



National Optical Astronomy Observatory (NOAO)

Style Guide

NOAO Newsletter and NSF Reports

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Quick Reference Guide for NSF Reports

Abbreviations

Spelling

Images

Captions

- Provide concise captions to describe what the image represents.
- Number images if more than one in the article.
- Examples: *Figure 1. Concise description. (Image credit: J. Price/NOAO/AURA/NSF.)*
Figure 2. Concise description. (Image credit: Muñoz et al. 2015, ApJ, 815, L1.)

Image Files

- Acceptable formats are EPS, PNG, TIF, JPG, GIF, PDF.
- Provide separate (not imbedded in text) high-resolution image files.
- Images must be 1200 x 800 pixels or larger.
- If image is from a published article, check the publisher's requirements for permission requirements and add a "permission" comment to the credit line as directed.

Text References

Examples: See Figure 2; As shown in Table 1; The orbit was variable (Figure 1).

Names, Personal

- Avoid naming specific NOAO staff when possible; if necessary, use "first initial last name."
- Use spaces between initials: K. H. Hunt
- Principal investigator references: PI: J. Smith
- Non-NOAO staff: Use full name without title and degree. Add affiliation after name in parentheses. Example: F. Fekel (Tennessee State University)
- Use a formal voice and avoid the use of first person pronouns.
- Write from the standpoint of the third person, limiting the use of third person pronouns. Refer instead to a department, program, or group name and/or use the words "staff" or "employees." The report needs to sound as though only one person wrote it.
- References to the "reader" should not be necessary.

References

- Text examples:
(Ryan 2014; Mann et al. 2015; Smith and Jones 2015)
We found two new binary stars (Smith and Jones, 2015, MNRAS, 52, 415).
Hui et al. (2015, MNRAS, 446, 842) found a new binary star.
Smith published "The Binary Stars" (2015, ApJ, 781, 82) earlier this year.

Word Count

- 1 page, Calibri, 11 pt = (approx.)
With two 2.5 × 2.5 images and captions: 300 words, 2000 characters with spaces
Without image: 550 words; 3400 characters with spaces

Quick Reference Guide to Colons, Commas, and Semicolons

Colon

- Use before a quotation longer than one line.
Example: According to Dr. Page: "The government goofed again. It failed to review the matter."
- May be used between two sentences when the second sentence explains or expands upon the first sentence.
Example: She got what we worked for: she earned a promotion.
- Use after a complete sentence to introduce a list.
Example: I must remember to bring my things to the party: food, drink, fork.
- Do not use after an incomplete sentence before a list. This sentence is incorrect: I must remember to bring my things to the party including: food, drink, fork. = I must remember to bring my things to the party including food, drink, and fork.

Semicolon

- Use between two closely linked sentences.
- Use to separate units of a series when one or more of the units contain commas.
Example: The conference was attended by individuals from Moscow, Idaho; California; Tucson, Arizona; and other places.
- Use before conjunctive adverbs (however, therefore, that is, for example) when they introduce a complete sentence.
Example: I wanted to go to Mars; however, the spacecraft was already full.

Commas

Use a comma

- before "and" in a series (Blanco, **Mayall**, and SOAR);
- between a city name and state name or a city name and country name (Kitt Peak is located in Tucson, **Arizona**, south of Phoenix)
- in numbers of 4 or more digits in non-science uses (3,270 miles; 1,000,111 individuals)
- before "which"; this relative pronoun introduces a nonrestrictive clause that provides supplementary information not essential to define the word or clause referred to by "which." *Example:* The Mosaic filters include the VR **filter, which** has an especially broad band-pass.

Do **not** use a comma

- in four-digit number in science uses (**6700** square degrees)
- before "that"; this relative pronoun introduces a restrictive clause essential to the meaning of the sentence to properly identify or define the word or clause referred to by "that." *Example:* For the deepest surveys, you should use the Mosaic **filter that** has the broadest band-pass.

Quick Reference Guide for NOAO Newsletter

Abbreviations

Spelling

Images

Captions

- Provide concise captions to describe what the image represents.
- Number images if more than one in the article.
- Examples: *Figure 1. Concise description. (Image credit: J. Price/NOAO/AURA/NSF.)*
Figure 2. Concise description. (Image credit: Muñoz et al. 2015, ApJ, 815, L1.)

Image Files

- Acceptable formats are EPS, PNG, TIF, JPG, GIF, PDF.
- Provide separate (not imbedded in text) high-resolution image files.
- Images must be 1200 x 800 pixels or larger.
- If image is from a published article, check the publisher's requirements for permission requirements and add a "permission" comment to the credit line as directed.

Text References

Examples: See Figure 2; As shown in Table 1; The orbit was variable (Figure 1).

Names, Personal

- Use people's names without a title or degree. (J. Smith)
- In a Science Highlights article, use the last name only in second and subsequent references.
- In an article other than in Science Highlights, use the first name only in second and subsequent (unless it would be confused with someone else in the article).
- Articles may be written in the first person ("I," "we," "my," "our," "me," "us").
- References to the reader may be in the second person ("you," "your").

References

- In sections other than Science Highlights, use full citation in body of article.
- Science Highlights
 - Text
 - 1 author: Smith (2007) OR (Smith 2007)
 - 2 authors: Smith and Jones (2008) OR (Smith and Jones 2008)
 - 3 authors: Smith, Jones, and Ryan (2010) OR (Smith, Jones, and Ryan 2010)
 - 4 or more authors: Connors et al. (2011) OR (Connors et al. 2011)
 - 2 or more papers in same reference: (Smith 2008; Towne 20007)
 - References (at end of article):
 - 1 author: Smith, A. B. 2007, arXiv:0702.1234
 - 2 authors: Smith, M. R. and Jones, S. Q. 2008, ApJ, 492, 111
 - 3 authors: Smith, M. R., Jones, S. R., and Ryan, N. C. 2010, AJ, 444, 22
 - 4 or more authors: Connors, M., et al. 2011, Natur, 475, 481
 - Papers with the same author(s) and years: Smith 2008a; Smith 2008b, etc.

Abbreviations

- See this Style Guide’s *Abbreviations*.
- Write out all names in full on their first appearance followed by the abbreviation in parentheses. Use the abbreviation in the remainder of text.
Example: The National Optical Astronomy Observatory (NOAO) is the national center for ground-based nighttime astronomy in the United States. Visit the NOAO website (www.noao.edu) for information on our programs.
- Spell out “University” the first time and then abbreviate as “U.”
Example: The instrument was developed at the University of Florida. The principal investigator was Richard Jones (U. Florida).
- Use “the” or “a/an” only before an abbreviation that cannot be pronounced as a word.
Examples: We contacted ESO to inquire about the IAU.
We are interested in ALMA as well as in the VLT.

Accent Marks

Note: A “+” in the table below indicates that you must press the specified keys *together*. A comma indicates that you press the specified keys *separately*.

Example: For è on a Windows machine, press Ctrl key together with ` key; release; press “e” key

	Windows	Mac
Letter/Symbol	Shortcut Key Combination	Shortcut Key Combination
à, è, ì, ò, ù, À, È, Ì, Ò, Ù	Ctrl + ` (accent grave), the letter	Option + ` (accent grave), the letter
á, é, í, ó, ú, ý, Á, É, Í, Ó, Ú, Ý	Ctrl + ' (apostrophe), the letter	Option + e, the letter
â, ê, î, ô, û, Â, Ê, Î, Ô, Û	Ctrl + Shift + ^ (caret), the letter	Option + i, the letter
ã, ñ, õ, Ã, Ñ, Õ	Ctrl + Shift + ~ (tilde), the letter	Option + n, the letter
ä, ë, ï, ö, ü, ÿ, Ä, Ë, Ì, Ö, Ü, Ý	Ctrl + Shift + : (colon), the letter	Option + u, the letter
å, Å	Ctrl + Shift + @, a or A	Option + a or Option + A
æ, Æ	Ctrl + Shift + &, a or A	Option + ' (apostrophe) OR Option + Shift + ' (apostrophe)
œ, Œ	Ctrl + Shift + &, o or O	Option + q OR Option + Shift + q
ç, Ç	Ctrl + , (comma), c or C	Option + c or C
đ, Đ	Ctrl + ' (apostrophe), d or D	
ø, Ø	Ctrl + /, o or O	Option + o
ı	Alt + Ctrl + Shift + ?	Option + Shift + ?
ı	Alt + Ctrl + Shift + !	Option + !
ß	Ctrl + Shift + &, s	Option + s

Adjectives, Compound

- For compound adjectives before nouns, use a hyphen only if necessary for clarification.
- Do not hyphenate a compound adjective when the first word ends in “ly.”
Example: She is a highly competent employee.
- See this Style Guide’s Spelling *section* for the capitalization of specific terms. Consult a dictionary for terms not found in the Spelling list.

Capitalization

General Guidelines

- See this Style Guide’s Spelling *section* for the capitalization of specific terms.
- Capitalize all proper nouns.
- For individual or institutional names, follow the convention of the individual or institution.

Section Headings and Article Titles

Capitalize

first and last words in titles and subtitles
all nouns, pronouns, adjectives, verbs, and adverbs

Lowercase

articles (a, an, the)
conjunctions (and, but, or, nor)
prepositions (above, in)

Hyphenated Words

Always capitalize the first element.
Capitalize the second element UNLESS it is an article, conjunction, or preposition OR the first element is a prefix.

Examples:

A Run-in with the Boss
Twenty-Two
Back-and-Forth
High-Status Job
Time-Sensitive Material
Anti-intellectual
Pre-order

Commas

Use a comma

- before “and” in a series (Blanco, **Mayall**, and SOAR);
- between a city name and state name or a city name and country name (Kitt Peak is located in Tucson, **Arizona**, south of Phoenix)
- in numbers of 4 or more digits in non-science uses (3,270 miles; 1,000,111 individuals)

- before “which”; this relative pronoun introduces a nonrestrictive clause that provides supplementary information not essential to define the word or clause referred to by “which.” Example: The Mosaic filters include the VR **filter, which** has an especially broad band-pass.
- Do **not** use a comma
- in four-digit number in science uses (**6700** square degrees)
 - before “that”; this relative pronoun introduces a restrictive clause essential to the meaning of the sentence to properly identify or define the word or clause referred to by “that.” *Example:* For the deepest surveys, you should use the Mosaic **filter that** has the broadest band-pass.

