

Nguyen Le

Professor Andres & Professor Henebry

IN 250

9/30/25

Autumnal Equinox Paper

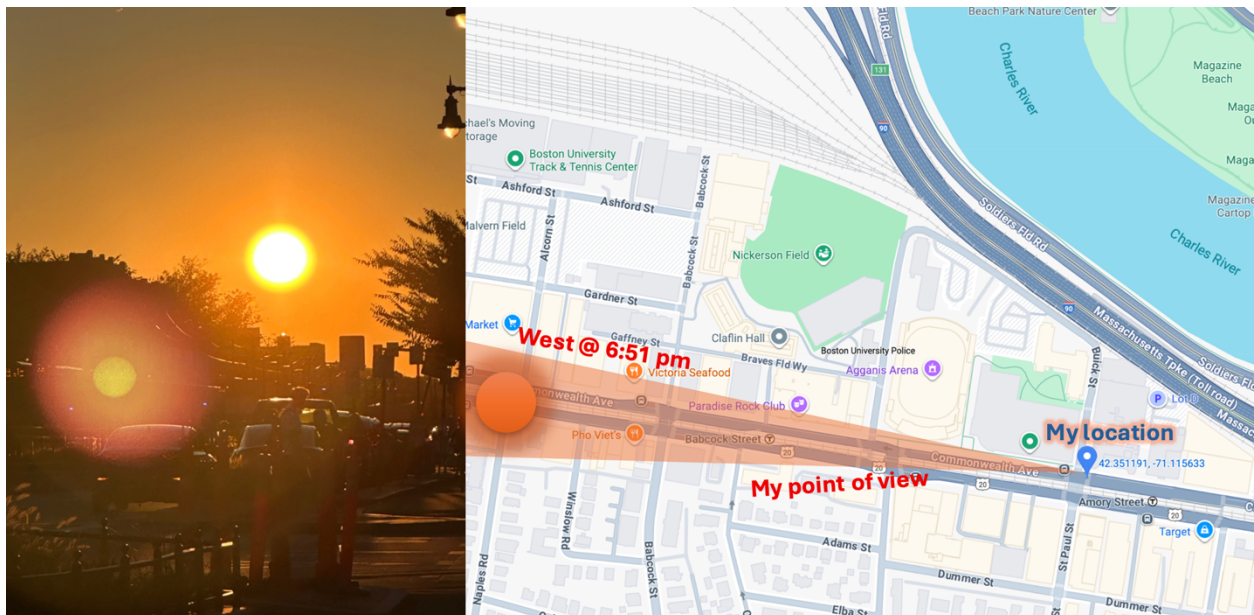
Intro:

The autumnal equinox is an astronomical event where day and night are nearly equal. During the autumnal equinox, the sun rises exactly east and sets exactly west. Thus, I conducted an experiment to try to capture this moment, which occurred on Monday September 22, 2025.

Methods:

I did my data collections on Monday September 8, 2 weeks before the equinox, and on Monday September 22, the day of the autumnal equinox. For the fieldworks, I would check for the estimated time of sunset for the day on my phone's weather app and go to the observation location. Since the sun sets west, to capture it I needed to be located somewhere facing west. The easiest way to orient yourself is to follow along BU's campus. For instance, BU West is located on the west side of BU campus, hence the name. Thus, it would make sense to capture this moment standing somewhere facing the West campus. Thus, I initially chose to do my observation along Commonwealth Avenue right next to BU FitRec, facing towards West Campus.

Initial Data Collection and Data Processing



On September 8, I conducted my experiment next to FitRec towards West Campus. Although my phone's weather app said that the sunset would take place around 7:05 PM, around 6:50 PM I noticed that the sun started to set already so I decided to take a couple of photos every 5 minutes until 7:10 PM. As can be seen, I was able to capture the sun pretty clearly and you can see the T-stop, street signs, the intersecting street, and other landmarks to identify the exact location and direction I was facing when I took this photo. One thing I noted from this experiment to better prepare for my final run of data collection was that the sun seemed to set before the official time of sunset on the weather app. To be more prepared for my next experiment, I decided to be ready at my data collection location 30 minutes early. Additionally, I realized that from my elevation, surrounding structures may partially inhibit my view of the sunset slightly earlier; thus, to improve this experiment, I decided to go somewhere with a higher up elevation to ensure a better view of the horizon. Thus, for my next experiment I decided to go to the 26th floor of Student Village II.

Final Data Collection:



On the day of the final autumnal equinox on September 22nd, I went to the 26th floor of Student Village II in West Campus to get a clearer view of the sunset. As per my previous experiment, I decided to get my camera set up 30 minutes before the estimated time of sunset. I also enabled a 3x3 grid as well as set up a stand for my camera to ensure that my photo's horizon isn't tilted. This is to make sure that any changes in location and angle of the sun reflects the autumnal equinox rather than human errors. In this picture, there are multiple visible landmarks in the snapshots such as Sleeper and Rich Hall, as well as Star Market and Malvern Field, allowing us to clearly identify the location of where these photos were taken. We can see that over time, even though the equinox is set due west, our ~42 N degree latitude (Boston) makes the Sun slide diagonally down from our perspective.

Reflection on Accuracy and Improvements

Overall, I think my experiment was pretty accurate. Throughout both data collection periods, I was able to identify potential sources of error and ways to improve the accuracy for my final experiment. In the first trial run, I realized I needed a location with better elevation to ensure that the time I no longer see the sun reflects the time when the last visible part of the sun disappears below horizon rather than the time the sun is not visible from my level caused by slopes and surrounding structures. I also realized in order to minimize my human errors, I should use a grid and a stand for my camera in my final experiment. If I were to recreate this experiment again, I would most likely conduct it on the 26th floor of StuVi II again, using a grid as well as a stand for stability. The only change I would make if I were to conduct this experiment again would be to extend the data collection period. Capturing images over an hour, with 15-minute intervals instead of just 30 minutes, would provide a clearer representation of the sun's movement.