



Basic ESO Publication Statistics

Prepared by:

Uta Grothkopf, Silvia Meakins, Nathalia Escarlante, Leslie Saldías

ESO Library and Information Centre

European Southern Observatory (ESO)

library@eso.org

Version 12.3, August 2021

DOI [10.18727/docs/1](https://doi.org/10.18727/docs/1)

Table of Contents

Introduction	2
Publications	3
Citations	4
ESO and other Observatories	5
ESO Top 20	6
VLT instruments	8
VLTI instruments	9
Survey telescopes: VISTA + VST	10
La Silla instruments	11
APEX	12
ALMA	13
Further Information	14

Introduction

What is the ESO Telescope Bibliography?

The ESO Telescope Bibliography (telbib) is a database of refereed papers published by the ESO users' community. All papers use partly or exclusively data from ESO telescopes.

Paper classification / selection criteria

Papers pertaining to the ESO Telescope Bibliography use partly or exclusively data from ESO facilities. These can be observations taken by the authors or data obtained from the ESO Science Archive or other sources, regardless of whether or not the observations have been published before. However, papers that merely quote results from the literature, that are derived from ESO data, are excluded. Likewise, papers that describe instrumentation or software, simply mention ongoing projects (e.g., surveys or Large Programmes), suggest future observations with ESO facilities, develop models or run simulations, using data merely as examples, are not included in telbib. Also excluded are papers which show ESO images as a visual reference rather than using them to achieve scientific results.

The ESO librarians communicate with authors as well as ESO instrument scientists and archive specialists to determine if, and which, observations were used in publications. The final decision about inclusion or exclusion of a given paper lies with the ESO Director for Science.

Coverage and Completeness

telbib contains records from publication year 1996 onwards. New records are added approx. 3 weeks after they appear with their final bibcode on the NASA ADS Abstract Service. The following journals are routinely screened: *A&A*, *A&ARv*, *AJ*, *AN*, *ApJ*, *ApJS*, *ARA&A*, *EM&P*, *Icarus*, *MNRAS*, *Nature*, *NewA*, *NewAR*, *PASJ*, *PASP*, *P&SS*, *Science*.

For VLT/VLTI and Chajnantor facilities, instrument-level information and program IDs are available since the beginning of operations. All papers based on data from La Silla facilities are tagged with telescope labels since 1996, but instrument labels and program IDs have only been assigned to papers from publishing year 2000 onwards. In addition, some instruments (e.g., FEROS@1.5 m telescope) may have been operated under special agreements for which no program IDs exist.

We make extensive efforts in order to identify all refereed papers that use ESO data (see also the telbib Help pages at <http://telbib.eso.org/help.html>) and consider telbib essentially complete.

Populating the Database

telbib is compiled by scanning the major astronomy journals for scientific papers that contain any of the ESO-defined keywords (e.g., telescope and instrument names). Bibliographic information, citations and some further metadata are imported from the NASA ADS Abstract Service. Standardized descriptions of telescopes and instruments, survey names and other tags as well as ESO program IDs are assigned by the librarians.

Access, Reports, Statistics

telbib's public interface is available at <http://telbib.eso.org>. While the public interface provides access to some publications that use data obtained during non-ESO time (such as APEX observations obtained during Max Planck, Onsala, or Chilean observing time), statistics reported in this document include only papers based on data from telescopes and instruments for which observing time is recommended by the ESO OPC (Observing Programmes Committee), unless explicitly mentioned otherwise.

Metrics derived from the database can be explored in various ways:

- search results are shown in tabular format. Whenever possible, entries include ESO program IDs that provide direct links to the data in ESO Archive. The results can be exported for further use
- search results can be visualized as animated charts which are created on-the-fly, based on the user's queries
- interactive graphs of selected statistics are available in the telbib Statistics area (<http://telbib.eso.org/telbibstats/>)
- an overview of publication statistics is available at http://telbib.eso.org/pubstats_overview.php. In order to make our statistics more transparent and reproducible, the numbers are linked to the corresponding records in the telbib database
- various metrics as well as instrument-level statistics derived from the database can be found in this document, "Basic ESO Statistics", which is available on the [ESO Libraries homepage](#) or directly at <http://www.eso.org/libraries/edocs/ESO/ESOstats.pdf>
- lists of papers included in the ESO telescope bibliography are available as Supplements to the ESO Annual Report (<http://www.eso.org/public/products/annualreports/>).

For more detailed reports, contact the ESO librarians (library@eso.org).

Publications

ESO publication statistics are derived from the Telescope Bibliography (telbib), a database of refereed articles that directly use ESO data. telbib is maintained by the ESO library. Here, we provide some basic statistics to give an overview of publications and citations for the publication years 1996-2020.

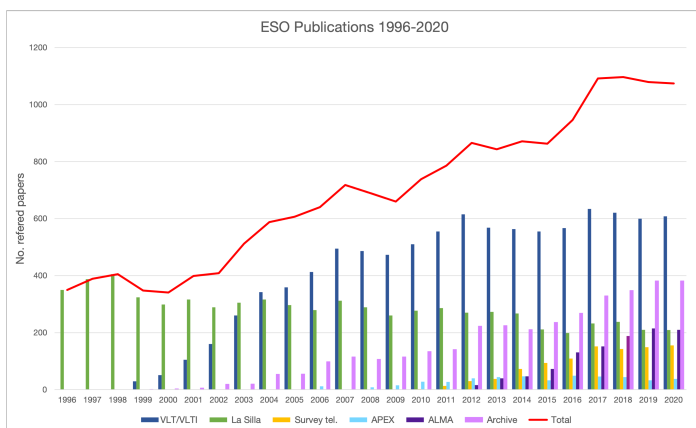


Fig. 1: Refereed papers using ESO data

Notes:

VLT/VLTI: papers using data generated by VLT and VLTI instruments, including visitor instruments for which observing time is recommended by the ESO OPC (Observing Programmes Committee), e.g., VLT Ultracam, VLTI PIONIER.

