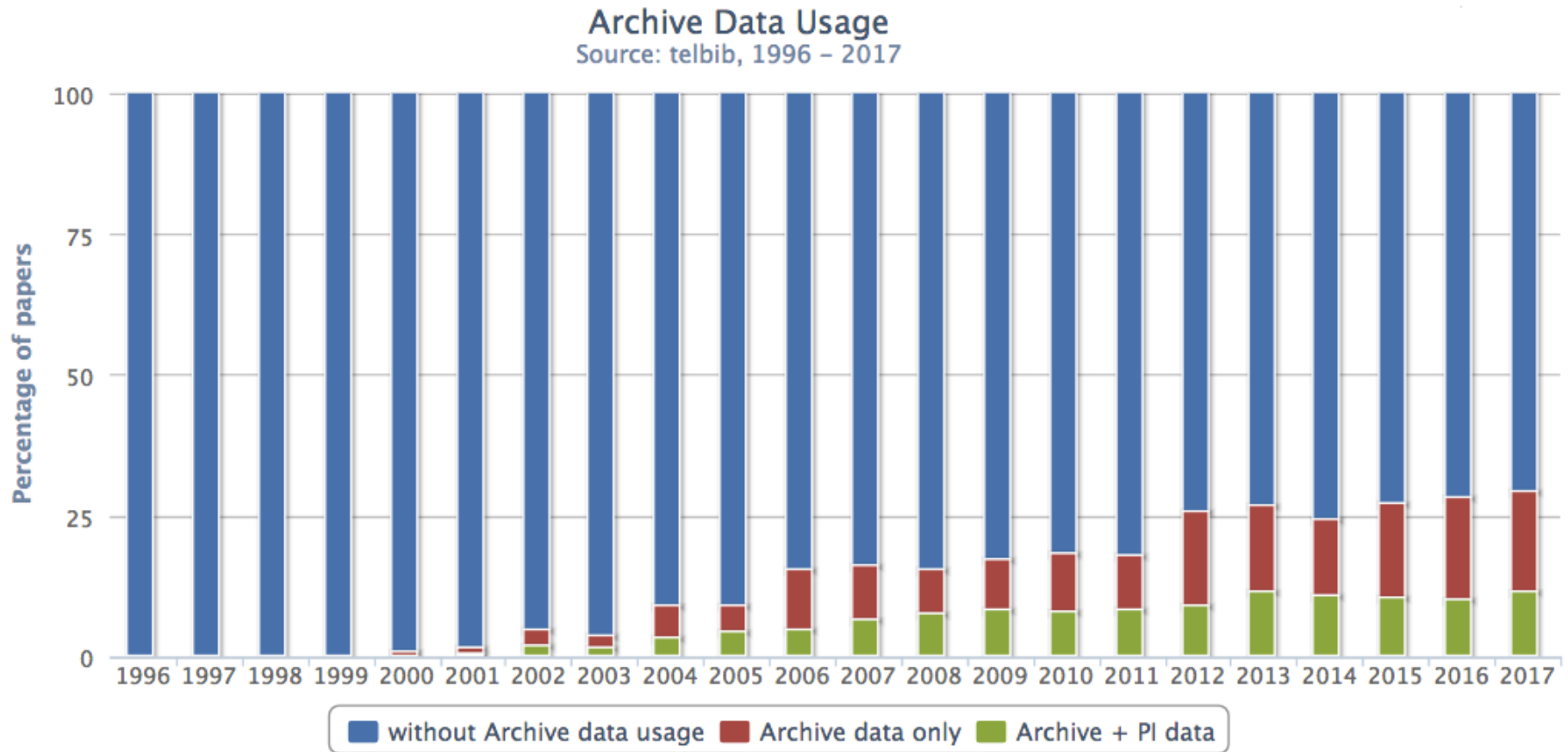


Publication statistics

ESO Publications 1996-2016



Archival publications





Archive interfaces

ESO Science Archive - Data Products

Search by Target/Position
Target/RA Dec (RA/deg)

▼ Collapse all

Object

- ☐ ATLAS survey 44944
- ☐ HD128421 19429
- ☐ Str05 13484
- ☐ Str04 13176
- ☐ Str06 12748

Show 45 more out of 426415

Search...