Dashes & Hyphens

Hyphen

- -
- Used to connect two words in text, such as compound adjectives (ground-based astronomy) and nouns (one-off).
- Used in non-inclusive numbers such as phone numbers (318-8475).
- Used before “mid” when followed by word starting with a capital letter (mid-April).
- *See also* this Style Guide’s *Adjectives, Compound section* for guidance on hyphenating compound adjectives.
- *See also* this Style Guide’s Spelling *section* and a dictionary for hyphenation of specific terms.

En-dash

- –
- Used to separate ranges of numbers and dates (May–August; 114–251)
- Used to indicate a minus sign (–2)

Em-dash

- —
- Used to indicate a break in thought
- Used before a phrase that emphasizes or provides further explanation of the main clause in a sentence
- No spaces before or after em-dash
- *Examples:*
- The house was very solid—and not just because it was made of stone.
- The instrument—damaged severely in transit—is not available for the coming semester.

Dates

- Centuries: 20th century (“th” not superscript)
- Decades: the 1990s (no apostrophe)
- Months: September, March, February (spell out)
- Specific Dates: 25 June 2015; 15–16 February 2015; May 2010; December 25; 1 March–2 April 2008; May–June

Foreign Names/Words

- Foreign words that have not been commonly accepted into English are placed in italics. See this Style Guide’s Spelling *section* for specific terms. For terms not in this Style Guide, consult a dictionary.
- Proper names in foreign languages are capitalized and in roman type.
- See also this Style Guide’s *Accent Marks section* and *Institutional Names section*.

Formatting

- Margins: 1-inch
- Font: Times New Roman
- Type Size: 12 point (NOAO Newsletter); 11 point (NSF Reports)
- Orientation: Portrait

Greek Letters

Greek letters may be used in any section of the *NOAO Newsletter* and in NSF Reports.

Example: “H α ” instead of “H-alpha”

Hyphens. See *Dashes*.

Images

Captions

- Provide concise captions to describe what the image represents.
- Number images for *Newsletter* article if more than one in the article.
- Place credit line at end of caption: (Initial of first name Last name/Affiliation.)
- Examples:
 - *Figure 1. Concise description. (Image credit: J. Price/NOAO/AURA/NSF.)*
 - *Figure 2. Concise description. (Image credit: Muñoz et al. 2015, ApJ, 815, L1.)*

Charts/Graphs/Tables

- Axis labels and symbols should be readable.
- Provide separate (not imbedded in text), high-resolution image files.

Images

- Acceptable formats are EPS, PNG, TIF, JPG, GIF, PDF.
- Provide separate (not imbedded in text) high-resolution image files.
- Images must be 1200 x 800 pixels or larger.
- If image is from a published article, check the publisher's requirements and be sure that permission has been obtained. Add a "permission" comment to the credit line as directed by the publisher.

Text References

Examples: See Figure 2; As shown in Table 1; The orbit was variable (Figure 1).

Institutional Names

- Spell out an institution's name at first occurrence and follow with the abbreviation in parentheses (if there will be subsequent references). Use the abbreviation for all subsequent references.
- Spell out "University" the first time and then abbreviate as "U." (example: University of Florida; U. Florida)

Foreign Institutions:

Aarhus University (or Aarhus Universitet)
Agenzia Spaziale Italiana
Argelander-Institut für Astronomie
Astronomický ústav
Astrophysikalisches Institut Potsdam
Australian National University
Brandon University
Byurakan Astrophysical Observatory
Centre d' Etude Spatiale des Rayonnements
Centre National de la Recherche
Scientifique
Centro de Astrobiología
Centro de Investigaciones de Astronomía
Centro de Radio Astronomia e Aplicações
Charles University, Prague
Chubu University
Città Universitaria
College of New Caledonia
Commissariat à l'Énergie Atomique

Consejo Superior de Investigaciones
Científicas
Deutschen Zentrum für Luft- und
Raumfahrt
Dr. Remeis-Sternwarte Bamberg (the
Astronomical Institute of the University
of Erlangen-Nuremberg)
Eberhard Karls Universität, Tübingen
École Polytechnique de Lausanne
Eldgenössische Technische Hochschule
Escuela Intermedia Sabana Llana
Ewha Womans University
Facultad de Ciencias
Friedrich-Schiller-Universität, Jena
Fundació Observatori Esteve Duran
Hamburger Sternwarte
Heidelberg University
Heidelberg-Königstuhl Landessternwarte
Herzberg Institute of Astrophysics
Inst. Astrofísica de Andalucía (IAA)

Inst. of Space & Astronautical Science	Katholieke Universiteit Leuven (KU Leuven)
Institut d'Astrophysique et de Géophysique	Kiepenheuer-Institut für Sonnenphysik
Institut d'Astrophysique de Paris	Kiev State University
Institut d'Astrophysique Spatiale	L'Observatoire de Nice
Institut de Ciències de L'Espai	Laboratoire d'Astronomie Spatial de Marseilles
Institut de Planétologie et d'Astrophysique de Grenoble	Laboratoire d'Astrophysique de Bordeaux
Institut de RadioAstronomie Millimétrique	Laboratoire d'Astrophysique de Grenoble
Institut für Astronomie, Zurich	Laboratoire d'Astrophysique de Marseille
Institut für Theoretische Astrophysik Potsdam	Laboratoire de Photophysique Moléculaire
Institute for Theoretical Physics	Laboratoire de Physique Moléculaire et Atmosphérique
Institute of Astronomy, University of Tokyo	Laboratorio di Radioastronomia
Institute of Experimental Physics	Laboratório Nacional de Astrofísica
Institute of Radioastronomy C.N.R.	Laval University
Instituto (de) Astrofísico de Andalucia	Leibniz-Institut für Astrophysik
Instituto de Astrofísica de Canarias	Liverpool John Moores University
Instituto de Astronomía	Ludwig-Maximilians Universität-München
Instituto de Astronomia, Geofísica e Ciências Atmosféricas	Macquarie University
Instituto de Estructura de la Materia	Max-Planck-Institut für Astronomie
Instituto de Matemáticas y Física Fundamental	Max-Planck-Institut für Astrophysik
Inter-University Centre for Astronomy and Astrophysics	Max-Planck-Institut für extraterrestrische Physik
International Centre for Theoretical Physics	Max-Planck-Institut für Kernphysik Heidelberg
International Space University	Max-Planck-Institut für Radioastronomie
Istituto Astronomico	McGill University
Istituto de Astrofisica Spaziale	McMaster University
Istituto de Astronomia, Firenze	Monash University
Istituto de Fisica Cosmica CNR	National Astronomical Observatory
Istituto di Fisica Cosmica e Tecnologie	National Central University
Istituto di Fisica dello Spazio Interplanetario	Observatoire astronomique de Strasbourg
Istituto di Radioastronomia	Observatoire de Besançon
Istituto di Radioastronomia, Bologna, CNR	Observatoire de la Côte d'Azur
Istituto Nazionale di Astrofisica: Istituto Nazionale di Astrofisica-Osservatorio Astrofisico di Catania; Istituto Nazionale di Astrofisica-Telescopio Nazionale Galileo	Observatoire de Midi-Pyrenees
Iwate University	Observatoire de Paris
Jagiellonian University	Observatoire de Pic-du-Midi
Justus-Liebig-Universität Giessen	Observatoire de Strasbourg
	Observatoire Royal de Belgique
	Observatorio Astrofísico Guillermo Haro
	Observatorio Astronómico Nacional
	Observatorio Astronómico de Córdoba
	Observatório Astronómico de Lisboa
	Observatorio Astronómico F. Aguilar
	Observatorio Astronómico Nacional

Observatório do Valongo	Universität Kiel
Observatorio Nacional Brazil	Universität Münster
Odessa State University	Universität Potsdam
Open University	Universität Wien
Osservatorio Astrofisico di Arcetri	Universitäts-Sternwarte München
Osservatorio Astrofisico di Torino	Université de Liège
Osservatorio Astronomico di Brera	Université de Reims Champagne-Ardenne
Osservatorio Astronomico di Padova	Université de Strasbourg
Osservatorio Astronomico di Roma	Université Libre de Bruxelles
Osservatorio Astronomico di Trieste	University of Alberta
Pontificia Universidad Católica de Chile	University of Birmingham
Queen’s University Belfast	University of Cambridge
Radboud University Nijmegen	University of Canterbury
Service d’Aéronomie du CNRS	University of Durham
Service d’Astrophysique	University of Edinburgh
Swinburne University	University of Exeter
The Hebrew University	University of Groningen
Thüringer Landessternwarte Tautenberg	University of Hertfordshire
Universidad Autónoma de Madrid	University of Leicester
Universidad Católica del Norte	University of Manchester
Universidad de Cantabria	University of Melbourne
Universidad de Concepción	University of Montreal
Universidad de Valparaíso	University of Oxford
Universidad del País Vasco	University of Portsmouth
Universidad Nacional de la Plata	University of Sheffield
Universidade Cruzeiro do Sul	University of Southampton
Universidade Federal de Santa Maria	University of St. Andrews
Universidade Federal do Rio Grande do Norte	University of Sydney
Universidade Federal do Rio Grande do Sul	University of Toronto
Università degli Studi di Bologna	University of Victoria
Università degli Studi di Ferrara	University of Warwick
Università degli Studi di Padova	Warsaw University Observatory
Università degli Studi di Roma Tor Vergata	Weizmann Institute of Science
Universität Bonn	York University
Universität Heidelberg	Zentrum für Astronomie der Universität Heidelberg

Italics

- Book titles: *Coloring the Universe*
- Journal names: *Astronomical Journal*
- Non-English-language words that have not been commonly accepted into English are italicized. See this Style Guide’s Spelling *section* for specific terms. For terms not in this Style Guide, consult a dictionary; non-English-language terms found in the dictionary are not italicized.