La Silla: papers using data generated by facilities located on La Silla, including visitor instruments for which observing time is recommended by the ESO OPC, e.g., NTT Ultracam. Papers based on data from non-ESO telescopes or observations obtained during 'private' periods are not included.

Survey telescopes: papers using data generated by ESO's survey telescopes VISTA and VST

APEX: papers using data generated by APEX, including visitor instruments for which observing time is recommended by the ESO OPC, e.g., APEX P-Artemis, APEX Z-Spec. Other visitor instruments (e.g., APEX/CONDOR) are excluded. Only papers based (entirely or partly) on ESO APEX time are included.

ALMA: papers using data generated by ALMA. Only papers based (entirely or partly) on European ALMA time are included.

Archive: papers using partly or exclusively data based on archival data, i.e., observations without any overlap between observers and authors.

Papers can use data from more than one facility, therefore the total number cannot be calculated by simply adding all publications of the individual sites, telescopes, or instruments.

Publication and citation statistics mentioned in this report date from December 2020, unless indicated otherwise.

Table 1: Number of refereed papers using ESO data (see also <http://telbib.eso.org/pubstats/overview.php>)

	VLT / VLTI	La Silla	Survey tel.	APEX	ALMA	Arc.	Total
1996		350					350
1997		388					389
1998		405					405
1999	29	324					348
2000	51	299					341
2001	105	316					399
2002	160	289					409
2003	260	305					512
2004	342	316					588
2005	359	297					607
2006	413	279		12			640
2007	495	312		1			718
2008	486	289		8			689
2009	473	260		15			660
2010	510	277	2	28			738
2011	555	286	13	27			786
2012	615	270	30	40	16		866
2013	568	273	38	44	40		843
2014	563	267	73	47	47		871
2015	555	211	94	33	73		863
2016	567	199	109	49	131		946
2017	634	232	152	46	152		1092
2018	621	238	143	44	188		1097
2019	600	210	149	33	215		1080
2020	608	209	155	38	210		1077

Citations

In bibliometric studies, numbers of publications show the observatory's productivity, citations the impact papers have made among the community. Since it takes time to gather citations, older papers typically have higher citation numbers than recent ones.

While it is tempting to use publication and citation statistics for comparisons, this has to be done with **utmost care** as the numbers may have been obtained with different methodologies.

	Pubs	Cites	Average
1996	350	17970	51,34
1997	389	18750	48,20
1998	405	36148	89,25
1999	348	29833	85,73
2000	341	18789	55,10
2001	399	21793	54,62
2002	409	24737	60,48
2003	512	37368	72,98
2004	588	45000	76,53
2005	607	36285	59,78
2006	640	45489	71,08
2007	718	44755	62,33
2008	689	40566	58,88
2009	660	45278	68,60
2010	738	44861	60,79
2011	786	41293	52,54
2012	866	41556	47,99
2013	843	44715	53,04
2014	871	38860	44,62
2015	863	35645	41,30
2016	946	34780	36,77
2017	1092	34955	32,01
2018	1097	29438	26,84
2019	1080	17449	16,16
2020	1077	8708	8,09

Table 2: Total and average citations of refereed papers using ESO data

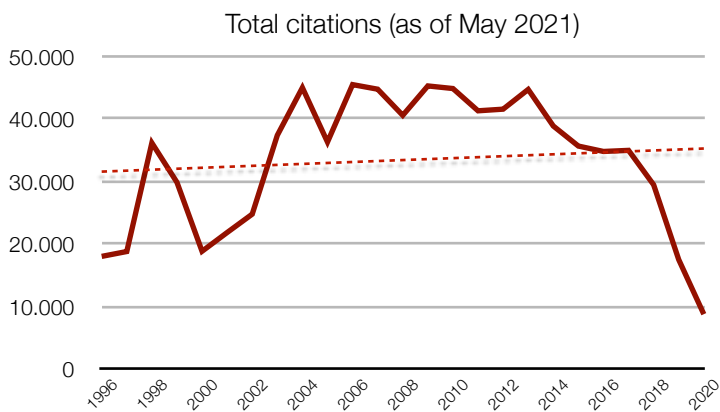


Fig. 2a: Total citations of papers using ESO data (with trend line)

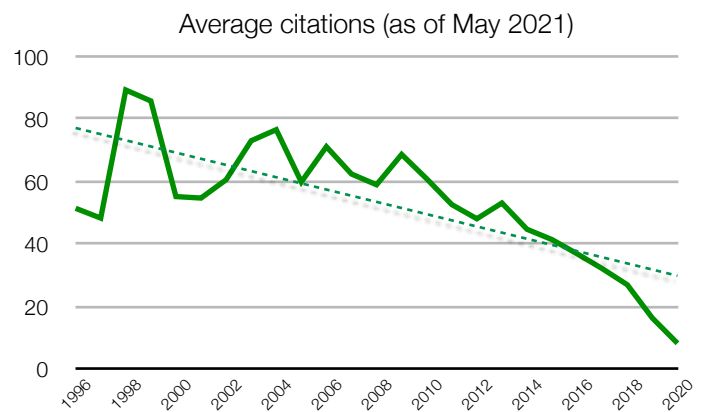


Fig. 2b: Average citations of papers using ESO data (with trend line)

ESO and other Observatories

In order to put ESO's research output into context, we give an overview of the total numbers of publications of major observatories for the publication years 1996 to 2020 (if already available). Note that some facilities date back further than that; their early years are not included in this graph.

