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CGS IN250

30th September 2025

Autumnal Equinox Final Write Up

Introduction

This report documents my fieldwork tracking the position of the sun as it dipped below the horizon during the Autumnal Equinox on September 22, 2025. The Autumnal Equinox is one of two days a year where the day is exactly equal to the night. The sun should rise due east and set due west on this day. The objective was to define true west by observing and photographing the sunset, using multiple trial runs leading up to the equinox. Data collection occurred over several weeks, and maps were annotated to show my location and the direction of the sun. This report includes the experimental procedure, data processing, and a reflection on accuracy and potential improvements.

Experimental Procedure

The experiment was carried out over four weeks. During Week 1, I began by practicing data collection to become familiar with photographing sunsets. For Week 2, I documented the sun's position on a map while noting my location and documenting the setting sun. Week 3 included the actual Autumnal Equinox data collection, where the sun's position was carefully observed and recorded. The final week involved compiling data, photographs, and maps into this report.

Each sunset was documented using a smartphone camera, although I would have liked to document from the same location, each image was documented from a different location in Boston. Photographs were taken a few minutes before the predicted sunset time, and local landmarks were recorded to help determine direction as well as the compass app on my smartphone.

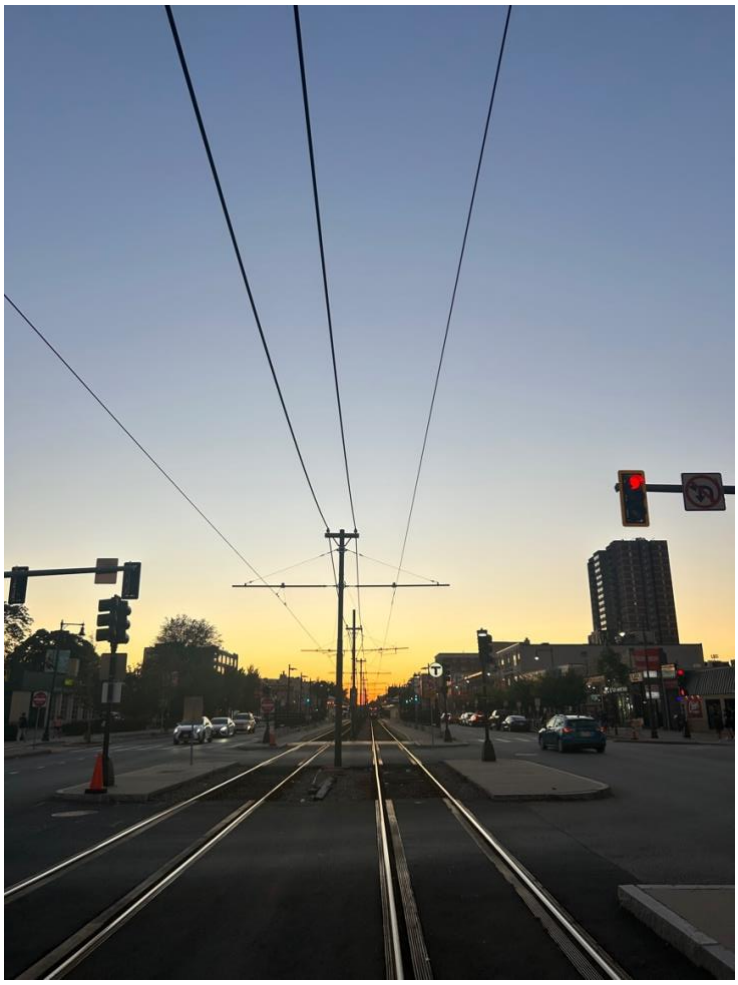
Weekly Observations

Week 1: Data Collection Trial Run

September 8, 2025

Observation: The initial data collection was a practice run. I did not note the exact time of sunset, but I went outside when the sun seemed to be setting. I believe the sun likely set a few minutes later than predicted due to my position near Agganis arena, which is higher in elevation compared to other parts of Boston. I was facing the top of West Campus which is a strong indication that I was facing westward. All things considered, I don't think the elevation would have affected the time too drastically, but seeing as this was a trial run, I was not well equipped to get the best possible data.

