

# International Comet Quarterly

## Links

*International Comet Quarterly*  
Cometary Science Center  
Comet magnitudes  
Central Bureau for Astro. Tel.  
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## ICQ: Recommended (and condemned) sources for stellar magnitudes

Below is a list that observers may use to evaluate whether the source(s) that they are contemplating using for visual or V stellar magnitudes are recommended or not. Unfortunately, many errors have been found over the years in the both the individual variable-star charts of the AAVSO (ICQ code AC) and the AAVSO Variable Star Atlas (code AA); those variable-star charts were designed for the purpose of tracking the relative variation in brightness of individual variable stars, and they frequently are not adequately aligned with the proper magnitude scale. The new Hipparcos/Tycho catalogues have had new codes implemented (see below).

New additions (and changes in categories) will be made to the following list as new information reaches the ICQ.

### MAGNITUDE-REFERENCE KEY

Second-draft recommendation list, 1997 Dec. 1.  
Updated 2007 April 20 and 2017 Oct. 4.

NOTE: For visual magnitude estimation of comets, NEVER USE SOURCES for which the available star magnitudes are only brighter than the comet! For example, the SAO Star Catalog is very poor for magnitudes fainter than 9.0, and should NEVER be used on comets fainter than mag 9.5. The Tycho catalogue should not be used for comets fainter than mag 10.5. (Even CCD photometrists should be wary of using bright stars for very faint comets; it is always best to use comparison stars within a few magnitudes of the comet when doing CCD photometry.)

NOTE: It is highly recommended that users of variable-star charts also specify (in descriptive notes to accompany the tabulated data) the specific chart(s) used for each observation; this information will be published in the ICQ. Also, observers are urged to not be careless about the use of secondary references for comparison-star magnitudes: specifically, if using a secondary source (such as amateur software containing compilations of professional star-catalogue data, or even professional catalogues such as the SAOC containing magnitudes from other catalogues), one should note both the primary and secondary sources CLEARLY.

### \*\*\* Recommended Sources:

Old Key	New Key	Source [+ location in ICQ where first introduced]
A	A	Charts or Atlas of the A.A.V.S.O. (NOTE: codes AA or AC should be used instead) [ICQ 3, 47]
	AA	A.A.V.S.O. Variable Star Atlas [ICQ 4, 6]
	AC	Charts of the Amer. Assn. of Var. Star Observers (specific chart should be specified) [ICQ 4, 7]
	AE	Planetary magnitudes from the American Ephemeris and Nautical Almanac (for use with bright comets) [ICQ 4, 105]; also star magnitudes from Astronomical Almanac
F	AG	Astronomisches Gesellschaft Katalog [ICQ 2, 6]
	AH	G. D. Roth's Astronomy: A Handbook, p. 534 (chart of the Pleiades) [ICQ 6, 64]
	AN	Comparison-star sequences as published by M. Beyer in articles in Astron. Nachrichten. Following are some excerpts from a letter that Beyer wrote to Dennis Milon on 1970 Sept. 16: "From 1930 to 1946 all observations are given in magnitudes of the Revised Harvard Photometry (Harv. Ann. 50 or Pickering's Northern Polar Sequence). Later I reduced all my observations (variable stars and comets) to the Internat. Photovisual System. The very reliable magnitudes in Harv. Ann. 50, 54, and 74 can be reduced to the Ipv-System by using Pv(Mt. Wilson) = Harv. + Korr. + fC given in Mt. Wilson Contributions 88. Most stars with magnitudes brighter than 7.5 are given in the Harv. Catalogues. Pickering's Durchmusterungszonen in Harv. Ann. 70 show systematic errors by more than 0.3 mag. Therefore all the fainter stars have been measured by myself applying a Graff-wedge-photometer and for comparison the IPv Northern Polar Sequence. As these photometric measurements have to be made only under good atmospheric conditions and in higher