The **most simplistic way** of comparing facilities is to look at the numbers of publications. Obviously, this favors large institutions with many facilities over smaller ones. **A more meaningful investigation should normalize the numbers** in some way, for instance by number of observing hours, by actual share of data used in the papers (as many scientific articles use data from more than one observatory), or by budget (telescope construction costs and maintenance).

When comparing publication statistics among different observatories, it is essential to assess the **selection criteria** applied by each observatory. To the best of our knowledge, the observatories shown in this graph include only papers that actually use observational data from their facilities (as opposed to merely referencing them). All papers were published in refereed journals.

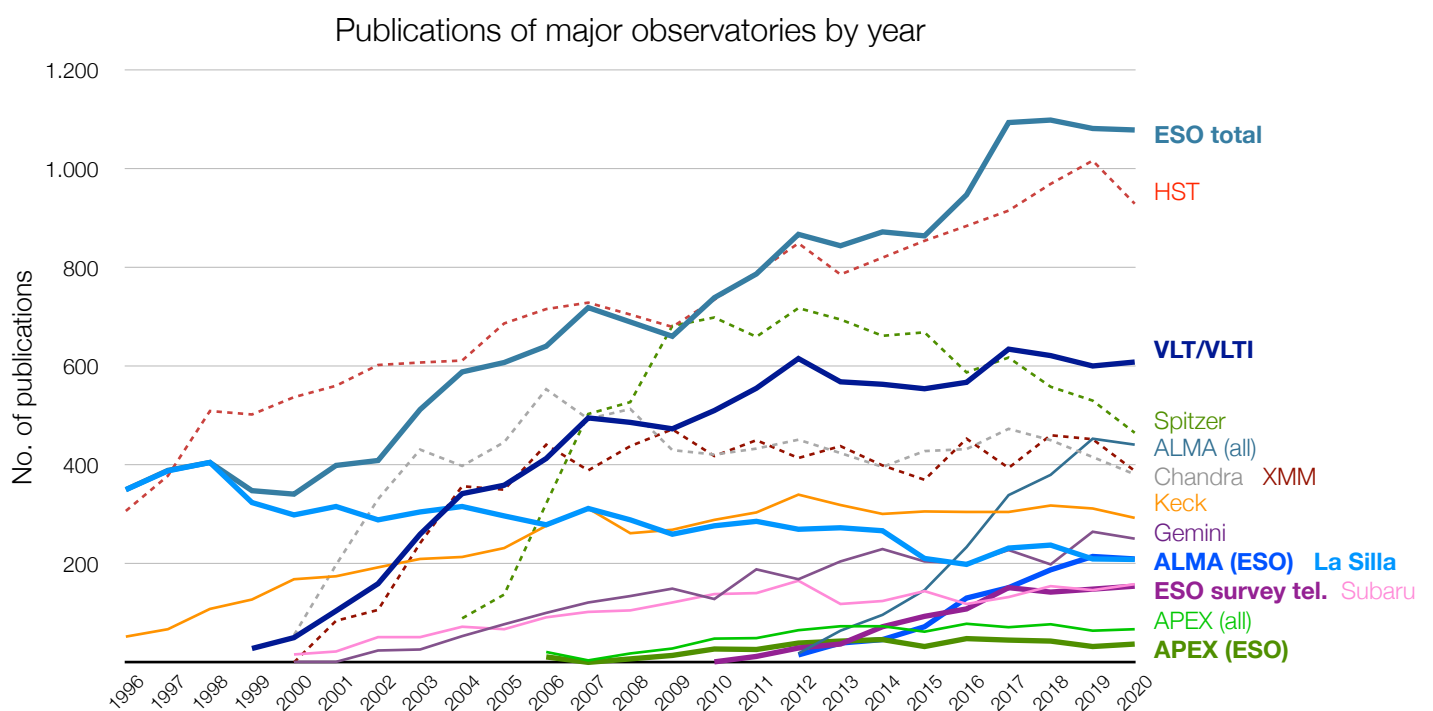


Fig. 3: Refereed publications by ESO and other observatories (mostly as of 05/2021; info for 2020 may still be preliminary.)

Thick lines: ESO facilities. **Thin lines:** other ground-based facilities. **Dashed lines:** space-based facilities.

Please note that selection criteria for inclusion or exclusion of papers vary among observatories.

The statistics shown in Fig. 3 and Table 3 were obtained as follows:

ESO total, VLT/VLTI, La Silla, ESO survey telescope, APEX (ESO and all partners), **ALMA** (Europe and all partners):

ESO Telescope Bibliography (<http://telbib.eso.org>)

Chandra: Chandra Bibliographic Statistics (<http://cxc.harvard.edu/cda/bibstats/bibstats.html>) 'Refereed Chandra Science Papers' and www.eso.org/http://cxc.harvard.edu/cda/bibstats/plots/Current/Papers_by-year.txt

Gemini: Gemini publications, (www.gemini.edu/science/publications/)

HST: HST Publication Statistics (<http://archive.stsci.edu/hst/bibliography/pubstat.html>)

Keck: Keck Science Bibliography (http://www2.keck.hawaii.edu/library/keck_papers.html)

Spitzer: Spitzer Bibliographical Database (<http://sohelp2.ipac.caltech.edu/bibsearch/>, Observational + Legacy Enhanced Data Products)

Subaru: Subaru Publishing Results (<https://subarutelescope.org/Observing/Proposals/Publish/index.html>)

XMM: XMM-Newton in the Journals (<http://heasarc.gsfc.nasa.gov/docs/xmm/xmmbib.html>). Number of publications per year provided by Norbert Schartel, ESA, Madrid, Spain

