

HEAVENLY NEWS

“What’s Up with the Sun?”

By Forrest Lockhart, Docent

Cameron Park Rotary Community Observatory

Our planet is fortunate to orbit a very ordinary, middle-aged yellow dwarf star, producing both light and heat by converting 600 million tons of Hydrogen into 595 millions tons of Helium every second. The Sun has been doing that for over four billion years and is expected to do so for another four billion years to come.

After a brief phase of adolescence, old Sol has churned out a very consistent stream of energy that kept our newly-formed planet warm and provided energy for the birth of early plant life. After plants, came animals, humans, wars, TV commercials, Internet dating, and smog. Over all things on earth the Sun has presided in warm and unvarying beneficence.

So why are solar astronomers around the world all asking, “What’s up with the Sun”?

To set the stage, astronomers have been recording the number of sunspots for nearly three hundred years. Scientists who reviewed the unfolding sunspot record found that the annual number of spots fluctuated over a rather consistent eleven-year period, known as the Solar Cycle. With small variations, scientists could successfully estimate the years in which sunspot numbers would be at the highest and lowest levels. The latest sunspot interval, known as Cycle 23, came to a close in mid-2007, with an upswing into Cycle 24 due to begin in early 2008. Now, in mid 2009, we’re still awaiting a rise in sunspot activity. In fact, since 2007, very little has been happening on the solar surface. “So what,” you might say. “How does this affect me?”

When and how the next solar cycle begins may have a significant effect on us puny earthlings. Scientists are about equally divided on what might result from a delayed next cycle. Some say once new spots appear we will experience a very mild solar season. Others predict that Cycle 24 may produce an unusually violent spate of spots. If that is the case, our planet may be bombarded with a more intense solar wind, pushing back our natural magnetic shield and impinging on our lives in some inconvenient ways. High-energy solar particles striking military, scientific, and commercial satellites have the punch to damage sensitive electronics. All forms of satellite data transmission such as cell phone and satellite TV signals could be disrupted. A big enough hit could also disrupt land-based power grids. We all remember the major power blackout that struck the eastern seaboard several years ago.

Governments and satellite companies can reduce possible damage by briefly shutting down vulnerable satellites prior to attack by sleeting solar particles. Unfortunately, our government has recently reduced the operating budget of the agency charged with monitoring the sun and sounding the alarm. This decision could cost billions of dollars to the U.S. alone.

On the bright side, whatever happens will have no appreciable effect on global warming. We might miss the latest airing of American Idol, or a few cell phone calls, but for brief periods here in El Dorado County the aurora borealis could be magnificent.