



ALPO COMET NEWS FOR JANUARY 2021

*A Publication of the Comets Section of the
Association of Lunar and Planetary Observers*

By Carl Hergenrother
ALPO Comets Section Coordinator



Gregg Ruppel caught C/2020 M3 (ATLAS) on 2020 December 8 at it moved passed the emission nebula IC 410 and open star cluster NGC 1893 in Auriga.

The monthly ALPO Comet News PDF can be found on the ALPO Comets Section website (<http://www.alpo-astronomy.org/cometblog/>). A shorter version of this report is posted on a dedicated Cloudy Nights forum (<https://www.cloudynights.com/topic/748760-alpo-comet-news-for-january-2021/>). All are encouraged to join the discussion over at Cloudy Nights. The ALPO Comet Section welcomes all comet related articles, observations, images, drawings, magnitude estimates, or spectra. One does not have to be a member of ALPO to submit material, though membership is encouraged. To learn more about the ALPO, please visit us @ <http://www.alpo-astronomy.org>.

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Summary

While many of us are happy to see the end of 2020, it was actually quite a good year for comet observing. No less than 13 comets were observed at magnitude 10.0 or brighter. The comet highlight of the year was C/2020 F3 (NEOWISE) which was the most impressive comet for northern hemisphere observers since C/1995 O1 (Hale-Bopp) in 1997.

Though it is unlikely 2021 will deliver another NEOWISE-like event, the year is predicted to see a large number of reasonably bright short-period comets, though most won't be bright till the 2nd half of the year. As a result, 2021 will start off slow with no comets expected to be brighter than 10th magnitude in January. We may need to wait till February or March when long-period comet C/2020 R4 (ATLAS) could become bright enough for small aperture observers.

2020 in Review

The Brightest Comets of 2020. The list only includes the maximum brightness observed by ground-based observers. If we had included the brightness seen in spacecraft data, then C/2020 S3 (Erasmus) would be ranked #2 with a peak brightness of ~4. Similarly, 249P/LINEAR was seen no brighter than 12th magnitude from the Earth but was around 7.5 in SOHO images. Small Krutetz sungrazer C/2020 X3 (SOHO) made the list as it was imaged during the December 14 Total Solar Eclipse.

1. C/2020 F3 (NEOWISE) (mag 1.5)
2. C/2020 F8 (SWAN) (mag 5.1)
3. C/2020 X3 (SOHO) (mag 5.1)
4. C/2020 S3 (Erasmus) (mag 6.1)
5. C/2019 U6 (Lemmon) (mag 6.4)
6. 2P/Encke (mag 7.3)
7. C/2019 Y1 (ATLAS) (mag 7.5)
8. C/2019 Y4 (ATLAS) (mag 7.6)
9. C/2020 M3 (ATLAS) (mag 7.6)
10. C/2017 T2 (PANSTARRS) (mag 8.3)
11. 88P/Howell (mag 8.6)
12. 156P/Russell-LINEAR (mag 9.6)
13. C/2020 A2 (Iwamoto) (mag 10.0)

Most Imaged/Sketched Comets of 2020 based on submissions to the ALPO Comets Section (total of 571 images/sketches of 51 comets made in 2020).

1. C/2020 F3 (NEOWISE) 218
2. C/2019 Y4 (ATLAS) 88
3. C/2017 T2 (PANSTARRS) 45
4. C/2020 S3 (Erasmus) 45
5. C/2020 M3 (ATLAS) 31
6. C/2020 F8 (SWAN) 24
7. C/2019 U6 (Lemmon) 17
8. C/2019 Y1 (ATLAS) 13
9. 156P/Russell-LINEAR 8
10. 88P/Howell 7

Most Magnitude Estimates, both visual and CCD, of 2020 based on submissions to the ALPO Comets Section (total of 716 submissions of 34 comets).

1. C/2020 F3 (NEOWISE)	116
2. C/2020 F8 (SWAN)	88
3. C/2019 U6 (Lemmon)	74
4. C/2017 T2 (PANSTARRS)	66
5. C/2019 Y4 (ATLAS)	62
6. C/2020 M3 (ATLAS)	52
7. C/2020 S3 (Erasmus)	51
8. 88P/Howell	46
9. C/2019 Y1 (ATLAS)	27
10. 156P/Russell-LINEAR	24

Bright Comets (magnitude < 10.0)

None. ☹

Fainter Comets of Interest (generally fainter than magnitude 10.0)

C/2020 S3 (Erasmus) – Barring a surprise discovery or major outburst, no comet observable from Earth is expected to be brighter than 10th magnitude this month. *C/2020 S3 (Erasmus)*, on the other hand, is visible within the FOV of the LASCO C3 coronagraph on the SOHO spacecraft. Though, even this is a stretch for January 2021 as it expected to leave the C3 FOV on January 1 or 2, perhaps even before you read this.

Comet *C/2020 S3 (Erasmus)* is a dynamically old long-period comet with an orbital period on the order of ~2600 years and was a faint 17th magnitude object at discovery back on 2020 September 17 with the ATLAS 0.5-m f/2 Schmidt at Mauna Loa. The comet rapidly brightened in November before being lost in the glare of dawn in early December. Willian Souza followed Erasmus down to an elongation of 23 degrees on December 4.30 UT when he estimated it at magnitude 6.1.

The comet was next imaged during the December 14 Total Solar Eclipse (see [Nick James' image](#) at the BAA Comet Section Image Archive which also shows *C/2020 X3*) when it was located only 11 degrees from the Sun. Four days later, Erasmus entered the SOHO LASCO C3 FOV. Mieczyslaw Leszek Paradowski submitted magnitude measurements to the COBS website showing Erasmus at magnitude 3.9 on December 18.58 UT as it entered the C3 FOV. By December 31.44 UT, it was measured to have faded to magnitude 6.1. If these magnitudes are accurate, Erasmus must have either rapidly brightened or experienced an outburst since early December. The quick fade from magnitude 3.9 to 6.1 in the C3 data also suggests a possible outburst may have occurred.

Unfortunately, once Erasmus leave the C3 FOV in a day or two, we may not see it again till April when it will finally be observable from Earth though as an object too faint for visual observation.

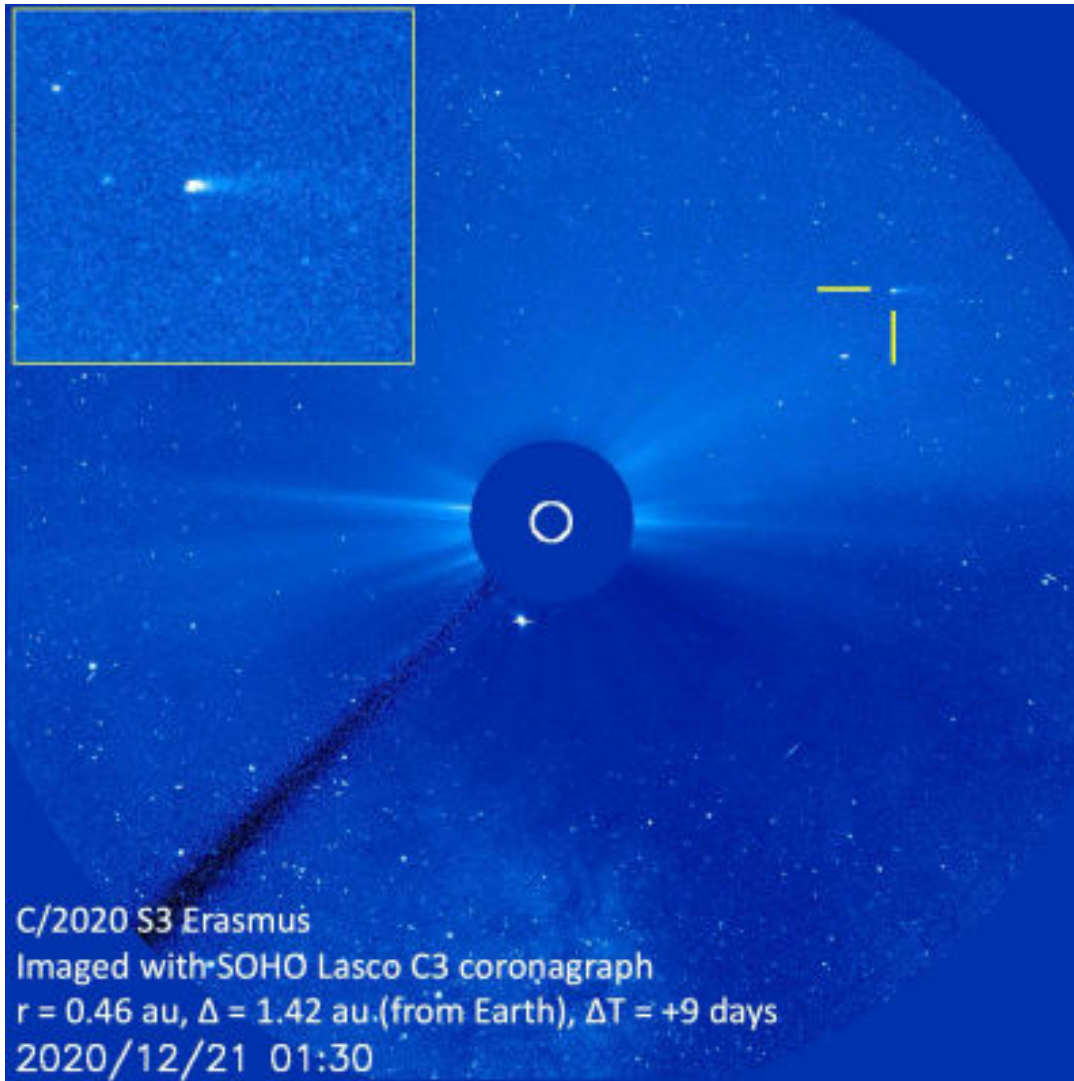


Figure 1 - C/2020 S3 (Erasmus) was only a few degrees from the Sun when imaged by the SOHO LASCO C3 coronagraph on December 21.

