Calendar

Sun Finale

San Diego's Stonehenge

It's a simple enough question: why isn't the earliest sunset of the year on the same day as the winter solstice — the year's shortest day?

"To fully explain it, you need diagrams," says Jerry Schad, professor of physical science and astronomy at San Diego Mesa College. "I wish I could show it to you on a chalkboard." But he's speaking by phone from his office.

Schad is right. The reasons are multiple, technically complex, and best explained by using at least one diagram, an analemma.

LOCAL EVENTS

The analemma is, roughly, a figure eight, its top smaller than its bottom. If it were three-dimensional, it would look somewhat like a bowling pin.

"You'll often see them on globes," says Schad. "They are superimposed over the Pacific Ocean, or used to be. Most people don't know what they are, so if they aren't there, they aren't missed."

Astronomers like to say that if a photo were taken of the sun at the same time and from the same location over a period of a year, the cumulative result would be a shape that corresponds to the analemma.

In fact, a photographer has taken such a photo. Dennis di Cicco, an editor at *Sky & Telescope* magazine, recorded on a single piece of film the sun's position in the sky at the same time of day on 45 different occasions throughout a year. Since its publication in 1979, the photograph has become famous in the astronomy world.

The analemma is the result of two factors, says Schad. One, the earth orbits the sun in an elliptical path rather than in a perfect circle, and two, the earth's axis is tilted with respect to its orbit.

"If the orbit were perfectly circular and if the earth's axis weren't tilted, there would be no analemma," says Schad.

And the classic di Cicco photo would be an image of a single bright fuzzy dot instead of a figure-eight necklace.

More to the point, there would be no differing lengths of days, no equinoxes, solstices, or seasons.

"There also wouldn't be the peculiar time shifts that determine the exact middle of the daylight period during the various parts of the year," says Schad.

What it means in ordinary terms is that the days are getting shorter, as we've always been taught. But the earliest sunset is two weeks before the winter solstice, and the latest sunrise is two weeks after it.

As sunset gets earlier each day, the sunrise gets later — except that the sunrise gets later faster. So the nights lengthen and the days shorten until the grand finale, which this year falls on December 21.

On winter solstice, for a couple of years now, a group has gathered at sunset on the Silver Strand. They go to a place on the bay side, adjacent to the Naval Amphibious Base. The Silver Strand Beautification Project christened it "Nature's Bridge to Discovery." It consists of a path 1.4 miles long, punctuated by four "nodes" or points for rest and reflection.

The gatherings are at what's unofficially the "solstice node." There is no signage. As a result, at least so far, there have been no crowds, like those that converge on England's Stonehenge. This is San Diego's Stonehenge, on a minuscule scale.

The Schmidt Design Group designed the path and its nodes in collaboration with artist Paul Hobson. The solstice node was Glen Schmidt's idea, says Hobson. It consists of a low concrete wall with circular seating, its diameter less than 20 feet. At intervals the wall has spaces, like a donut with pieces cut out. On its deck are four chevrons — compass points — as well as inlaid bands of brass. At sunset on both winter and summer solstice, the sun's rays shine through the openings in the donut and line up with the bands.

"It works," Schmidt said recently and offered a photo to prove the fact. "The sun slides along the horizon, and the benches create a shadow pattern on the pavement. As the sun gets low, lines of sunlight beam through the slits in the benches."

Schad, who hasn't yet been to the solstice node, says "right now" is the time to see San Diego's best sunsets. "We get our clear air and high clouds coming through." His current favorite place to watch the show is his living room, where there's no danger of crowding.

"I live in a condominium overlooking Lake Murray, and for a period of two and a half months centered on the winter solstice, I see the most magnificent sunsets over the Lake Murray Dam. I get to see all the sunset phenomena — the refraction, the flattening, the inversion layers, the green flash — and, oftentimes, the high clouds will light up after the sun goes down."

One more question: winter solstice is not at sunset. Why?

This time Schad can easily state the answer: "The solstice is the exact moment when the sun shines down on the most southerly latitude of earth."

— *Jeanne Schinto*

Solstice bench during winter solstice, Silver Strand

Earliest sunset:
Saturday, December 7, 4:42 p.m.

Winter solstice:
Saturday, December 21, 5:14 p.m.

Latest sunrise:
Sunday, January 5, 6:52 a.m.

Parking for the solstice node:
Fiddler's Cove Marina,
Silver Strand Boulevard (SR 75),
about 1.5 miles south of the
Naval Amphibious Base
Cost: free