

Solar Flare from the Solar Dynamics Observatory

Now working in orbit

A full-disk multiwavelength extreme ultraviolet image of the Sun taken by SDO March 30, 2010. False colors trace different gas temperatures. Reds are relatively cool (about 107,500° F, 60,000° C); blues and greens are hotter (greater than 1.8 million degrees F, 1.0 million degrees C). *NASA/Goddard/SDO AIA Team*

**Longmont Astronomy Society Newsletter**

**May 2010**

**From the President:**

Our monthly meeting is this Thursday, May 20, at the IHop Resturaunt, 2040 Ken Pratt Blvd., Longmont, CO.

A group of us will meet for dinner around 6 pm at the restaurant. The general meeting will begin at 7 pm.

The speaker at the meeting will be Craig Betzina who will talk about "Designing and Building a Backyard Domed Observatory". Craig is an active amateur astronomer from Strausberg, CO who became interested in building his own observatory several years ago and with his engineering background he designed and built several small observatories at his home. He will go over the trade-offs and interesting bumps along the road to success.

Following Craig's presentation will be a general business meeting to discuss proposed changes to the club's by-laws. There will be a presentation about the status of the "All Sky" Camera project. The current design will be discussed and a proposed budget will be presented.

**In the sky this month:**

Meteor Showers

Summer lull in major showers until the Perseids.

Planets

Mercury: visible low in the east in morning, best viewing about May 30 to June 12 or so

Venus: bright and shining in the west at sunset, best viewing from now thru July

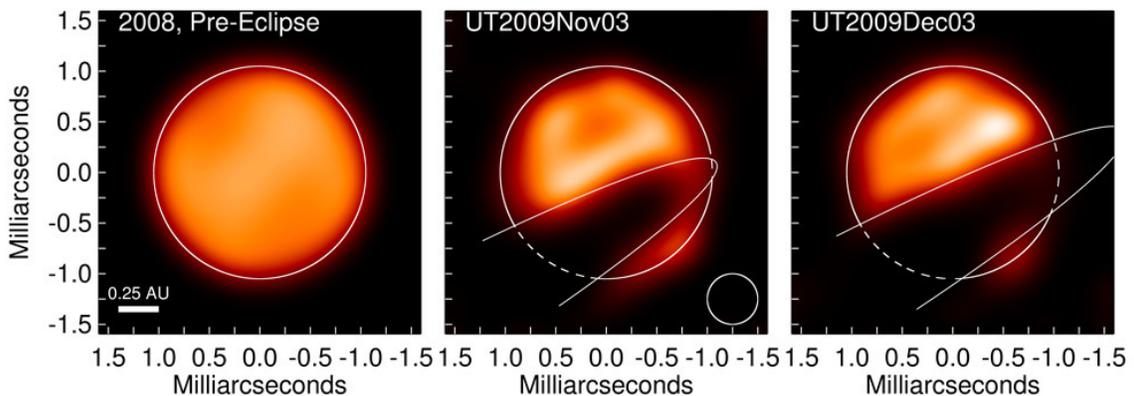
Mars: sets about 1 AM

Jupiter: bright in the east at sunrise, rises about 2 AM. Rumor has it that Jupiter is missing a stripe, but Gary can't get the Photoshop working to erase it from one of his old pictures.

Saturn: nice a bright target high in the south at sunset, rings beginning to open

Interesting Stars/Galaxies

**Epsilon Aurigae Eclipse (CHARA-MIRC)**



Well, they are beginning to figure out the dimming of Epsilon Aurigae.

### **Club Calendar:**

No star parties at local schools are scheduled, so the weather should be pretty good!  
Next LAS meeting: June 17<sup>th</sup>

### **Fiske Planetarium:**

Down for vacation, summer schedule will be out about June 1<sup>st</sup> at  
<http://fiske.colorado.edu/>

### **Internet Resources:**

<http://www.astronomy.com/asy/default.aspx?c=a&id=9740>

view this "movie" that shows Venus and Mercury setting. Want to make one yourself? Just put your digital camera on a tripod and lock it down, then take a picture every \_\_\_\_ seconds (ok, the directions need some work). Put the pics into your computer, then use a program like PhotoStory 3 to turn it into a movie. Since I used to use this program in class with 9<sup>th</sup> graders after about 1 minute of directions, you should be able to figure it out!