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Bibliographies
ESO total	348	341	399	409	512	588	607	640	718	689	660	738	786	866	843	871	863	946	1092	1097	1080	1077	ESO telbib
VLT/VLTI	29	51	105	160	260	342	359	413	495	486	473	510	555	615	568	563	555	567	634	621	600	608	ESO telbib
La Silla	324	299	316	289	305	316	297	279	312	289	260	277	286	270	273	267	211	199	232	238	210	209	ESO telbib
ESO survey tel.												2	13	30	38	73	94	109	152	143	149	155	ESO telbib
APEX (ESO)								12	1	8	15	28	27	40	44	47	33	49	46	44	33	38	ESO telbib
ALMA (ESO)														16	40	47	73	131	152	188	215	210	ESO telbib
APEX (all)								22	5	19	29	49	50	66	74	74	63	79	72	78	65	68	ESO telbib
ALMA (all)														19	65	97	147	234	339	380	453	441	ESO telbib
Chandra		56	198	331	431	398	446	553	493	513	430	421	433	451	424	396	426	432	473	450	416	381	Chandra Bibliogr.
Gemini		2	2	25	27	54	78	101	122	135	150	129	189	169	205	230	205	201	228	199	265	251	Gemini public.
HST	502	537	560	602	607	611	686	715	728	704	679	734	789	848	785	819	853	883	914	968	1015	928	HST
Keck	128	169	175	193	210	214	232	277	312	262	269	289	304	340	319	301	306	305	305	318	312	293	Keck Science Bibliogr.
Spitzer						90	138	322	503	527	681	698	659	717	694	661	668	587	617	558	530	465	Spitzer Biblio. DB
Subaru		17	23	52	52	73	68	92	103	106	122	139	141	166	119	125	145	119	133	155	147	159	Subaru Pub. Stats
XMM		1	85	107	242	357	350	441	389	438	472	418	450	414	438	399	370	453	394	460	452	388	XMM

Table 3: Number of refereed papers using data from ESO and other observatories. Pre-1999 statistics can be found via the links listed below Fig. 3

ESO Top 20

The ESO Top 20 list contains the 20 articles that gathered the highest number of citations. All papers directly use ESO data and were published in refereed journals.

The first two papers are the two highest quoted refereed papers listed on the ADS (see <http://tinyurl.com/lwb2tbc>)

#	Bibcode	Citations	Title	Authors	Telescopes / Instruments
1	1998AJ....116.1009R	13.101	Observational Evidence from Supernovae for an Accelerating Universe and a Cosmological Constant	Riess et al.	EMMI/NTT, 3.6m, 1.5m
2	1999ApJ...517..565P	12.899	Measurements of Omega and Lambda from 42 High-Redshift Supernovae	Perlmutter et al.	EFOSC2/3.6m
3	2018A&A...616A...1G	4.588	Gaia Data Release 2. Summary of the contents and survey properties	Gaia Collaboration et al.	OMEGACAM

(Contd. from previous page)

#	Bibcode	Citations	Title	Authors	Telescopes / Instruments
4	2004ApJ...607..665R	3.474	Type Ia Supernova Discoveries at $z > 1$ from the Hubble Space Telescope: Evidence for Past Deceleration and Constraints on Dark Energy Evolution	Riess et al.	FORS2
5	2016A&A...595A...1G	2.665	The Gaia mission	Gaia Collaboration et al.	OMEGACAM
6	2006A&A...447...31A	2.133	The Supernova Legacy Survey: measurement of Ω_M , Ω_Λ and w from the first year data set	Astier et al.	FORS1
7	2013Sci...340..448A	2.079	A Massive Pulsar in a Compact Relativistic Binary	Antoniadis et al.	FORS2
8	1998Natur.391...51P	2.005	Discovery of a supernova explosion at half the age of the universe	Perlmutter et al.	EFOSC1/3.6m
9	2017ApJ...848L..12A	1.833	Multi-messenger Observations of a Binary Neutron Star Merger	Abbott et al.	EFOSC2, FORS2, HAWK-I, MUSE, NACO, OMEGACAM, SOFI, VIMOS, VIRCAM, VISIR, X-SHOOTER
10	2003ApJ...594....1T	1.598	Cosmological Results from High- z Supernovae	Tonry et al.	FORS1, ISAAC
11	1998Natur.395..670G	1.556	An unusual supernova in the error box of the γ -ray burst of 25 April 1998	Galama et al.	EMMI/NTT
12	2003ApJ...598..102K	1.443	New Constraints on Ω_M , Ω_Λ , and w from an Independent Set of 11 High-Redshift Supernovae Observed with the Hubble Space Telescope	Knop et al.	EFOSC2, FORS1
13	2004A&A...418..989N	1.363	The Geneva-Copenhagen survey of the Solar neighbourhood. Ages, metallicities, and kinematic properties of $\sim 14\,000$ F and G dwarfs	Nordstrom et al.	Danish1.5
14	2004ApJ...600L..93G	1.338	The Great Observatories Origins Deep Survey: Initial Results from Optical and Near-Infrared Imaging	Giavalisco et al.	FORS1, FORS2, ISAAC, SOFI, WFI
15	2006ApJ...648L.109C	1.299	A Direct Empirical Proof of the Existence of Dark Matter	Clowe et al.	FORS1, WFI
16	2007ApJS..172....1S	1.280	The Cosmic Evolution Survey (COSMOS): Overview	Scoville et al.	VIMOS
17	2008ApJ...686..749K	1.267	Improved Cosmological Constraints from New, Old, and Combined Supernova Data Sets	Kowalski et al.	Danish1.5, EFOSC2
18	2014A&A...568A..22B	1.254	Improved cosmological constraints from a joint analysis of the SDSS-II and SNLS supernova samples	Betoule et al.	EMMI
19	2007ApJ...670..156D	1.208	Multiwavelength Study of Massive Galaxies at $z \sim 2$. I. Star Formation and Galaxy Growth	Daddi et al.	FORS2, ISAAC
20	2010ApJ...721..193P	1.185	Mass and Environment as Drivers of Galaxy Evolution in SDSS and zCOSMOS and the Origin of the Schechter Function	Peng et al.	VIMOS

Table 4: ESO Top 20 papers (as of May 2021)

VLT instruments

VLT papers use data generated by VLT instruments. Visitor instruments for which observing time is recommended by the ESO OPC (Observing Programmes Committee), e.g., VLT Ultracam, are included in the general VLT statistics (see page 3), but are not shown in Fig. 4. Instrument-level data for the VLT are available since the beginning of operations, i.e., from publication year 1999 onwards.