- altitudes of the stars, it lasts often a longer time before the total magnitudes of the comets can be derived."
- AO USNO (S)A1.0 catalogue R magnitudes, from the first editions of this catalogue; not recommended because magnitudes may be off by 0.5 mag or more due to photographic calibration errors, but CCD astrometric comet observers are using them due to convenience; see more information on the World Wide Web at <http://ftp.nofs.navy.mil/projects/pmm/readpht.v10> [see also ref. UO]
- AP Atlas Photometrique des Constellations (1948), by Antoine Brun (has stars to mag 7.5 labeled with Harvard photometry magnitudes) [ICQ 5, 24]
- AS AAVSO chart for M81 (NGC 3031) in Ursa Major, which was closely scrutinized and revised during April and May 1993 as a result of SN 1993J. The revised sequence, which was published in the April 1993 issue of the ICQ, has a good sequence for the range  $10.3 < V < 15.5$ . [ICQ 15, 60; 15, 102]
- Z AT Arizona-Tonantzintla Catalog (publ. in July 1965 Sky & Telescope) [ICQ 2, 6; 4, 8]
- AU ASAS-3 V magnitudes, available from website: [http://archive.princeton.edu/~asas/asas3\\_catalog.html](http://archive.princeton.edu/~asas/asas3_catalog.html), and click on "Search: V-band" under "Photometric Catalog" (it is recommended that specific sequences and/or website URLs be mentioned in descriptive data) [ICQ 25, 160]
- BC Boss Catalogue
- B BD Bonner Durchmusterung (Argelander et al.) [ICQ 2, 59; 4, 63]
- BR V magnitude sequence for stars in the Coma cluster of galaxies including Abell 1656 (Boerngen and Richter 1978, A.N. 299, 177)
- BS Johnson V photometry by Brian Skiff at Lowell Observatory, with data given at the World Wide Website URL <http://www.kusastro.kyoto-u.ac.jp/vsnet/catalogs/skiffchart.html>; because website material may be transient, the ICQ policy for use of this source is to give additional information in the descriptive information accompanying the published tabulated data in the ICQ.
- C Photovisual magnitudes from "Cape Photographic Catalogue for 1950.0", in Annals of the Cape Observatory, Vols. 17-22. [ICQ 9, 142]
- CA M44 standard sequence as published in Henden and Kaitchuck's Astronomical Photometry (1982, New York: Van Nostrand Reinhold), pp. 301-302. [ICQ 9, 99]
- CC Carte du Ciel, Paris (Astrographic Catalogue?) [ICQ 10, 35]
- CD Open star cluster NGC 225 (R.A. = 0h43m.8, Decl. = +61 47', equinox 2000.0) photometry; star chart with magnitudes given ( $9.2 < V < 16.0$ ) as published in Visual Astronomy of the Deep Sky (see ref. 'CL', below), p. 250.
- CE Open star cluster NGC 1647 photometry ( $8.5 < V < 16.4$ ), in Visual Astronomy of the Deep Sky, p. 252 (see ref. 'CL', below).
- CF Open star cluster NGC 2129 photometry ( $11.2 < V < 16.1$ ), in Visual Astronomy of the Deep Sky, p. 254 (see ref. 'CL', below).
- CG Open star cluster NGC 2422 (M47) photometry ( $7.7 < V < 14.3$ ), in Visual Astronomy of the Deep Sky, p. 256 (see ref. 'CL', below).
- CH Open star cluster NGC 6494 (M23) photometry ( $9.3 < V < 13.9$ ), in Visual Astronomy of the Deep Sky, p. 258 (see ref. 'CL', below).
- CI Open star cluster NGC 6823 photometry ( $9.4 < V < 16.0$ ), in Visual Astronomy of the Deep Sky, p. 260 (see ref. 'CL', below).
- CJ Open star cluster NGC 6910 photometry ( $9.9 < V < 14.9$ ), in Visual Astronomy of the Deep Sky, p. 262 (see ref. 'CL', below).
- CK Open star cluster NGC 7031 photometry ( $11.2 < V < 16.5$ ), in Visual Astronomy of the Deep Sky, p. 264 (see ref. 'CL', below).
- CL Photometry by Hoag et al. (1961) from one of the open-star-cluster charts as published in Visual Astronomy of the Deep Sky, by Roger N. Clark (Cambridge Univ. Press, 1990), pp. 250-266.
- CM Photovisual and photoelectric-V magnitudes from Cape Mimeograms (Royal Observatory, Cape of Good Hope). [ICQ 9, 142]
- CN Open star cluster NGC 7235 photometry ( $8.7 < V < 16.4$ ), in Visual Astronomy of the Deep Sky, p. 266 (see ref. 'CL', above).
- CO UBV photometry for 39 stars in the range  $11.7 < V < 18.7$ , from "A New Stellar Standard Sequence in the Comet Cluster of Galaxies" (F. Boerngen and N. Richter 1978, Astron. Nach. 299, 117)
- CR V magnitudes of 13 stars surrounding NGC 3627 (M66), as given by Ciatti and Rosino (1977, A.Ap. 56, 62). The range in V is 13.8-16.9, and the stars are fairly red. [ICQ 11, 30]
- CS Catalogue of Stellar Identifications (1979, Strasbourg). Large compilation of many catalogues. For information, see F. Ochsenbein et al. (1981), A.Ap. Suppl. 43, 259, and Ochsenbein (1974), A.Ap. Suppl. 15, 215. The visual magnitudes with colons (:) should be avoided if possible. [ICQ 10, 35]
- D Dutch Comet Halley Handbook (E. P. Bus) [ICQ 7, 96]
- E One of Everhart's 3 Selected Area charts (1984, Sky Telesc. 67, 28)
- EA Selected Area 51: From Everhart (1984, Sky Telesc. 67, pp. 28-30).
- EB Selected Area 57: From Everhart (1984, see EA, above) [ICQ 7, 51]
- EC Selected Area 68: From Everhart (1984, see EA, above) [ICQ 7, 51]
- FA V photometry by Harold Ables, U.S. Naval Observatory, Flagstaff, "Region No. 6", unpublished (stellar V magnitude range 11.1-15.8 photoelectric and 13.7-21.6 electronographic). [ICQ 9, 99]
- FD R magnitudes of M13 stars as published in "A photoelectric BVRI sequence in the field of the globular cluster NGC 6205 (M13)", by D. Forbes and P. C. Dawson (1986), PASP 98, 102-103.
- FG from variable star charts published in \*A Field Guide to the Stars and Planets\*, by D. H. Menzel and J. M. Pasachoff (part of the Peterson Field Guide Series); charts by Wil Tirion for SS Cyg (visual mag 5.1-11.4), R CrB (7.5-12.6), Algol (2.9-5.5), beta Lyr, and Mira (3.5-9.2) are given on pages 158-161 of the second edition and pages 198-201 of the third ed. (magnitude source is