Reflection: To get more reliable data I plan to choose a higher vantage point with fewer obstructions to capture a clearer image. I also need to make sure to consider the time the sun is supposed to set to capture the image at the correct time.

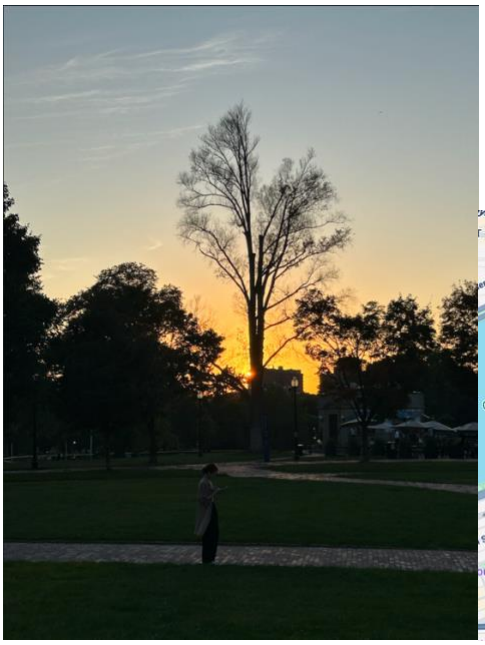


Week 2: Data Processing Trial Run

September 15, 2025

Observation: During this week, I recorded my position and the sun's setting direction on a map. I was facing west-northwest and felt confident in my alignment because I was facing towards the Charles River and West Campus, which are consistent reference points for westward orientation. I was also positioned to the left of the Parkman Bandstand in Boston Commons which is facing west. I ensured to capture the image a few minutes before the sunset because I wanted to see the sun set before it became fully obstructed.

Reflection: To improve accuracy, I could have found a place with less of an obstruction, as mentioned the week before an image taken from a higher elevation would be preferable. While a tree partially obstructed my view, this was the clearest image I could capture at the time.