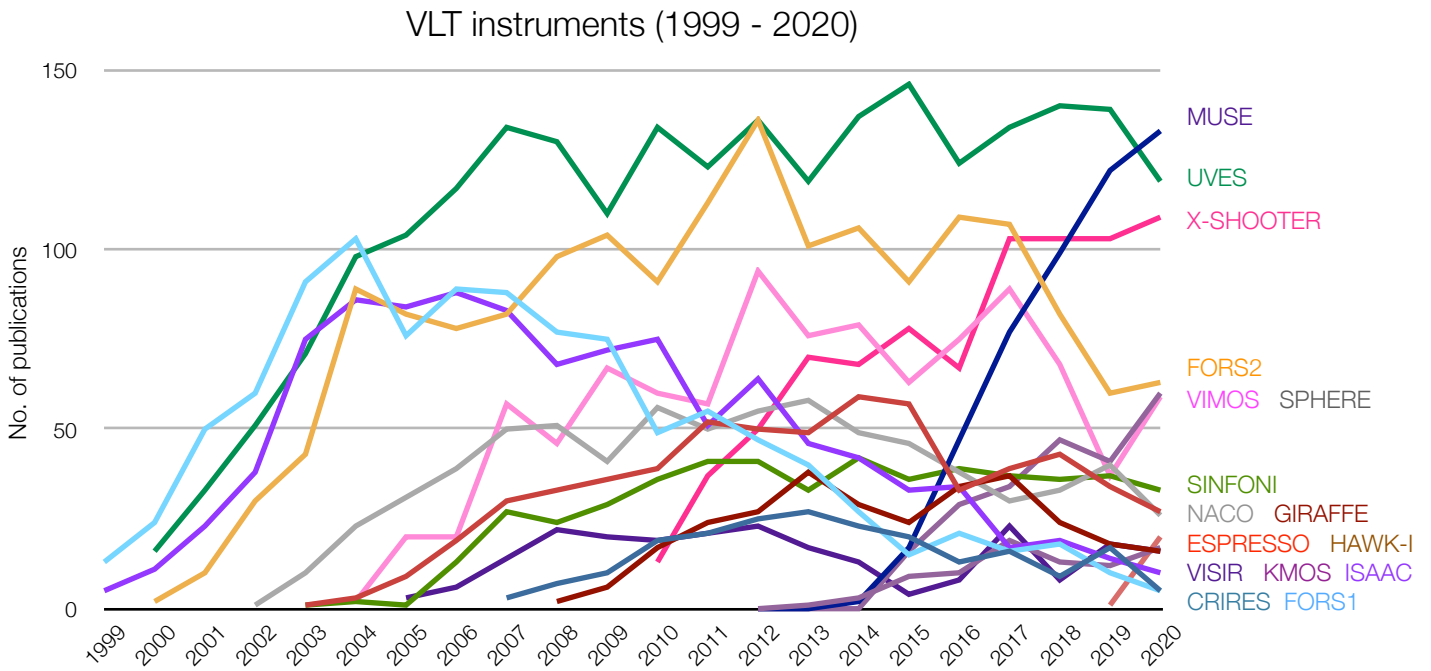


Fig. 4: Refereed publications using data from VLT instruments

FLAMES papers are listed as GIRAFFE and/or UVES. NACO = NAOS + CONICA. SINFONI = SPIFFI + MACAO

	VLT															
	CRIRES	ESPRESSO	FORS1	FORS2	GIRAFFE	HAWK-I	ISAAC	KMOS	MUSE	NACO	SINFONI	SPHERE	UVES	VIMOS	VISIR	X-SHOOTER
1999			13				5									
2000			24	2			11						16			
2001			50	10			23						33			
2002			60	30			38			1			51			
2003			91	43	1		75			10	1		71			
2004			103	89	3		86			23	2		98	2		
2005			76	82	9		84			31	1		104	20	3	
2006			89	78	19		88			39	13		117	20	6	
2007	3		88	82	30		83			50	27		134	57	14	
2008	7		77	98	33	2	68			51	24		130	46	22	
2009	10		75	104	36	6	72			41	29		110	67	20	
2010	19		49	91	39	17	75			56	36		134	60	19	13
2011	21		55	113	52	24	51			50	41		123	57	21	37
2012	25		47	136	50	27	64	0	0	55	41	0	136	94	23	50
2013	27		40	101	49	38	46	1	0	58	33	0	119	76	17	70
2014	23		27	106	59	29	42	3	2	49	42	0	137	79	13	68
2015	20		15	91	57	24	33	9	17	46	36	16	146	63	4	78
2016	13		21	109	33	34	34	10	47	38	39	29	124	75	8	67
2017	16		16	107	39	37	17	19	77	30	37	34	134	89	23	103
2018	9		18	82	43	24	19	13	99	33	36	47	140	68	8	103
2019	17	1	10	60	34	18	14	12	122	40	37	41	139	37	18	103
2020	5	20	5	63	27	16	10	17	133	26	33	60	119	59	16	109

Table 5: Number of refereed papers using VLT data

VLT instruments

VLT papers use data generated by VLT instruments, including visitor instruments for which observing time is recommended by the ESO OPC (Observing Programmes Committee), e.g, VLT PIONIER. Instrument-level data for the VLT are available since the beginning of operations, i.e., from publication year 2002 onwards.