C/2020 M3 (ATLAS) – C/2020 M3 (ATLAS) is a Halley-type comet with an orbital period of 139 years. Perihelion occurred on October 25 at 1.27 au and closest approach to Earth on November 14 at 0.36 au. ATLAS held steady near its peak brightness (magnitude 7.5 to 8.0) for most of November. As it moved away from the Earth and Sun in December, ATLAS started to rapidly fade and was estimated between magnitude 9.4 and 9.7 by J. J. Gonzalez and Chris Wyatt on December 8, 9, and 16. Both observers observed a diffuse 5-6' coma.

As 2021 begins, C/2020 M3 is well placed for northern observers in the evening sky in Auriga. If its rapid fading continues, it may be lost to most visual observers by the end of the month as it drops below 12-13th magnitude.



Figure 2 - Martin Mobberley imaged C/2020 M3 (ATLAS) on the same night as Gregg Ruppel (see front page image). Martin's image is a wider field view and shows many of the other gems of central Auriga.

C/2020 M3 (ATLAS)

T = 2020-Oct-25 q = 1.27 au

Halley-family comet - 139-year orbital period

Date	R.A.	Decl.	r	d	Elong	Const	Mag	Max El (deg)	
								40N	40S
2021-Jan-01	05 14	+45 28	1.603	0.672	150E	Aur	10.7	84	4
2021-Jan-06	05 15	+46 39	1.647	0.733	146E	Aur	11.1	83	3
2021-Jan-11	05 16	+47 30	1.692	0.799	142E	Aur	11.5	82	2
2021-Jan-16	05 19	+48 06	1.738	0.869	139E	Aur	11.9	82	2
2021-Jan-21	05 23	+48 28	1.785	0.943	135E	Aur	12.3	82	2
2021-Jan-26	05 27	+48 41	1.833	1.020	132E	Aur	12.7	81	1
2021-Jan-31	05 33	+48 45	1.882	1.100	128E	Aur	13.0	81	1
2021-Feb-05	05 39	+48 43	1.931	1.184	125E	Aur	13.4	81	1

Comet Magnitude Parameters --- H = 8.0, 2.5n = 18.4, Offset = +5 days

88P/Howell – Though over three months since its September 28 perihelion at 1.35 au, Jupiter-family comet 88P/Howell has been slow to fade. After brightening to between magnitude 8.5 and 9.0 in September/October, 88P faded to between magnitude 9.1 and 10.0 in December as estimated by visual observers Michel Deconinck, J. J. Gonzalez, and Chris Wyatt. 88P should continue to fade in January as it moves through Aquarius in the evening sky though it becomes a difficult object for southern observers as the month progresses. Comet 88P/Howell is next at perihelion in March 2026 when it may peak at ~9.5.



Figure 3 - Michel Deconinck sketched 88P/Howell on December 9 with a 0.25-m Mewlon 250CRS f/10 at 96x.

88P/Howell

T = 2020-Sep-26 q = 1.35 au

Max El

Jupiter-family comet – 5.47-year orbital period

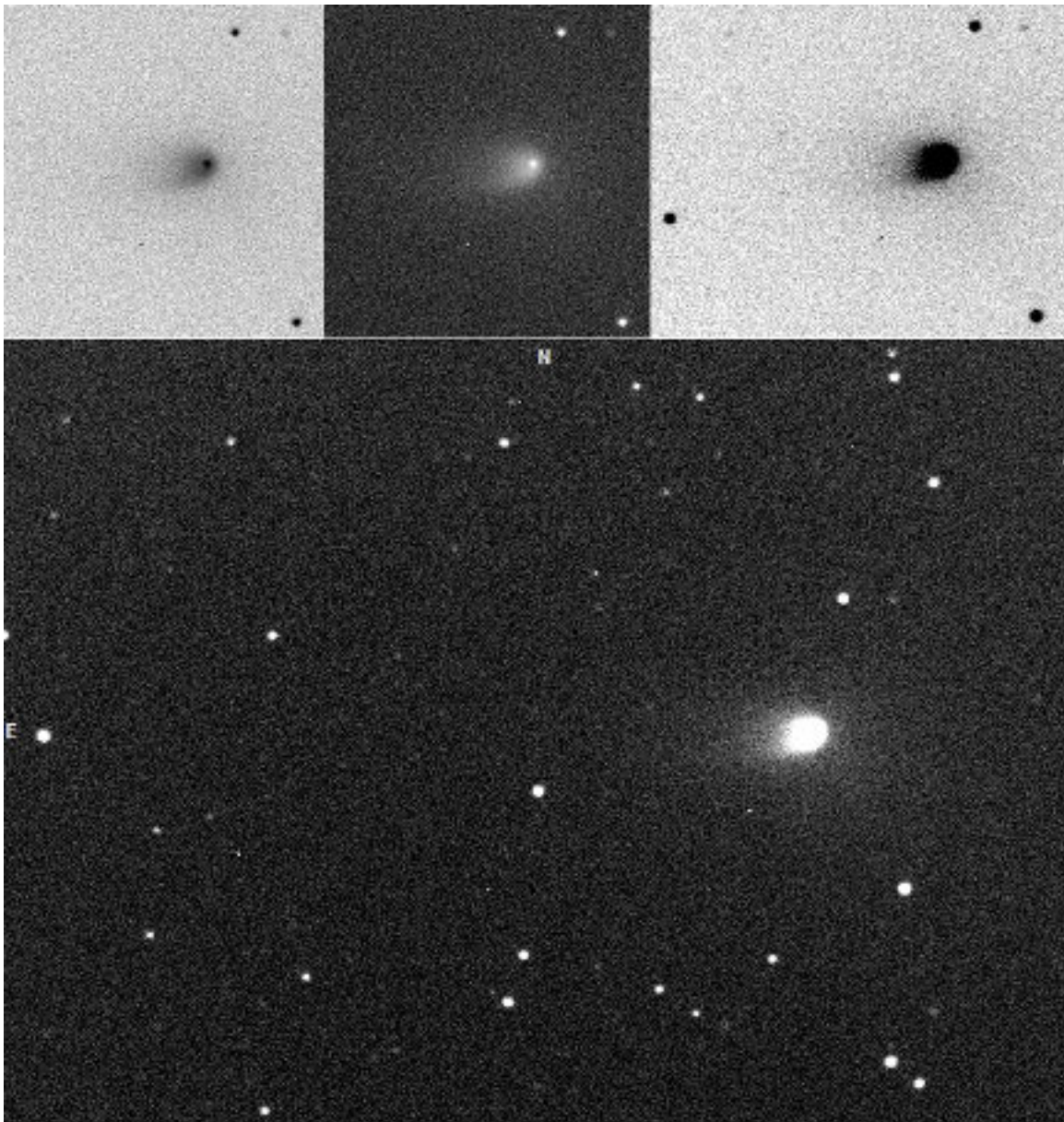
(deg)

Date	R.A.	Decl.	r	d	Elong	Const	Mag	40N	40S
2021-Jan-01	22 15	-14 05	1.700	2.154	50E	Aqr	10.5	24	9
2021-Jan-06	22 28	-12 41	1.730	2.216	48E	Aqr	10.6	23	8
2021-Jan-11	22 41	-11 18	1.761	2.279	46E	Aqr	10.7	23	6
2021-Jan-16	22 54	-09 54	1.792	2.343	45E	Aqr	10.9	22	5
2021-Jan-21	23 06	-08 32	1.824	2.407	43E	Aqr	11.0	21	3
2021-Jan-26	23 18	-07 10	1.856	2.472	41E	Aqr	11.2	20	2
2021-Jan-31	23 30	-05 49	1.889	2.537	39E	Aqr	11.3	19	1
2021-Feb-05	23 41	-04 29	1.922	2.602	37E	Aqr	11.4	18	0

Comet Magnitude Parameters --- H = 6.5, 2.5n = 10.0

156P/Russell-LINEAR – The next comet on our list continues the trend of fading comets. 156P is an object that rarely shows discernable cometary activity. Surprisingly, 2020 saw the comet brightening to magnitude 9.5-10.0 as it neared a 2020 November 17 perihelion at 1.33 au and close approach to 0.48 au from Earth.

