**Sunset location finder**

**potential end products:**

**app:**

simple sunset azimuth finder

ioverlander for sunsets

**Web:**

Location map

Gameified somehow

**A map that recommends good places to see the sunset/rise from**

Step 1: a map that shows elevation

* Completed – <https://portal.opentopography.org/datasetMetadata?otCollectionID=OT.032025.3979.1>
* 30m rez
* Tif contains geodata:
  + Coordinate System:
    - Horizontal: Canada Atlas Lambert NAD83 (CSRS) [EPSG: 3979]
    - Elevation(?): CGVD2013 [EPSG: 6647]
* A map of a mountain range

  AI-generated content may be incorrect.

step 2: your location on the map

* Converted data to lat long and set fixed current location to Tofino for now

Step 3: sunrise and sunset azimuths

* Using pvlib, current date, time, and location, sun azimuth can be calculated
* Pvlib also has sunset and sunrise calc if passed a set of times to interpolate over
* Combine these 2 bits of data to get azimuth at set and rise
* A map of the north and south america

  AI-generated content may be incorrect.Use this azimuth and pyproj geod to draw a line on the curved earth surface pointing in direction of set and rise

Step 4: determine chance of sunset being good

Weather

* Clouds
* Dust
* Rain/snow

Geography

* Raytracing
* Viewshed

Astronomical conditions

Geography

Ray tracing requires sun location, observer location, terrain and terrain curvature drop off.

A graph of a graph

AI-generated content may be incorrect.A graph with blue lines

AI-generated content may be incorrect.using the azimuth, a vector of elevations along the line of the azimuth can be sampled and used for ray tracing.

Numerical analysis of last visible sun elevation. Bisectional analysis could be replaced with a faster method but works well enough for now

Roadmap update:

* Time of last visible sun
* Recommended viewing window
* Research best time for sunsets

A graph on a graph paper

AI-generated content may be incorrect.

Found a curve I felt fit a good rating scale. Y is sunset quality, x is last visible sun height

A colorful image of a heat wave

AI-generated content may be incorrect.

Test sample using a grid of points. Darker means worse sunset lighter means better sunset. Appears to work well based on testing of various terrains. Scale is currently set to range between local best and local worst ratings, a more consistent visualization is needed