Data Type

- ☐ SPECTRUM 198913
- ☐ CATALOG 279729
- ☐ IMAGE 271072
- ☐ CUBE 5884
- ☐ VISIBILITY 1134

Instrument

- ☐ GIRAFFE 1369713
- ☐ VIRCAM 448871
- ☐ HARPS 255586
- ☐ UVES 126680
- ☐ VIMOS 118264

Show 15 more out of 20

Date of Observation

1999 2002 2005 2008 2011 2014 2017

from to

Total Exposure Time (s)

Showing 100 out of 2546813 results 0 records marked (0)

Request marked datasets Request all datasets

ESO 2017

Coming soon!

Actions	Priv.	Object	Data Type	Instrum.	Obs.Date	T.Exp.T.	Spec.Range	Spec.Res.	SNR	P.L.	Program Id	Collection	#OE's	Pub.Date
☐	☐	HD223681	SPECTRUM	HARPS	2017-06-14	515.1	378.2-691.3 nm	115000	20	LAGRANGE, A.-M.	099.C-0205	HARPS	single	2017-06-15
☐	☐	HD223681	SPECTRUM	HARPS	2017-06-14	900	378.2-691.3 nm	115000	20.2	LAGRANGE, A.-M.	099.C-0205	HARPS	single	2017-06-15
☐	☐	HD218860	SPECTRUM	HARPS	2017-06-14	900	378.2-691.3 nm	115000	46.4	LAGRANGE, A.-M.	099.C-0205	HARPS	single	2017-06-15
☐	☐	HD218860	SPECTRUM	HARPS	2017-06-14	900	378.2-691.3 nm	115000	42.8	LAGRANGE, A.-M.	099.C-0205	HARPS	single	2017-06-15
☐	☐	HD000013	SPECTRUM	HARPS	2017-06-14	900	378.2-691.3 nm	115000	10	LANNIER, JUSTINE	097.C-0864	HARPS	single	2017-06-15
☐	☐	HD000013	SPECTRUM	HARPS	2017-06-14	900	378.2-691.3 nm	115000	9.8	LANNIER, JUSTINE	097.C-0864	HARPS	single	2017-06-15
☐	☐	HD202917	SPECTRUM	HARPS	2017-06-14	900	378.2-691.3 nm	115000	48.9	LAGRANGE, A.-M.	099.C-0205	HARPS	single	2017-06-15
☐	☐	HD202917	SPECTRUM	HARPS	2017-06-14	900	378.2-691.3 nm	115000	42.1	LAGRANGE, A.-M.	099.C-0205	HARPS	single	2017-06-15
☐	☐	HD174429	SPECTRUM	HARPS	2017-06-14	700	378.2-691.3 nm	115000	54.5	LAGRANGE, A.-M.	099.C-0205	HARPS	single	2017-06-15
☐	☐	HD174429	SPECTRUM	HARPS	2017-06-14	700	378.2-691.3 nm	115000	51.3	LAGRANGE, A.-M.	099.C-0205	HARPS	single	2017-06-15
☐	☐	HD191089	SPECTRUM	HARPS	2017-06-14	300	378.2-691.3 nm	115000	53.5	LAGRANGE, A.-M.	099.C-0205	HARPS	single	2017-06-15

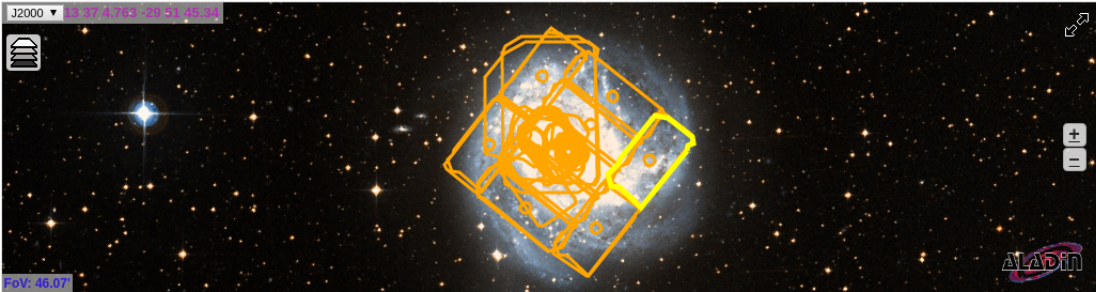
Archive interfaces

ALMA Science Archive Query

[Query Form](#)
[Results Table](#)

[Submit download request](#)
[Close Viewer](#)
[Results Bookmark](#)
[Export Table](#)
[Results Help](#)

J2000
13:37:4.703 -29:51:46.34



More columns
Showing 72 of 72 rows.

