

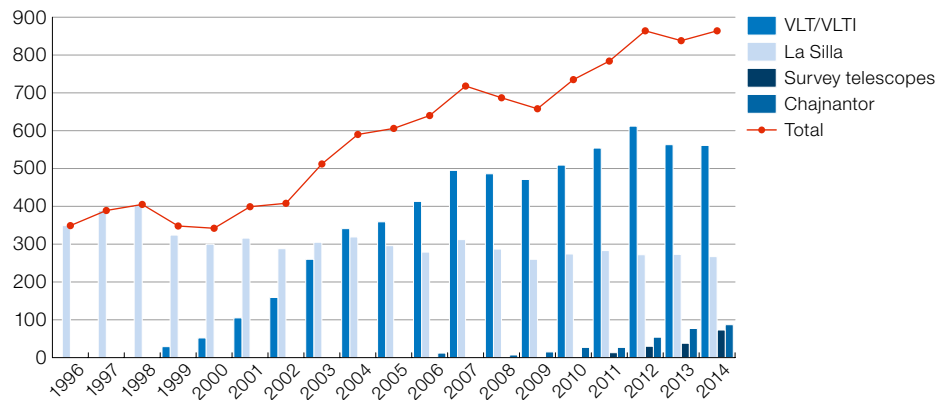
# Publication Digest

In 2014, the ESO user community published 865 refereed papers, reaching once again the all-time high of 2012. During the year, more than 10 000 refereed astronomy papers were reviewed by the ESO librarians and approximately 7.5% fulfilled the criteria for inclusion in the ESO Telescope Bibliography (telbib: <http://telbib.eso.org>). The numbers of papers based on data from the individual observing sites, as well as the total numbers per year, are shown. An overview of publication statistics is also available with links to the corresponding records in the telbib database ([http://www.eso.org/sci/libraries/telbib\\_pubstats\\_overview.html](http://www.eso.org/sci/libraries/telbib_pubstats_overview.html)).

The VLT and VLTI provided data for 562 refereed papers in 2014. The workhorse instruments UVES and FORS2 led with 137 and 105 articles, respectively, while the spectrographs VIMOS and FLAMES/GIRAFFE achieved the remarkable numbers of 78 and 59 papers. With 68 scientific publications, X-shooter continues to be a very productive instrument. Further statistics of individual instruments can be found in the *Basic ESO Publication Statistics* report.

Clear trends can be seen regarding the number of authors per paper. In the early years of VLT operations, more than half of the articles were written by rather small groups of one to five authors. Over time, the fraction of teams with larger numbers of authors has continually increased, leading to more than a quarter (27%) of all VLT/VLTI papers in 2014 with 11–30 authors. In addition, 9% of the publications were written by groups with more than 30 members. During the past ten years, a steady percentage (1–3%) of articles have been authored by even larger collaborations, consisting of more than 60 authors per paper, while the number of single-author papers has diminished. An overview of the number of authors per paper for all VLT/VLTI papers per year is shown.

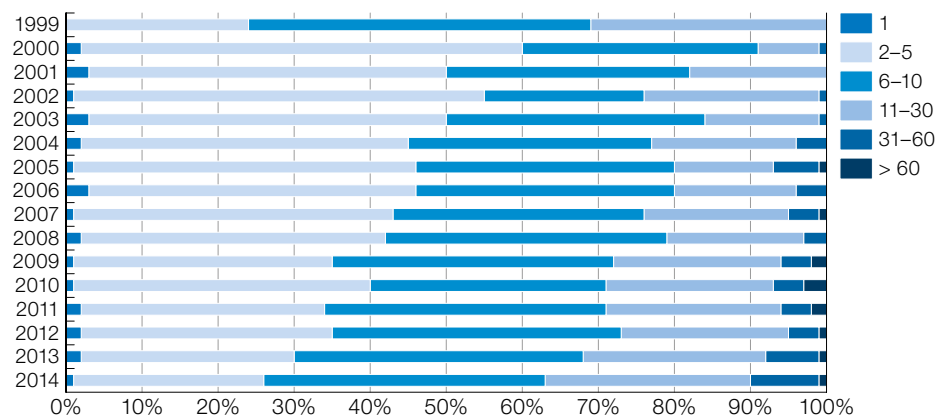
As was the case in previous years, the facilities located at La Silla continued to provide data for many papers (more than 260 in 2014). A total of 71 papers were based on observations made with the HARPS exoplanet hunter. Data from the FEROS and EFOSC2 spectrographs and SOFI led to almost 50 papers each.



