The Photographer's Ephemeris

DISCOVER THE LIGHT
PHOTOGRAPHY

What's Covered

- ✓ Example shots planned with TPE
- ✓ Overview
- ✓ Using TPE without an Internet Connection
- ✓ Finger gestures
- ✓ Settings
- ✓ Screen Layouts
- ✓ Change date
- ✓ Events
- ✓ Maps
- ✓ Pins
- ✓ Locations
- ✓ Altitude Chart And Event Timeline
- ✓ Line-of-sight (Geodesics)
- ✓ Visual search
- ✓ Share results
- ✓ Night mode

TPE Overview

TPE Overview

With TPE you can:

- Plan outdoor photo shoots based on sun and moon light and direction
- Plan Milky Way and astrophotography shoots
- Use several map types to plan your shoots
- Save and share results using visual search

Notes on TPE:

- Knowing your shoot locations is helpful
- Internet connection required for full capabilities

TPE Overview

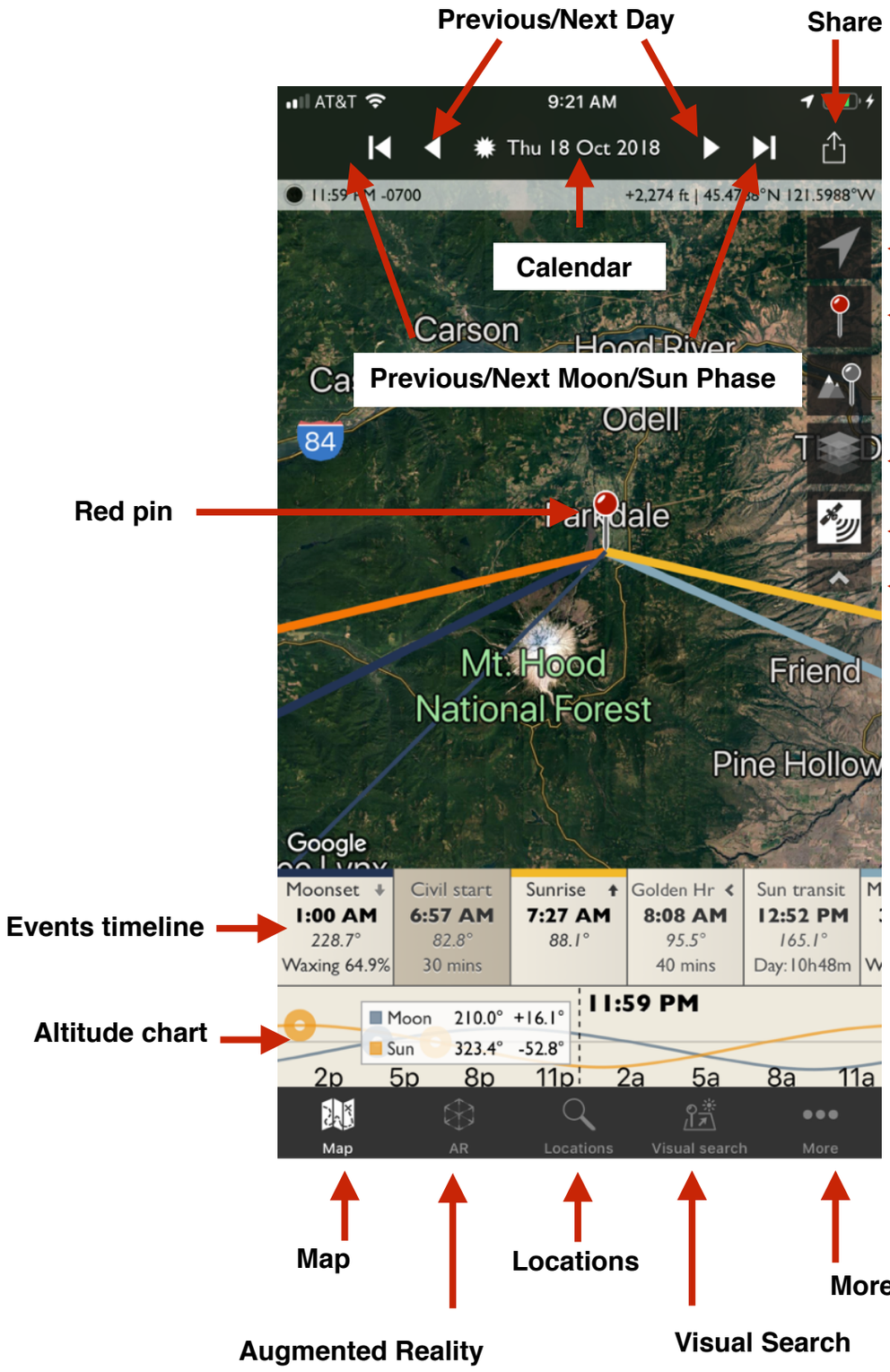
Key definitions

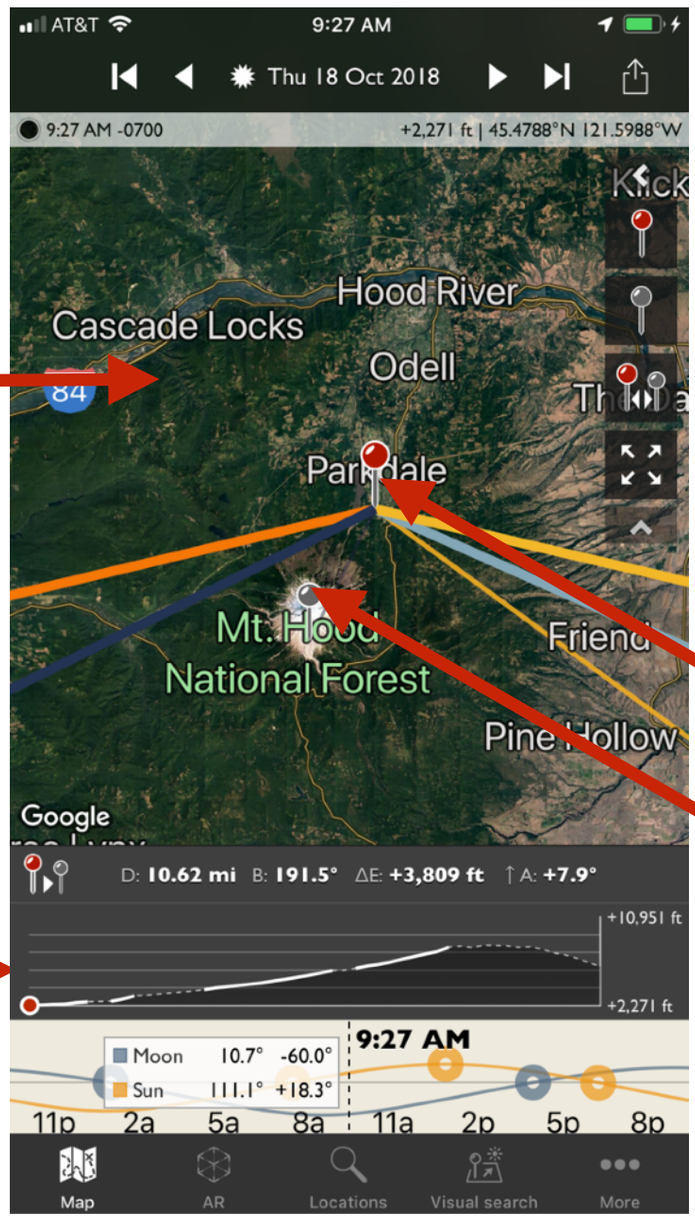
- **Red pin** - defines your shooting position
- **Gray pin** - defines the direction you want to shoot
- **Geodesics** - shoot direction with topographic profile between the red and gray pins
- **Azimuth/Bearing** - the direction (in degrees) clockwise from true north
- **Zenith** - the angle above or below the horizon

>>> The best way to **learn** TPE is to **use** TPE <<<

Screen Layouts

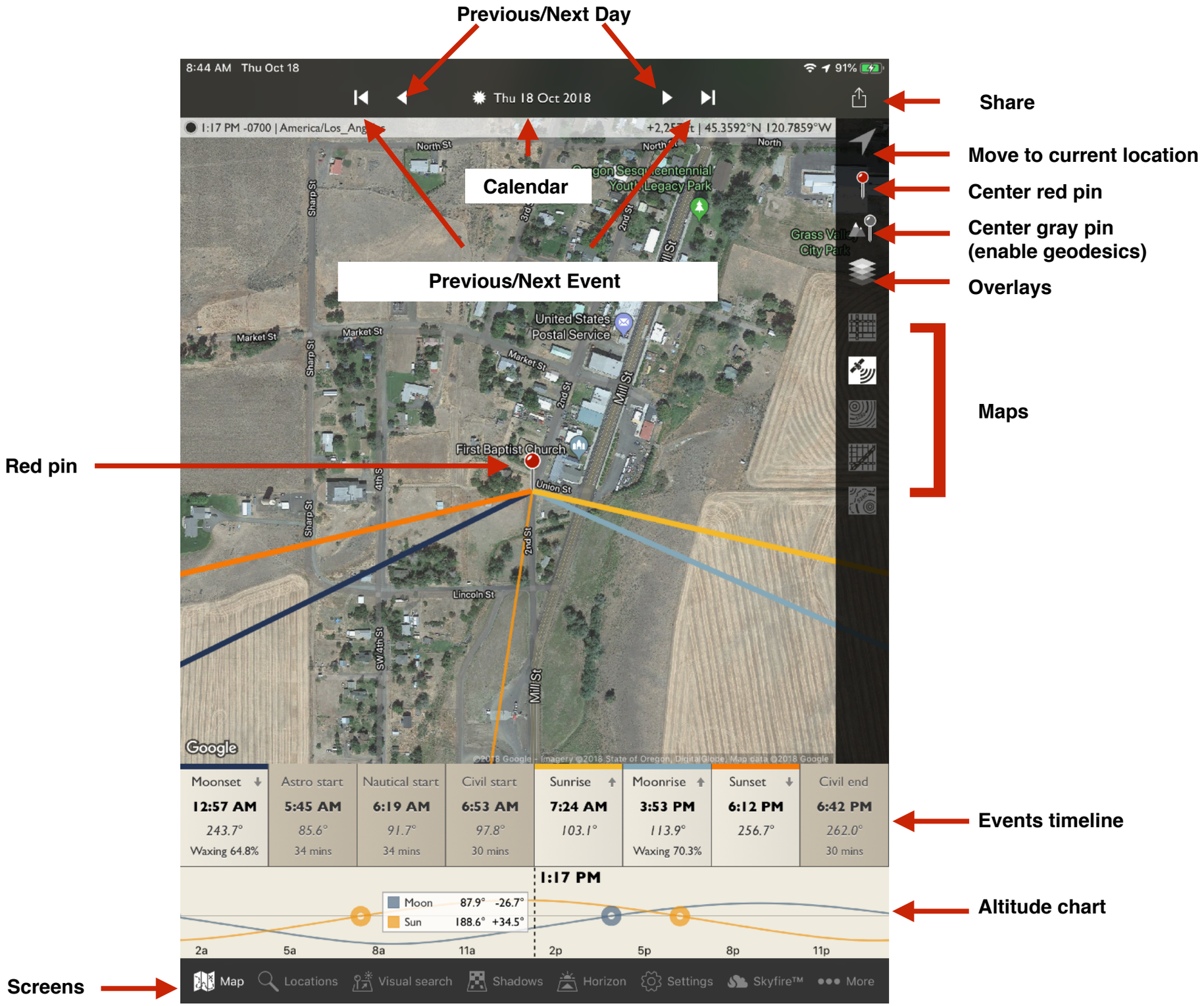
Screen Layout (iPhone)