Journal Names and Abbreviations

A&A – *Astronomy and Astrophysics*
 A&AR – *The Astronomy and Astrophysics Review*
 A&AS – *Astronomy and Astrophysics Supplement Series*
 Afz – *Astrofizika*
 AJ – *The Astronomical Journal*
 ApJ – *The Astrophysical Journal*
 ApJL – *The Astrophysical Journal Letters*
 ApJS – *The Astrophysical Journal Supplement Series*
 Ap&SS – *Astrophysics and Space Science*
 ARA&A – *Annual Review of Astronomy and Astrophysics*
 BAAS – *Bulletin of the American Astronomical Society (AAS Meetings)*
 JA&A – *Journal of Astrophysics and Astronomy*
 MNRAS – *Monthly Notices of the Royal Astronomical Society*
 PASJ – *Publications of the Astronomical Society of Japan*
 PASP – *Publications of the Astronomical Society of the Pacific*
 QJRAS – *Quarterly Journal of the Royal Astronomical Society*
 RevMexAA – *Revista Mexicana de Astronomia y Astrofisica*

Lists, Vertical

Ensure that each element of the list is in the same format and follows consistently from the lead-in statement.

Complete sentence (begin list with capital letter; end with punctuation)

We made the following observations:

The star exploded in space.

The aliens escaped.

Incomplete sentence (begin list with lowercase letter; end with period; use semicolons within list)

I observed the following objects:

pen;

paper;

Saturn;

a space shuttle.

Measurements

- Abbreviations vs. symbols: Use symbols if no confusion is possible; otherwise use abbreviations.
- Adjectives: 4m telescope; 40-second clock
- Angstroms = Å
- Arcminute: “arcmin” instead of symbol [‘]
- Arcsecond: “arcsec” instead of symbol [“]
- Degrees: 90°
- Metric system: use as much as possible

- Space between measure and unit (7 μm ; 12 GHz; 12 Mps)
- Telescopes: 4m; 200 in

Names, Personal

NOAO Newsletter

- Use people's names without a title or degree. (J. Smith)
- In second and subsequent references to an individual in a Science Highlights article, use the last name only.
- In second and subsequent references to an individual in sections other than Science Highlights, use the first name only (unless it would be confused with someone else in the article).
- Articles may be written in the first person (“I,” “we,” “my,” “our,” “me,” “us”).
- References to the reader may be in the second person (“you,” “your”).

NSF Reports

- Avoid naming specific NOAO staff when possible; if necessary, use “first initial last name.”
- Use spaces between initials: K. H. Hunt
- Principal investigator references: PI: J. Smith
- Non-NOAO staff: Use full name without title and degree. Add affiliation after name in parentheses. Example: F. Fekel (Tennessee State University)
- Use a formal voice and avoid the use of first person pronouns.
- Write from the standpoint of the third person, limiting the use of third person pronouns. Refer instead to a department, program, or group name and/or use the words “staff” or “employees.” The report needs to sound as though only one person wrote it.
- References to the “reader” should not be necessary.

Numbers/Numerals

See also this Style Guide's *Measurements section*.

- Abbreviations: 4 g; 35 kg (use Arabic numerals)
- Adjectives: 15-year-old telescope
- Apertures: $f/8$ aperture (use Arabic numerals and f symbol)
- CCD formats: 8K \times 8K
- Centuries: 14th century, 20th century
- Dimensions: 10 \times 15
- Formulas: Use Arabic numerals
- Fractions: one-eighth portion (use hyphen)
- Ionization values: He II, [O III]
- Large numbers: With four or more digits to left of decimal point, use a comma separator or use scientific notation. This also applies to “R” units for spectral resolution.

- Math symbols: No space between symbol (i.e., \sim , $+$, etc.) and number, unless part of an equation (~ 100)
- Numbers \leq nine: Spell out (one, two)
- Numbers \geq 10: Use Arabic numerals (10, 251)
- Ordinal numbers: 23rd (no superscripts)
- Percents: Arabic numeral and percent sign (15%)
- Ranges (inclusive): Use en-dash (–)

Punctuation

Apostrophes

- Use to indicate possession.
Examples: singular nouns: Smith's, Jones's
plural nouns: cars'; United States'
- Do not use in abbreviations: CDs
- Do not use in decades: 1980s

Colon

- Use before a quotation longer than one line.
- May be used between two sentences when the second sentence explains or expands upon the first sentence.
Example: She got what we worked for: she earned a promotion.
- Use after a complete sentence to introduce a list.
Example: I must remember to bring my things to the party: food, drink, fork.
- Do not use after an incomplete sentence before a list. This sentence is incorrect: I must remember to bring my things to the party including: food, drink, fork. = I must remember to bring my things to the party including food, drink, and fork.

Semicolon

- Use between two closely linked sentences.
- Use to separate units of a series when one or more of the units contain commas. *Example:* The conference was attended by individuals from Moscow, Idaho; California; Tucson, Arizona; and other places.
- Use before conjunctive adverbs (however, therefore, that is, for example) when they introduce a complete sentence.
Example: I wanted to go to Mars; however, the spacecraft was already full.

Spaces

- Use one space between sentences in NSF Reports.
- Use two spaces between sentences in *NOAO Newsletter*.

Redundant Redundancies

- Avoid unnecessary words and phrases unless needed for clarity. In the following examples, you should remove the words in square brackets.
 - I studied the Moon [in order] to determine its orbit.
 - [absolutely] necessary
 - [absolutely] essential
 - attach [together]
 - [brief] summary
 - [completely] eliminate
 - connect [together]
 - crisis [situation]
 - each [and every]
 - [end] result
 - [final] outcome
 - outside [of]
 - whether [or not]

In *NOAO Newsletter* articles, avoid starting articles with phrases such as “As you know,” “As we said before,” and “As you may recall.” The classic newspaper style of leading with a few strong declarative sentences that get the main point of the article instantly in front of the reader is preferred.

References

NOAO Newsletter

- In sections other than Science Highlights, use full citation in body of article. Do not include in captions.
- Science Highlights
 - Text
 - 1 author: Smith (2007) OR (Smith 2007)
 - 2 authors: Smith and Jones (2008) OR (Smith and Jones 2008)
 - 3 authors: Smith, Jones, and Ryan (2010) OR (Smith, Jones, and Ryan 2010)
 - 4 or more authors: Connors et al. (2011) OR (Connors et al. 2011)
 - 2 or more papers in same reference: (Smith 2008; Towne 20007)
 - References (at end of article):
 - 1 author: Smith, A. B. 2007, arXiv:0702.1234
 - 2 authors: Smith, M. R. and Jones, S. Q. 2008, ApJ, 492, 111
 - 3 authors: Smith, M. R., Jones, S. R., and Ryan, N. C. 2010, AJ, 444, 22
 - 4 or more authors: Connors, M., et al. 2011, Natur, 475, 481
 - Papers with the same author(s) and years: Smith 2008a; Smith 2008b, etc.
 - Wolk, S. J., & Walter, F. M. 1999, AJ, submitted
 - Wolk, S. J., & Walter, F. M. 1999, AJ, in press



NSF Reports

- Text examples:
 (Ryan 2014; Mann et al. 2015; Smith and Jones 2015)
 We found two new binary stars (Smith and Jones, 2015, MNRAS, 52, 415).
 Hui et al. (2015, MNRAS, 446, 842) found a new binary star.
 Smith published “The Binary Stars” (2015, ApJ, 781, 82) earlier this year.

Special Characters

- $M_{\text{sun}} = M_{\odot}$
- \times (multiplication sign)

Spelling

See also this Style Guide’s *Abbreviations*.

90Prime (Bok telescope)	Burrell Schmidt telescope
a.m.	Call for Proposals
Abu (infrared camera)	Cassegrain
ad hoc	Celcius
Adaptive Optics Roadmap	Cerro Pachón
Aladdin	Chandra X-ray Observatory
alt-az	clean room
Altair	co-author
arcmin	co-spatial
arcminute	coelostat
arcsec	cooldown
arcsecond	cost-effective (adj.)
Astro2010 Decadal Survey	Coudé Feed
Astronomy Night at the White House	cross-calibration
ATST Project	Crosstalk (electronics term)
backscatter	Curtis Schmidt telescope
backup	data (plural noun)
baseline	database
beam splitter	data set/s
Big Bang	Daytime
binarity	decadal survey (but capitalize when part of proper name)
birthline	Deep Wide-Field Survey (NDWFS) (use abbreviation on second and subsequent text references)
Boötes	delivered image quality
Bok Telescope	Demonstration Science
Bosque Fray Jorge National Park	Dewar
break up (verb)	diffraction-limited (adj.)
breakup (adj.)	digital archive
bright-time	
broadband	
build-up	



dimensional: 2-D; 3-D	guide star
Doppler	Gyr
Dunn Solar Telescope	Haleakalā
e.g.,	hard copy
Earth (not “the Earth”)	hard wired (verb); hardwired (adj.)
East (direction)	hemisphere: unsphere; Southern Hemisphere
echelle	high energy physics
eduroam	high-resolution (adj.)
eigenprofile(s)	home page
El Peñón	HTML
electro-mechanical	i.e.,
electro-optical	in situ
email	infrared (spell out on first occurrence; use IR in second and subsequent text references)
et al.	input
etalon	intergalactic
etc.,	Internet
Evershed effect	Iolkam Duag
extrasolar planet	IR
Fahrenheit or F (212° F or 212° Fahrenheit)	iSHELL
fall (season)	IYA2009
far-infrared	James Webb Space Telescope
farside	JPEG
federal	Keck telescopes: Keck I; Keck II
fiber optics	Kelvin
fiber-optic	Kitt Peak Observers’ Information web page
field-of-view (adj.); field of view (noun)	Kitt Peak Visitor Center (KPVC)
flat-fielding	kpc
follow-up (noun and adj.); follow up (verb)	Kuiper Belt object
ftp	LabVIEW
FWHM	large-scale (adj.)
FY 2003; FY03	light-curve(s)
Galactic	light-year(s)
Galactic Center	local universe
Galaxy	long-slit
gamma-ray astronomy	long-term (adj.)
Gauss (unit)	LONGSLIT
Gaussian	lookup
GEMINI (software package)	low frequency waves
Gemini Director	low-order
Gemini North	lowercase
Gemini Observatory	magnetogram(s)
Gemini Partnership	magnitude-limited (adj.)
Gemini South	Maunakea
GMOS-North	Mayall 4m telescope
GMOS-South	McMath-Pierce facility; McMath-Pierce Solar Telescope; McMath-Pierce
GNIRS Team	medium-resolution (adj.)
go-ahead	
grayscale	
grism	
ground-based (adj.)	



