

Comets

Volume 3



An Astrophoto Album

by

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Comets are truly remarkable members of the solar system. Believed to be debris left from the solar system's creation, they are a link to understanding the composition and formation of the solar system. Described as 'dirty icebergs', a comet's nucleus is an agglomeration of ices (such as water, carbon dioxide, ammonia), dust and rock particles. As a comet approaches the inner solar system, heating from the sun causes the ices to vaporize, releasing the gases, dust and particles. Solar radiation pressure pushes the released materials away, creating the coma and tails that are the signature feature of a comet.

Comets are wonderful subjects for photography because they can rapidly change in appearance and are a beautiful example of the dynamic nature of the solar system. As they approach the sun, sudden increases in vaporization can release large chunks from the nucleus or create localized vapor jets, modifying the appearance of the coma and tail. Gravitational forces from close approaches to planets or the sun can break the nucleus into fragments, creating a multiple comet string. And severe interaction with the sun can cause the comet to completely vaporize and disappear.

This album presents photographs of comets from March 12, 2013 through October 20, 2014. The comets are:

- PanSTARRS C/2011 L4
- Lemmon C/2012 F6
- PanSTARRS C/2012 K1
- Jacques C/2014 E2
- Siding Springs C/2013 A1

Proceeding each group of photographs is a description of the equipment used to obtain the images and exposure details.

PANSTARRS

C/2011 L4

Images 1 through 4 were obtained with a Canon EOS 20Da DSLR at ISO 1600 with a Canon EF 100-400mm f/4.5-5.6L IS zoom lens set at 400mm f/5.6 on a stationary tripod

1) 2.0 seconds 2) 2.5 seconds 3) 2.5 seconds 4) 2.5 seconds

Images 5 through 10 were obtained with a Canon EOS 20Da DSLR at ISO 1600 on a Takahashi Sky 90 with 0.8x field flattener/focal reducer (405mm f/4.5) on a Paramount MX equatorial mount

5) Stack of 30 1-minute exposures - registered on comet

6) Stack of 30 1-minute exposures - registered on stars

7) Stack of 30 1-minute exposures - registered on comet

8) Stack of 30 1-minute exposures - registered on stars

9) Stack of 30 1-minute exposures - registered on comet

10) Stack of 30 1-minute exposures - registered on stars

Location: Prescott Valley, Arizona, Lat: +34° 39' 08", Long: -112° 19' 20"

1) 7:30 PM MST, March 13, 2013



2) 7:31 PM MST, March 13, 2013



3) 7:32 PM MST, March 13, 2013



4) 7:34 PM MST, March 13, 2013



5) May 2, 2013



6) *May 2, 2013*



7) June 3, 2013



8) *June 3, 2013*



9) June 27, 2013



10) June 27, 2013



LEMMON

C/2012 F6

All images were obtained with a Canon EOS 60Da DSLR at ISO 3200 on a Takahashi Sky 90 with 0.8x field flattener/focal reducer (405mm f/4.5) on a Paramount MX equatorial mount

- 11) Stack of 30 1-minute exposures - registered on comet
- 12) Stack of 30 1-minute exposures - registered on stars
- 13) Stack of 30 1-minute exposures - registered on comet
- 14) Stack of 30 1-minute exposures - registered on stars
- 15) Composite of images 11 and 13

Location: Prescott Valley, Arizona
Lat: +34° 39' 08"
Long: -112° 19' 20"