not specified, but probably AAVSO)

GA Guide Star Photometric Catalog - I, in Astrophysical Journal Supplement Series, Volume 68, Number 1 (1988 September). Contains nearly 1500 stars with V magnitudes and convenient finder charts throughout the sky. [ICQ 10, 124; 15, 60]

G GP [apparently same as 'HE'; see below]

GR Groombridge (1838, rev. 1905, Greenwich Obs.) [ICQ 3, 15]

HC photographic R-band magnitudes from Hubble Space Telescope Guide Star Catalogue [ICQ 145]

D HD Henry Draper Catalog (Harvard Coll. Obs. Annals) [ICQ 2, 39]

HE Harvard E Regions (declination -45 deg), Kron-Cousins V photometry for nine fields; stars range generally between  $7 < V < 16$  (Graham 1982, P.A.S.P. 94, 244) [ICQ 10, 124]

HI Hipparcos Input Catalogue (C. Turon et al. 1992, European Space Agency Special Publication SP-1136; derived V magnitudes (118,000 stars brighter than mag 13, with the distribution peak around  $V = 9$ ); see also HJ

HJ magnitudes in the Hipparcos photometric system, Hp (see code HI, above); peak of Hp is closer to true visual than to Johnson V, though it has a long red wing

HK H<sub>p</sub> magnitudes from the Hipparcos Catalogue (ESA SP-1200).