megayear	O/IR (optical/infrared, spell out first occurrence; use abbreviation on second and subsequent text references)
metal-rich, metal-poor (adj.)	off-axis
Michelle (Gemini mid-infrared imager)	on-axis
micromirror	on-site (adj.)
mid- (when followed by proper noun as in mid-June; most compound adjectives do not require hyphen as in midyear)	onboard (adj.)
mid-infrared (spell out on first occurrence; use mid-IR on second and subsequent text references)	online (noun, adj.)
Mini-Mosaic	open-access (adj.)
MMT	optical/infrared
Moon	optomechanical
Mosaic 1.1	overspeed
Mosaic-3	p.m.
Mosaic camera(s)	parameter
Mosaic II imager	Parque Nacional Bosque Fray Jorge
Mosaic z-Band Legacy Survey (MZLS)	pc
mosplate	PDF
mpc	Phase I Tool
msini	Phase II submissions
multi (in compound terms, generally do not use hyphen, e.g., multipartner; multislit; multinational, multiwavelength; but multi-object; multi-instrument)	PhD
Mx	Phoenix (high-resolution near-infrared spectrometer)
Myr	photo-ablation
narrowband	p.m.
Nasmyth	point spread function
Near-Earth object (NEO)	polarimetric
near-infrared	Polysilicon
near-infrared (also near-IR or NIR, hyphenate as adj, spell out first occurrence)	postdoc, postdoctoral
NEWFIRM (use “the NEWFIRM wide-field infrared imager” on first reference)	powerhouse
nighttime	pre-ship, pre-shipment
<i>NOAO Currents</i>	principal component analysis
NOAO director; NOAO Director Joe Smith	principal investigator (lowercase except when preceding person’s name, i.e., Principal Investigator Ken Hinkle, the principal investigator for the project)
NOAO North; NOAO-N	protoplanet
NOAO South; NOAO-S	protoplanetary
NOAO Tucson	radial velocity dispersion
nod-and-shuffle mode	read-time
non (in compound terms, generally do not use hyphen, e.g., nonlinear; but, non-survey)	readout (noun)
North (direction)	real time (noun); real-time (adj.)
notch filter	RedLaSer
NSF (use on first and all subsequent occurrences)	redshift
	redshifted
	resolution: hyphenate before term in compound adjectives: high-resolution; low-resolution; moderate-resolution; medium-resolution
	ridge (Kitt Peak): west ridge; north ridge
	road map



SAC	time series observations
set up (verb); set-up (adj.); setup (noun)	tip-tilt
shared-risk basis	Tohono O’odham
shut down (verb); shutdown (noun)	tonne
sidelobe(s)	toward
sky glow	TripleSpec (instrument)
sky line	Type Ia, Type Ia supernova
small-scale (adj.)	U-floor
SMARTS consortium	ultraviolet
SOAR 4.1-m telescope	underrepresented
solar system	United States (noun); US (adj.)
south (direction)	Universe
Southern Hemisphere	University of Hawai‘i
space weather	uppercase
space-based (adj.)	URL
spectropolarimeter	US (adj.); United States (noun)
spring (season)	user guide/user manual
staff (plural noun)	videoconference
star formation (adj.)	Washington, DC
star-forming (adj.)	wavefront (adj.)
starburst	waveplate
subaward	weak lensing (adj.)
subfield	weather-tight
subpixel	Web
substellar	web page
summer	web-based (adj.)
Sun (our Sun; lowercase other suns)	webcam
Sun-like	webcast
supernova (SN)	WebEx
supernovae (SNe)	website
supersonic	well-known (adj.)
Survey Program	west
Swift	white paper
T Tauri stars	wide-field
telescope (lowercase, as in Blanco telescope)	wide-field camera
telnet	Wi-Fi
terabytes	wind shake
TeraGrid	winter (season)
test bed	Wireless LAN Controller (WLC)
time-domain (adj.)	WIYN building
time-sensitive (adj.)	WIYN Consortium
timescale	workshop
	X-ray

States

- Address: Use the postal service two-letter abbreviation in a complete address.
950 N. Cherry Ave., Tucson, AZ 85719
- City/State format: Spell out (Kitt Peak is near Tucson, Arizona.)

- Institutional Names: Spell out (University of Arizona)

Telescope Names

- Spell out telescope names at first occurrence. Follow with the abbreviation in parentheses if there will be subsequent abbreviation and use the acronym for all subsequent references.
Exceptions: MMT, WIYN (use abbreviation in every occurrence)
- Aperture size in telescope names:
 - 4m telescope
 - 4-meter telescope
 - the telescope is 4 meters
 - 8-meter-class telescope
 - 4- to 8-meter-class telescopes
- Names, Personal ftp sites: *ftp://ftp*.
- Web Addresses: Use *http://* only if URL does not include a “www”
www.noao.edu
http://legacysurvey.org/dr1/description
- Use *https://*
https://groups.google.com/forum/#!forum/decam-legacy-survey

Titles

Books: Italics

Journals: Italics

Lecture Series: No italics or quotation marks

Meetings: No italics or quotation marks for reoccurring meetings (The AAS Meeting); a single meeting title is enclosed in quotation marks (“The Pluto Files”)

Newspapers: Italics

Photographs: Italics

Unpublished Works: Quotation marks

Webpages/sections: Quotation marks

Websites: No italics or quotation marks

Word Count

1 page, Calibri, 11 pt = (approx.)

With two 2.5 × 2.5 images and captions: 300 words, 2000 characters with spaces

Without image: 550 words; 3400 characters with spaces

Word Usage

Acronym/Initialism

Acronym = word formed by the initial letters of a longer name, with the acronym pronounced differently than the full form; do not use “the” and “a/an” before these words

Examples: ESO; ALMA

Initialism = word formed by the initial letters of a longer name, with each letter pronounced separately; use “the” and “a/an” as needed before these words

Examples: IAU; NSF; NOAO

Assure/Ensure/Insure

Assure = to promise or say with confidence

I assure you that my calculations are correct.

Ensure = to do what is necessary for success

I documented every observation to ensure I could explain my findings.

Insure = to cover with an insurance policy

I will insure my car as required by law.

Further/Farther

Farther = distance

Further = in greater detail

We discussed the matter further while walking farther down the road.

Which/That

- If removing the words introduced by “which” or “that” changes the meaning of the sentence, use “that.” Otherwise, use “which” and precede it with a comma.

Examples:

The Mosaic filters include the VR filter, which has an especially broad band-pass.

For the deepest surveys, you should use the Mosaic filter that has the broadest band-pass.

Abbreviations

2dFGRS	—	2dF Galaxy Redshift Survey
2MASS	—	2-Micron All-Sky Survey
4CES	—	4-Meter Cryogenic Echelle Spectrograph
AAAC	—	Astronomy and Astrophysics Advisory Committee
AAL	—	Astronomy Australia Limited
AAO	—	Australian Astronomical Observatory
AAS	—	American Astronomical Society
AASC	—	Astronomy and Astrophysics Survey Committee; i.e., the Decadal Survey
AAT	—	Anglo-Australian Telescope
ACCORD	—	AURA Coordinating Council of Observatory Research Directors
ACS	—	Advanced Camera for Surveys
ACTR	—	Advisory Committee on Technical Resources (CTIO)
AD	—	Active Directory
ADA	—	Americans with Disabilities Act
ADC	—	Analog-to-digital converter

ADC	— Atmospheric dispersion compensator
ADO	— Associate Director’s Office (NOAO)
AE	— architecture & engineering
AED	— Automatic External Defibrillator
AER	— Astronomy Education Review
AFGU	— Astronomy From the Ground Up
AFRL	— Air Force Research Laboratory
AFWA	— Air Force Weather Agency
AGB	— Asymptotic Giant Branch
AGN	— active galactic nucleus (or nuclei)
AGU	— American Geophysical Union
AIP	— American Institute of Physics
AISES	— American Indian Science and Engineering Society
AITC	assembly, integration, test, and commissioning
AJ	— <i>Astronomical Journal</i>
ALAN	— Artificial Light at Night (conference)
ALFALFA	— Arecibo Legacy Fast ALFA Survey
ALMA	— Atacama Large Millimeter Array
ALO	— Andes LIDAR Observatory
ALPACA	— Advanced Liquid-mirror Probe for Astrophysics, Cosmology and Asteroids
ALTAIR	— Altitude conjugate adaptive optics for the infrared (Gemini AO system)
ALTAIR	— Access to Large Telescopes for Astronomical Instruction and Research (NOAO committee)
AMCL	— AURA Management Committee for LSST
AMNH	— American Museum of Natural History
ANDICAM	— A Novel Double-Imaging Camera
ANTARES	— Arizona-NOAO Temporal Analysis and Response to Events System
AO	— adaptive optics
AO	— Announcement of Opportunity
AODP	— Adaptive Optics Development Program
AOP	— Advanced Observing Program (Kitt Peak program)
AOS	— active optics system (LSST)
AOSS	— AURA Observatory Support Services
API	— application programming interface
ApJ	— <i>Astrophysical Journal</i>
APOGEE	— Apache Point Galactic Evolution Experiment
APP	— annual program plan (in 2016 changed to program operations plan [POP])
APS	— Alignment and Phasing System
ARBSE	— Astronomy Research Based Science Education
ARC	— Astronomy Research Consortium
Arcon	— Array Controller (CCD controller developed at CTIO)