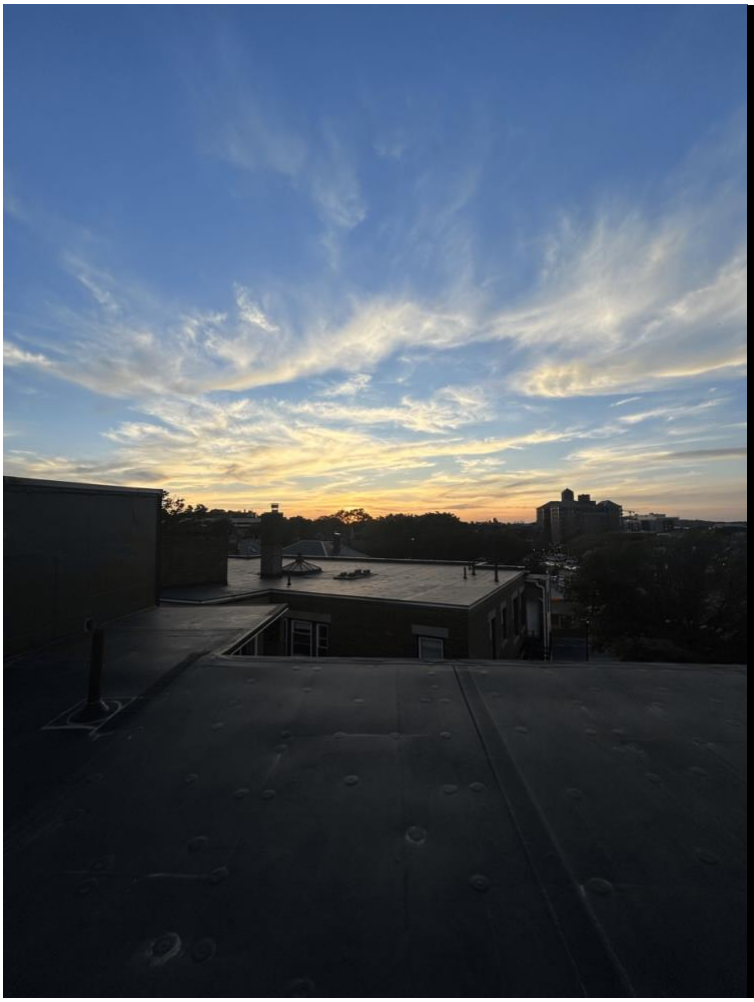


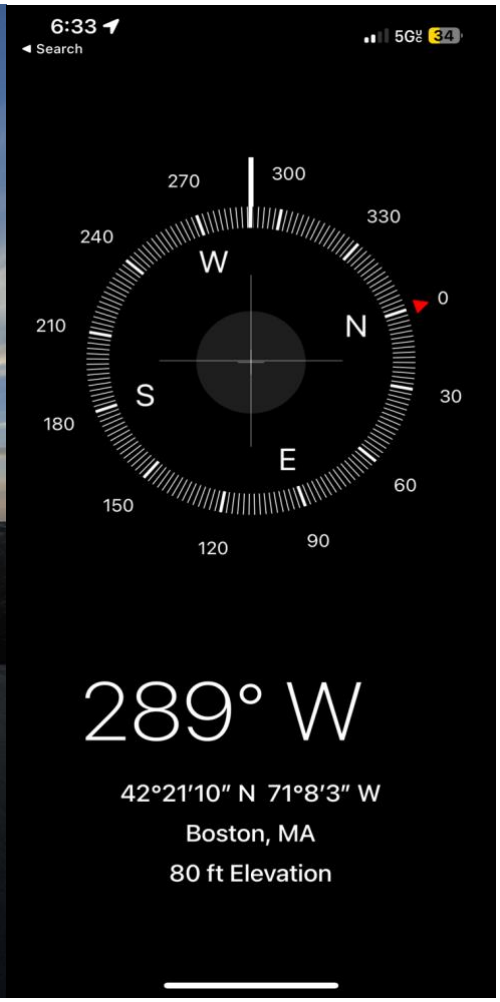
Week 3: Autumnal Equinox

September 22, 2025

Observation: On the day of the equinox, I captured the sunset from the top of my apartment building in Allston at the time determined by the weather app. The sun appeared to be setting west, but I confirmed this with a compass. While it was not perfectly aligned with due west, it was close, possibly affected by compass inaccuracies or slight misalignment in how I held it.

Reflection: To my right in the image is a tall building containing the Brighton Islamic Center, which I used as a landmark to verify the sun's position relative to my location.




