

SEMESTER SUN WATCH

Ancient peoples were much more familiar with the patterns of the sun and stars than are we. They were much more aware of how directly dependent they were on the sunlight and rains that they studied and noted the patterns very carefully as Stonehenge and Chaco Cañon exhibit. The purpose of this project is to foster such an awareness of the sun's motion in you and to help you touch, albeit lightly, the minds of our ancestors. You will observe its apparent motion from north to south as we pass through the autumnal equinox and continue to the winter solstice. This should help you get more of a sense of being on a planet that is in motion instead of sitting still below the "dome of the sky." It is also to encourage you to make astronomical observations a natural part of your life. Until very recently, it was a matter of survival to know and observe the motions of celestial objects. Remember to see the sky and not just a class assignment... enjoy the sunsets!

You must observe every sunset from the EXACT same position!

PREPARATIONS: Choose a place from which you will observe the sunrise or sunset for the rest of the semester. You will need to see a large stretch of the eastern horizon (if you enjoy sunrise) or western horizon (if you're more inclined to appreciate the sunset)¹. It is preferable to have a rather distant horizon instead of a nearby building, thus a place outside or a high window will be best. Make sure you can see the horizon to at least 30° south of due east/west. **During the day, take a photo of your horizon and print it!** Mark the position of due east or due west (use a compass!). You will then mark the positions of sunrise or sunset on this diagram throughout the semester. **DO NOT TAKE INDIVIDUAL PHOTOS OF EACH SUNRISE OR SUNSET! SKETCH THEM ON THE DIAGRAM.**

OBSERVATIONS: At least once every other week observe the sunrise or sunset from your chosen location.

Note that the hours of daylight decrease from now until December 21 at 4:48 PM (EST), the winter solstice. For each observation of the sunset or sunrise, **draw the position of the Sun accurately on the printout of your photograph and note above it:**



- 1) Date
- 2) Time of day (Eastern Standard Time or Eastern Daylight Time. Most of the US will "Fall Back" one hour at 2AM on Sunday, November 5 ... *NOTE THE TIME CHANGE*)
- 3) Sky conditions
- 4) Position of the sun as it crosses the horizon.
See the example on the back of this page.

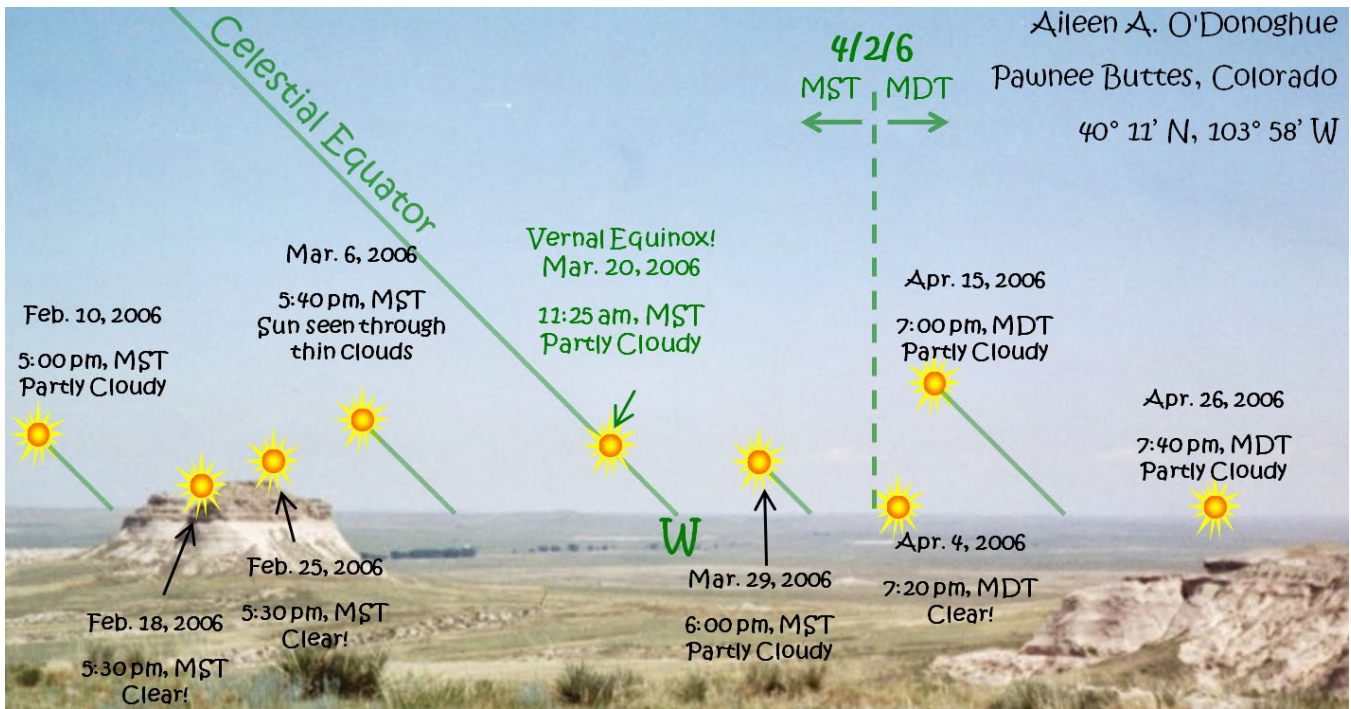
YOU MUST HAVE A MINIMUM OF FIVE OBSERVATIONS BETWEEN SEPTEMBER 9 AND DECEMBER 2.