VLT						
	AMBER	GRAVITY	MATISSE	MIDI	PIONIER	VINCI
2002						1
2003						6
2004				3		12
2005				5		12
2006	1			11		6
2007	9			19		4
2008	12			11		1
2009	12			18	1	4
2010	12			6	0	1
2011	16			13	4	1
2012	18			8	2	1
2013	20			20	3	0
2014	15			12	13	1
2015	11			10	4	0
2016	13			7	11	0
2017	10	7		5	15	1
2018	7	9		6	10	0
2019	7	8		6	12	0
2020	7	21	1	3	9	0

Table 6: Number of refereed publications using data from VLT instruments

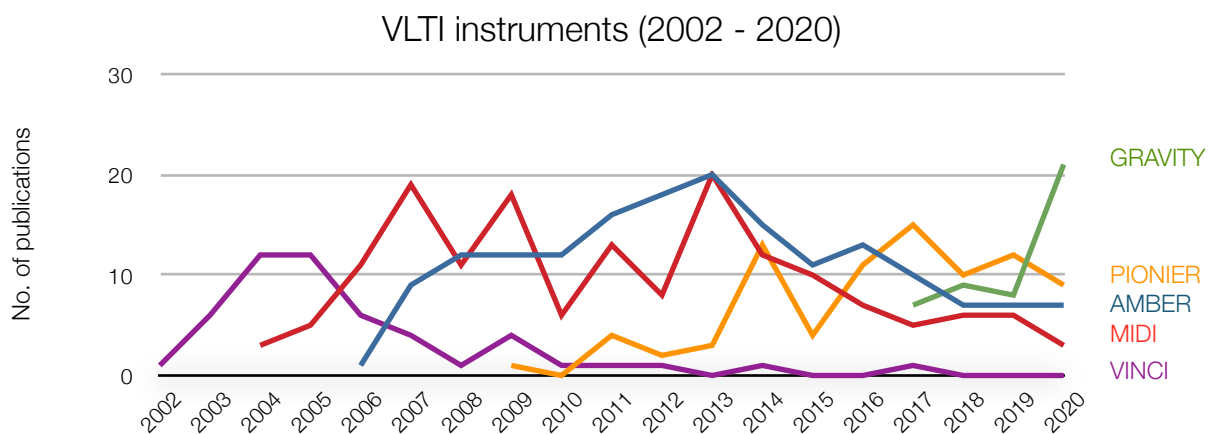


Fig. 5: Refereed publications using data from VLT instruments

Survey telescopes: VISTA + VST

ESO's Visible and Infrared Survey Telescope for Astronomy (VISTA), with its VIRCAM camera, has produced science papers since 2010. Papers mostly use data from the VV, VIKING, VMC, UltraVISTA, VHS, and VIDEO surveys. Observations with OmegaCAM at the VLT Survey Telescope (VST) led to the first data papers in 2014.

	VISTA (VIRCAM)	VST (OmegaCAM)
2010	2	
2011	13	
2012	30	
2013	38	
2014	65	8
2015	72	24
2016	94	19
2017	102	55
2018	106	48
2019	101	57
2020	116	61

Table 7: Number of refereed publications using data from the VISTA and VST telescopes

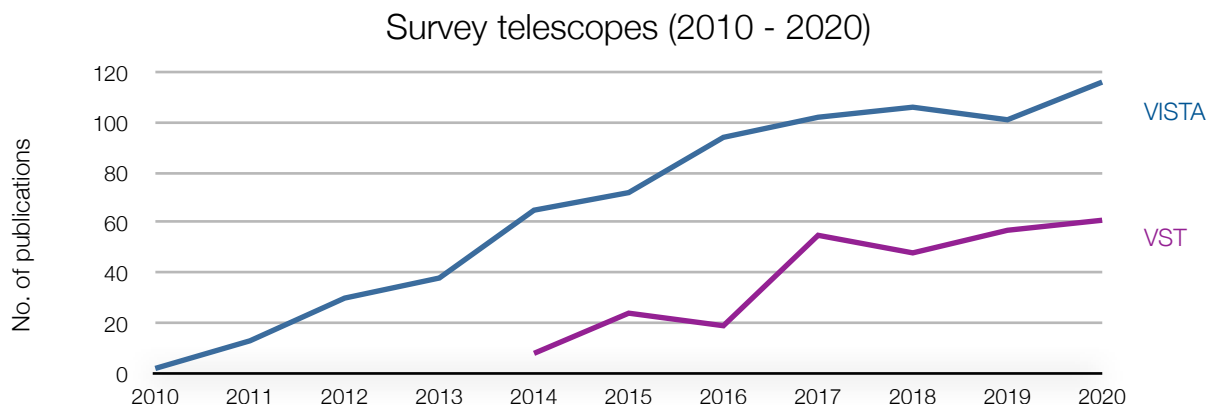
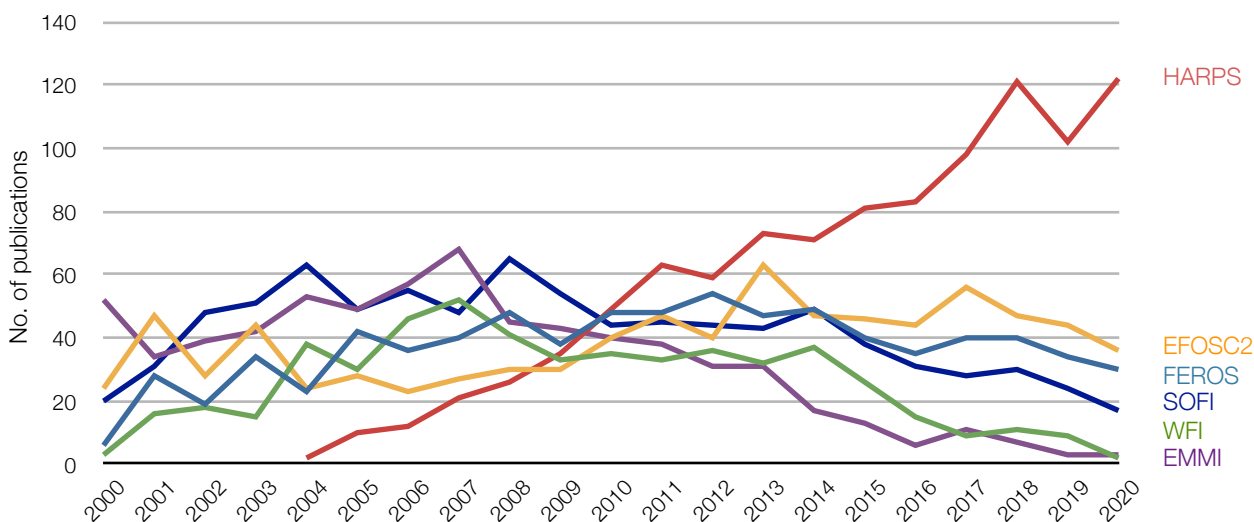


