Written by **James Heiser** on November 15, 2011

NASA: Solar Flares Won't Destroy Earth

NASA's scientists have been trying to answer the burgeoning number of Internet rumors and pseudoscientific claims that have arisen periodically for years regarding claims that the Mayan calendar predicts the end of the world on December 21, 2012. In 2009, NASA responded to the release of Columbia Pictures' movie *2012* with an extended "Frequently Asked Questions" (FAQ) entitled "2012: Beginning of the End or Why the World Won't End?" which dealt with many of the claims that had been floating around at that point. As observed at that time, there are parallels between the irrational fears associated with the "Year 2000" (Y2K) computer "bug" and 2012 doom and gloom:

> Remember the Y2K scare? It came and went without much of a whimper because of adequate planning and analysis of the situation. Impressive movie special effects aside, Dec. 21, 2012, won't be the end of the world as we know. It will, however, be another winter solstice.
>
> Much like Y2K, 2012 has been analyzed and the science of the end of the Earth thoroughly studied. Contrary to some of the common beliefs out there, the science behind the end of the world quickly unravels when pinned down to the 2012 timeline.

The final question addressed in the 2009 FAQ pertained to theories of a solar storm endangering the Earth in December 2012, noting that:

> Solar activity has a regular cycle, with peaks approximately every 11 years. Near these activity peaks, solar flares can cause some interruption of satellite communications, although engineers are learning how to build electronics that are protected against most solar storms. But there is no special risk associated with 2012. The next solar maximum will occur in the 2012-2014 time frame and is predicted to be an average solar cycle, no different than previous cycles throughout history.

NASA's latest reply to 2012 fear mongering ("2012: Killer Solar Flares Are a Physical Impossibility") focuses on the notion that Earth would somehow be destroyed by a massive solar flare. As NASA acknowledges, though it is true that solar flares can pose a significant risk for disruptions of the modern way of life by disrupting communications and power, the imagined risk of all life on Earth being destroyed by a solar flare is absurd:

> Given a legitimate need to protect Earth from the most intense forms of space weather — great bursts of electromagnetic energy and particles that can sometimes stream from the sun — some people worry that a gigantic "killer solar flare" could hurl enough energy to destroy Earth. Citing the accurate fact that solar activity is currently ramping up in its standard 11-year cycle, there are those who believe that 2012 could be coincident with such a flare.

> But this same solar cycle has occurred over millennia. Anyone over the age of 11 has already lived through such a solar maximum with no harm. In addition, the next solar maximum is predicted to occur in late 2013 or early 2014, not 2012.
>
> Most importantly, however, there simply isn't enough energy in the sun to send a killer fireball 93 million miles to destroy Earth.

For those who are interested in actual scientific fact regarding "space weather," several credible websites — including SpaceWeather.com and the "Space Weather Branch" of the Australian Bureau of Meteorology — have sections of their websites that carry regular updates on sunspots and solar flares.

As NASA acknowledges, solar flares most certainly can have a dramatic affect on Earth — and despite the fact that humanity is not in danger of being wiped out by a massive solar flare, there are still risks associated with the naturally occurring pattern of solar flares:

> The explosive heat of a solar flare can't make it all the way to our globe, but electromagnetic radiation and energetic particles certainly can. Solar flares can temporarily alter the upper atmosphere creating disruptions with signal transmission from, say, a GPS satellite to Earth causing it to be off by many yards. Another phenomenon produced by the sun could be even more disruptive. Known as a coronal mass ejection (CME), these solar explosions propel bursts of particles and electromagnetic fluctuations into Earth's atmosphere. Those fluctuations could induce electric fluctuations at ground level that could blow out transformers in power grids. The CME's particles can also collide with crucial electronics onboard a satellite and disrupt its systems.
>
> In an increasingly technological world, where almost everyone relies on cell phones and GPS controls not just your in-car map system, but also airplane navigation and the extremely accurate clocks that govern financial transactions, space weather is a serious matter.

Such risks are real, but nowhere near as flashy as a theory about the imminent end of the world. Given the fragility of the global economy, such potential disruptions could have an even greater impact than would be the case in more prosperous times.

Notions of the mankind being swallowed up by a massive solar flare might make for a fascinating story, but if they take the public's attention from real and ongoing political and economic problems, they cease to be a source of amusement and become a dangerous distraction. Will mankind be destroyed by a massive solar flare? Certainly not. But a public worn down by endless hype regarding largely fictional or misunderstood threats is less likely to respond in an effective way to genuine threats to their safety and prosperity.