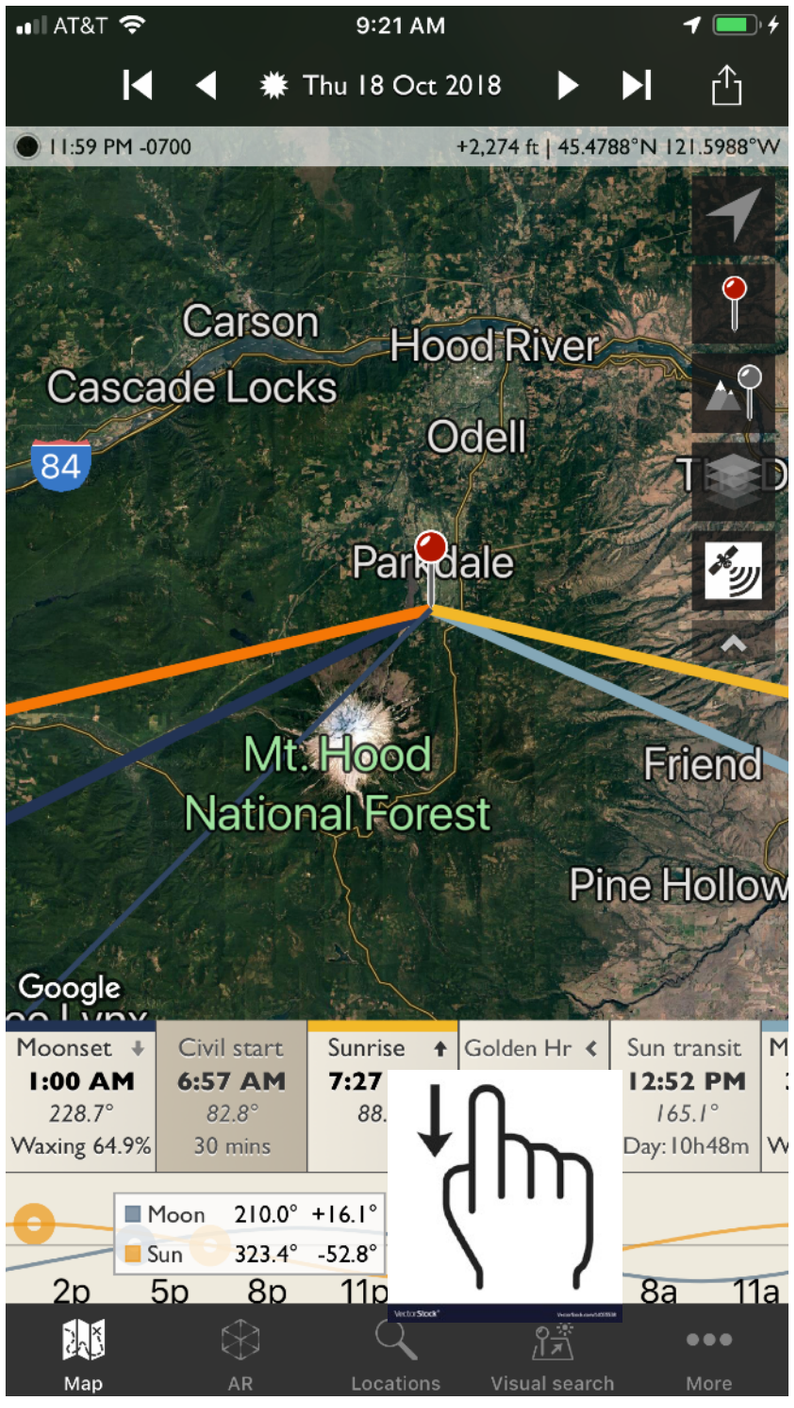


Geodesics Screen

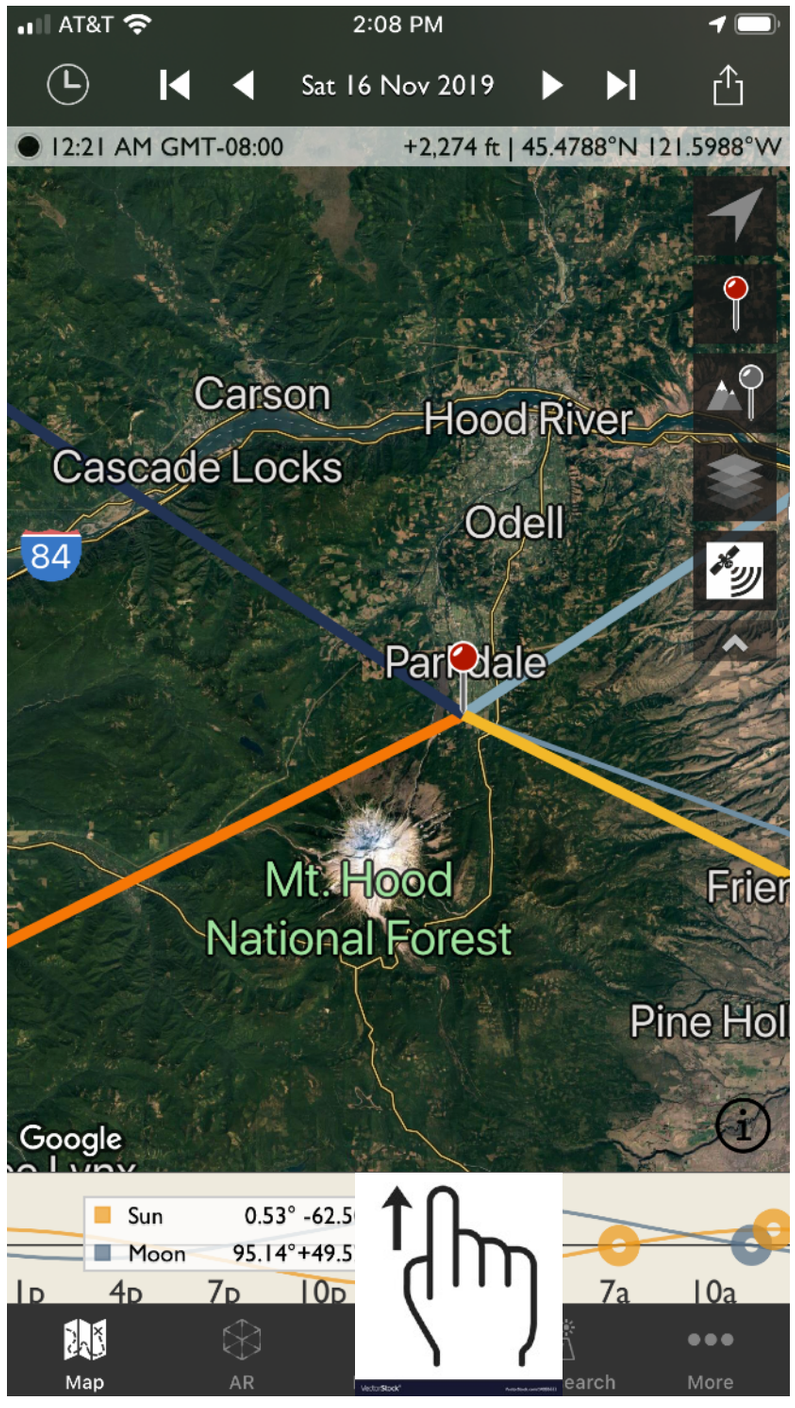
Screen Layout (iPad)