ARCoIRIS	—	Astronomy Research using the Cornell Infra Red Imaging Spectrograph
ARO	—	Arizona Radio Observatory
ARRA	—	American Recovery and Reinvestment Act of 2009
ASAS	—	All Sky Automated Survey
ASCA	—	All-Sky Camera
ASP	—	Advanced Stokes Polarimeter
ASP	—	Astronomical Society of the Pacific
AST	—	Astronomical Sciences (Division of NSF)
ASTRO	—	(Not an acronym)
ATC	—	Astronomical Technology Center (United Kingdom)
ATI	—	Advanced Technologies & Instrumentation
ATM	—	Atmospheric Sciences (Division of NSF)
ATST	—	Advanced Technology Solar Telescope
ATT	—	Advanced Technology Telescope
AUI	—	Associated Universities, Inc. (runs NRAO)
AURA	—	Association of Universities for Research in Astronomy
AURA-CAS	—	AURA Central Administrative Services
AURA-O	—	AURA Observatory in Chile
AAO	—	Australian Astronomical Observatory
AWIS	—	Association for Women in Science
BAO	—	Baryon acoustic oscillations
BASS	—	Beijing Arizona Sky Survey
BAT	—	Burst Alert Telescope (one used in NASA's Swift mission)
BBSO	—	Big Bear Solar Observatory
BCG	—	brightest cluster galaxy
BHB	—	Blue horizontal branch (stars)
bHROS	—	bench-mounted High Resolution Optical Spectrograph
BigBOSS	—	Big Baryon Oscillation Spectroscopic Survey (now named MS-DESI)
BPT	—	"Baldwin, Phillips & Terlevich"
BRAVA-RR	—	Bulge Radial Velocity Assay project
BSR	—	Business Service Review
BTC	—	Big Throughput Camera
BTFI	—	Brazilian Tunable Filter Imager
BTO	—	Beam transfer optics
CA	—	Cooperative Agreement
CAA	—	Committee on Astronomy and Astrophysics
CAD	—	computer-aided design
CADIAS	—	Centro de Apoyo a la Didáctica de la Astronomía
CANDELS	—	Cosmic Assembly Near Infra-red Deep Extragalactic Legacy Survey



CARA	—	Center for Astrophysical Research in Antarctica
CARA	—	California Association for Research in Astronomy
CAS	—	Central Administrative Services (AURA department)
CASNet	—	Central Administrative Services Network (NOAO software application)
CATCH	—	Community Access Telescope Clearing House
CATTS	—	Collaboration to Advance Teaching Technology and Science
CBAT	—	Central Bureau for Astronomical Telegrams
CBET	—	Central Bureau Electronic Telegrams
CCD	—	charge-coupled device
CCEL	—	Cooper Center for Environmental Learning
CCO	—	Chief Compliance Officer (NOAO)
CD	—	Community Development (NOAO)
CDM	—	cold dark matter
CDR	—	Critical Design Review
CD-ROM	—	Compact Disk – Read Only Memory
CEAZA	—	El Centro de Estudios Avanzados en Zonas Áridas
CELT	—	California Extremely Large Telescope
CEMP	—	Carbon-enhanced metal poor
CfA	—	Harvard Smithsonian Center for Astrophysics
CfAO	—	Center for Adaptive Optics (University of California at Santa Cruz)
CFD	—	computational fluid dynamics
CFIP	—	CTIO Facilities Improvement Project
CFO	—	Central Facilities Operations (NOAO department)
CFOH	—	Central Facilities Operations and Headquarters
ChaMPlane	—	Chandra Multi-wavelength Plane Survey
Chandra	—	Chandra X-Ray Observatory (space telescope operated by NASA)
CHARA	—	Center for High Angular Resolution Astronomy
CHIRON	—	CTIO high-resolution spectrometer
CIAA	—	Congreso Internacional de Aficionados a la Astronomía
CIS	—	Computer Infrastructure Services (NOAO North department)
CISS	—	Computer Infrastructure Services South (NOAO South department)
CISSP	—	Certified Information Systems Security Professional
CIV	—	Corona inception voltage
CL	—	command language
CLEA	—	Contemporary Laboratory Exercises in Astronomy
CMB	—	Cosmic Microwave Background
CMBR	—	Cosmic Microwave Background Radiation
CMD	—	Color magnitude diagram
CME	—	coronal mass ejection
CMOS	—	Complementary Metal Oxide Semiconductor
CNC	—	Computer Numerical Control



CNO	—	carbon-nitrogen-oxygen
COBE	—	Cosmic Background Explorer
CoDR	—	Conceptual Design Review
Co-I	—	co-investigator
COI	—	Conflict of Interest
CSC	—	Community Science Center (SCS)
CONAMA	—	Comisión Nacional de Medio Ambiente
COPUS	—	Coalition on the Public Understanding of Science
CoSEC	—	Collaborative Sun-Earth Connection
COSMOS	—	Cerro Tololo Ohio State Multi-Object Spectrograph
COSMOS	—	Cosmic Evolution Survey
CRAC	—	computer Room Air Conditioner
CSA	—	cooperative support agreement
CSMA	—	Committee on the Status of Minorities in Astronomy
CSDC	—	Community Science and Data Center (NOAO)
CSWA	—	Committee on the Status of Women in Astronomy
CTE	—	charge transfer efficiency
CTIO	—	Cerro Tololo Inter-American Observatory
CWFS	—	Calibration Wave-Front Sensor
CXO	—	Chandra X-ray Observatory
D&D	—	Design and Development
DASL	—	Data and Activities for Solar Learning
DCAA	—	Defense Contract Audit Agency
DCI	—	Data Cache Initiative
DCR	—	Differential chromatic refraction
DDP	—	Design Development Phase
DDR	—	detailed design review
DECaLS	—	Dark Energy Camera Legacy Survey
DECam	—	Dark Energy Camera
DEEP	—	Deep Extragalactic Evolutionary Probe
DEIMOS	—	Deep Imaging Multi-Object Spectrograph (Keck)
DENIS	—	Deep Near Infrared Survey (of the Southern Sky)
DES	—	Dark Energy Survey
DES Y1	—	Dark Energy Survey Year One data
DES Y2	—	Dark Energy Survey Year Two data
DES	—	Deep Ecliptic Survey
DESDM	—	Dark Energy Survey Data Management
DESI	—	Dark Energy Spectroscopic Instrument
DGAC	—	Dirección General de Aeronautica Civil (Chilean civil aviation administration)

DHS	—	Data Handling System
DIMM	—	differential image motion monitor
DIQ	—	delivered image quality
DKIST	—	Daniel K. Inouye Solar Telescope
DL	—	Data Lab (NOAO)
DLS	—	Deep Lens Survey
DLSP	—	Diffraction-Limited Spectro-Polarimeter
DM	—	deformable mirror
DMAC	—	Data Management and Analysis Center (GONG)
DMO	—	Data Management Operations
DMU	—	Digital Mock-Up
DMZ	—	demilitarized zone
DoD	—	Department of Defense
DOE	—	Department of Energy
DPP	—	Data Products Program (NOAO department)
DQE	—	Detective Quantum Efficiency
DR	—	Data release
DRL	—	Division of Research on Learning in Formal and Informal Settings
DRM	—	Design Reference Mission
DSD	—	Dark Sky Discovery Program (NOAO)
DSDS	—	Data Storage and Distribution System
DST	—	Dunn Solar Telescope
E2E	—	End-to-End
e2v	—	e2v Technologies (vendor producing new detectors)
EC	—	Executive Council (changed from Executive Committee)
ECAD	—	Electronic computer-aided design
EGSO	—	European Grid of Solar Observations
EIS	—	Environmental Impact Statement
ELT	—	extremely large telescope
EMSS	—	Einstein Medium Sensitivity Survey
EO	—	Educational Outreach
EPDS	—	Extreme Precision Doppler Spectrograph
EPO	—	Education and Public Outreach (NOAO department, formerly PAEO)
EPOXI	—	Extrasolar Planet Observation and Deep Impact Extended Investigation
ESA	—	European Space Agency
ESD	—	electrostatic discharge
ESF	—	Evans Solar Facility
ESO	—	European Southern Observatory
ESSENCE	—	Equation of State: SupErNovae trace Cosmic Expansion
ET	—	Exoplanet Tracker



ETC	—	Explosive Transient Camera
ETS	—	Engineering and Technical Services (NOAO)
EVLA	—	Expanded Very Large Array
F&A	—	Facilities and Administrative
FDDI	—	Fiber Distributed Data Interface
FDP	—	full-disk patrol
FEA	—	Finite Element Analysis
FEPS	—	Formation and Evolution of Planetary Systems
FFRDC	—	Federally Funded Research and Development Center
FHiRE	—	Fiber High Resolution Echelle
FIDEL	—	Far-Infrared Deep Extragalactic Legacy (a survey)
FDR	—	Final Design Review
FIRS	—	Facility Infrared Spectropolarimeter
FITS	—	Flexible Image Transport System
FLAMINGOS	—	Florida Multi-Object Imaging Near-Infrared Grism Observational Spectrometer
FLAMINGOS-2	—	(Second FLAMINGOS instrument for Gemini)
FO	—	Facilities Operations (NOAO-S)
FORCAST	—	Faint Object Infrared Camera for the SOFIA Telescope
FOV	—	field of view
FPGA	—	Field programmable gate array
FSR	—	Free spectral range
FTE	—	full-time equivalent
FTS	—	Fourier Transform Spectrometer
FUSE	—	Filesystem in Userspace (software interface)
FWHM	—	full width half-maximum
FY	—	fiscal year
G&A	—	General & Administrative
GALEX	—	Galaxy Evolution Explorer
GAMA	—	Galaxy And Mass Assembly
GB	—	gigabytes
Gbps	—	Gigabits per second
GDDS	—	Gemini Deep Deep Survey
GeMS	—	Gemini Multi-Conjugate Adaptive Optics System (Gemini Mcao System)
GEMS	—	Great Explorations in Math and Science
GHOS	—	Gemini High-Resolution Optical Spectrograph
GHOU	—	Global Hands-On Universe
GIS	—	Geographical Information System
GLAO	—	Ground Layer Adaptive Optics
GLAST	—	Gamma-ray Large Area Space Telescope



