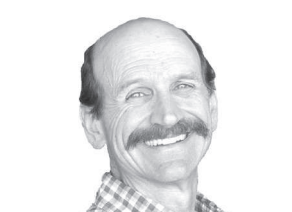


## Seeing our star in a new light

At sunrise every day for 40 years, Steve Padilla arises on Mount Wilson, Calif., and goes to work at the observatory to draw sunspots. The solar telescopes were originally installed by astronomer George Hale early in the last century. Even after so many decades, modern technologies, and scopes on spacecraft orbiting Earth which can see more detail, the human eye is better at zeroing in on subtle features of each sunspot. Astronomers continue to maintain a consistent visual record.

Who really thinks about the sun? It shows up every day to illuminate our world. Maybe we grumble after too many cloudy days. And we brighten just like the sun, when it comes out after the rains have cleared, but we rather assume that Earth will continue to rotate and we will see daylight after night comes to an end. It seems obvious that the sun just does its job, but because we can't look directly at the brilliant orb with our naked eye, or at least we shouldn't, it becomes easy to take our closest stellar object for granted. Much can still be learned by focusing on the sun. So the University of California at Los Angeles maintains the steady art of recording the sunspots, which have been reviewed and studied since before Galileo.

sunspots (dark patches) appear regularly in the sun's gaseous outer shell over a series of days. The sun is somewhat like a cauldron of convection, not terribly different from a pot of water bubbling on a stove top. Water in a rolling boil cycles to the top, and turns



### Outdoors

By Paul Zaenger

over as it rotates back to the bottom. Convection on the sun circulates in a similar manner.

Temperatures of the patches are usually cooler than the sun itself. A large sunspot could be 6,700 degrees Fahrenheit, compared to the average overall solar temperature of some 10,000° F. They appear darker primarily because they are not quite as bright as the overall "surface" or corona of the sun. And they can be huge... compared to Earth, expanding and contracting as they travel across the solar surface, their size can grow from some 10 miles across, to tens of thousands of miles.

Yet they give us some good clues to the powerful magnetic activity of the sun. Like Old Faithful at Yellowstone's upper geyser basin, the solar blemishes host coronal loops or prominences which erupt from the corona. Although prominences appear somewhat like flares, the loops are a different kind of incident. The number and strength of sunspots, along with prominences and flares, provide insight to astronomers on the amount of solar activity. Taken together, it is believed that they reflect the amount of energy released by the magnetic field of the sun.



Members of the Black Canyon Astronomical Society set up telescopes for the sixth annual Black Canyon Astronomy Festival. (Becky Wright/Daily Press)

Maybe it seems natural that sunspot and solar activity rise and fall in cycles, but stay with me. The energy is released as particles: electrons, protons (think high school chemistry) in larger and smaller amounts, depending on the cycle. Almost as if the breath of Apollo himself were sent our way, the solar wind blows the particles to Earth and beyond. While this is not entirely understood, the fluctuations impact our weather and communications, and maybe more importantly, they impact northern night skies with the aurora borealis.

It's hard to picture our sun as a living entity, but watching an aurora unfold across the sky is almost as surreal an event as any in nature. If you've not seen it in person, check out one of the many videos on line. To experience an aurora is to feel as though the sun

### If you go

#### Solar Viewing at Black Canyon Astronomy Festival:

- Today, 1:30 to 3 p.m., South Rim Visitor Center.
- Saturday, 1:30 to 3p.m., South Rim Visitor Center.

#### Solar Viewing at Montrose Farmers Market with Black Canyon Astronomical Society:

- July 4, after 8:30 a.m.
- The astronomy society will also be at the market July 11 and 18, Aug. 1 and Sept. 5 and 12.

has arrived on our planet in living form. In fact, our sun does have a life of its own. Astronomers have found star nurseries in nebula formations such as the Eagle or Orion Nebulae. The sun was likely born from

such a feature out in the Milky Way during a time difficult for us to image. And we know that our sun, like stars across the universe, will also pass away in time.