	Project code	Source name	RA	Dec	Band	Integration	Release date	Velocity resolution	Frequency support	Pub
Filter:			H.M.S	D.M.S		seconds		m/s		
☐	2015.1.01593.S	m83	13:37:02.13	-29:52:06.3	7	37.579	2017-04-19	848.91	344.29..360.15GHz	Q
☐	2015.1.01593.S	m83	13:37:00.92	-29:51:56.7	3	33786.720	2017-05-05	2684.00	94.84..110.83GHz	Q
☐	2015.1.01593.S	m83	13:37:05.63	-29:51:07.9	7	37.578	2017-05-20	848.91	344.29..360.15GHz	Q
☐	2013.1.01161.S	M83	13:37:00.75	-29:51:58.0	6	9822.960	2017-07-01	2458.25	229.14..247.21GHz	Q
☐	2015.1.01177.S	m83	13:37:00.92	-29:51:56.7	3	2419.200	2017-07-25	6659.15	85.61..101.27GHz	Q
☐	2015.1.01593.S	Project title Molecular Clouds and Star Formation: Across M83						2684.00	94.83..110.83GHz	Q
☐	2015.1.01593.S							849.02	344.16..360.19GHz	Q
☐	2015.1.01177.S	PI name Sakamoto, Kazushi						6659.56	85.60..101.27GHz	Q
☐	2015.1.01593.S							849.01	344.16..360.20GHz	Q
☐	2016.1.00386.S	Proposal abstract We propose an arcsecond-resolution imaging of molecular gas in the central 10 kpc of M83, a third of which has been taken in Cycle 3. We will study molecular gas and cloud properties, star formation, their interrelation as well as relation to gas dynamics. M83 is the nearest face-on grand-design spiral galaxy with a stellar bar. Our mapping area contains two grand-design spiral arms, entire bar, and most of star forming regions in the galaxy. We will resolve individual GMCs at 20 pc resolution and achieve 10-sigma mass sensitivity of 1e4 Msun for beam-size clouds. Statistical properties of the GMCs will be analyzed as a function of gas dynamical environment (e.g., circumnuclear, on/off bar, bar-end, on-/inter-arm, and outer disk). We will also quantify using HST data the association of GMCs to young star clusters and HII regions. Our central question is : How do galactic structures such as the bar and spiral arms affect the properties of GMCs and subsequent star formation? Our unprecedentedly detailed wide-area observations will allow a significant progress toward its answer. The data will also serve as a base for multi-wavelength studies of M83 by the community.					2386.39	229.64..247.20GHz	Q	
☐	2016.1.00386.S							2386.32	229.65..247.21GHz	Q
☐	2016.1.00386.S							2386.33	229.65..247.21GHz	Q
☐	2016.1.00164.S							5691.17	95.00..110.77GHz	Q
☐	2016.1.00386.S							2386.33	229.65..247.21GHz	Q
☐	2016.1.00386.S							2386.29	229.66..247.21GHz	Q
☐	2016.1.00386.S							2386.25	229.64..247.21GHz	Q
☐	2016.1.00164.S							6012.12	89.51..105.22GHz	Q

Virtual Observatory

- The original idea of the VO has become **a reality!**
- ESO is committed to provide VO services
- Heavy use of VO standards, protocols and tools
 - VOTable, HiPS, STC-S, ObsCore, ADQL, AVM, ...
 - TAP, ObsTAP, SIAPv2, SSAP, ...
 - AladinLite, OpenCADCTap, TAPLibrary, ...
- Personal: “Could the UN endorse the IVOA?”