HN Arne Henden's photometric sequences, which can be downloaded from his computer at  
<ftp://ftp.nofs.navy.mil/pub/outgoing/aah/sequence>  
 (and especially via R. Bouma at  
<http://www.shopplaza.nl/astro/vs-charts/> and via M. Simonsen at <http://home.earthlink.net/~joevp/index.html>) -- but specific sequences should be specified in descriptive data [ICQ 26, 8]

H HP Harvard Photometry (Harvard College Obs. Annals) [ICQ 4, 8]

HR Harvard Revised Photometry (H.C.O. Annals) [ICQ 1, 42; 4, 8]

HS V magnitudes from Hubble Space Telescope astrometric catalogue of stars on compact disk [see ICQ 15, 60]

HV Johnson V magnitudes from Hipparcos Catalogue, ESA SP-1200.

JH Jet Propulsion Laboratory's Horizons website (for planetary magnitudes [<http://ssd.jpl.nasa.gov/horizons.cgi>] [ICQ 29, 14]

JT Cousins VRI magnitudes of stars in M67 (M. Joner and B. Taylor 1990, PASP 102, 1004)

L Landolt V Photoelectric Sequences (AJ 78, 959) [ICQ 6, 37]

LA Landolt photoelectric sequences (1992, AJ 104, 340)

LB Landolt (1983, AJ 88, 439 and 853) sequences as published by Christian Buil in ASTRONOMIE CCD (1989, Societe d'Astronomie Populaire), p. 261

LC Landolt (1975, PASP 87, 379) magnitude sequence for 33 stars near V1057 Cyg (V magnitude range 5.5-15.5)

LD \*Lietuvos Dangus 2007\* (Vilnius, 2006), p. 171  
 (an annual Lithuanian publication) [ICQ 29, 14]

L LN Lampkin's Naked-Eye Stars [ICQ 2, 6]

LM V magnitudes from "A Visual Atlas of the Large Magellanic Cloud", by Mati Morel (1983), Rankin Park, New South Wales [ICQ 10, 67]

MC Carlsberg Meridian Catalogue (1989). Volume 4. La Palma. More than 50,000 stars with visual magnitudes down to  $V = 13$ ; do not use stars with magnitudes given to less than 0.01 mag.

ME V photometry by Tedesco, Tholen, and Zellner (1982, A.J. 87, 1585); mag range 6-13 [ICQ 8, 77]

MK V magnitudes for M67 in LE GUIDE PRATIQUE DE L'ASTRONOMIE CCD (P. Martinez and A. Klotz 1994; Adagio press), p. 270

ML V magnitudes on chart of Large Magellanic Cloud by Mati Morel (apparently same as LM)

MM V magnitudes on chart of Small Magellanic Cloud by Mati Morel (apparently same as SM)

U MP McCormick Photovisual Sequence (Univ. of Virginia) [ICQ 3, 15]

MS From "McCormick Photovisual Sequences", by C. A. Wirtanen and A. N. Vyssotsky (1945, Ap.J. 101, 141-178). [ICQ 9, 142]

MT Visual magnitudes of stars in M67 as published by B. E. Schaefer (1989, SKY TEL. 77, 332); after work by Racine and Gilliland.

MV From Publ. Leander McCormick Obs., Vol. VI, Part II, pp. 201-306 ("Magnitudes and Coordinates of Comparison Stars in Regions of Long-Period Variables, by S. A. Mitchell, 1935) or Vol. IX, Part V, pp. 59-88 ("Sequences for Fifty Variable Stars", by Mitchell and C. A. Wirtanen, 1939). [ICQ 9, 142]

NH North Polar Sequence as published by Henden and Kaitchuck (1982, Astronomical Photometry, NY: Van Nostrand Reinhold), p. 305.