In December, Michel Deconinck, J. J. Gonzalez, and Chris Wyatt observed 156P between magnitude 9.7 and 10.8 which suggests it hasn't changed much in brightness since November. This month, the comet should start to fade as it moves through evening constellations of Pisces (Jan 1-8) and Triangulum (8-31).



156P/Russell-LINEAR, m=11.8, fan tail 2'20" PA 90°, 2020/12/06 01:20UT, 1x60s, FOV 15'x11'
11" SCT #6.4 STF-8300M 1.24"/pixel Mike Olason, Tucson Arizona
Figure 4 – 156P/Russell-LINEAR showing some coma structure in this image taken by Mike Olason.

156P/Russell-LINEAR

T = 2020-Nov-17 q = 1.33 au Max El
 Jupiter-family comet – 6.44-year orbital period (deg)

Date	R.A.	Decl.	r	d	Elong	Const	Mag	40N	40S
2021-Jan-01	01 11	+26 26	1.428	0.806	105E	Psc	10.8	77	11
2021-Jan-06	01 25	+28 33	1.449	0.851	104E	Psc	11.0	79	9
2021-Jan-11	01 38	+30 28	1.472	0.900	102E	Tri	11.1	80	7
2021-Jan-16	01 53	+32 11	1.496	0.950	101E	Tri	11.3	81	5
2021-Jan-21	02 07	+33 43	1.522	1.004	99E	Tri	11.5	81	4
2021-Jan-26	02 22	+35 05	1.549	1.059	98E	Tri	11.7	81	3
2021-Jan-31	02 38	+36 18	1.578	1.117	97E	Tri	11.9	80	3
2021-Feb-05	02 53	+37 20	1.607	1.177	95E	Per	12.1	78	2

Comet Magnitude Parameters --- H = 9.7, 2.5n = 10.0

11P/Tempel-Swift-LINEAR – When a comet possesses three names, it usually means one of two things. Either the comet was discovered by three or more observers almost simultaneously (think 2018’s Machholz-Fujikawa-Iwamoto) or it was discovered across three or more apparitions. 11P is an example of the later. It acquired its first name on 1869 November 27 when Ernst Wilhelm Leberecht Tempel of Marseilles, France found it visually. The second name came on 1880 October 11 when Lewis Swift of Rochester, New York rediscovered the comet (also visually). After being seen in 1891 and 1908, 11P then went unobserved for 93 years. Its third name was the result of yet another re-discovery, this time by the CCD equipped LINEAR survey on 2001 December 7.

11P is now significantly fainter than it was a century or more ago. The intrinsic fading could be a result of an increasing perihelion distance from 1.06 au in 1869, 1.09 au 1891, and 1.15 au in 1908 to 1.58 au in 2001. After a close approach to Jupiter in September 2018 (0.60 au), 11P’s perihelion dropped back down to 1.39 au. The lower perihelion on 2020 November 26 and minimum comet-Earth distance of 0.49 au on November 3 have resulted in 11P reaching its brightest in over a century.

Magnitude brightness reports for this comet are quite scattered. In December submissions to the COBS site ranged from 10.9 to 14.0. The brightness forecast below is heavily leaning toward the fainter end. This month, 11P is an evening object moving through Cetus (Jan 1-26) and Taurus (26-31) and should fade as it moves away from the Sun and Earth.

11P/Tempel-Swift-LINEAR

T = 2020-Nov-26 q = 1.39 au Max El
 Jupiter-family comet – 5.95-year orbital period (deg)

Date	R.A.	Decl.	r	d	Elong	Const	Mag	40N	40S
2021-Jan-01	02 17	+06 21	1.444	0.736	113E	Cet	13.9	56	36
2021-Jan-06	02 30	+06 10	1.459	0.778	111E	Cet	14.1	56	36
2021-Jan-11	02 44	+06 07	1.477	0.821	109E	Cet	14.3	56	36
2021-Jan-16	02 57	+06 10	1.496	0.868	107E	Cet	14.4	56	35
2021-Jan-21	03 10	+06 19	1.517	0.917	105E	Cet	14.6	56	35
2021-Jan-26	03 24	+06 32	1.539	0.969	103E	Cet	14.8	57	35
2021-Jan-31	03 36	+06 47	1.562	1.023	102E	Tau	15.0	57	35
2021-Feb-05	03 49	+07 05	1.587	1.080	100E	Tau	15.2	57	35

Comet Magnitude Parameters --- H = 13.0, 2.5n = 10.0

29P/Schwassmann-Wachmann - 29P/Schwassmann-Wachmann was discovered photographically in 1927 by German astronomer team Arnold Schwassmann and Arno Arthur Wachmann. The duo discovered 4 comets together, three short-period comets (29P, 31P and 73P) and a long-period comet shared with Leslie Peltier (C/1930 D1).

On November 19, 29P underwent another of its frequent outbursts. Since then, the comet has stayed between magnitude 12-14 in the evening sky in Aries. If you image 29P, please consider contributing to the British Astronomical Society's (BAA) 29P monitoring program coordinated by Richard Miles. You can find more information at the BAA's "Observing the outbursting comet 29P/Schwassmann-Wachmann" page (<https://britastro.org/node/18562>).

29P/Schwassmann-Wachmann

T = 2019-Mar-07 q = 5.77 au

Centaur comet - 14.8-yr orbital period

Date	R.A.	Decl.	r	d	Elong	Const	Mag	Max El	
								40N	40S
2020-Jan-01	02 15	+24 24	5.847	5.313	118E	Ari	12-14	74	20
2020-Jan-06	02 15	+24 15	5.848	5.385	113E	Ari	12-14	74	18
2020-Jan-11	02 15	+24 07	5.849	5.461	108E	Ari	12-14	74	17
2020-Jan-16	02 16	+24 01	5.851	5.539	103E	Ari	12-14	74	15
2020-Jan-21	02 17	+23 57	5.852	5.618	98E	Ari	12-14	73	13
2020-Jan-26	02 18	+23 54	5.853	5.699	94E	Ari	12-14	71	12
2020-Jan-31	02 19	+23 52	5.854	5.780	89E	Ari	12-14	69	10
2021-Feb-05	02 21	+23 52	5.855	5.861	84E	Ari	12-14	65	9

141P/Machholz - Former ALPO Comet Section Coordinator Don Machholz discovered this Jupiter-family comet in 1994. With a 5.34-year period, 141P is making its 5th observed perihelion passage. During 1994 the comet was actually a multiple comet with 5 components (component D was even observed to split during the apparition). The two brightest components (the primary A and secondary D) made a visually striking double comet in small telescopes. Components A and D were re-observed in 1999 but by 2005 only component A was visible. Due to poor observing conditions, no components were seen in 2010. During the last return in 2015, the primary (A) has been seen as well as another component (H) which could have been a new sighting of components B or C observed back in 1994.

141P's split personality didn't begin in 1994. Research by Zdenek Sekanina found that components B through E split from the primary during the period of 1987 to 1991. Other research suggests 141P (or its progenitor) may have been breaking up for some time as it is related to both the Alpha Capricornid meteor shower and comet 169P/NEAT (a weakly active comet on an orbit with a 4.2-year period).

During the current apparition, CCD imagers have detected two additional fainter components. We are still awaiting an official announcement of these two fainter components and whether they are new components or a return of previously observed components.

141P is an evening object moving through Aquarius (Jan 1-10) and Cetus (10-31). With perihelion on December 16 at 0.81 au and closest approach to Earth on January 19 at 0.53 au, 141P should be near its peak brightness as January begins. Recent submissions to COBS suggest the comet is around magnitude 10.5 as January begins.