GLOBE	—	Global Learning and Observations to Benefit the Environment (GLOBE at Night program)
GMOS	—	Gemini Multi Object Spectrograph
GMT	—	Giant Magellan Telescope
GNIRS	—	Gemini Near Infrared Spectrograph
GO	—	Guest Observer program
GO-FAAR	—	Graduate Opportunities at Fisk in Astronomy and Astrophysics Research
GOES	—	Gemini Optical Echelle Spectrometer
GOES	—	Geostationary Operational Environmental Satellite
GOLF	—	Global Oscillations at Low Frequencies
GONG	—	Global Oscillation Network Group
GOODS	—	Great Observatories Origins Deep Survey
GPI	—	Gemini Planet Imager
GPFS	—	General Parallel File System
GPRA	—	Government Performance and Results Act of 1993
GRB	—	Gamma-ray Burst
GSA	—	General Services Administration (US government)
GSAOI	—	Gemini South Adaptive Optics Imager
GSC	—	Gemini Science Committee
GSFC	—	Goddard Space Flight Center (NASA)
GSM	—	Generalized Seeing Monitor
GSMT	—	Giant Segmented Mirror Telescope
GSMTPO	—	Giant Segmented Mirror Telescope Program Office (NOAO department)
GTC	—	Gran Telescopio Canarias
GWF MOS	—	Gemini Wide Focus Multi-Object Spectrograph
HAO	—	High Altitude Observatory
HATNet	—	Hungarian Automated Telescope Network
HBCU	—	Historically Black Colleges and Universities
HDF	—	Hubble Deep Field
HDI	—	Half-Degree Imager
HDRI	—	high dynamic range imaging
HEASARC	—	High Energy Astrophysics Science Archive Research Center (NASA)
HET	—	Hobby-Eberly Telescope
HIPASS	—	HI Parkes All Sky Survey
HIRES	—	High Resolution Echelle Spectrometer
HMI	—	Helioseismic and Magnetic Imager
HOO	—	Hands-On Optics (NOAO)
HQ	—	headquarters
HR	—	Human Resources
HRMS	—	Human Resource Management System



HST	—	Hubble Space Telescope
HVAC	—	Heating, Ventilating, Air Conditioning
HZSST	—	High z Supernova Search Team
IAC	—	Instituto de Astrofísica de Canarias (Spain)
IAS	—	Instrument Adapter System (WIYN)
IAU	—	International Association of Universities
IAU	—	International Astronomical Union
IBIS	—	Infrared Boötes Imaging Survey
IBIS	—	Interferometric Bidimensional Spectrometer (Arcetri Observatory)
ICD	—	Interface Control Document
ICE	—	IRAF Control Environment
ICM	—	intracluster medium
IDA	—	International Dark-Skies Association
IDL	—	Interactive Data Language
IfA	—	Institute for Astronomy (University of Hawai`i)
IFTS	—	imaging Fourier transform spectrograph
IFU	—	integral field unit
IGM	—	intergalactic medium
IGO	—	International Gemini Observatory (twin telescopes in Hawai`i and Chile)
IGP	—	International Gemini Project
IHF	—	Instrument Handling Facility
IHY	—	International Heliophysical Year
IINSPIRE	—	Iowa, Illinois, Nebraska STEM Partnership for Innovation in Research
IMACS	—	Inamori-Magellan Areal Camera and Spectrograph
IMF	—	initial mass function
INAOE	—	Instituto Nacional de Astrofísica, Óptica y Electrónica
INTEGRAL	—	International Gamma-Ray Astrophysics Laboratory
IPAC	—	Infrared Processing and Analysis Center
IR	—	Infrared
IRAC	—	Infrared Array Camera (Spitzer instrument)
IRAF	—	Image Reduction and Analysis Facility
IRAS	—	Infrared Astronomical Satellite
IRMOS	—	Infrared Multi-Object Spectrograph
iRODS	—	Integrated Rule-Oriented Data System
IRS	—	Infrared Spectrograph (Spitzer)
IRTF	—	Infrared Telescope Facility (NASA)
ISE	—	Informal Science Education
iSHELL	—	(new instrument planned for NASA's Infrared Telescope Facility)
ISM	—	interstellar medium
ISOON	—	Improved Solar Observing Optical Network (called OSPAN as of 2006)



ISPI	—	Infrared Side Port Imager (NOAO)
ISS	—	Integrated Sunlight Spectrometer
iSTB	—	Internet Save the Bits
IT&C	—	Integration, Testing, & Commissioning
ITAC	—	International Telescope Allocation Committee
ITAR	—	International Traffic in Arms Regulations
ITC	—	Integration Time Calculator (Gemini instrument tool)
IUE	—	International Ultraviolet Explorer
IVOA	—	International Virtual Observatory Alliance
IYA	—	International Year of Astronomy
JHA	—	Job Hazard Analysis
JHU	—	The Johns Hopkins University
JINA	—	Joint Intitute for Nuclear Astrophysics
JPL	—	Jet Propulsion Laboratory
JSPS	—	Japan Society for the Promotion of Science
JUF	—	joint use fee
JWST	—	James Webb Space Telescope
KAOS	—	Kilo-Aperture Optical Spectrograph
KASI	—	Korea Astronomy and Space Science Institute
KBOs	—	Kuiper Belt objects
KCWI	—	Keck Cosmic Web Imager
keV	—	kiloelectron Volt
KINGFISH	—	Key Insights on Nearby Galaxies: a Far Infrared Survey with Herschel
KMF	—	K-band luminosity function
KMTNet	—	Korea Microlensing Telescope Network
KOSMOS	—	Kitt Peak Ohio State Multi-Object Spectrograph
KP	—	Kitt Peak
KPMO	—	Kitt Peak Mountain Operations
KPNO	—	Kitt Peak National Observatory
KPST	—	Kitt Peak SOLIS Tower
KPVC	—	Kitt Peak Visitor Center
KPVT	—	Kitt Peak Vacuum Telescope (retired October 2003)
LALA	—	Large Area Lyman Alpha survey
LAMOST	—	Large Aperture Multi-Object Spectroscopic Telescope
LAPLACE	—	Life and Planets Astrobiology Center (University of Arizona)
LS	—	La Serena
LBG	—	Lyman break galaxy
LBNL	—	Lawrence Berkeley National Laboratory



LBT	—	Large Binocular Telescope
ΛCDM	—	Lambda-Cold Dark Matter (or Λ-CDM)
LCO	—	Las Campanas Observatory
LCOGTN	—	Las Cumbres Observatory Global Telescope Network
LCRS	—	Las Campanas Redshift Survey
LCSC	—	LSST Community Science Center
LGS	—	laser guide star
LIRG	—	luminous infrared galaxy
LLNL	—	Lawrence Livermore National Laboratory
LLT	—	laser launch telescopes
LMC	—	Large Magellanic Cloud
LMCM	—	Laser Mask Cutting Machine
LMCT	—	Lockheed Martin Coherent Technologies
LMT	—	Large Millimeter Telescope
LNA	—	Laboratório Nacional de Astrofísica (Brazil)
LPL	—	Lunar and Planetary Laboratory (University of Arizona)
LRP	—	Long Range Plan
LSES	—	Long Slit Echelle Spectrograph
LSP	—	Large Science Program
LSST	—	Large Synoptic Survey Telescope
LSSTC	—	LSST Corporation
LTE	—	Local Thermodynamic Equilibrium
LVTD	—	linear variable differential transformer
LWS	—	Living With a Star
M2	—	secondary mirror
MACHO	—	massive compact halo object
MAP	—	Microwave Anisotropy Probe
MARS	—	Multi-Aperture Red Spectrometer
MASS	—	multi-aperture scintillation sensor
Mbps	—	Megabits per second
MCAO	—	multi-conjugate adaptive optics
MCC	—	Maui Community College
MCELS	—	Magellanic Clouds Emission Line Survey
MCI	—	Michelson Doppler Imager
McMP	—	McMath-Pierce Solar Telescope
MDI	—	Michelson Doppler Imager
MEDB	—	Maui Economic Development Board
MDM	—	MDM Observatory (not an abbreviation)
MEIFU	—	million element integral field unit
MEMS	—	Micro Electrical Mechanical Systems