Hide/Show Events Timeline

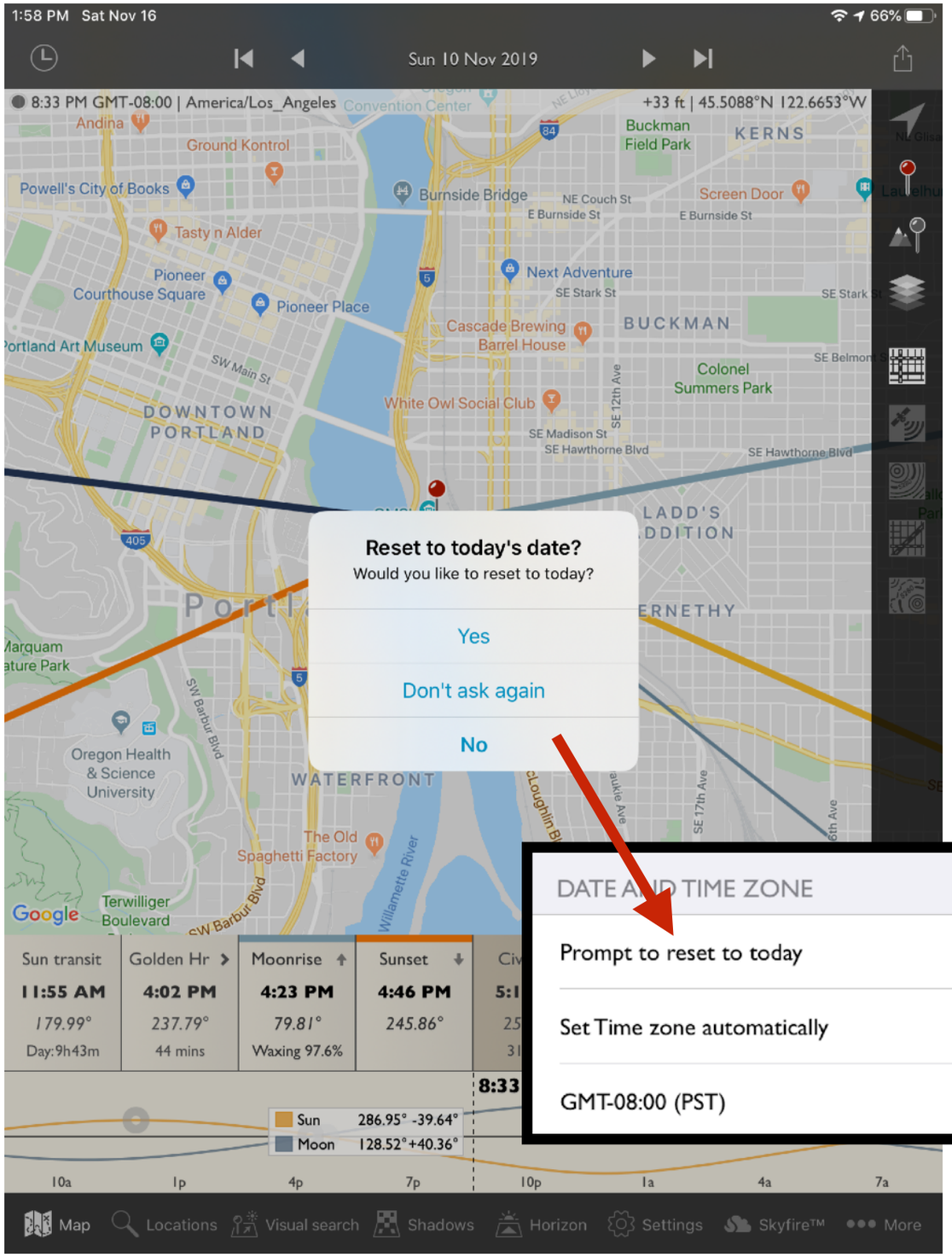


Swipe down inside events timeline to hide

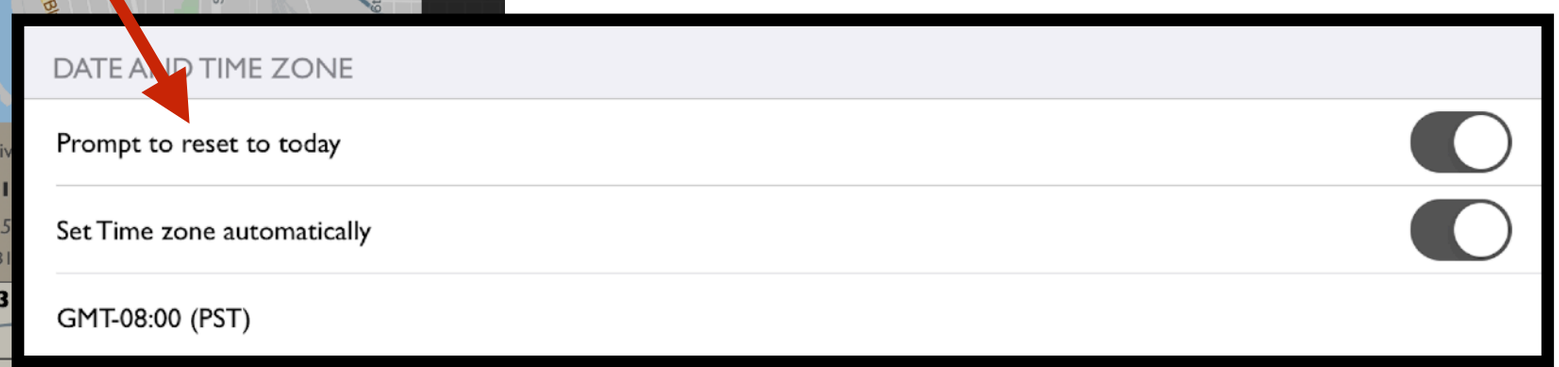


Swipe up inside altitude chart to show

Reset Date Message