Fig. 6: Refereed publications using data from the survey telescopes

La Silla instruments

This section reports on papers that use data generated by other facilities of the La Silla Paranal (LSP) Observatory, located on La Silla. Papers based on data from non-ESO telescopes or observations obtained during reserved periods (e.g., national allocations of time) are not included. Instrument-level data for La Silla facilities are shown below from publication year 2000 onwards. Only papers based on data from FEROS (1.5m and 2.2m tel. combined), WFI (2.2m) EFOSC2 (2.2m, 3.6m, NTT combined), HARPS (3.6m), EMMI, and SOFI (both NTT) are included in the graph. The table also shows papers based on data from smaller or decommissioned La Silla facilities (e.g., TIMM12, SUSI2) if observations took place during ESO time. Visitor instruments for which observing time is recommended by the OPC (e.g., NTT Ultracam) are included in the general statistics (see p. 3), but are not shown in Fig. 7.

La Silla instruments (2000 - 2020)



EFOSC2 = EFOSC2@NTT, EFOSC2@3.6m + EFOSC2@2.2m

FEROS = FEROS@1.5m + FEROS@2.2m

La Silla decomm. = small or decommissioned facilities.

National telescopes (e.a.. Swiss Euler Tel.) are **excluded**

Fig 7 (above) and Table 8 (below): Number of refereed papers using data from La Silla facilities

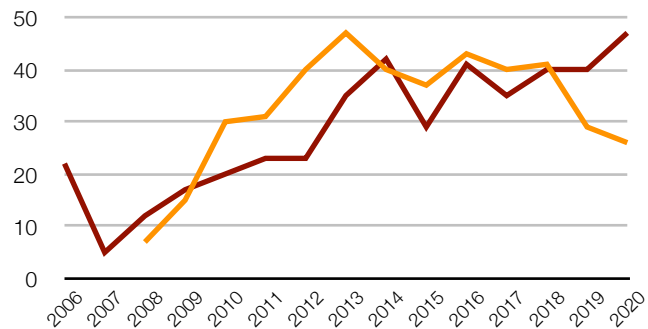
	2.2m		3.6m	NTT			La Silla decomm.
	FEROS	WFI	HARPS	EFOSC2	EMMI	SOFI	
2000	6	3		24	52	20	237
2001	28	16		47	34	31	215
2002	19	18		28	39	48	178
2003	34	15		44	42	51	169
2004	23	38	2	24	53	63	175
2005	42	30	10	28	49	49	135
2006	36	46	12	23	57	55	91
2007	40	52	21	27	68	48	97
2008	48	41	26	30	45	65	80
2009	38	33	35	30	43	54	68
2010	48	35	49	40	40	44	55
2011	48	33	63	47	38	45	47
2012	54	36	59	40	31	44	34
2013	47	32	73	63	31	43	37
2014	49	37	71	47	17	49	35
2015	40	26	81	46	13	38	17
2016	35	15	83	44	6	31	20
2017	40	9	98	56	11	28	20
2018	40	11	121	47	7	30	8
2019	34	9	102	44	3	24	19
2020	30	2	122	36	3	17	15

APEX

APEX is a collaboration between the Max-Planck-Institute for Radio Astronomy (MPIfR, 55%), the Onsala Space Observatory (OSO, 13%), and ESO (32%). The telescope is located on the Chajnantor plateau in Chile's Atacama region and is operated by ESO.

Publication information for APEX is available since the beginning of operations, i.e., from publication year 2006 onwards. Papers based on data from all APEX partners are recorded in the ESO Telescope Bibliography (telbib), but only those that use ESO/APEX data are counted in the ESO statistics.

APEX		
	ESO/APEX	all APEX
2006	12	22
2007	1	5
2008	8	19
2009	15	29
2010	28	49
2011	27	50
2012	40	66
2013	44	74
2014	47	74
2015	33	63
2016	49	79
2017	46	72
2018	44	78
2019	33	65
2020	38	68
Total	465	813



Imagers: APEX-SZ, Artemis, LABOCA, P-Artemis, SABOCA, SUPERCAM
Spectrographs: APEX-2A, CHAMP+, CONDOR, FLASH, LAsMA, MPL_1.1THz, FLASH, PI230, SEPIA, SHFI, ZEUS-2, Z-Spec

Fig. 8: Number of refereed publications using APEX bolometer and heterodyne instruments, respectively. Data are from observations by **all APEX partners**. Note that the sum of papers from imagers and spectrographs can be higher than the real total since papers can use data from both groups.