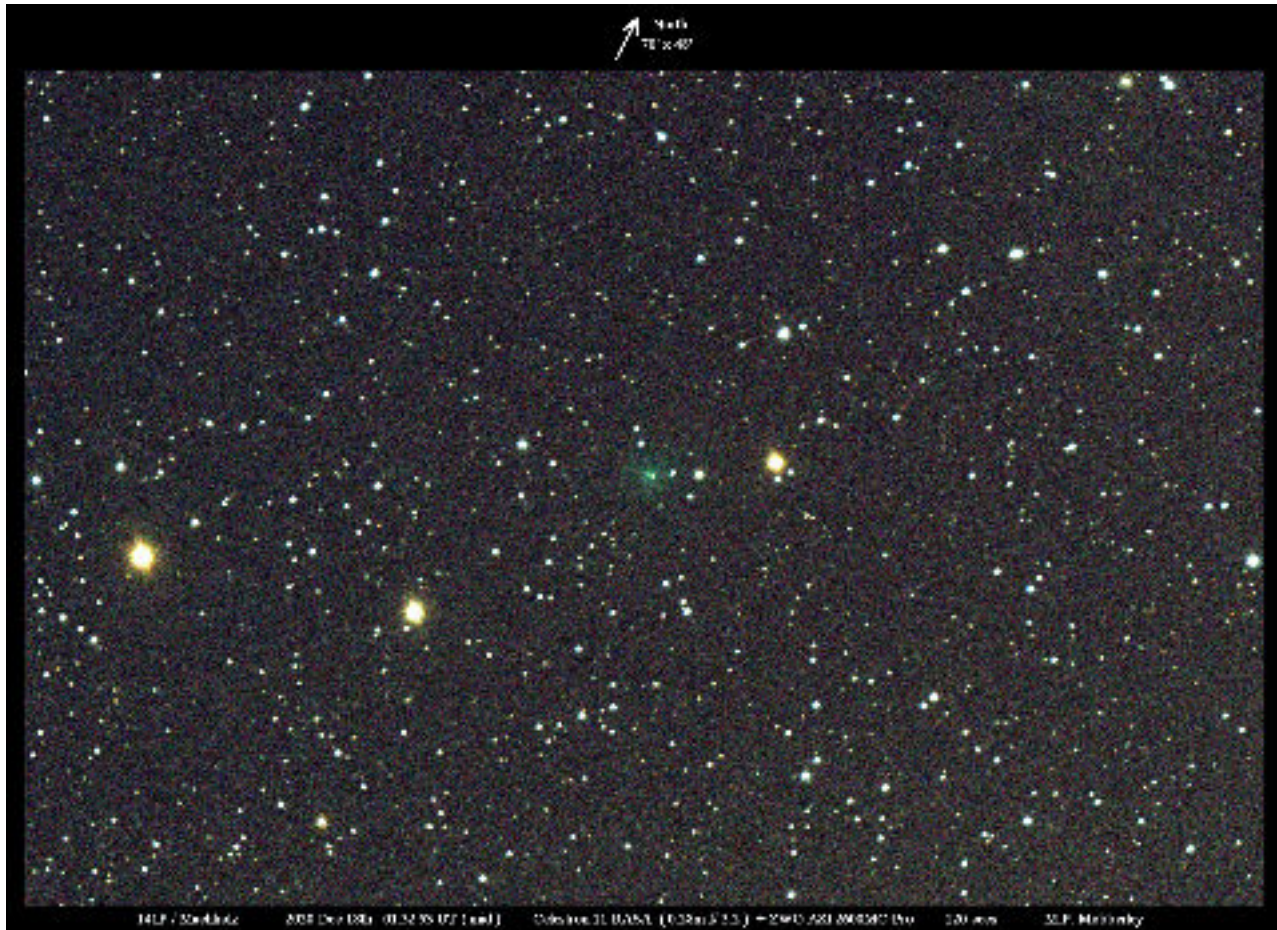


Figure 5 - The main component of 141P/Machholz was captured in this image taken on 2020 Dec. 18 by Martin Mobberley.

141P/Machholz

T = 2020-Dec-16 q = 0.81 au

Jupiter-family comet - 5.34-year orbital period

Date	R.A.	Decl.	r	d	Elong	Const	Mag	Max El	
								40N	40S
2021-Jan-01	22 47	-08 31	0.852	0.589	59E	Aqr	10.5	33	12
2021-Jan-06	23 23	-08 06	0.881	0.556	62E	Aqr	10.5	34	15
2021-Jan-11	00 01	-07 32	0.915	0.533	66E	Cet	10.6	37	19
2021-Jan-16	00 41	-06 46	0.954	0.521	71E	Cet	10.9	39	23
2021-Jan-21	01 22	-05 48	0.997	0.521	76E	Cet	11.2	41	27
2021-Jan-26	02 01	-04 40	1.043	0.532	80E	Cet	11.6	43	31
2021-Jan-31	02 39	-03 27	1.091	0.556	85E	Cet	12.1	45	35
2021-Feb-05	03 13	-02 13	1.141	0.590	89E	Eri	12.6	47	37

Comet Magnitude Parameters --- H = 9.4, 2.5n = 10.0

398P/Boattini - Comet Boattini was discovered on 2009 August 26 as an 18-19th magnitude object by Andrea Boattini with the 0.7-m Catalina Schmidt. During its 2009 return, the comet was a reasonably bright object reaching 12-13th magnitude. It was missed at its next return in 2015 but was recently recovered on 2020 August 11 at 19th magnitude by the ATLAS survey. Observing circumstances are near optimal for its current orbit with perihelion occurring on 2020 December 17 at 1.31 au and closest approach to Earth a few days later on December 22 at 0.38

au. Chris Wyatt and J. J. Gonzalez both observed the comet in December at magnitude 11.0 to 12.8. 398P is currently at its brightest and should start to fade this month as it moves through Eridanus (Jan 1), Orion (1-27) and Taurus (27-31) in the evening sky.



Figure 6 – Image of 398P/Boattini by Tenho Tuomi on 2020 December 17 taken with a 0.3-m f/5 newtonian.

398P/Boattini

T = 2020-Dec-26 $q = 1.31$ au

Jupiter-family comet – 5.53-year orbital period

Date	R.A.	Decl.	r	d	Elong	Const	Mag	Max El (deg)	
								40N	40S
2021-Jan-01	04 46	-00 10	1.307	0.381	142E	Eri	11.8	50	50
2021-Jan-06	04 52	+02 52	1.311	0.389	141E	Ori	11.8	53	47
2021-Jan-11	05 00	+05 57	1.317	0.400	140E	Ori	11.9	56	44
2021-Jan-16	05 09	+09 01	1.326	0.416	139E	Ori	12.0	59	41
2021-Jan-21	05 18	+11 59	1.337	0.435	137E	Ori	12.2	62	38
2021-Jan-26	05 28	+14 45	1.351	0.458	135E	Ori	12.3	65	35
2021-Jan-31	05 39	+17 17	1.366	0.485	133E	Tau	12.5	67	33
2021-Feb-05	05 51	+19 32	1.384	0.516	131E	Ori	12.7	70	30

Comet Magnitude Parameters --- $H = 12.7$, $2.5n = 10.0$

C/2019 N1 (ATLAS) – Yet another ATLAS discovery may be within range of visual observers, albeit those with larger apertures. *C/2019 N1* was discovered back on 2019 July 5 at 18th magnitude and 6 au from the Sun. As is characteristic for a dynamically new long-period comet, *N1* has brightened very slowly since discovery. Combine that with the fact that it came to perihelion on 2020 December 1 at 1.70 au on the far side of the Sun, and there is little expectation of *N1* becoming brighter than about 11th magnitude. This month, the comet is

climbing higher into the morning sky though it is only visible from the southern hemisphere as it moves through Centaurus (Jan 1), Lupus (1-17), Circinus (17-28), and Triangulum Austrinus (28-31).

C/2019 N1 (ATLAS)

T = 2020-Dec-01 $q = 1.70$ au

Long-period comet – Dynamically new

Date	R.A.	Decl.	r	d	Elong	Const	Mag	Max El	
								40N	40S
2021-Jan-01	14 30	-42 15	1.750	2.104	55M	Cen	11.7	3	33
2021-Jan-06	14 36	-46 04	1.766	2.061	58M	Lup	11.7	0	38
2021-Jan-11	14 42	-50 00	1.784	2.022	61M	Lup	11.7	0	43
2021-Jan-16	14 48	-54 04	1.805	1.988	64M	Lup	11.7	0	47
2021-Jan-21	14 55	-58 15	1.827	1.960	67M	Cir	11.7	0	50
2021-Jan-26	15 02	-62 30	1.851	1.938	70M	Cir	11.7	0	52
2021-Jan-31	15 10	-66 48	1.877	1.922	72M	TrA	11.7	0	53
2021-Feb-05	15 19	-71 07	1.905	1.914	74M	TrA	11.8	0	52

Comet Magnitude Parameters --- H = 8.0, 2.5n = 8.5

C/2020 R4 (ATLAS) – Back in the ALPO Comet News for October 2020, I suggested that we keep an eye on C/2020 R4 (ATLAS). With a perihelion on March 1 at 1.03 au and a close approach with Earth on April 23 at 0.46 au, R4 could become a nice object if it brightens rapidly. At discovery on 2020 September 12 it was a faint 18th magnitude. Since then, the comet is showing some promise with observers placing it as bright as 11-13th magnitude in mid-December.

As January begins, R4 is diving towards the Sun. In fact, it is already lost to most southern observers and will be lost to northern observers by the 2nd week of the month. Expected to be fainter than 11th magnitude, there may be few observations made before we lose it to the Sun's glare. The good news is that the comet will reappear to ground-based observers in late February to early March. At its brightest in late April, R4 may be an easy target for small aperture visual observers (8-9th magnitude though this is still highly uncertain).