NN NGC 2129/6531/1342 cluster photometry, in Publ. U.S.N.O. Vol. XVII, parts VII, VIII (1961), pp. 406, etc.. [ICQ 8, 130]

O NO U.S.N.O. Photoelectric Photometry Catalogue [ICQ 2, 6; 4, 8]

N NP North Polar Sequence (publ. by the A.A.V.S.O.); 3 charts showing stars w/ useful range  $mv = 5.0$  and fainter [ICQ 1, 17; 3, 7]

NS "Magnitudes and Colors of Stars North of +80", by Seares, Ross, and Joyner (1941, Carnegie Inst. Publication 532) [ICQ 4, 80]

OB magnitudes for faint cluster stars from S. C. Odewahn, C. Bryja, and R. M. Humphreys (1992), PASP, 104, 553 [used by Spacewatch beginning 1999 Sept. 29, replacing FA; ICQ 123]

OH From listing of bright stars in Observers' Handbook, R.A.S.C. [ICQ 7, 51]

PA M45 sequence, Johnson & Mitchell (1958, Ap.J. 128, 31) [ICQ 8, 77]

PB Pleiades chart in Sky and Telescope 70, 465 (1985). [ICQ 8, 77]

PC Pleiades sequence, Henden and Kaitchuck (1982, Astronomical Photometry; N.Y.: Van Nostrand Reinhold), pp. 298-300 [ICQ 8, 130]

PD "Photometrische Durchmusterung: Generalkatalog", by G. Mueller and P. Kempf (1907), in Publ. Astrophysikalischen Observatoriums zu Postdam No. 52 (Vol. 17); B.D. stars to mag 7.5 [ICQ 10, 35]

PI IC 4665 sequence as found in Henden and Kaitchuck (1982, Astronomical Photometry, New York: Van Nostrand Reinhold), pp. 302-304. [ICQ 10, 35]

PK From the Soviet Program for Comet Halley; Dr. Klim Churyumov, Kiev University, describes the method as follows (edited):