Cassini has finally captured pictures of lightning on Saturn – you can check them out at  
[http://www.ciclops.org/view/6064/Lightning\\_Flashing\\_on\\_Saturn?js=1](http://www.ciclops.org/view/6064/Lightning_Flashing_on_Saturn?js=1)

Current view (May 3) of the Gulf oil slick is at

<http://earthobservatory.nasa.gov/NaturalHazards/view.php?id=43862>

Big enough to be seen from space! I stopped by Whole Foods and stocked up on Key West shrimp Monday and got home to find tar balls washing up in the beaches in Key West. Could be a good investment.

### **Upcoming Space Missions:**

Solar Dynamics Observatory

Everyone has seen the prominence picture from SDO as its "first light" special (it was even in the paper!), so maybe a movie? Try [http://science.nasa.gov/science-news/science-at-nasa/2010/27apr10\\_plasmarain/](http://science.nasa.gov/science-news/science-at-nasa/2010/27apr10_plasmarain/) for the action.

April 22, 2010

NASA's recently launched Solar Dynamics Observatory (SDO) is returning early images that confirm an unprecedented new capability for scientists to better understand our Sun's dynamic processes. These solar activities affect everything on Earth.

Some of the images from the spacecraft show never-before-seen detail of material streaming outward and away from sunspots. Others show extreme close-ups of activity on the Sun's surface. The spacecraft also has made the first high-resolution measurements of solar flares in a broad range of extreme ultraviolet wavelengths.

"These initial images show a dynamic Sun that I had never seen in more than 40 years of solar research," said Richard Fisher, director of the Heliophysics Division at NASA headquarters in Washington, D.C. "SDO will change our understanding of the Sun and its

processes, which affect our lives and society. This mission will have a huge impact on science, similar to the impact of the Hubble Space Telescope on modern astrophysics."

Launched February 11, 2010, SDO is the most advanced spacecraft designed to study the Sun. During its 5-year mission, it will examine the Sun's magnetic field and also provide a better understanding of the role the Sun plays in Earth's atmospheric chemistry and climate. Since launch, engineers have been conducting testing and verification of the spacecraft's components. Now fully operational, SDO will provide images with clarity 10 times better than high-definition television and will return comprehensive science data faster than any other solar observing spacecraft.

SDO will determine how the Sun's magnetic field is generated, structured, and converted into violent solar events such as turbulent solar wind, solar flares, and coronal mass ejections. These immense clouds of material, when directed toward Earth, can cause large magnetic storms in our planet's magnetosphere and upper atmosphere. SDO will provide critical data that will improve the ability to predict these space weather events.

Space weather has been recognized as a cause of technological problems since the invention of the telegraph in the 19th century. These events produce disturbances in electromagnetic fields on Earth that can induce extreme currents in wires, disrupting power lines and causing widespread blackouts. These solar storms can interfere with communications between ground controllers, satellites, and airplane pilots flying near Earth's poles. Radio noise from the storms also can disrupt cell phone service.

SDO will send 1.5 terabytes of data back to Earth each day, which is equivalent to a daily download of half a million songs onto an MP3 player. The observatory carries three state-of-the-art instruments for conducting solar research.

The Helioseismic and Magnetic Imager maps solar magnetic fields and looks beneath the Sun's opaque surface. The experiment will decipher the physics of the Sun's activity, taking pictures in several narrow bands of visible light. Scientists will be able to make ultrasound images of the Sun and study active regions in a way similar to watching sand shift in a desert dune.

The Atmospheric Imaging Assembly is a group of four telescopes designed to photograph the Sun's surface and atmosphere. The instrument covers 10 different wavelength bands, or colors, selected to reveal key aspects of solar activity. These types of images will show details never seen before by scientists.

The Extreme Ultraviolet Variability Experiment measures fluctuations in the Sun's radiant emissions. These emissions have a direct and powerful effect on Earth's upper atmosphere — heating it, puffing it up, and breaking apart atoms and molecules. Researchers don't know how fast the Sun can vary at many of these wavelengths, so they expect to make discoveries about flare events.

**And we got room, so a few pictures from the membership:**



Battle of the M51s, Kimball (top) and Garzone (bottom). Write which one you think is best on the margin of a 10 dollar bill and mail it to the newsletter editor.

