



NIGHT-TIME PHOTOGRAPHY

- **Special equipment required = tripod and remote shutter cord)**
 - **Turn night into day (with or w/o moon)**
 - **Moonlit objects**
 - **Water scenes (AZ Falls, ...)**
 - **Desert scenes (cacti, mountains, ...)**
 - **Meteor showers, the Milky Way (requires clear dark sky)**
 - **Wide angle lens**
 - **Storm clouds & Lightning**
 - **Wide angle lens**
 - **Moon, sun**
 - **Telephoto lens, telescope optional**
 - **For sun, telescope with solar filter required**

THESE CHARTS WERE UPDATED ON 6/18/12



WHAT CAN YOU DO WITH NIGHTTIME PHOTOGRAPHY?

- Turn night into day



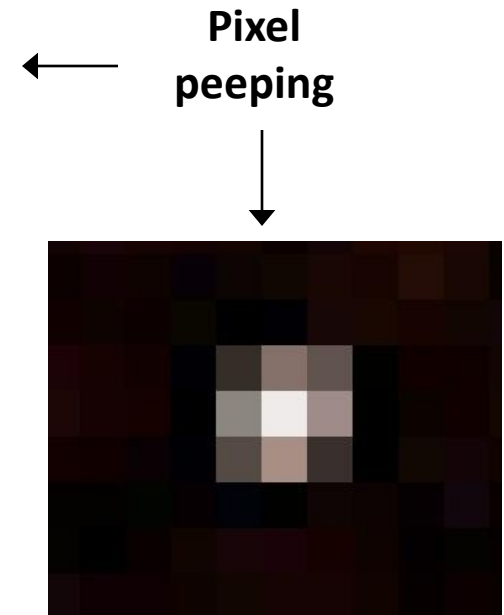
Picture taken at midnight in Maine, summer of 2007



WHAT CAN YOU DO WITH NIGHTTIME PHOTOGRAPHY?

- **Meteor showers**

A “good” Geminid meteor



Properly centered and focused star image



WHAT CAN YOU DO WITH NIGHTTIME PHOTOGRAPHY?

- **Storm clouds**





WHAT CAN YOU DO WITH NIGHTTIME PHOTOGRAPHY?

- **The Milky Way (requires very dark sky)**





WHAT CAN YOU DO WITH NIGHTTIME PHOTOGRAPHY?

- **Conjunctions (300mm)**



- **Moon (420mm)**





ASTRONOMICAL PHOTO EVENTS OF 2012

March 14 – Conjunction of Venus and Jupiter in evening sky

March 25 – Conjunction of Venus, Jupiter and crescent moon

May 20 – Annular solar eclipse (visible in N. Arizona) [added 5/24/12]

June 4 – Partial lunar eclipse [added 6/18/12]

June 5, 6 – Transit of Venus across sun [added 6/18/12]

August 12 – Perseids Meteor shower (peaks at 100/hr around 4 AM)

November 27 – Conjunction of Venus and Saturn (1 deg separation)

December 13 (Sunday) – Geminids meteor shower (peaks at 120/hr around 1 AM)



APRIL 3 – CONJUNCTION OF VENUS AND THE PLEIADES



**Taken with 300mm f/4 Nikkor lens with 1.4x tele-extender
(420mm efl) mounted on Nikon D90, f/5.6, 0.7 sec, ISO 1600**



APRIL 30 – GIBBOUS MOON THROUGH NEX-7 AND QUESTAR TELESCOPE





MAY 20 ANNULAR SOLAR ECLIPSE



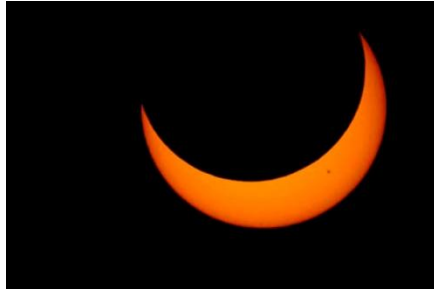
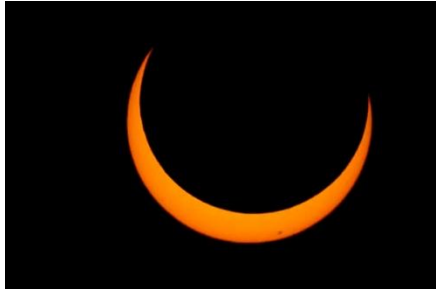
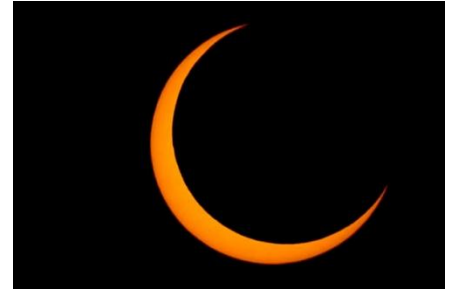
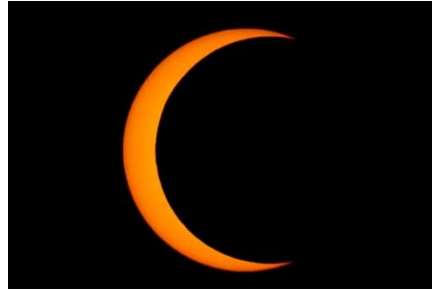
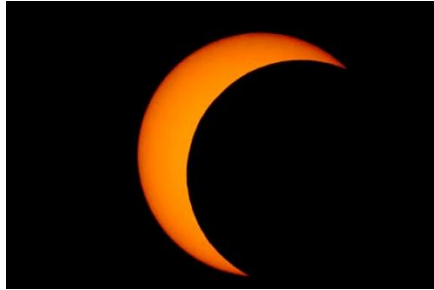
(Image credit: Google Maps / NASA.)

