



NGC281 by LAS member Brian Kimball

**Longmont Astronomy Society Newsletter
November 2010**

From the President:

Next Meeting Thursday November 18

The November meeting of the Longmont Astronomical Society is this Thursday, November 18th, at the IHop Restaurant, 2040 Ken Pratt Blvd., Longmont, CO. Please join us for dinner around 6 pm at the restaurant. The general meeting will begin at 7 pm.

The speaker will be Dr. James W. Elkins with the National Oceanic and Atmospheric Administration, Boulder, Colorado. His presentation is titled "Understanding the Earth's Atmosphere Better with Unmanned Aircraft Systems"

Astronomers must view through our changing atmosphere to see the heavens from the ground. NASA and NOAA scientists have used new Unmanned Aircraft Systems to better understand our atmosphere in order to study atmospheric motions, water vapor, climate change, stratospheric ozone depletion, air quality, and hurricanes. New technologies allow scientists to operate new instrumentation on aircraft over a larger range and endurance timescales, including both regional and global coverage. It is now possible for scientists based at their home institution to operate their instruments and view their data remotely. Scientists, program managers, and policy makers can benefit from the real time data feed through the "Internet in the Sky" communications to make real-time changes in the flight path. The addition of unmanned aircraft systems to atmospheric research allows scientists more real-time coverage through 30+ hour flights, hazardous duty without risk to pilots or crew, and many cruising altitude options (just above ground to 65,000 ft). The talk will highlight the scientific and technical results of a recent Pacific-Arctic Ocean unmanned aircraft campaigns involving local area scientists.

Dr. Elkins is the chief of the Nitrous Oxide and Halocarbons Group at the National Oceanic and Atmospheric Administration (NOAA) in Boulder, CO. He has authored or co-authored over 90 publications in the fields of global warming and the depletion of stratospheric ozone. His research has covered measurements of atmospheric trace species from the depths of the Pacific Ocean to the heights of the stratosphere. He is the Principal Investigator for the UCATS instrument on the Global Hawk Pacific Experiment (GloPac) in 2010 and the future Airborne Tropical Troposphere EXperiment (ATTREX) for the NASA Global Hawk UAS platform.

In the sky this month:

Meteor Showers The Leonids are going on at this very moment. The morning couple hours before sunrise is the best time to view, if the skies weren't cloudy....

Planets

Mercury: too close to the Sun

Venus: high in the east at sunrise and getting better

Mars: behind the Sun

Jupiter: High in the south at sunset, and great viewing right now. There is an ongoing debate whether the missing Equatorial belt is reforming. Take a look and join the argument, which will be settled in a year or two.

Saturn: high in the east at sunrise and getting better, rings are opening again.

Interesting Stars/Galaxies

Special Note and kudos:

Brian Kimball got a publish of one of his images at

<http://bb.nightskylive.net/asterisk/viewtopic.php?f=29&t=21680>

Club Calendar:

Fiske Planetarium:

Colorado Skies: Hubble Update *Thursday, December 2, 2010, 7:30pm*

Enjoy an evening under the stars at Fiske Planetarium with a special talk on the Hubble Space Telescope.

Astronomical Star of Bethlehem *Friday, December 3, 2010, 7:30pm*

Presented by amateur astronomer Gil Buller, this exciting program examines the sky at the time of the birth of Christ to see which astronomical phenomenon may have been the Star of Bethlehem.

Internet Resources:

High speed video of lightning: <http://www.ztresearch.com/>

The National Research Council does a once-a-decade survey to set priorities for big ticket astronomy expenditures. The results:

Wide Field Infrared Survey Telescope (WFIRST) <http://wfirst.gsfc.nasa.gov/>

Large Synoptic Survey Telescope (LSST) <http://lsst.org/lsst/public>

Upcoming Space Missions:

“New” Moon Mission

The story begins in 2007 when NASA launched a fleet of five spacecraft into Earth's magnetosphere to study the physics of geomagnetic storms. Collectively, they were called THEMIS, short for "Time History of Events and Macroscale Interactions during Substorms." P1 and P2 were the outermost members of the quintet.

Working together, the probes quickly discovered a cornucopia of previously unknown phenomena such as [colliding auroras](#), [magnetic spacequakes](#), and [plasma bullets](#) shooting up and down Earth's magnetic tail. These findings allowed researchers to solve several longstanding mysteries of the Northern Lights.

Because the mission had gone so well, the spacecraft still had an ample supply of fuel--enough to go to the Moon. "We could do some great science from lunar orbit," he says. NASA approved the trip and in late 2009, P1 and P2 headed away from the shadows of Earth.

With a new destination, the mission needed a new name. The team selected ARTEMIS, the Greek goddess of the Moon. It also stands for "Acceleration, Reconnection, Turbulence and Electrodynamics of the Moon's Interaction with the Sun."

The first big events of the ARTEMIS mission are underway now. On August 25, 2010, ARTEMIS-P1 reached the L2 Lagrange point on the far side of the Moon. Following close behind, ARTEMIS-P2 entered the opposite L1 Lagrange point on Oct. 22nd. Lagrange points are places where the gravity of Earth and Moon balance, creating a sort of gravitational parking spot for spacecraft.

ARTEMIS will also explore the Moon's plasma wake—a turbulent cavity carved out of the solar wind by the Moon itself, akin to the wake just behind a speedboat. Sibeck says "this is a giant natural laboratory filled with a whole zoo of plasma waves waiting to be discovered and studied."

A [Youtube video](#) describes the complex orbits of the two Artemis spacecraft.

Another target of the ARTEMIS mission is Earth's magnetotail. Like a wind sock at a breezy airport, Earth's magnetic field is elongated by the action of the solar wind, forming a tail that stretches to the orbit of the Moon and beyond. Once a month around the time of the full Moon, the ARTEMIS probes will follow the Moon through the magnetotail for *in situ* observations.

http://www.nasa.gov/mission_pages/artemis/ for more details

Space Shuttle Discovery remains on the launch pad getting a hydrogen leak repaired and some cracks in the external tank patched. The next window for launching open November 30.

Humor Dept:

<http://wcco.com/video/?id=84710@wcco.dayport.com> Watch the video of the amateur that fried up his scope and deck using the power of the Sun!

The editor was missing in action for a week or so, as he went birding in the Rio Grande Valley. Last year, I stopped south of Lubbock and set up the scope to look at the stars from a place that (4 lane divided US highway) had only one light in view, no city glow, and no passing cars in 30 minutes. This year, it was cloudy....



Had to sneak in Gary Garzone's 3 stack pic of Comet Hartley

And a diagram of the LaGrange points, Artemis style...