Start This Week!

SUMMARY & ANALYSIS: At the end of the semester, write a paragraph describing 1) where, 2) how (finding west, finding same observing spot) and with whom you observed the sunsets, 3) what you saw, and 4) how they fit the theory of the Earth's motion you have learned in class. How easy would it be for you to figure out the motions of the Earth from your data?

**2 OBSERVATIONS DUE ON WEDNESDAY OCTOBER 11, 2023 AND
3 MORE OBSERVATIONS (PLUS WRITE UP) DUE BY FRIDAY, DECEMBER 1, 2023**

¹ The best place for this is in on the path along the practice fields parallel to Park Street, between trees on opposite side.



Sun Watch Example: The position of sunset shown on different dates on the same diagram as the sun moved north through the spring of 2006. Note that the date of the change from standard to daylight saving time is shown along with the position of the observer (place and latitude and longitude). Also, **for each observation, the date, time and sky conditions are shown along with a line showing where the sun will intercept the horizon.**

SkyWise by Jay Ryan Daylight Savings

SUMMER DAYS (AT MIDTEMPERATE LATITUDES) CAN BE ABOUT 15 HOURS LONG. ON SUMMER MORNINGS THE SUN IS UP FOR ABOUT 7 1/2 HOURS BEFORE IT REACHES THE MERIDIAN. IT TAKES ANOTHER 7 1/2 HOURS TO DECLINE AND SET.

IF WE STAYED ON STANDARD TIME, THE SUN WOULD RISE BETWEEN 4 AND 5 A.M. (DEPENDING ON WHERE YOU ARE IN YOUR TIME ZONE)-- WHEN ALMOST EVERYONE IS ASLEEP, THE SUN WOULD SET AROUND 7 OR 8 P.M., CUTTING EVENING ACTIVITIES SHORT.

THEREFORE MANY COUNTRIES "SPRING" THEIR CLOCKS FORWARD TO DAYLIGHT SAVINGS TIME EACH SPRING. THE SUMMER SUN RISES AND SETS LATER ON THE CLOCK, WHICH BETTER FITS MOST PEOPLE'S SCHEDULES.

"SPRING FORWARD"

DAYLIGHT SAVINGS TIME

IN WINTER, DAYTIME IN MIDTEMPERATE LATITUDES IS ONLY ABOUT 9 HOURS LONG. IF WE STAYED ON DAYLIGHT SAVINGS, THE SUN WOULD RISE AT 9 OR 9 A.M., AND MOST PEOPLE WOULD GO TO WORK IN DARK.

SO WE "FALL BACK" TO STANDARD TIME EACH FALL. IN THE U.S.A., DAYLIGHT SAVINGS TIME RUNS FROM THE FIRST SUNDAY IN APRIL TO THE LAST SUNDAY IN OCTOBER.

"FALL BACK"