MESA	—	Math, Engineering, and Science Achievement
MHD	—	Magnetohydrodynamic
MIHDAS	—	mid-IR high dispersion AO-fed spectrograph
MIKE	—	Magellan Inamori Kyocera Echelle
MIP	—	Major Instrumentation Program (NOAO department, now called SI)
MIRES	—	Mid-IR Echelle Spectrograph
MK	—	Mauna Kea
MKIR	—	Mauna Kea Infrared
MMIRS	—	MMT and Magellan Infrared Spectrograph
MMT	—	Multiple Mirror Telescope (This meaning is not used anymore; the name is the initialism only.)
MOCASSIN	—	Monte Carlo Simulations of Ionized Nebulae
MODS1	—	Multi-Object Double Spectrograph (copy 1 for LBT)
MODS2	—	Multi-Object Double Spectrograph (copy 2 by Ohio State)
MOMFOS	—	multi-object multi-fiber optical spectrograph
MONSOON	—	(Not an acronym.) A scalable, multi-channel high-speed array controller and image acquisition system
MOS	—	multiple object spectroscopy
Mosaic	—	Not an acronym. It is the NOAO CCD wide-field imager having 8192 x 8192 pixels (also called CCD Mosaic Imager)
MOSFIRE	—	Multi-Object Spectrograph for Infrared Exploration
MOU	—	Memorandum of Understanding
MPS	—	Mathematical and Physical Sciences (NSF division)
MREFC	—	Major Research Equipment and Facility Construction (NSF)
MRF	—	magneto-rheological finishing
MRI	—	Major Research Instrumentation (NSF)
MRO	—	Magdalena Ridge Observatory
MRS	—	Medium-Resolution Spectrograph
MS	—	Main sequence (stars)
MS-DESI	—	Mid-Scale Dark Energy Spectroscopic Instrument (formerly known as BigBOSS)
MTDC	—	modified total direct costs
NAAAC	—	National Astronomy and Astrophysics Advisory Committee
NAC	—	NSO Array Camera (formerly NSO Aladdin Array Camera)
NAHB	—	Native American, Hispanic, and Black Undergraduates
NAI	—	NASA Astrobiology Institute
NAOC	—	National Astronomical Observatories of the Chinese Academy of Sciences
NAOJ	—	National Astronomical Observatory of Japan
NAS	—	National Academy of Sciences
NASA	—	National Aeronautics and Space Administration



NC	—	NOAO Core
NCAR	—	National Center for Atmospheric Research
NCE	—	no-cost extension
NCEP	—	National Centers for Environmental Prediction
NCSA	—	National Center for Supercomputing Applications
NDO	—	National Optical Astronomy Observatory's Director's Office
NDSC	—	Network for the Detection of Stratospheric Change
NDWFS	—	NOAO Deep Wide-Field Survey
NEID	—	NN-EXPLORE Exoplanet Investigations with Doppler Spectroscopy
NEO	—	Near-Earth Object
NEOWISE	—	Asteroid-hunting component of NASA's Wide-field Infrared Survey Explorer (WISE)
NESSI	—	NASA Exoplanet Star (and) Speckle Imager
NESTA	—	National Earth Science Teachers Association
NEWFIRM	—	NOAO Extremely Wide-Field Infrared Mosaic imager
NFIRAOS	—	Narrow Field Infra-Red Adaptive Optics System (for TMT)
NFPS	—	NOAO Fundamental Plane Survey
NGAO	—	Next-Generation Adaptive Optics (Keck)
NGC	—	New General Catalog
NGCP	—	National Girls Collaborative Project
NGO	—	National Gemini Office
NGOS	—	Next Generation Optical Spectrograph (on Mayall 4-meter)
NGP	—	North Galactic Pole
NGS	—	natural guide star
NGSC	—	NOAO Gemini Science Center
NGSL	—	Next Generation Spectral Library
NGST	—	Next Generation Space Telescope
NHPA	—	National Historic Preservation Act
NHPPS	—	NOAO High-Performance Pipeline System
NICI	—	Near-Infrared Coronagraphic Imager (NASA project for Gemini South)
NICMOS	—	Near Infrared Camera and Multi-Object Spectrometer
NIF	—	National Ignition Facility
NIFS	—	Near-Infrared Integral Field Spectrograph (Gemini)
NIO	—	New Initiatives Office (former name of GSMTPO)
NIRDIF	—	near-infrared deployable integral field spectrograph
NIRs	—	near infra-red echelle spectrograph
NIRI	—	Near-Infrared Imager (on Gemini North)
NIRSP	—	Near-IR Spectro-Polarimeter
NIRSPEC	—	Near-Infrared Echelle Spectrograph (on Keck II)
NISP	—	NSO Integrated Synoptic Program (combination of GONG & SOLIS)
NITARP	—	NASA/IPAC Teacher Archive Research Program



NJIT	—	New Jersey Institute of Technology
NLFF	—	Non-Linear Force-Free
NLTE	—	Non-Local Thermodynamic Equilibrium
NMBS	—	NEWFIRM Medium Band Survey
NN	—	NOAO North
NN-ETS	—	NOAO North Engineering and Technical Services
NN-EXPLORE	—	NASA-NSF Exoplanet Observational Research program
NOAA	—	National Oceanic and Atmospheric Administration
NOAO	—	National Optical Astronomy Observatory
NOAO-N	—	National Optical Astronomy Observatory-North
NOAO-S	—	National Optical Astronomy Observatory-South
NOP	—	Nightly Observing Program (NOAO)
NPOI	—	Navy Prototype Optical Interferometer
NRAO	—	National Radio Astronomy Observatory
NRC	—	National Research Council
NRL	—	Naval Research Laboratory (United States)
NS	—	NOAO South
NSA	—	NOAO Science Archive
NSF	—	National Science Foundation
NSF/AST	—	National Science Foundation, Division of Astronomical Sciences
NSF/ATM	—	National Science Foundation, Division of Atmospheric Sciences
NSO	—	National Solar Observatory
NSO/SP	—	National Solar Observatory Sacramento Peak
NSO/T	—	National Solar Observatory Tucson
NSTA	—	National Science Teachers Association
NVO	—	National Virtual Observatory
O/IR	—	optical/infrared
OA	—	Observing Assistant
OAD	—	Observatory Architecture Document
OC	—	Observatory Council (OC)
OCD	—	Operations Concept Document
OCIW	—	Observatories of the Carnegie Institution of Washington
OCS	—	Observation Control System
ODI	—	One Degree Imager
OGCE	—	Open Grid Computing Environment
OIWFS	—	on-instrument wavefront sensor
OMB	—	Office of Management and Budget
OPCC	—	Oficina de Protección de la Calidad del Cielo
OPD	—	optical path difference
OpSim	—	Operations Simulator (LSST)



OPTIC	—	Orthogonal Parallel Transfer Imaging Camera
ORD	—	Observatory Requirements Document
OSA	—	Optical Society of America
OSCIR	—	mid IR camera and spectrometer system built at University of Florida
OSIRIS	—	Ohio State Infra-Red Imager and Spectrometer
OSIRIS	—	OH-Suppressing Infra-Red Imaging Spectrograph (built by UCLA for Keck with TSIP funds)
OSIRIS	—	Optical System for Imaging and Low-Resolution Integrated Spectroscopy (instrument on Gran Telescopio CANARIAS, Canary Islands)
OSMOS	—	Ohio State Multi-Object Spectrograph
OSPAN	—	Optical Solar Patrol Network (formerly ISOON)
OSTP	—	Office of Science and Technology Policy
OT	—	Observing Tool (Gemini)
OTA	—	Orthogonal Transfer Array
OTOP	—	Overnight Telescope Observing Program (NOAO)
OWL	—	overwhelmingly large telescope
P&T	—	promotion and tenure
PA	—	position angle
PAARE	—	Partnerships in Astronomy & Astrophysics Research and Education
PAEO	—	Public Affairs and Educational Outreach (NOAO department, now EPO)
PAH	—	polycyclic aromatic hydrocarbons
Pan-STARRS	—	Panoramic Survey Telescope & Rapid Response System
PASRD	—	Pipeline Software and Archive Science Requirements Document
PCA	—	Principal Component Analysis
PDO	—	NOAO Planning and Development Office
PDR	—	Preliminary Design Review
PEP	—	Program Execution Plan
PHA	—	Potentially hazardous asteroid (orbits come within 50,000 km of the Earth)
PI	—	principal investigator (no periods)
PIA	—	Prácticas de Investigación en Astronomía
PICASSO	—	Portable Ionospheric Camera and Small-Scale Observatory
PIO	—	Public Information and Outreach
PipeQA	—	Pipeline Quality Assessment (software package)
PIT	—	Phase I Tool (Gemini)
PMAC	—	Permanent Magnet alternating current (motor control type)
PMS	—	pre-main sequence
PN	—	planetary nebula
PNe	—	planetary nebulae
pODI	—	partially populated (focal plane) ODI
POP	—	program operations plan

POPPR	—	program operations plan progress report
PPA	—	Pipeline, Portal, and Archive (an ODI project)
PPE	—	personal protective equipment
PREST	—	Program for Research and Education with Small Telescopes
PRIMO	—	Prime Focus Infrared Mosaic wide-field camera
PRIMUS	—	Prism Multi-object Survey
PROMPT	—	Panchromatic Robotic Optical Monitoring and Polarimetry Telescopes
ProtoDESI	—	Prototype instrument for the Dark Energy Spectroscopic Instrument
PRP	—	program review panel
PRVS	—	Precision radial velocity spectrometer
PSD	—	power spectral density
PSF	—	point spread function
PSI	—	Planetary Science Institute
PSPT	—	Precision Solar Photometric Telescope
PTI	—	Pervasive Technology Institute (Indiana University)
PWV	—	precipitable water vapor
QE	—	Quantum efficiency
QLT		Quality Lighting Teaching (kit program at NOAO)
QRP	—	Quick-reduce pipeline
QSO	—	quasi-stellar object
QUIRC	—	Quick IR Camera (Gemini North)
QUOTA	—	Quad Orthogonal Transfer Array camera
RA/Dec	—	Right Ascension/Declination
RADIUS	—	Remote Authentication Dial In User Service
RASICAM	—	Radiometric All Sky Infrared Camera
RASL	—	Research in Active Solar Longitudes
RBSE	—	Research Based Science Education
RCR	—	Responsible Conduct in Research
RCS2	—	Red Sequence Cluster Survey 2
RCT	—	Robotically Controlled Telescope
RedLaSer	—	Red de Estudiantes de La Serena
Region IV	—	IV Región de Coquimbo
RESOLVE	—	RESolved Spectroscopy Of a Local VolumE
ReSTAR	—	Renewing Small Telescopes for Astronomical Research
RET	—	Research Experiences for Teachers
REU	—	Research Experiences for Undergraduates
REUNA	—	Red Universita Nacional (National University Network; Chile)
RFI	—	Request for Information
RGB	—	Red Giant Branch