C/2020 R4 (ATLAS)

T = 2021-Mar-01 $q = 1.03$ au

Long-period comet – ~942-year orbital period

Date	R.A.	Decl.	r	d	Elong	Const	Mag	Max El	
								40N	40S
2021-Jan-01	21 17	-18 57	1.420	2.101	35M	Cap	11.8	11	2
2021-Jan-06	21 14	-18 25	1.368	2.132	29M	Cap	11.7	8	0
2021-Jan-11	21 10	-17 54	1.317	2.153	23M	Cap	11.6	3	0
2021-Jan-16	21 07	-17 22	1.269	2.164	18M	Cap	11.5	0	0
2021-Jan-21	21 05	-16 49	1.224	2.164	12M	Cap	11.4	0	0
2021-Jan-26	21 02	-16 16	1.181	2.152	7M	Cap	11.2	0	0
2021-Jan-31	20 59	-15 41	1.143	2.127	2M	Cap	11.1	0	0
2021-Feb-05	20 56	-15 06	1.109	2.090	4M	Cap	11.0	0	0

Comet Magnitude Parameters --- H = 9.0, 2.5n = 8.0

New Discoveries, Recoveries and Other Comets in the News

Newly Numbered Periodic Comets –

397P/Lemmon	= P/2012 SB6	= P/2020
398P/Boattini	= P/2009 Q4	= P/2020 P2
399P/PANSTARRS	= P/2013 O2	= P/2020 O4
400P/PANSTARRS	= P/2013 PA104	= P/2020 R1
401P/McNaught	= P/2006 H1	= P/2020 R3
402P/LINEAR	= P/2002 T5	= P/2020 Q3
403P/Catalina	= P/2007 VQ11	= P/2020 T1
404P/Bressi	= P/2011 U2	= P/2020 M6
405P/Lemmon	= P/2013 TL117	= P/2020 U1
406P/Gibbs	= P/2007 R2	= P/2020 R8
407P/PANSTARRS-Fuls	= P/2013 J4	= P/2019 Y2
408P/Novichonok-Gerke	= P/2011 R3	= P/2020 M7
409P/LONEOS-Hill	= P/2005 XA54	= P/2020 V1

C/2020 X3 (SOHO) – This was the comet mentioned in the above write-up for *C/2020 S3* (Erasmus). Prolific discoverer of SOHO comets, Worachate Boonplod of Samut Songkhram, Thailand, found this comet in LASCO C3 data taken on December 13. Only hours after Worachate’s discovery, *C/2020 X3* was imaged by A. Moeller and Nick James during the December 14 Total Solar Eclipse. Karl Battams (Naval Research Lab) was able to also find images of the comet in STEREO-A COR-2 data on December 14. At its brightest the comet was around magnitude 5.1. A small Kreutz sungrazing comet with a perihelion on December 14.94 UT at 0.005 au, *C/2020 X3* started to fade prior to perihelion and likely did not survive its extremely close brush with the Sun.

P/2020 X2 (ATLAS) – The Asteroid Terrestrial-Impact Last Alert System, or ATLAS, found this 18th magnitude short-period comet on December 10 with their 0.5-m f/2 astrograph at Mauna Loa on the big island of Hawaii. Pre-discovery observations on 7 nights going back to 2020 September 25 were also found (observations by ATLAS, Mount Lemmon, Pan-STARRS, and ZTF). *P/2020 X2* is a Halley-type comet with an orbital period of 66 years and perihelion on 2020 November 16 at 3.83 au. The comet’s next perihelion will be in 2087.

P/2020 X1 (ATLAS) – ATLAS found this 18th magnitude short-period comet on December 4, though this time it was their 0.5-m f/2 astrograph at Haleakala on the Hawaiian island of Maui that made the discovery. Pre-discovery observations made from December 1 to 3 by ATLAS, the Catalina Sky Survey 0.7-m Schmidt, and Pan-STARRS were also found. Based on a 7-day arc, *P/2020 X1* appears to be a short-period comet with an orbital period of 9.7 years and perihelion on 2020 July 20 at 2.88 au. *P/2020 X1* has likely already peaked in brightness and should fade as it moves away from perihelion and its minimum distance to Earth.

P/2020 W2 = P/2003 WR168 = P/2005 CR16 (LINEAR-NEAT) – On November 16, Catalina observer David Rankin found a 19th magnitude comet in images taken with the 1.5-m Mount Lemmon reflector. David had one productive observing run. Across two nights (Nov 15 & 16), he discovered 2 new comets and serendipitously recovered two more comets, including this one (*P/2020 W2*). After the object was posted on the MPC PCCP, H. Sato recognized the object as a return of an object that was designated as an asteroid twice in the past as 2003 WR168 (discovered

by NEAT at 19th magnitude on 2003 November 19) and 2005 CR16 (discovered by LINEAR at 19-20th magnitude on 2005 February 2).

While the object is still on the NEOCP, Eric Christensen, the PI of the Catalina Sky Survey, reached out to me regarding some observations of the object that I made in 2005. At the time I was regularly imaging asteroids on cometary orbits to detect any activity. A re-examination of my 1.5-m University of Arizona Kuiper reflector data from 2005 March 8 did uncover a faint diffuse coma and possible tail. Sam Deen was also able to find archival 3.6-m Canada-Hawaii-France Telescope data from 2005 April 11 that also showed a coma and tail.

We now know that P/2020 W2 = P/2003 WR168 = P/2005 CR16 (LINEAR-NEAT) is an active comet on a 17.1-year orbit. Perihelion occurs on 2021 June 23 at 3.26 au. With such a large perihelion distance, P/LINEAR-NEAT is at its brightest at opposition in 2020 November and 2022 February. It will be around magnitude 20 at both oppositions.

As always, the Comet Section is happy to receive all comet observations, whether textual descriptions, images, drawings, magnitude estimates, or spectra. Please send your observations via email to < carl.hergenrother @ alpo-astronomy.org >.

Thank you to everyone who contributed to the ALPO Comets Section!

Stay safe and enjoy the sky!

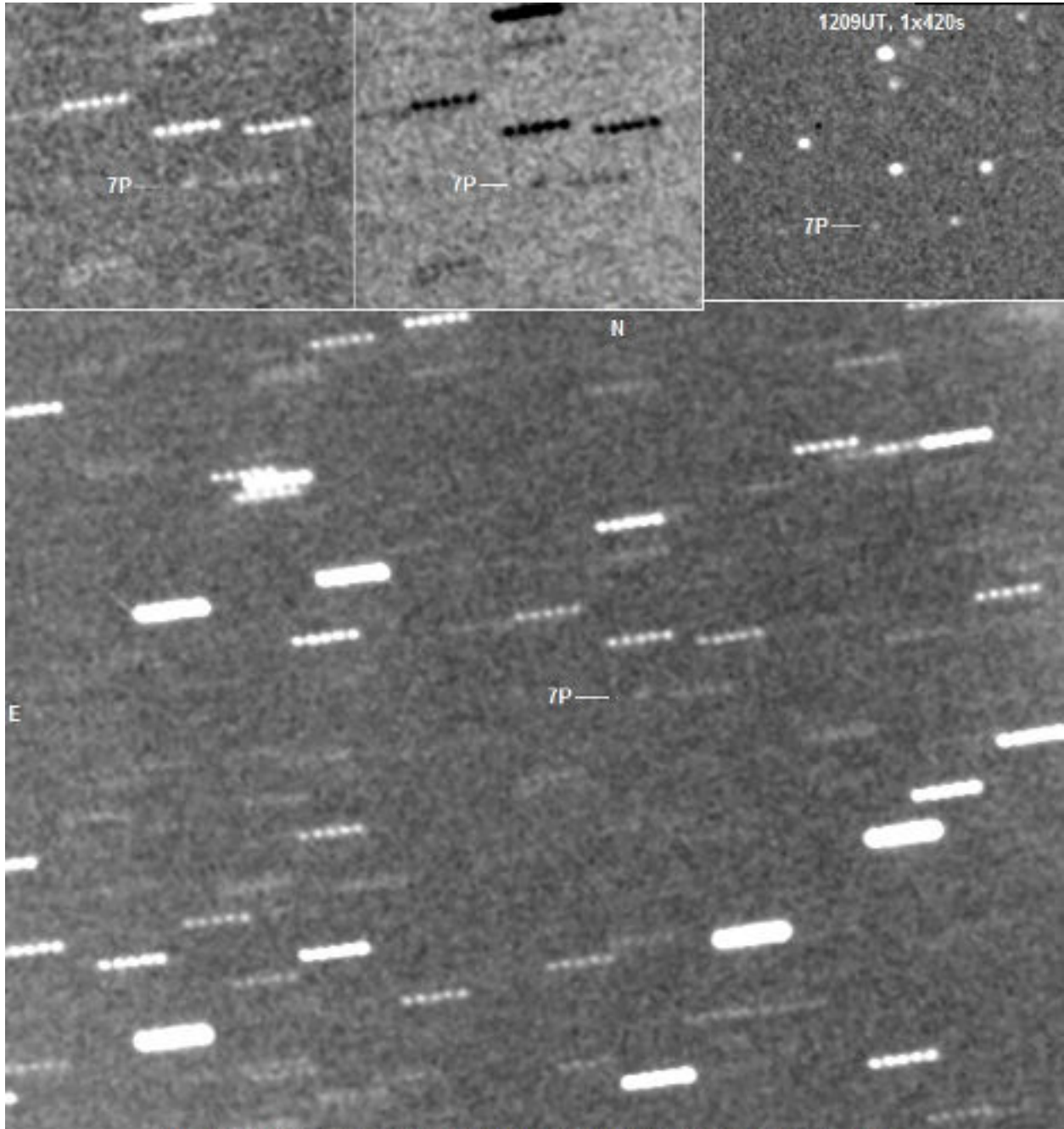
- Carl Hergenrother (ALPO Comets Section Coordinator)