11) September 25, 2013



12) *September 25, 2013.*



13) September 27, 2013



14) *September 27, 2013*



15) September 25-27, 2013



PANSTARRS

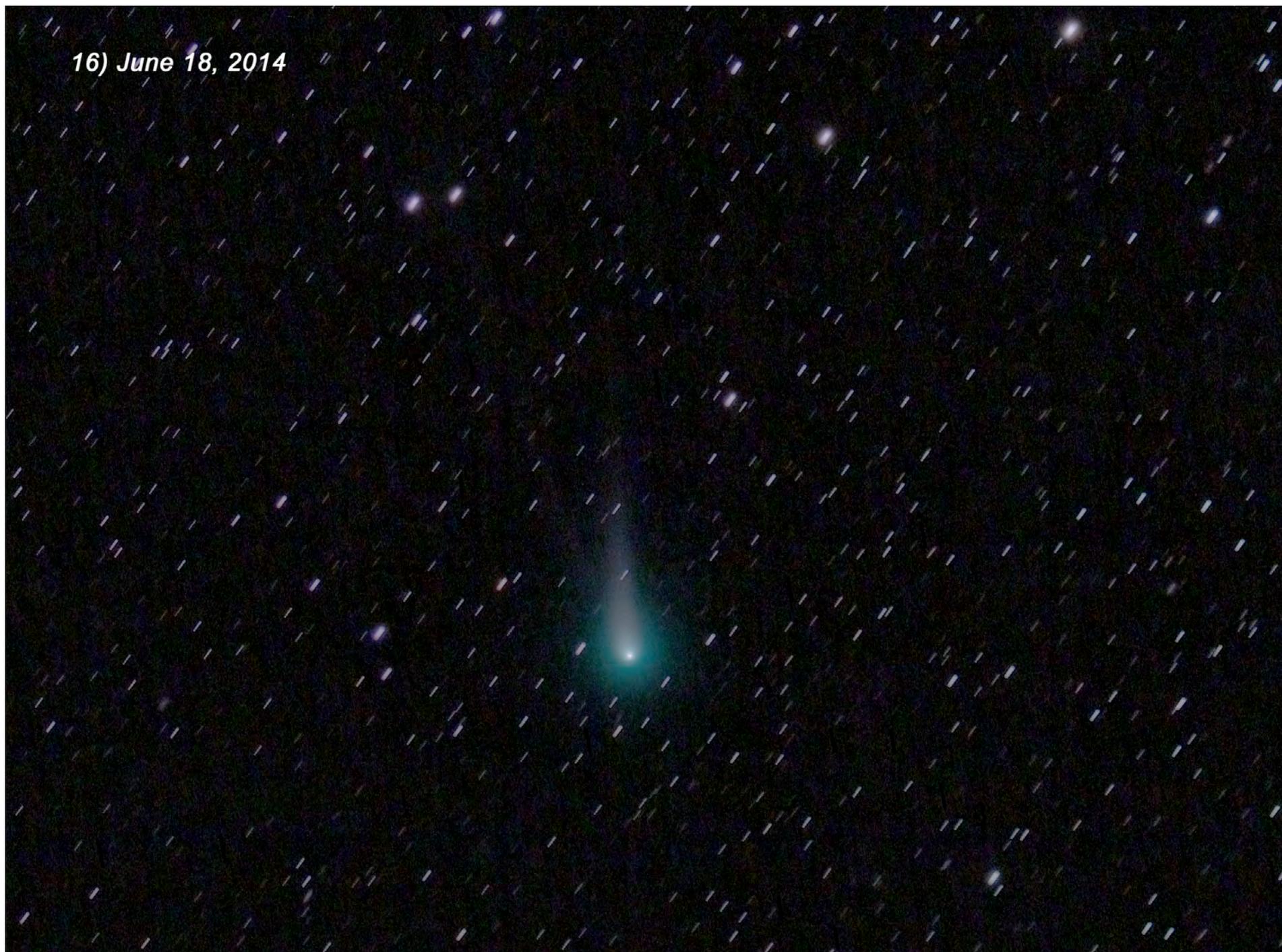
C/2012 K1

All images were obtained with a Canon EOS 60Da DSLR at ISO 3200 on a Takahashi Sky 90 with 0.8x field flattener/focal reducer (405mm f/4.5) on a Paramount MX equatorial mount

- 16) Stack of 30 1-minute exposures - registered on comet
- 17) Stack of 30 1-minute exposures - registered on stars
- 18) Stack of 30 1-minute exposures - registered on comet
- 19) Stack of 30 1-minute exposures - registered on stars
- 20) Stack of 30 1-minute exposures - registered on comet
- 21) Stack of 30 1-minute exposures - registered on stars
- 22) Composite of images 16, 18 and 20

Location: Prescott Valley, Arizona, Lat: +34° 39' 08", Long: -112° 19' 20"

16) June 18, 2014



17) June 18, 2014



18) June 19, 2014



19) June 19, 2014



20) June 20, 2014



21) June 20, 2014



22) June 18-20, 2014



JACQUES

C/2014 E2

All images were obtained with a Canon EOS 60Da DSLR at ISO 3200 on a Takahashi Sky 90 with 0.8x field flattener/focal reducer (405mm f/4.5) on a Paramount MX equatorial mount

23) Stack of 30 1-minute exposures - registered on comet

24) Stack of 30 1-minute exposures - registered on stars

25) Composite of two 1-minute exposures and image 24 showing movement of comet over one hour

Location: Prescott Valley, Arizona

Lat: +34° 39' 08"

Long: -112° 19' 20"

23) August 28, 2014



24) August 28, 2014



25) August 28, 2014



SIDING SPRINGS

C/2013 A1

All images were obtained with a Canon EOS 60Da DSLR at ISO 3200 on a Takahashi Sky 90 with 0.8x field flattener/focal reducer (405mm f/4.5) on a Paramount MX equatorial mount

In addition to the comet, the images show Mars (very overexposed) and the globular cluster NGC6401

26) Stack of 30 1-minute exposures - registered on comet

27) Stack of 30 1-minute exposures - registered on stars

28) Composite of images 26 and 27

29) Composite of images 26 and 27, close-up

Location: Prescott Valley, Arizona

Lat: +34° 39' 08"

Long: -112° 19' 20"

26) October 20, 2014



27) October 20, 2014



28) October 20, 2014



29) *October 20, 2014*



David B. Kucis

October 29, 2014