6:33
Search
5G
34
270
300
330
240
W
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N
210
30
S
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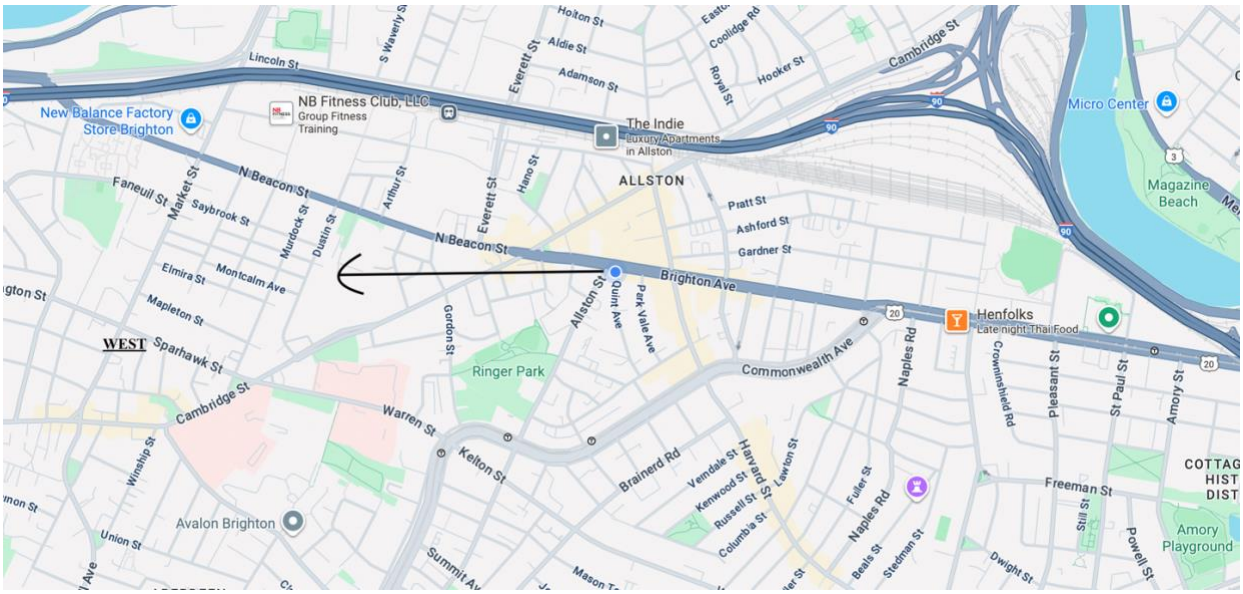
60
150
120
90
289° W
42°21'10" N 71°8'3" W
Boston, MA
80 ft Elevation


Lincoln St
New Balance Factory Store Brighton
NB Fitness Club, LLC
Group Fitness Training
The Indie
Luxury Apartments in Allston
ALLSTON
Everett St
Aldie St
Adamson St
Coolidge Rd
Royal St
Hooker St
Cambridge St
Micro Center
Magazine Beach
Faneuil St
Market St
Saybrook St
N Beacon St
Murdock St
Dustin St
Arthur St
Everett St
Hano St
Pratt St
Ashford St
Gardner St
Elmira St
Montcalm Ave
Mapleton St
WEST
Sparhawk St
Cambridge St
Gordon St
Allston St
Quint Ave
Park Vale Ave
Brighton Ave
Henfolks
Late night Thai Food
Ringer Park
Commonwealth Ave
Naples Rd
Crowninshield Rd
Pleasant St
St Paul St
Amory St
Warren St
Kelton St
Brainerd Rd
Verndale St
Harvard St
Lawton St
Kenwood St
Russell St
Columbia St
Fuller St
Naples Rd
Freeman St
Still St
Amory Playground
Powell St
Dwight St
Steedman St
Beals St
Winship St
Union St
Avalon Brighton
Summit Ave
Mason Terrace
Holton St
S Waverly St
Easton St
20
90
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Data Processing and Analysis

Using the collected data, I annotated maps to show my position and the direction of the sun as it set. By comparing images from different weeks, I was able to assess changes in sunset position over time. The data confirmed that while the sun set close to due west, slight variations occurred, the earlier in September, the sun set was more north of due west and as the weeks went by the sun set moved more westward with it finally reaching due west at the Autumnal Equinox. Additional variations could possibly be due to local geography and measurement limitations.

Conclusion

This fieldwork provided valuable experience in observing natural phenomena and documenting positional data. My results showed that the sun set very near due west during the Autumnal Equinox, as expected. It also consistently moved more westwards in the weeks leading up to the Equinox. To improve future experiments, I plan to use a tripod for more stable photos, record exact sunset times more accurately, and gather data from one high altitude location with clear visibility to cross verify my findings as the days pass.