- Comparison stars were noted on the Palomar Sky Survey prints; the visual magnitudes of these stars were determined by comparison with standard stars from the galactic cluster NGC 2129 (V magnitudes taken from the paper by Hoag et al. in Publ. U.S.N.O., Second Series, Vol. XVII, Part VII, pages 406 and 518, 1961). The visual magnitudes were determined by use of the formula  $m_v = V + 0.16(B-V)$ .
- PL star(s) & sources quoted for photoelectric data, but difference (comet - comparison-star) > 4.5 mag [ICQ 10, 35]
- RA Annual Ephemeris of the Royal Astronomical Society of Canada (not recommended, even for bright comets) [ICQ 5, 64]
- RB "Photoelectric Magnitudes and Colours of Southern Stars", A. W. J. Cousins and R. H. Stoy (1963), in Royal Observatory Bulletin No. 64 (Royal Greenwich Obs.), Series E3, pp. E101-E248. [ICQ 9, 142]
- RC "Standard Magnitudes in the E Regions", A. W. J. Cousins and R. H. Stoy (1962), in Royal Observatory Bulletin No. 49 (Royal Greenwich Obs.), Series E2, pp. E1-E59. [ICQ 9, 142]
- S S Smithsonian Astrophysical Obs. Star Catalog [ICQ 1, 17; 4, 9]
- SA M67 sequence by R. E. Schild (1983, PASP 95, 1021), Kron-Cousins magnitudes [ICQ 10, 35]
- SC Sky Catalogue 2000.0 (Sky Publishing; stars of magnitude  $V < 8.1$ ) [ICQ 4, 62; 4, 105]
- SD V magnitudes of members of the globular cluster M15 in the range  $13 < V < 22$  [and also nearby field stars for 40 stars of mag 7.64, 10.42-11.15, and  $12.9 < V < 18.8$ ], by A. Sandage (1970, Ap.J. 162, 841)
- SE V magnitudes of 134 stars of the II Persei Association (stars of spectral types A and B, mag range 5.1-11.4; C. K. Seyfert et al., Ap.J. 132, 58). [ICQ 11, 30]
- SK Brian Skiff's compilation of magnitudes as part of the LONEOS project (Lowell Observatory), appearing via Internet access at <ftp://ftp.lowell.edu/pub/bas/starcats/loneos.phot> (as of 9/25/01, containing about 33000 stars throughout the sky from some 600 published sources -- mostly professional astronomy journal articles); though magnitude range goes from  $V = 7.4$  to  $V = 22.9$ , only about 40 stars in this list are brighter than mag 9.0 (but generally a good source of V magnitudes for stars fainter than mag 10 or 11)
- SM V magnitudes from "A Visual Atlas of the Small Magellanic Cloud", by Mati Morel (1989), Rankin Park, N.S.W., Australia
- K SP Skalnate-Pleso Atlas Catalog (Atlas Coeli Cat.) [ICQ 2, 6; 4, 10]
- SS Various regions covering declination -60 deg to +10 deg, with stars having general range  $12 < V < 24$ ; Stobie et al. (1985), Astron. Astrophys. Suppl. Ser. 60, 503
- ST list of star magnitudes compiled by Brian Skiff and posted at [http://www.tass-survey.org/tass/refs/skiff\\_photom.tbl](http://www.tass-survey.org/tass/refs/skiff_photom.tbl) (submitted by R. D. Schwartz, who presumed this to be a culled list of the brighter standards from Landolt's lists) [ICQ 145]
- SW Four half-degree fields with finder charts and UBV photometry, range  $10 < V < 15$  (except field IV, which has a gap between  $11.5 < V < 13.5$ ), published by W. Saurer et al. (1992) in Astron. Astrophys. Suppl. Ser. 93, 553. The four fields average about 40 stars each, roughly centered at the following R.A. and Decl. (B1950.0): I, 1h27m, +58.2 deg; II, 3h24m, +45.2 deg; III, 7h15m, -10.1 deg; IV, 21h31m, +50.2 deg.
- TA Comparison-star magnitudes from "The Amateur Sky Survey" (TASS), which has data available at the website URL <http://www.tass-survey.org/> [ICQ No. 133]
- TB Supernova Search Charts, by G. D. Thompson and J. T. Bryan, Jr. (1989, Cambridge University Press) [specific chart should be specified]
- TG CCD magnitudes on the Thuan-Gunn system; comparison standard stars in Thuan and Gunn (1976, PASP 88, 543).
- TI Tycho Input Catalogue; more than three million stars brighter than  $V = 12.1$  prepared for the needs of the Tycho mission (Hipparcos satellite; see D. Egret et al. 1992, Astron. Astrophys. 258, 217); available upon request from the Strasbourg Data Center (France; e-mail address [question@simbad.u-strasbg.fr](mailto:question@simbad.u-strasbg.fr))
- TJ Tycho Catalogue Johnson V magnitudes from ESA SP-1200.
- TK Tycho-2 Catalogue (Hog et al. 2000, A.Ap., in press); NOTE: \*only\* Tycho-2 V\_T magnitudes (labeled VT) from the \*main\* catalogue should be used. The supplements contain a mix of V-like magnitudes from the original Tycho catalogue and should not be taken from here.
- TS Field of 13 stars (R.A. 22h02m, Decl. -19.1 deg, equinox 1950.0), V magnitudes with finding chart,  $9.7 < V < 19.2$ , by Tritton et al. (1984), MNRAS 206, 843-847.
- V TT Tycho/Hipparcos Catalogue V\_T magnitudes from ESA SP-1200.
- V V Variable star charts from recognized sources [ICQ 1, 42] (specific chart should be specified)
- VB Variable star charts of the British Astr. Assn. [ICQ 4, 64] (specific chart should be specified)
- VF Variable star charts of the A.F.O.E.V. (France) [ICQ 4, 64] (specific chart should be specified)
- VG Japanese variable-star charts edited by K. Gomi and based on charts drawn by Y. Kawanishi, publ. in 1970 by Koseisha Co. as a spiral-bound book; its preface states that the magnitudes of comparison stars are taken from Harvard Annals (Vols. 37, 50, 54, and 57) and from Skalnate Pleso II (Atlas Coeli). Akimasa Nakamura, who reported this reference to the ICQ, says that his comparison of Gomi charts with AAVSO charts show that the comparison-star magnitudes are very close to

each other.