So Steve Padilla has drawn sunspots to help track solar activity for our time, even in this century. Reported on by Los Angeles media, his work has relevancy to science, and may contribute to a much bigger understanding of star behavior than we presently have.

We are also able to look into a solar scope (using special red "hydrogen alpha" filters) and gaze closely upon our sun through the assistance of the Black Canyon Astronomical Society. Planets, stars, black holes, globular clusters and more are all out in the night sky, and we come to understand that these features add to the

magnificent universe.

Because the universe is so vast, it is easy to take this most important feature in the sky for granted. By looking closer at the sun we can come to see that it more than influences our lives. It is the one astronomical feature in which we truly have a constant relationship. Because it makes life work on Earth, our sun is as much a part of our natural world as all of the plant and animal life in our corner of western Colorado. And in that regard, it makes life possible for us as much as our relationships between family and friends.

Paul Zaenger has been a supervisory park ranger at Black Canyon of the Gunnison National Park since 1993. Other park assignments include Mount Rushmore National Memorial and Glen Canyon National Recreation Area.

## Now's the time to prepare your home for wildfire

On June 23, 2012, the Waldo Canyon fire began, just a few miles from Colorado Springs. When it was finally contained it had consumed 18,247 acres and destroyed 346 homes. 32,000 residents were evacuated from their homes. Insurance claims exceeded 450 million dollars. Then, a year later, the Black Forest Fire destroyed 486 homes. This became the costliest fire in Colorado history.

Wildfires are probably the most common disaster we may face here in Western Colorado. Many are caused by lightning strikes but the sad truth is that most are caused by careless acts of people. While there is nothing you can do to control or prevent a wildfire from approaching your property, there are steps you can take to minimize potential damage. The time to

take these steps is long before a fire starts. Taking these steps will make your home more defensible for a fire.

Many people rely on the firefighters to protect their homes. Truth is, while they will do their very best, there may be little they can do. Fires the size of Waldo Canyon or Black Forest will tax all the resources available to us. There is also the possibility that because of the nature of a particular fire, the firefighters might not be able to even get to your property. The first steps in defending your home and property are up to you.

One of the reasons we all live here in Montrose is the close proximity of the forestlands. These beautifully treed landscapes surround our community and spread in all directions

## Mitigation Tactics



1. 3-5 Feet unburnable surface next to foundation.
2. Screen in under burnable structures like decks.
3. Trim all ladder fuels to a height of 6'-10'.
4. Class "A" roofing includes, clay tile, metal, and asphalt.
5. Clean debris from gutters and rooflines.
6. Enclose any places where firebrands can lodge or enter a structure.
7. Interrupt "fuses" connecting your home to the landscape.
8. Clear any burnables from around/above propane tanks.
9. Chip or dispose of any slash or dry fuels.
10. Gasoline should be inside or far away.

from town. As more people move into the area, we encroach onto these lands, building homes and subdivisions amongst these forests. The deeper into the woods we build our homes, the further away from assistance we become, and the more susceptible to destruction by fire we are. It's not a question of if we will have a wildfire, but when.

### From roof down

Start by doing a study of your home and property. The little things can make all the

difference for the survivability of your property. Your roof is a great place to begin. It should be made of a nonflammable material. Metal roofs are good while wood shakes are not. Keep your roof and gutters clean and free from debris such as pine needles and dead leaves. Their presence can cause blowing embers to ignite your home. Beware of attachments to the house such as untreated wooden decks. These are very vulnerable and should also be kept cleaned underneath of all debris. During fire season remove large potential heat sources

such as piles of firewood, deck furniture, vehicles-anything that could catch embers or ignite by flames in the grass needs to be as faraway from the dwelling as possible. A propane tank is of special concern and should be located as far from the home as possible, keeping the area around it clear also.

It is a good idea to make a list of the contents of your home. The list can also have the serial numbers of the valuable items, if present. This can be helpful in the event you have to

See WILDFIRE, page A11

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