Recent Magnitude Measurements Contributed to the ALPO Comet Section

Comet Des	YYYY MM DD.DD (UT)	Mag	SC	APER	FL	POW	COMA Dia DC	TAIL LENG PA	ICQ CODE	Observer Name
C/2020 S3 (Erasmus)										
2020S3	2020 12 04.30	M	6.1	TK	15.0L	5 42	2 7		ICQ XX SOU01	Willian Souza
2020S3	2020 12 03.30	M	6.4	TK	15.0L	5 42	3 7		ICQ XX SOU01	Willian Souza
C/2020 R4 (ATLAS)										
2020R4	2020 12 16.78	S	10.7	TK	20.3T	10 77	4 2/		ICQ XX GON05	Juan Jose Gonzalez Suarez
C/2020 M3 (ATLAS)										
2020M3	2020 12 16.81	S	9.7	TK	20.3T	10 77	6 3		ICQ XX GON05	Juan Jose Gonzalez Suarez
2020M3	2020 12 09.47	xM	9.4	TK	25.0L	5 40	5.0 4/		ICQ XX WYA	Christopher Wyatt
2020M3	2020 12 08.96	S	9.6	TK	20.3T	10 77	6 3		ICQ XX GON05	Juan Jose Gonzalez Suarez
398P/Boattini										
398	2020 12 16.85	S	11.0	TK	20.3T	10 77	4 2		ICQ XX GON05	Juan Jose Gonzalez Suarez
398	2020 12 09.46	xM	12.8	AQ	25.0L	5 74	1.3 5/		ICQ XX WYA	Christopher Wyatt
398	2020 12 08.47	xM	12.7	AQ	25.0L	5 75	1.2 5		ICQ XX WYA	Christopher Wyatt
156P/Russell-LINEAR										
156	2020 12 16.86	S	9.9	TK	20.3T	10 77	5 3/		ICQ XX GON05	Juan Jose Gonzalez Suarez
156	2020 12 09.78	I	10.8	TK	25.0C	10 62	2 3 &	0.5m125	ICQ XX DECaa	Michel Deconinck,
156	2020 12 09.44	xM	10.3	AQ	25.0L	5 40	4.5 6	2.0m105	ICQ XX WYA	Christopher Wyatt
156	2020 12 08.87	S	9.7	TK	20.3T	10 77	5 3		ICQ XX GON05	Juan Jose Gonzalez Suarez
156	2020 12 08.45	xM	10.3	AQ	25.0L	5 40	3.7 6		ICQ XX WYA	Christopher Wyatt
141P/Machholz										
141	2020 12 16.80	S	10.8	TK	20.3T	10 77	5 2/		ICQ XX GON05	Juan Jose Gonzalez Suarez
141	2020 12 08.78	S	11.7	AQ	20.3T	10 100	4 2/		ICQ XX GON05	Juan Jose Gonzalez Suarez
88P/Howell										
88	2020 12 16.79	S	9.3	TK	20.3T	10 77	6 2		ICQ XX GON05	Juan Jose Gonzalez Suarez
88	2020 12 09.77	S	9.1	TK	25.0C	10 96	& 2 2/		ICQ XX DECaa	Michel Deconinck
88	2020 12 09.43	xM	10.0	TK	25.0L	5 40	4.0 3/		ICQ XX WYA	Christopher Wyatt
88	2020 12 08.77	S	9.1	TK	20.3T	10 77	6 2/		ICQ XX GON05	Juan Jose Gonzalez Suarez
88	2020 12 08.43	xM	9.9	TK	25.0L	5 40	3.5 3/		ICQ XX WYA	Christopher Wyatt
29P/Schwassmann-Wachmann										
29	2020 12 09.79	I	12.0:	TK	25.0C	10 96	2 1/		ICQ XX DECaa	Michel Deconinck
29	2020 12 09.45	xS	13.8	AQ	25.0L	5 125	1.0 2		ICQ XX WYA	Christopher Wyatt
29	2020 12 08.98	S	10.8	TK	20.3T	10 100	4 2		ICQ XX GON05	Juan Jose Gonzalez Suarez
29	2020 12 08.46	xS	13.9	AQ	25.0L	5 125	0.8 2		ICQ XX WYA	Christopher Wyatt
11P/Tempel-Swift-LINEAR										
11	2020 12 16.83	S	10.9	TK	20.3T	10 77	6 1/		ICQ XX GON05	Juan Jose Gonzalez Suarez
11	2020 12 09.77	I	12.0	TK	25.0C	10 190	& 1 1/		ICQ XX DECaa	Michel Deconinck
11	2020 12 08.82	S	10.9	TK	20.3T	10 77	6 1/		ICQ XX GON05	Juan Jose Gonzalez Suarez

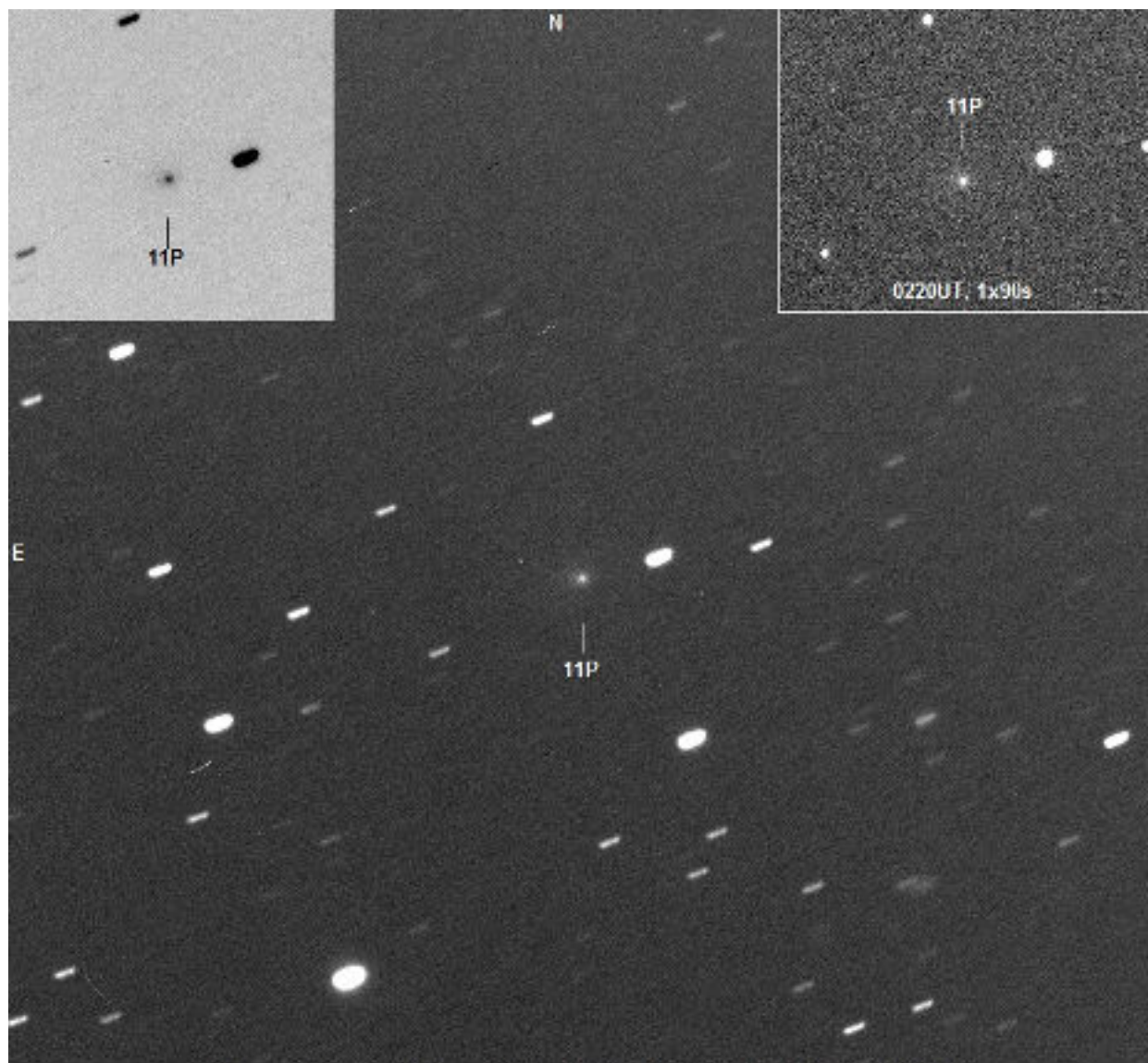
Recent Select Images Contributed to the ALPO Comet Section