ESO data for everyone

■ ESA/ESO/NASA FITSliberator

➤ <https://github.com/esobservatory/fitsliberator>

■ Content distribution standard for planetariums

➤ www.data2dome.org

■ Astronomy visualization metadata (AVM)

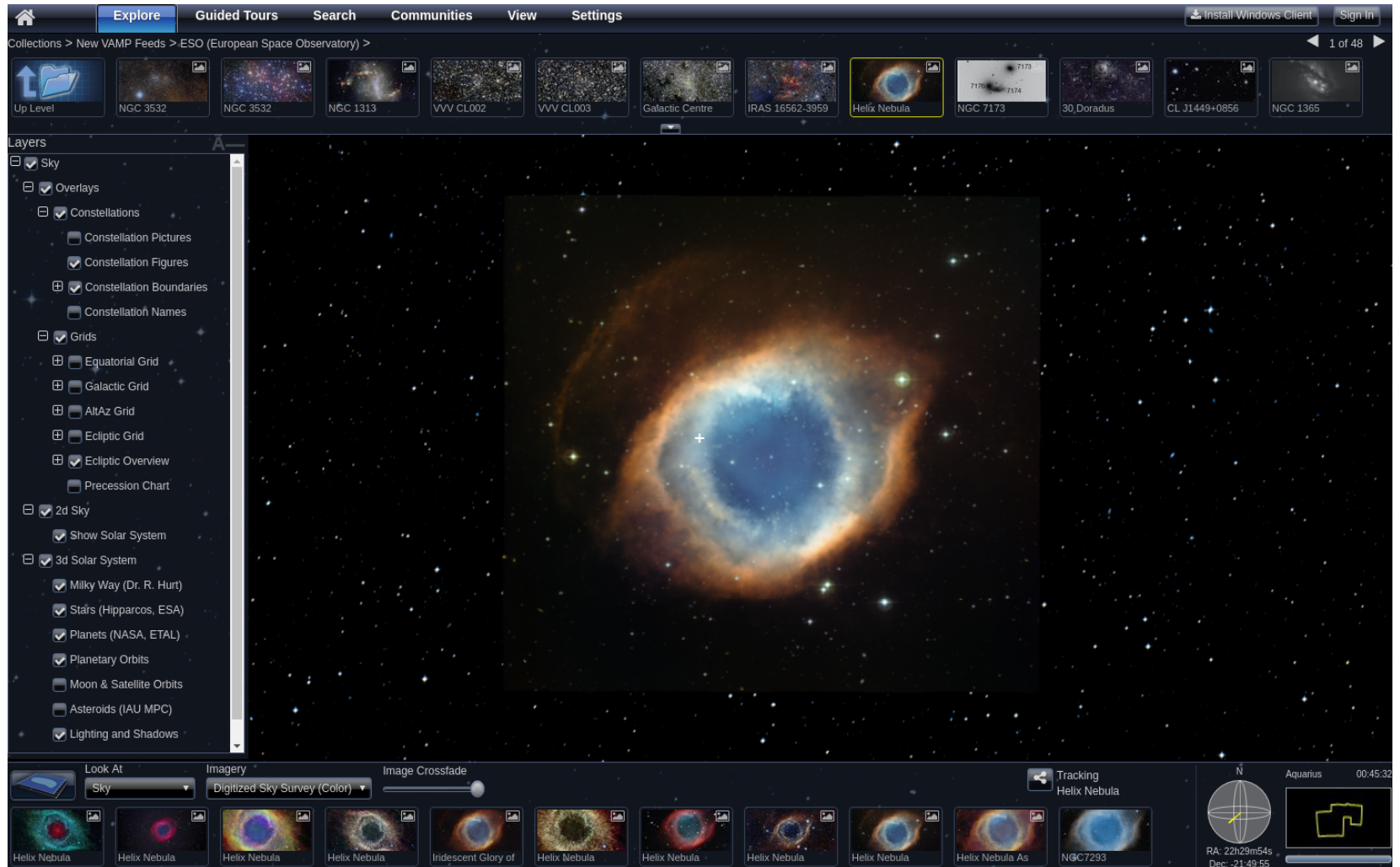
➤ IVOA-endorsed standard (in development)

➤ Already integrated into the
www.worldwidetelescope.org (WWT)



ESO data for everyone

www.worldwidetelescope.org





data for everyone

www.worldwidetelescope.org

Spitzer

Chandra

HST