RISE/PSPT	—	Radiative Inputs from Sun to Earth/Precision Solar Photometric Telescope
RMS	—	root mean square
ROB	—	round office building (use “administration building”) on Cerro Tololo
RoHS	—	Restriction of Hazardous Substances
ROI	—	region of interest
ROSA	—	Rapid Oscillations in the Solar Atmosphere
ROTSE	—	Robotic Optical Transient Search Experiment
RSS	—	root sum squares
RTI	—	Real-Time Innovations, Inc.
RV	—	radial velocity
SAC	—	Science Advisory Committee
SACNAS	—	Society for the Advancement of Chicanos and Native Americans in Science
SALT	—	Southern African Large Telescope
SAM	—	SOAR Adaptive-optics Module
SAMI	—	SOAR Adaptive Module Imager
SAMP	—	Simple Application Messaging Protocol
SAO	—	Smithsonian Astrophysical Observatory
SARA	—	Southeastern Association for Research in Astronomy
SARM	—	Romanian Society for Meteors and Astronomy
SBC	—	Solar Blind Channel
SBIG	—	Santa Barbara Instrument Group
SCB	—	Sequential Chromospheric Brightening
SCIDAR	—	Scintillation Detection and Ranging
SCOPE	—	Southwestern Consortium of Observatories for Public Education
SDAC	—	Solar Data Analysis Center
SDO	—	NOAO System Development Office (former department)
SDO	—	Solar Dynamics Observatory
SDQA	—	Science Data Quality Analysis (LSST)
SDSS	—	Sloan Digital Sky Survey
SED	—	spectral energy distribution
SEGUE	—	Sloan Extension for Galactic Understanding and Exploration
SFC	—	Space Flight Center (NASA)
SFM	—	sum-frequency mixing
SFR	—	star formation rate
SI	—	System Instrumentation (NOAO department, formerly MIP)
SIAP	—	Single Image Access Protocol (VAO)
SIFS	—	SOAR Integral Field Unit Spectrograph
SIG	—	Special Interest Group
SIMON	—	Spectromètre Infrarouge de Montréal (IR spectrometer for SMARTS 1.5-m telescope)



SINGG	—	Survey for Ionization in Neutral Gas Galaxies
SIRFT	—	Space Infrared Telescope Facility
SISPI	—	Survey Image System Process Integration (for DECam)
SKA	—	Square Kilometer Array
SLAC	—	No longer an acronym
SMARTS	—	Small and Moderate Aperture Research Telescope System
SMASH	—	Survey of the MAgellanic Stellar History
SMG	—	submillimeter galaxy
SMT	—	Submillimeter Telescope
SMT	—	surface mount technologies
SN	—	supernova
SNe	—	supernovae
SNIa	—	supernovae Type Ia
SOAR	—	Southern Astrophysical Research (a 4.1-m telescope)
SOAR TCS	—	SOAR Telescope Control System (TCS)
SOC	—	Solar Observatory Council (AURA)
SODAR	—	Sonic Detection and Ranging
SOFIA	—	Stratospheric Observatory for Infrared Astronomy
SOHO	—	Solar and Heliospheric Observatory
SOI	—	SOAR Optical Imager
SOI	—	Silicon-On-Insulator
SOI	—	Solar Oscillations Investigations (SOHO)
SOLIS	—	Synoptic Optical Long-term Investigations of the Sun
SOML	—	Steward Observatory Mirror Lab
SONG	—	Stellar Oscillation Network Group
SOT	—	Solar Optical Telescope
SPCA	—	spectral principal component analysis
SPD	—	Solar Physics Division (AAS)
SPIE	—	SPIE, the international society for optical engineering
SPIFFI	—	spectrometer for infrared fiber-fed field imaging
SPINOR	—	Spectro-Polarimeter for Infrared and Optical Regions
SPO	—	Special Projects Office (NOAO department)
SPO	—	Scientific Program Order (NSF)
SPRF	—	Science Program Research Funds
SQIID	—	Simultaneous Quad Infrared Imaging Device
SQL	—	Structured Query Language
SR	—	Senior Review
SRA	—	Summer Research Assistant
SRB	—	Storage Resource Broker
SRD	—	Science Requirements Document
SRS	—	Science Research Support



SSC	—	Science Steering Committee (WIYN)
SSC	—	Spitzer Science Center
SSC	—	super star clusters
SST	—	Swedish Solar Telescope
SSTAR	—	Simulated Survey Tools for Analysis and Reporting
SSWG	—	Site Survey Working Group (ATST)
STAC	—	Science and Technology Advisory Committee (Gemini)
STB	—	Save The Bits
STEAM	—	STEM Talent Expansion via Applied Mathematics
STELLES	—	SOAR Telescope Echelle Spectrograph
STEM	—	science, technology, engineering, and mathematics
STEP	—	Summer Teacher Enrichment Program
STEREO	—	Solar Terrestrial Relations Observatory
STFC	—	Science and Technology Facilities Council
STIS	—	Space Telescope Imaging Spectrograph (on HST)
STScI	—	Space Telescope Science Institute
SuperMACHO	—	five-year microlensing survey of the Large Magellanic Cloud
SV	—	system verification
SWG	—	Science Working Group
SWIRE	—	Spitzer Wide-Area Infrared Extragalactic Survey
SXT	—	soft X-ray telescope
SZ	—	Sunyaev-Zel'dovich
TAC	—	Telescope Allocation Committee
TADA	—	Telescope Automatic Data Archiving
TASCA	—	Tololo All Sky Camera
TB	—	Terabytes
TBSR	—	Total Business Service Review
TCS	—	Telescope Control System (SOAR)
TDS	—	Time Domain Services (NOAO)
TelOps	—	Telescope Operations (NOAO)
TIM	—	Mexican Infrared-Optical Telescope
TIO	—	Thirty Meter Telescope International Observatory
TLRBSE	—	Teacher Leaders in Research-Based Science Education
TMT	—	Thirty Meter Telescope
TOCC	—	Tohono O'odham Community College
TON	—	Tohono O'odham Nation
TORRENT	—	(Not an acronym.) Next generation of MONSOON controller
TOUA	—	Tohono O'odham Utility Authority
TP	—	thermally pulsing
TPF	—	Terrestrial Planet Finder

TRACE	—	Transition Region and Coronal Explorer
T-ReCS	—	Thermal-Region Camera Spectrograph
TRGB	—	tip of the red giant branch
TS4	—	TripleSpec4 (now called the ARCoIRIS)
TSIP	—	Telescope System Instrumentation Program
UA	—	University of Arizona
UBF	—	Universal Birefringent Filter
UCLES	—	University College London Echelle Spectrograph
UH	—	University of Hawai'i
UITS	—	University Information Technology Services (Indiana University)
UITS	—	University IT Services (U. of Arizona)
UK	—	United Kingdom
UK/ATC	—	United Kingdom Astronomical Technology Center
UKIRT	—	United Kingdom Infra-Red Telescope
ULIRG	—	ultra-luminous infrared galaxy
UNAM	—	Universidad Nacional Autónoma de México
UNESCO	—	United Nations Educational, Scientific and Cultural Organization
UNL	—	Unified Modeling Language
UPS	—	uninterruptible power supply
URAT	—	USNO Robotic Astrometric Telescope
URM	—	underrepresented minority
URO	—	University Radio Observatories
US	—	United States of America
USAF	—	United States Air Force
USL	—	US Land – Public Sector Solution Software
US NGO	—	US National Gemini Office
USNO	—	United States Naval Observatory
UV	—	ultraviolet
UVOT	—	UltraViolet/Optical Telescope (one used in NASA's Swift mission)
UW	—	University of Washington
	—	
VAO	—	Virtual Astronomical Observatory
VC	—	Visitor Center (NOAO)
VCCS	—	Virtual Camera Control System (Dunn Solar Telescope)
VERITAS	—	Very Energetic Radiation Imaging Telescope Array System
VIMOS	—	Visible Multiobject Spectrogram
VIRUS-P	—	Visible Integral-field Replicable Unit Spectrograph - Prototype (at McDonald Observatory)
VISTA	—	Visible and Infrared Survey Telescope for Astronomy
VLAN	—	virtual local area network



VLBA	—	Very Long Baseline Array (NRAO)
VLT	—	very large telescope
VO	—	Virtual Observatory
VPH	—	Volume-Phase Holographic (grating technology developed in part by NOAO)
VPN	—	Virtual private network
VRI	—	V-, R, and I- bands
VSM	—	Vector Spectromagnetograph
VSO	—	Virtual Solar Observatory
VTF	—	Visible Tunable Filter
WBS	—	Work Breakdown Structure
WCS	—	world coordinate solution
WDC	—	Workforce and Diversity Committee (AURA)
WEBUD	—	Web-based Budget (NOAO software application)
WFC3	—	Wide Field Camera 3 (HST instrument)
WFIRST	—	Wide-Field Infrared Survey Telescope
WFOS	—	Wide Field Fiber Multi-Object Spectrograph
WFPC2	—	Wide Field Planetary Camera 2 (HST instrument)
WFS	—	Wide-Field Survey (in science-oriented material)
WFS	—	wavefront sensor
WHAM	—	Wisconsin H-Alpha Mapper
WHIRC	—	WIYN High-Resolution Infrared Camera
WISE	—	Wide-field Infrared Survey Explorer
WIYN	—	Consortium consisting of the University of Wisconsin, Indiana University, NOAO, and the University of Missouri (previously Yale University was a member)
WMAP	—	Wilkinson Microwave Anisotropy Probe
WOCS	—	WIYN Open Cluster Study
WR	—	Wolf-Rayet (stars)
WTS	—	Web Time Sheets
WTTM	—	WIYN Tip-Tilt Module
WWT	—	WorldWide Telescope
WWW	—	World Wide Web
XSEDE	—	Extreme Science and Engineering Discovery Environment
XSL	—	<i>X-Shooter Spectral Library</i>
XRT	—	X-Ray Telescope (used in NASA's Swift mission)
YGO	—	Youth Group Program (NOAO)
YSO	—	young stellar object



- ZIMPOL — Zürich Imaging Polarimeter
- ZTF — Zwicky Transient Facility