Settings screen



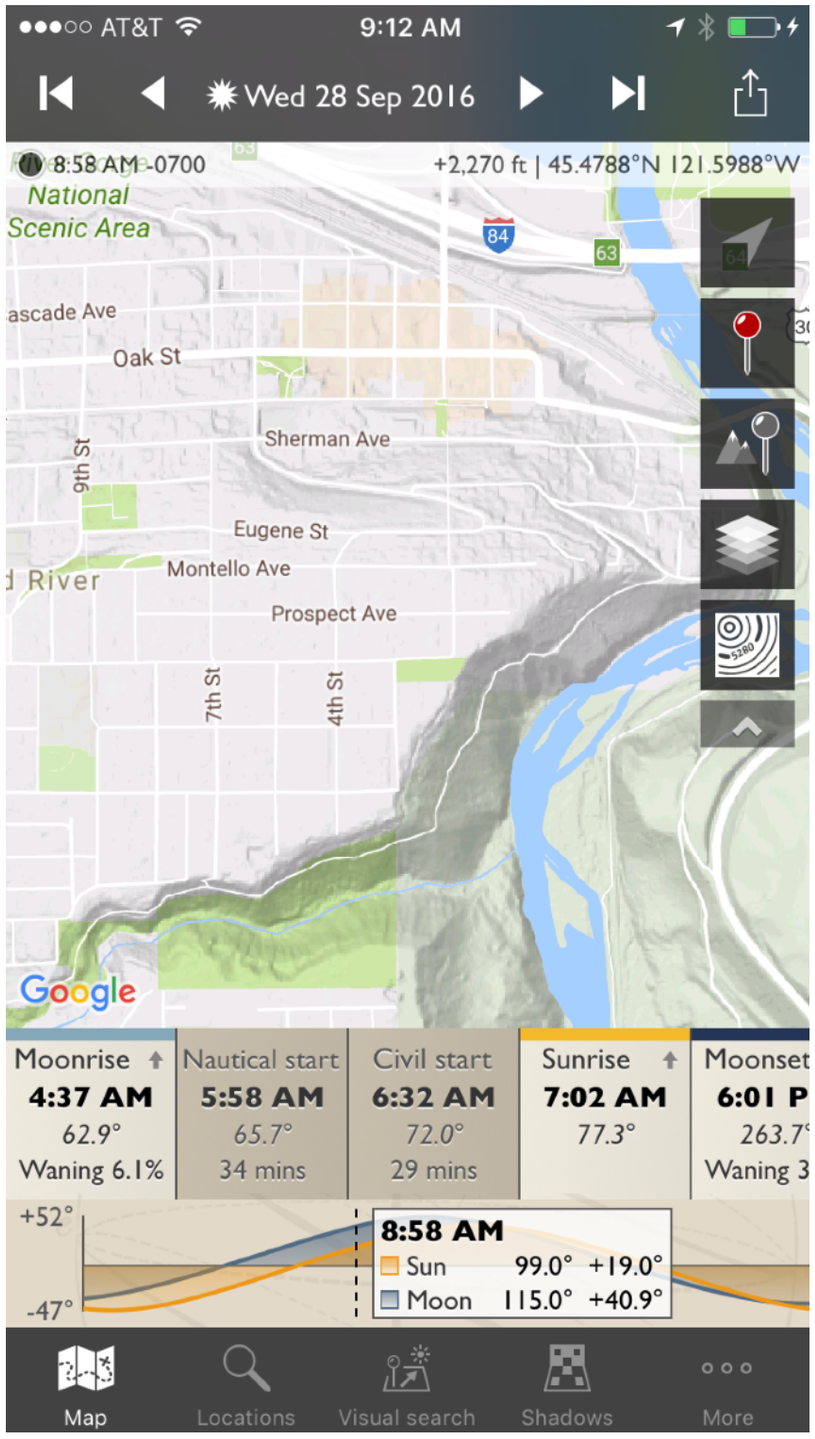
Events

Events

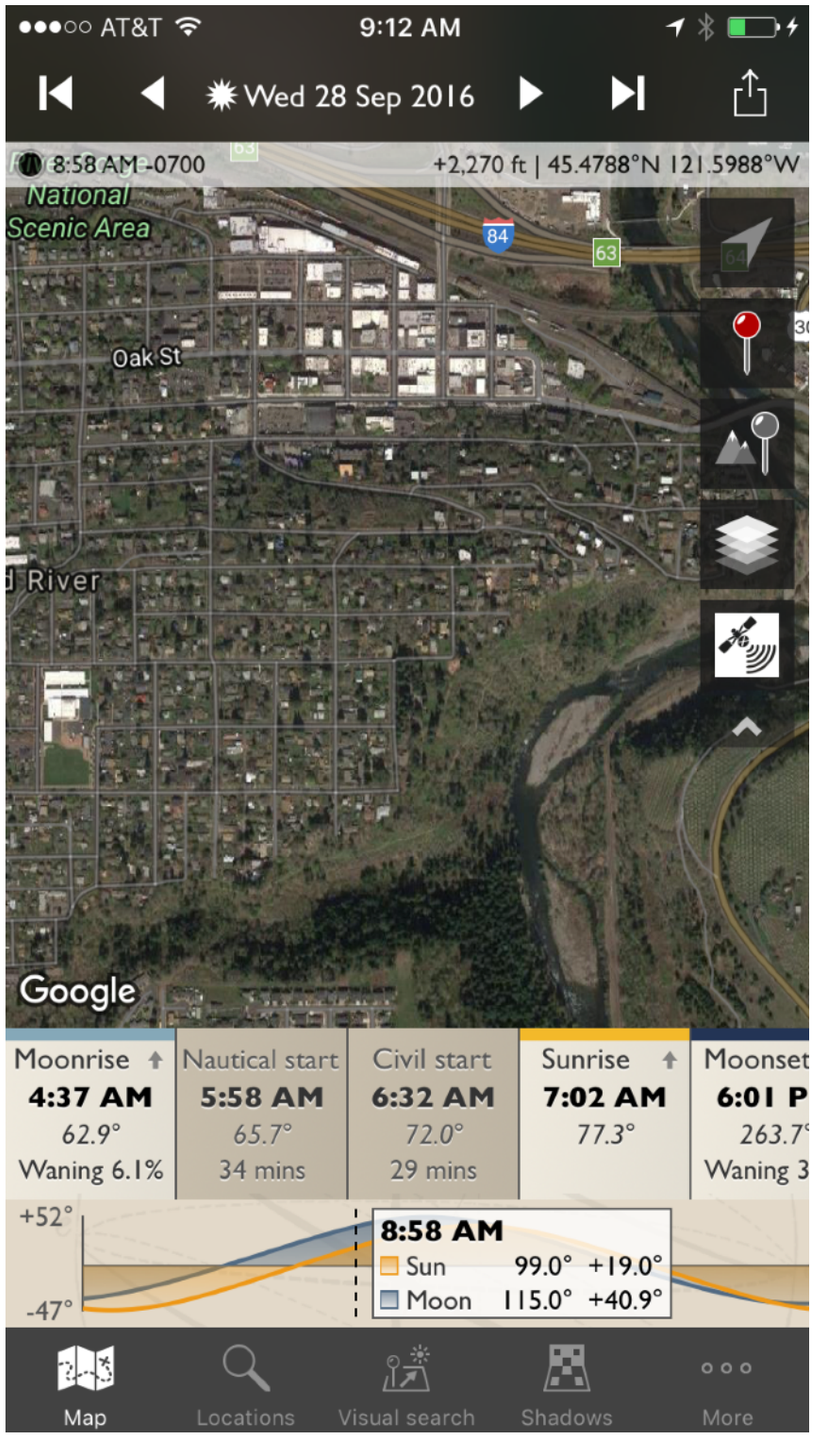
- New moon
- Full moon
- Moon at apogee (farthest from Earth)
- Moon at perigee (closest to Earth)
- First quarter moon
- Third quarter moon
- Solstice
- Equinox
- Eclipse (solar or lunar)
- Meteor shower
- Events accessible from Home screen or Dates and Events screen

Maps

Maps (iPhone shown)