Refereed papers using ESO data, 1996–2014 — note that papers can use data from more than one facility.

**VLT/VLTI:** Papers using data generated by the VLT and VLTI instruments, including visitor instruments for which observing time is recommended by the OPC, e.g., VLT ULTRACAM, VLTI PIONIER.  
**La Silla:** Papers using data generated by facilities on La Silla, including visitor instruments for which observing time is recommended by the OPC, e.g., NTT ULTRACAM. Papers based on data from non-ESO telescopes or observations obtained during reserved periods (e.g., national allocations of time) are not included.

**Survey telescopes:** Papers using data generated by the survey telescopes VISTA and VST.  
**APEX:** Papers using data generated by APEX, including visitor instruments for which observing time is recommended by the OPC, e.g., Z-Spec; other visitor instruments (e.g., 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.

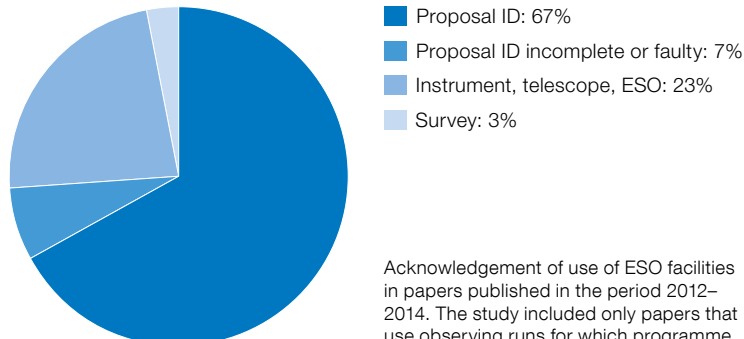
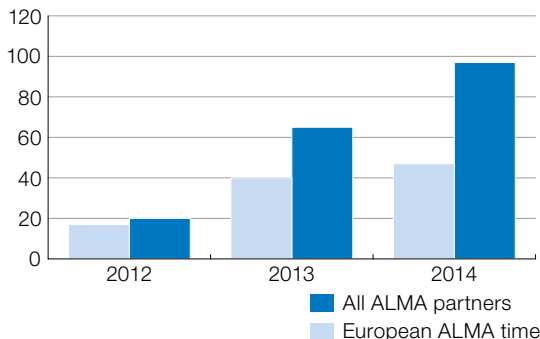


Number of authors per paper for VLT/VLTI publications over the period 1999–2014.

Interestingly, even observations from decommissioned instruments and telescopes are still being used in publications: in 2014, 33 articles were published based on these data. Note that non-ESO telescopes (for instance the Swiss 1.2-metre Leonhard Euler Telescope) and other facilities located on La Silla, for which observing time is not evaluated by the OPC, are not included in the statistics.

In 2014, the first papers based on data from the VLT Survey Telescope were

published, mostly using data from the VST/OmegaCAM Photometric H $\alpha$  Survey of the Southern Galactic Plane (VPHAS+) and ATLAS surveys. Observations at ESO's other survey telescope, VISTA, led to the impressive number of 65 papers in 2014, almost doubling the result of the previous year. Among these papers, outstanding output was achieved by the VISTA Variables in the *Via Láctea* (VVV) survey, which allowed scientists to publish 24 papers in the past year, followed by papers using data from the UltraVISTA survey (14 papers), the VISTA Hemisphere Survey (VHS, 8 papers) and the VISTA Magellanic Clouds survey (VMC with 8).



Numbers of papers during 2012–2014 using time allocated to Europe and to all ALMA partners.

Acknowledgement of use of ESO facilities in papers published in the period 2012–2014. The study included only papers that use observing runs for which programme IDs are assigned (i.e., excluding, for instance, observations at the Swedish–ESO Submillimetre Telescope [SEST]).

The APEX telescope generated data that led to 46 articles based on ESO/APEX time, constituting almost two thirds of all papers published by APEX users in 2014 (46 out of 74, or 63%). By the end of the year, the total number of papers using APEX data had passed 380.