6P/Pons-Winnecke



7P/Pons-Winnecke, m=-19.6, 2020/12/19 1141-1216UT, 5x420s, FOV 14.2'x11.4'
11" SCT f/6.4 STF-8300M 1.24"/pixel Mike Olason, Tucson Arizona

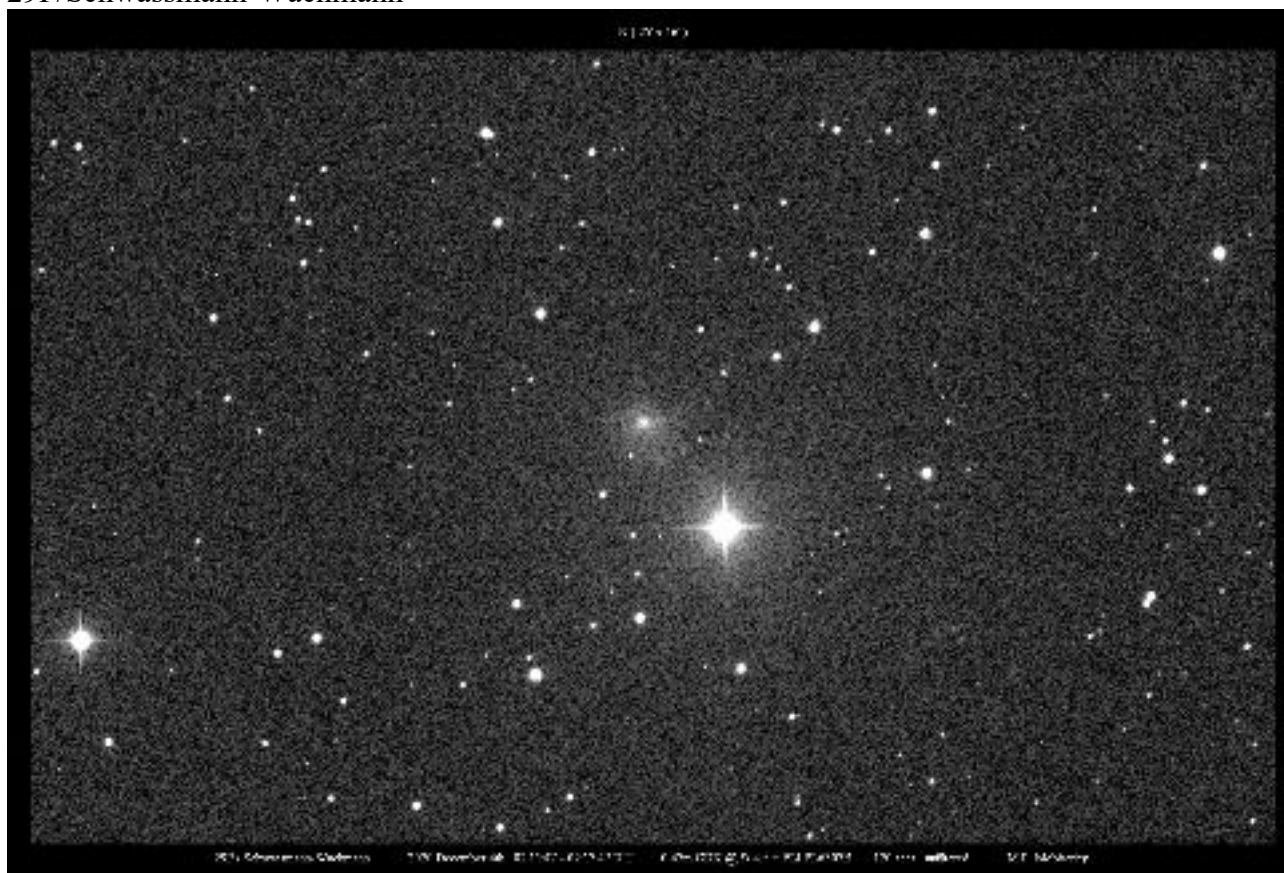
11P/Tempel-Swift-LINEAR



11P/Tempel-Swift-LINEAR, m=17.0, 2020/12/06 0214-0223UT, 6x90s, FOV 15"x14"
11" SCT f/6.4 STF-8300M 1.24"/pixel Mike Olason, Tucson Arizona

Michel Deconinck

29P/Schwassmann-Wachmann



29P (Schwassmann-Wachmann)
Mewlon 250mm f10 - 96x

2020/12/09 18h54 UTC
F.O.S.: 30'

I.C.Q.: 12.0: 25.0 C 96 2 1/

Aquarellia.com

Michel Deconinck

88P/Howell



88P (Howell)
Mewlon 250CRS f10 - 96x



2020/12/09 18h23 UTC
F.O.S.: 36'

I.C.Q.: S 9.1 TK 25.0 C 96 2 & 2/
Aquarellia.com

156P/Russell-LINEAR



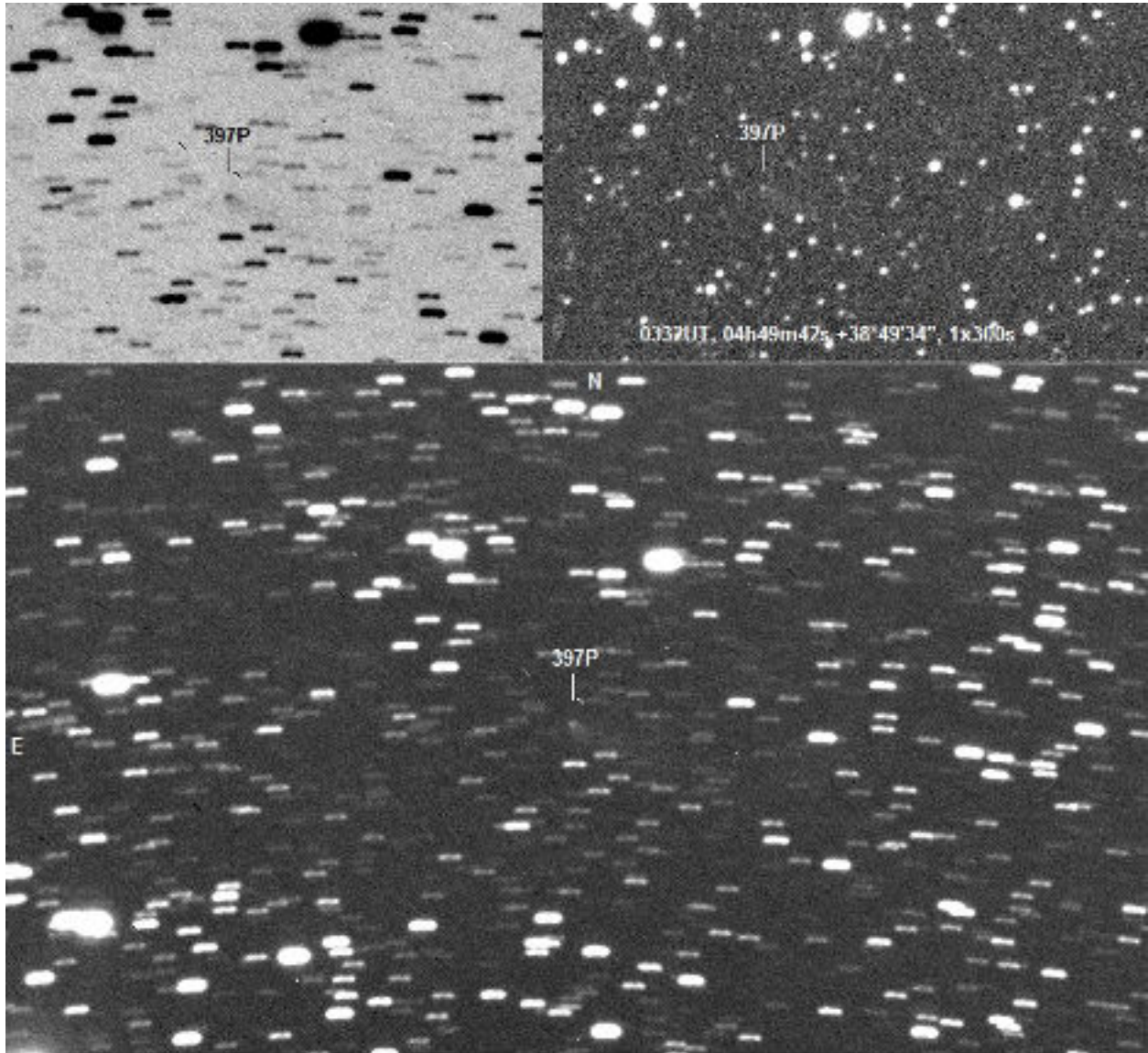
156P (Russell-LINEAR)
Mewlon 250mm f10 - 40mm EP:62x