In the waning hours of the day on May 20th, as Sun descends in the west, the Moon will pass in front of it, creating the first annular eclipse in the United States since 1994!



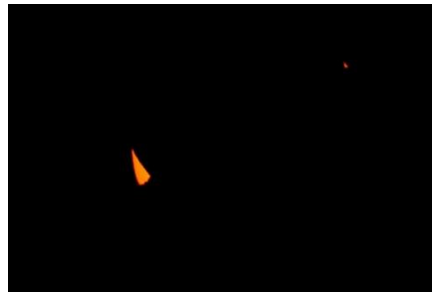
MAY 20 – PARTIAL ANNULAR SOLAR ECLIPSE PHOTOGRAPHS

Progression of eclipse just before sunset



Photographed from FH with NEX-7
mounted on Questar telescope with
full aperture solar filter

Sun setting behind McDowell Mountains while still eclipsed by the moon



Rare pictures of sun being eclipsed by moon and earth!



JUNE 4 – PARTIAL ECLIPSE OF THE MOON

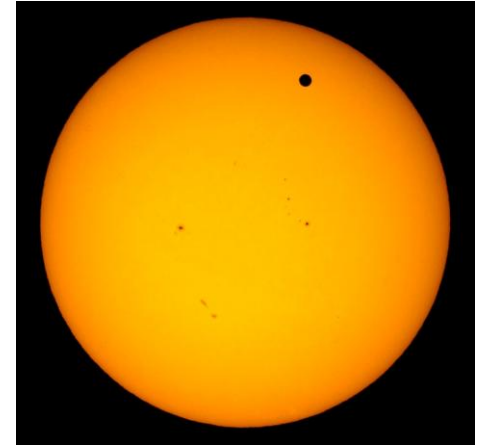
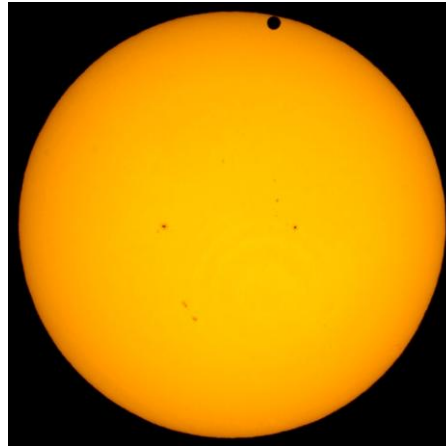
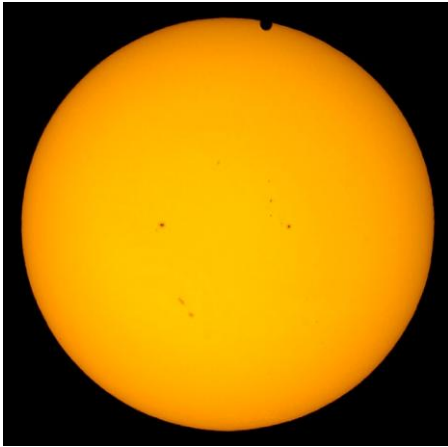
Progression of eclipse just before moon set behind local hills



NEX-7 with Nikkor 300mm f/4 & 1.4x tele-extender (420mm effective focal length)



JUNE 5 – TRANSIT OF VENUS

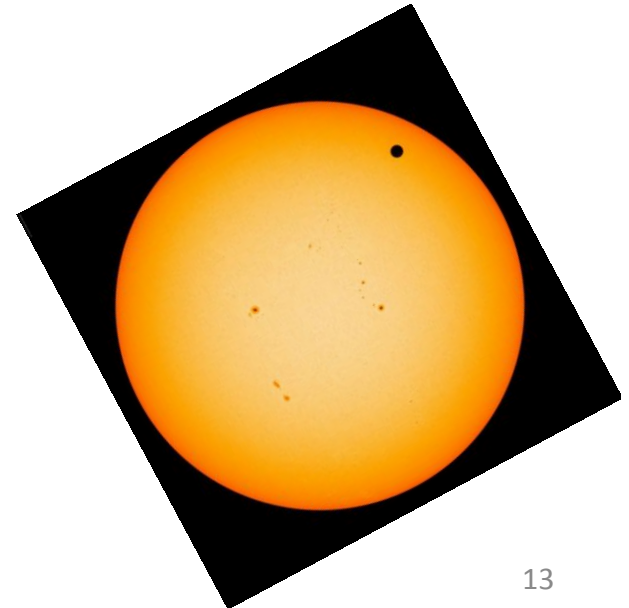


3 Questar (8.9 cm aperture diameter)/NEX-7 images (900x900)



Photographed from FH with NEX-7
mounted on Questar telescope with full
aperture solar filter

NASA SATELLITE Space Dynamics
Observatory (20 cm aperture
diameter) image (1024x1024)
[picture copied* from APOD]



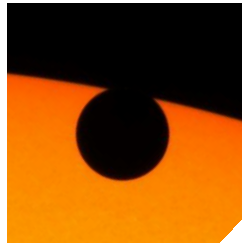
* <http://apod.nasa.gov/apod/ap120605.html>



JUNE 5 – TRANSIT OF VENUS AT INTERIOR INGRESS*

- Comparison of imagery taken from spaceborne 8 inch aperture diameter NASA satellite and ground based 3.5 inch Questar mounted on driveway
- Dramatic difference in resolution (sharpness) is primarily due to
 - atmospheric turbulence affecting imagery taken from the ground, and
 - 2.3x difference in theoretical resolution due to aperture diameter

**NASA's Orbiting Solar
Dynamics Observatory**



**Boyce's Driveway
Located Questar**



* Interior Ingress is the instant when the edge of entering Venus is tangent to the edge of the sun