In its third year of publications, the ALMA Observatory produced 97 refereed papers, far outnumbering the result of the previous year. About half of the articles (47 papers, or 48%) used European ALMA observing time. The total number of papers published between 2012 and 2014, using observations provided by all ALMA partners is 182. The ALMA bibliography is maintained jointly by the librarians at ESO and the National Radio Astronomy Observatory (NRAO) in the USA as well as by the National Astronomical Observatory of Japan (NAOJ). Publications based on data from all ALMA partners are recorded in telbib, but only those based on European observing time are counted in the ESO statistics.

In 2014, a quarter of all refereed articles (212 out of 865, or 24.5%) used exclusively or partly (i.e., in addition to proprietary ESO observations) data obtained from the ESO Science Archive. This fraction increased from around 18% to above 25% in 2012 and has been rather stable since. Likewise, a steady use of pre-reduced data, known as Science Data Products, provided by the Science Archive Facility can be noticed during this period: since 2012, almost 12% of scientific papers employed Science Data Products each year (see table).

	All ESO papers (using new or archival data)	Papers using archival data (incl. Science Data Products)	Papers using Science Data Products	Archive (incl. Science Data Products) in %	Science Data Products in %
1999	348	1	1	0.3	0.3
2000	342	3	0	0.9	0.0
2001	399	6	2	1.5	0.5
2002	408	19	3	4.7	0.7
2003	512	20	3	3.9	0.6
2004	590	54	23	9.2	3.9
2005	606	55	15	9.1	2.5
2006	640	98	24	15.3	3.8
2007	718	115	28	16.0	3.9
2008	687	107	25	15.6	3.6
2009	658	113	31	17.2	4.7
2010	735	134	42	18.2	5.7
2011	784	141	38	18.0	4.8
2012	864	224	101	25.9	11.7
2013	838	224	96	26.7	11.5
2014	865	212	100	24.5	11.6

Total numbers and percentages of ESO telbib papers 1999–2014 using exclusively or partly archival data and Science Data Products.

Correct indication of all ESO programmes that were used in research papers is of the utmost importance so that the publications can be linked to the corresponding data in the ESO archive. In order to achieve a uniform way of indicating the use of observations, a policy regarding publications based on ESO data is communicated to researchers on several occasions during the observing process: for instance, when Principal Investigators (PIs) are informed about awarded observing time based on the proposals submitted to the OPC, at the time when their data become publicly available (typically after a proprietary time of one year), or

when researchers request data from the ESO archive. The publication policy is also available on the web.

Over the past few years, the librarians have monitored the way in which authors give credit to the ESO facilities that provided the data. It has turned out that large inconsistencies exist between the acknowledgement request by ESO and the actual information provided by authors. Of 2515 papers published between 2012 and 2014, only two thirds (67%) of the authors indicated correct and complete programme IDs of all observations used in their papers. This

fraction includes a few cases in which users downloaded data from the ESO archive and (correctly) mentioned the archive request ID (9 papers). Another 7% of the authors listed programme IDs in their papers, but the identifiers were incorrect or incomplete. Almost a quarter of the publications (23%) merely acknowledged the instrument, telescope or ESO as an organisation, as credit for data use. The increasing numbers of papers based on surveys constitute many particularly difficult cases, where often the only trace of data use is the survey name, with no indication of either the programme IDs nor even the facilities that generated the data (3% of all ESO papers over 2012–2014).

These findings emphasise the importance of human curation of the ESO Telescope Bibliography in order to properly link papers and observations, enabling astronomers to easily access the data used in papers (by linking from the telbib database to the archive) and to find out which papers have already been published based on specific observations (through links from the archive to telbib).

The statistics presented here are derived from telbib, a database of refereed papers published by the ESO user community that links publications with the data in the ESO Science Archive. telbib is developed and maintained by the ESO Library. It is compiled by scanning articles published in the major astronomical journals for ESO-related keywords (e.g., telescope and instrument names). Journals routinely screened for ESO-related keywords are: *A&A*, *A&ARv*, *AJ*, *ApJ*, *ApJS*, *AN*, *ARA&A*, *EM&P*, *ExA*, *Icar*, *MNRAS*, *Nature*, *NewA*, *NewAR*, *PASJ*, *PASP*, *P&SS* and *Science*. All papers included in the database have been inspected visually by the curators to ensure that they directly use ESO observational data. Further information about telbib and various statistics and reports can be found on the web.

This image shows the beginning of sunrise over the Very Large Telescope.