Table 9: Number of refereed publications using ESO/APEX data and data generated by all APEX partners, respectively.

APEX publications (2006 - 2020)

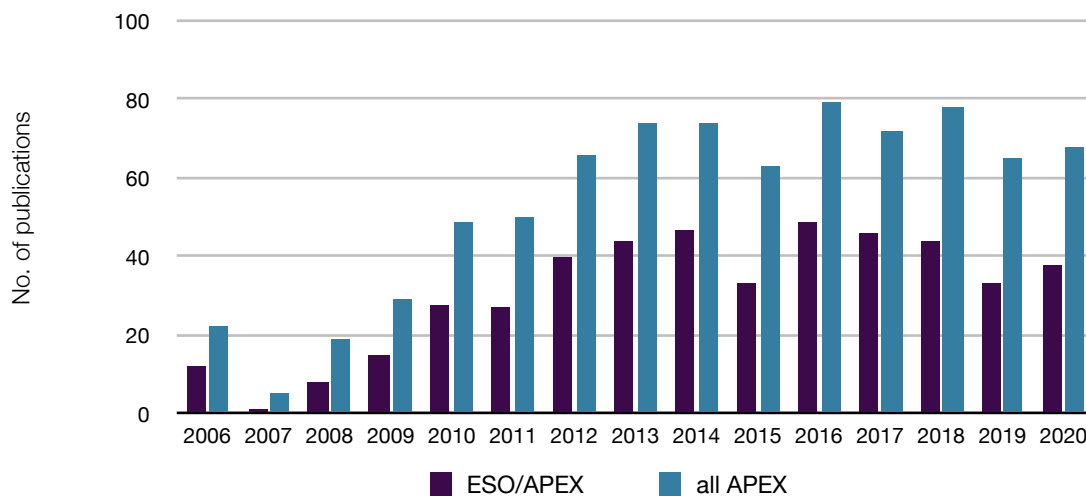


Fig. 9: Refereed publications using ESO/APEX data. For comparison, all APEX papers are shown.

ALMA

ALMA, the Atacama Large Millimeter/submillimeter Array, is an international collaboration between Europe, East Asia, and North America in cooperation with the Republic of Chile. The European executive is represented by ESO, which also hosts the European ALMA Regional Centre. The other partners North America and East Asia are represented by NRAO and NAOJ, respectively. The ALMA telescope bibliography is maintained by the librarians at ESO and NRAO as well as by NAOJ.

Papers based on European observing time as well as on data from all ALMA partners are recorded in the ESO Telescope Bibliography (telbib), but only those that use ESO/ALMA data are counted in the ESO statistics. Both numbers are shown below for comparison.

Papers resulting from science verification data are attributed to the four ALMA partners JAO, ESO, North America, and East Asia.

ALMA		
	ESO/ALMA	all ALMA
2012	16	19
2013	40	65
2014	47	97
2015	73	147
2016	131	234
2017	152	339
2018	188	380
2019	215	453
2020	210	441
Total	1072	2.175

Table 10: Number of refereed publications using ESO/ALMA data and data generated by all ALMA partners per year, respectively.

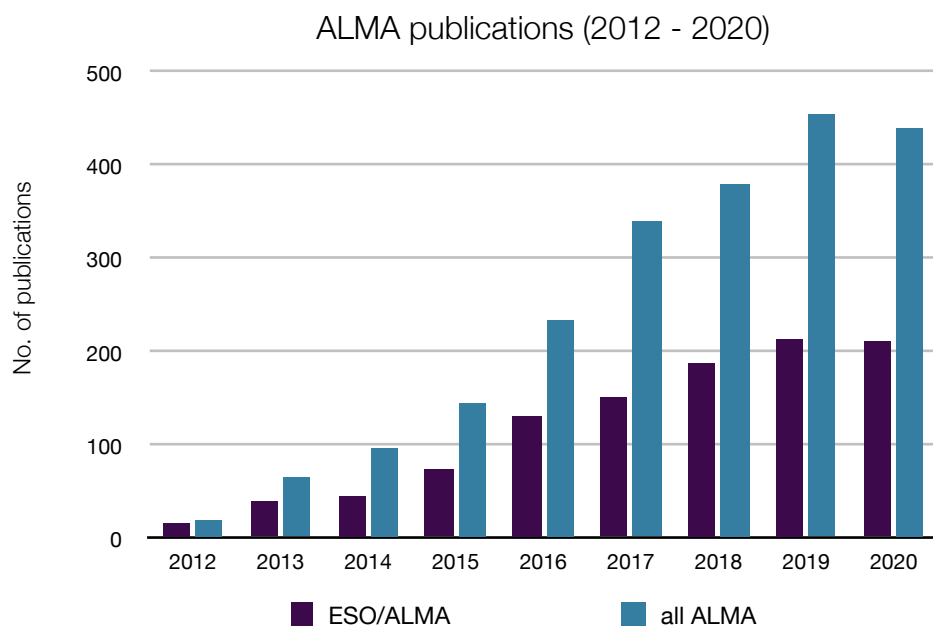


Fig. 10: Refereed publications using ESO/ALMA data. For comparison, all ALMA papers are shown. The graph is **not cumulative**.

Further Information

Articles and Presentations

For articles and presentations related to the ESO Telescope Bibliography, see http://www.eso.org/sci/libraries/useful_links/publications.html

Further telbib-related links:

Search: [ESO Telescope Bibliography \(telbib\)](#)

Cite: [ESO data citation policy](#)

Understand: [telbib Methodology](#)

Explore: [More info, reports, statistics](#)