2020/12/09 18h42 UTC
F.O.S.: 48'

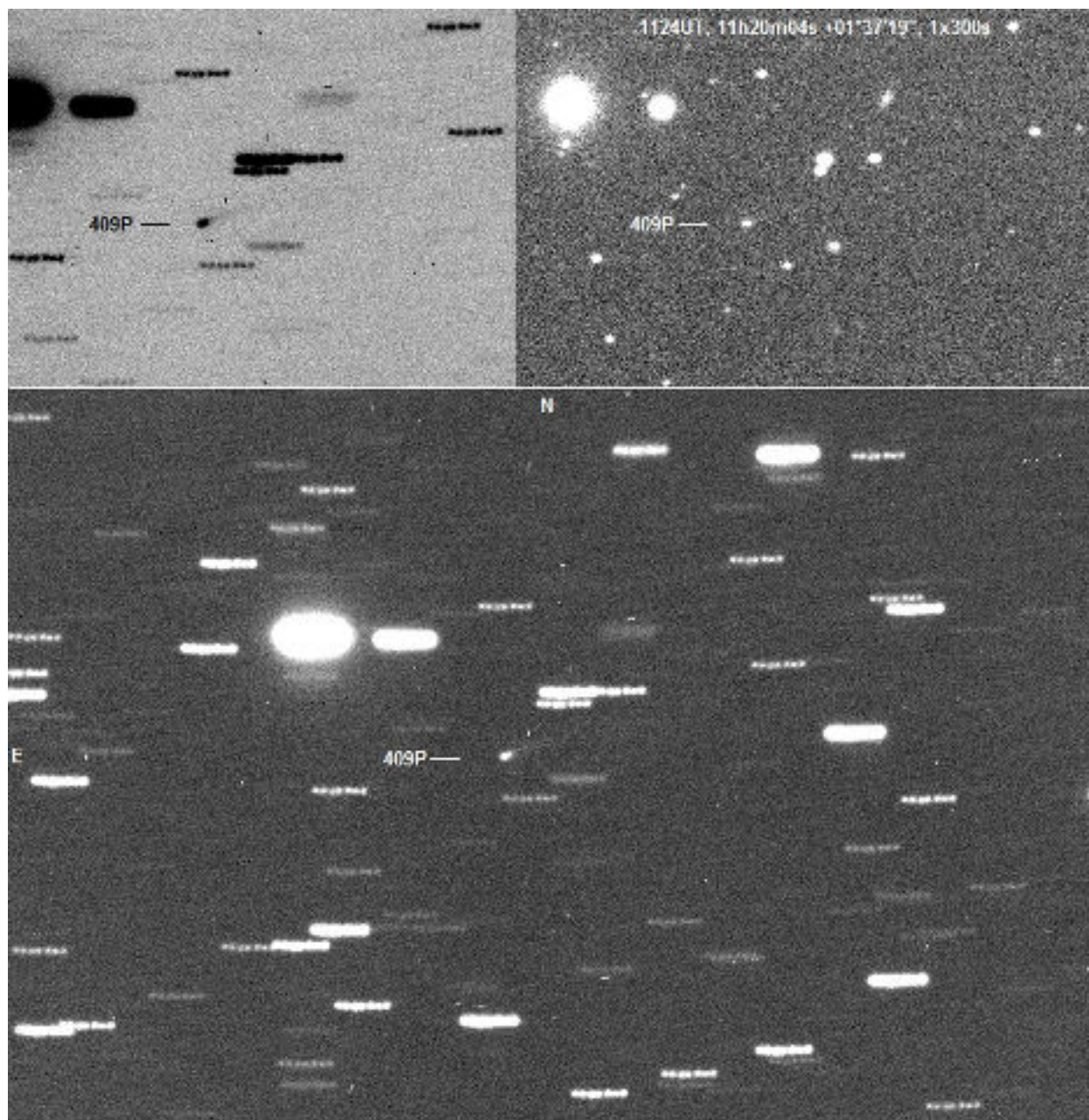
I.C.Q.: 10.8 25.0 C 62 2 3 & 0.5m 125
Aquarellia.com
Michel Deconinck

397P/LINEAR



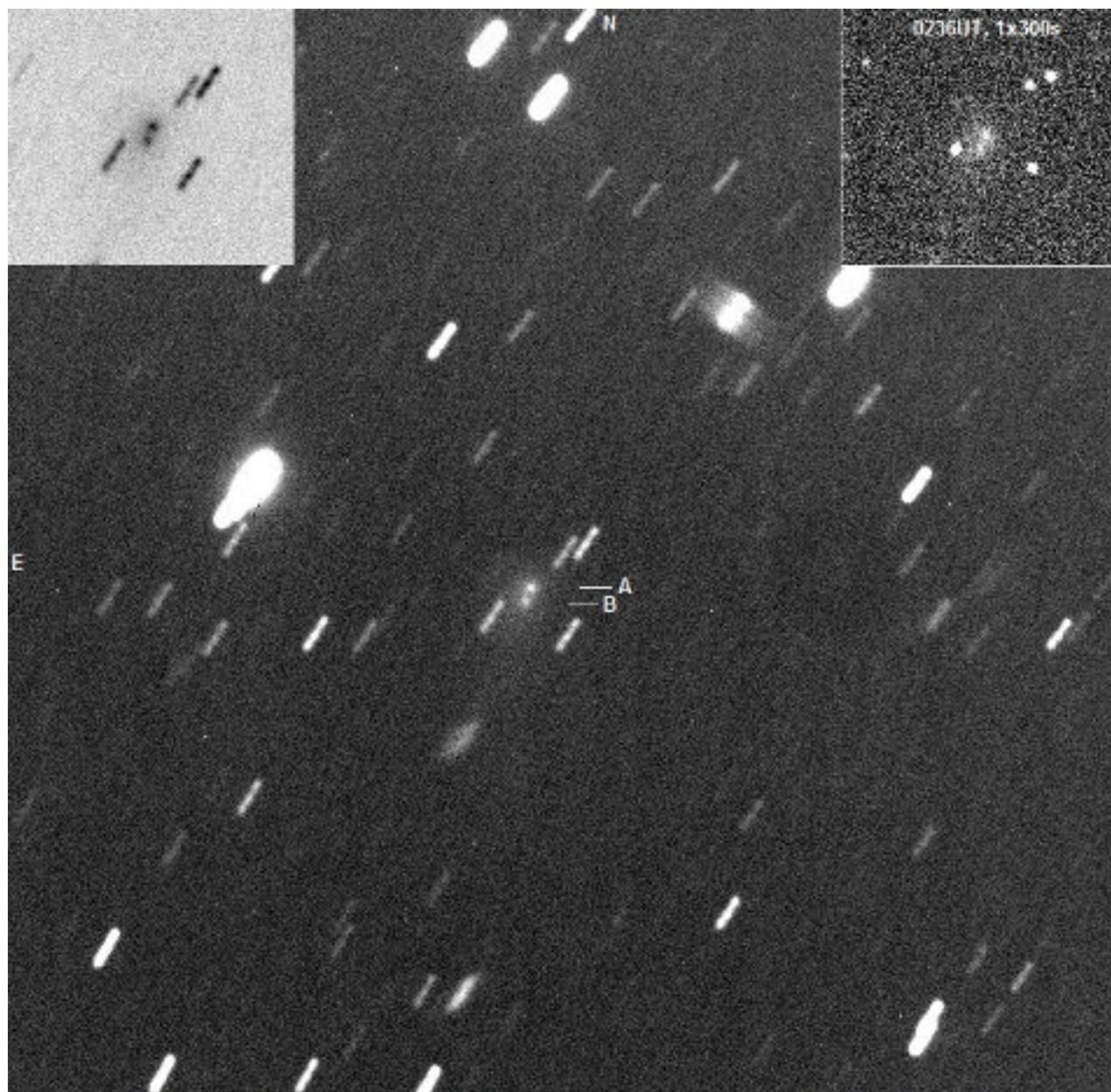
397P/Lemmon - P/2020 M2 - P/2012 SB6, m=18.3, tail 95" PA 242°, 2020/12/07 0322-0352UT, 6x300s
11" SCT f/6.4 STF-8300M 1.24"/pixel FOV 15.2'x9.5' Mike Olason, Tucson Arizona

409P/LONEOS-Hill



409P/LONEOS-Hill - P/2020 V1 - P/2005 XA54, m-17.1, tail 52" PA 290°, 2020/12/19 1059-1134UT, 7x300s
11" SCT f/6.4 STF-8300M 1.24"/pixel FOV 15.3'x10.2' Mike Olason, Tucson Arizona

C/2018 F4 (PANSTARRS)



C/2018 F4 (PANSTARRS) fragments A and B, $m=17.1$ and $m=17.3$, fragment B $12''$ PA 162° from fragment A
2020/12/06 0236-0336UT, 10x300s, FOV $14.9' \times 14.5'$ 11" SCT f/6.4 STF-8300M 1.24"/pixel
Mike Olason, Tucson Arizona