VN Variable star charts of the R.A.S. of New Zealand [ICQ 4, 64]  
(specific chart should be specified)  
W International Halley Watch (IHW) version of an unspecified  
AAVSO chart [ICQ 7, 96]  
WA Special IHW version of AAVSO chart for SU Tauri [ICQ 7, 96]  
WB Special IHW version of AAVSO chart for CZ Orionis [ICQ 7, 96]  
WC Special IHW version of AAVSO chart for Y Tauri [ICQ 7, 96]  
WD Special IHW version of AAVSO chart for V Tauri [ICQ 7, 96]  
WE IHW version of AAVSO chart for X Sextantis [ICQ 8, 130]  
WF IHW version of AAVSO chart for S Sextantis [ICQ 8, 130]  
WG IHW version of AAVSO chart for SX Leonis [ICQ 8, 130]  
WH Unspecified IHW charts [ICQ 8, 44]  
(this code should not be used)  
WW B.A.A. Charts as published in the IHW Observers' Manual [ICQ 8, 44]  
Y Y Yale Bright Star Catalogue [ICQ 1, 42; 4, 8]  
YF Yale Bright Star Catalogue, fourth edition (should now be used  
instead of earlier editions)  
YG Yale Bright Star Catalogue, fifth edition  
YZ Yale Zone catalogue

\*\*\*\*\* UNACCEPTABLE:

T UA Atlases Borealis, Eclipticalis, Australis [ICQ 2, 6]  
UB USNO-B1 catalogue magnitudes (B1 and B2, or R1 and R2) [ICQ 151]  
C, CP UC Cape Photographic Catalogs [ICQ 1, 42; 4, 63]  
UD Naval Observatory Merged Astrometric Dataset (NOMAD), a new  
astrometric catalogue that compiled data from several  
catalogues including Tycho-2, UCAC-2, and USNO-B1.0 (i.e.,  
some good data and some not-so-good data). [ICQ 151]  
UL Specific comet or planet mentioned as magnitude reference, but  
comparison object not above horizon at same time as comet  
OR no catalog listed [ICQ 7, 51]  
M UM Magnitudes of galaxies, nebulae, etc. [ICQ 2, 6]  
R UN Norton's Atlas [ICQ 2, 39; 4, 62]  
UO USNO-A2.0 catalogue R magnitudes; not recommended because  
magnitudes may be off by 0.5 to 2 full magnitudes or more  
due to photographic calibration errors, but CCD astrometric  
comet observers are using them due to convenience  
[see also ref. AO]  
I, Q UP Any standard photographic atlas (e.g., Falkauer, Stellarium)  
[ICQ 3, 15; 2, 59]  
J, RC UR Revue des Constellations [ICQ 5, 24; 5, 64]  
UU UCAC2 astrometric star catalogue; magnitudes with  
uncertainty estimated as +/- 0.3, intended for  
identification only (bandpass spans V to R) [ICQ 29, 14]  
US Skalnate Pleso Atlas [ICQ 7, 51]  
UV USNO-A2.0 catalogue used to extract blue and red magnitudes,  
then converted to "V" magnitudes through the following  
formula derived by T. Kato (Kyoto Univ.) by comparing two  
variable-star fields (SW UMa and IR Gem):  
$$V = r + 0.375 * (b - r);$$
 communicated by A. Nakamura  
X UX Specific stars quoted, no catalogue given [ICQ 2, 39]