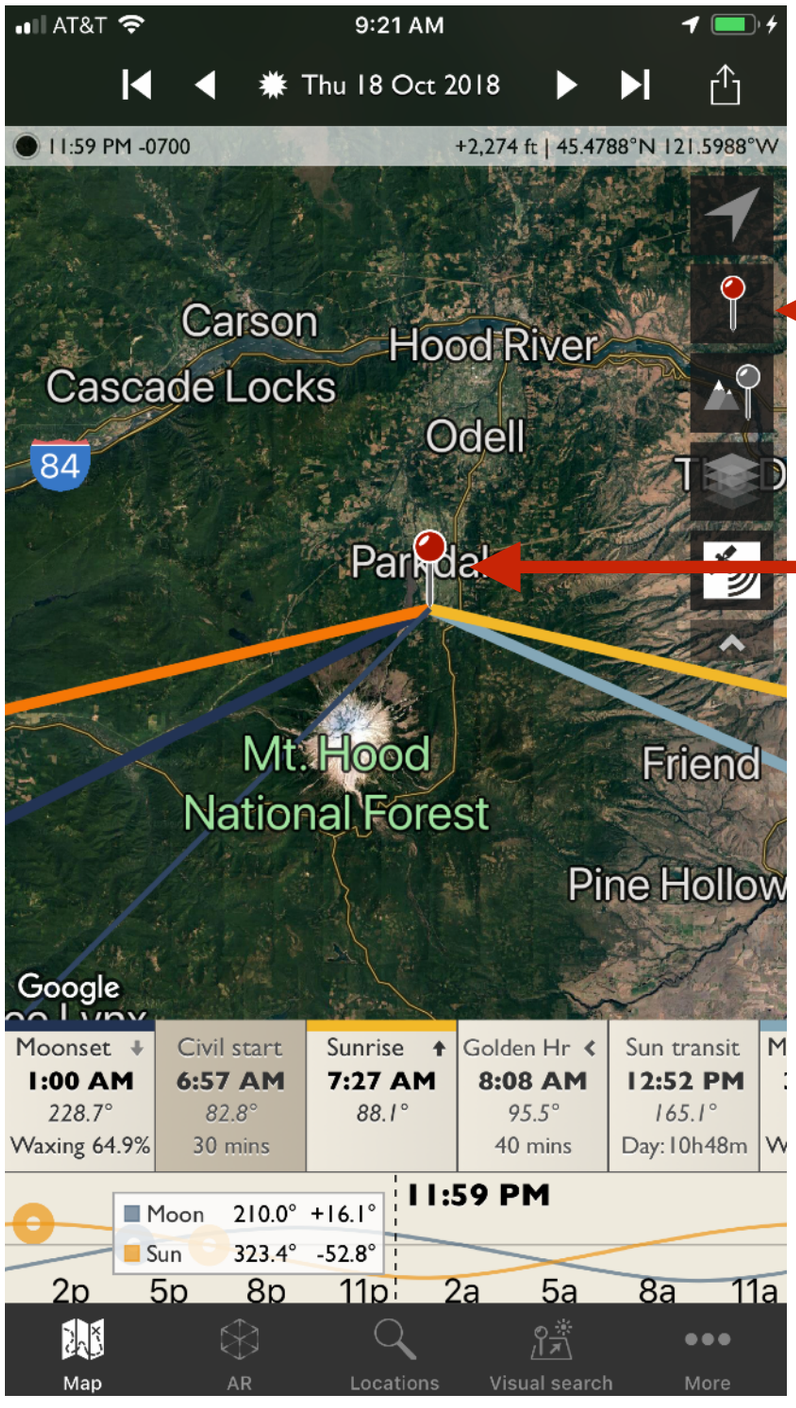
Google Terrain



Google Hybrid

Pins (Red and Gray)

Red Pin

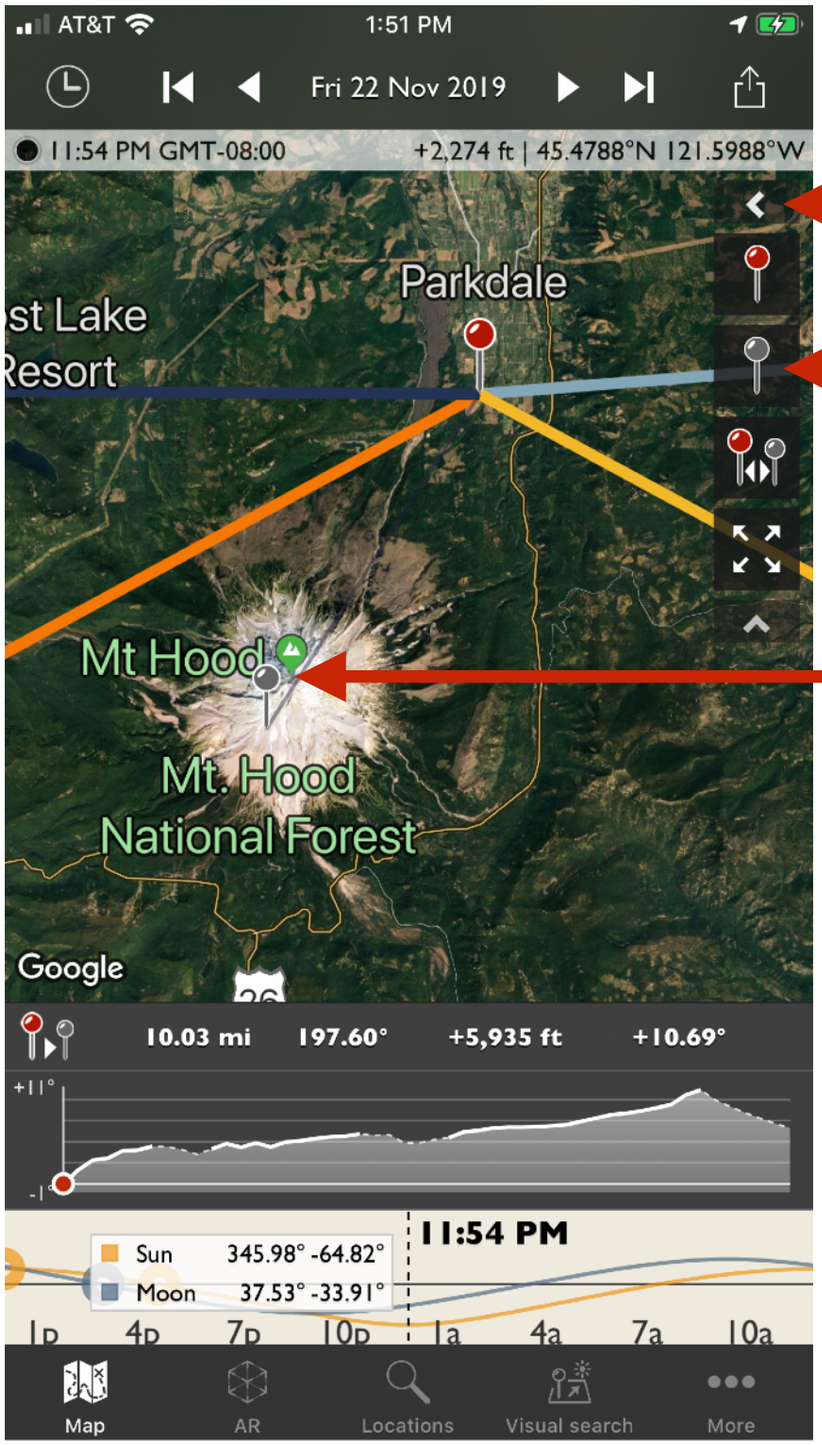


The red pin defines your shoot location

Places red pin at center of screen

Red pin on map

Gray Pin (Geodesics)



The gray pin defines your shoot direction

Exit geodesics

Places gray pin
NOTE: Initial tap places gray pin at a random location - subsequent taps places it at center of screen

Gray pin placed on map

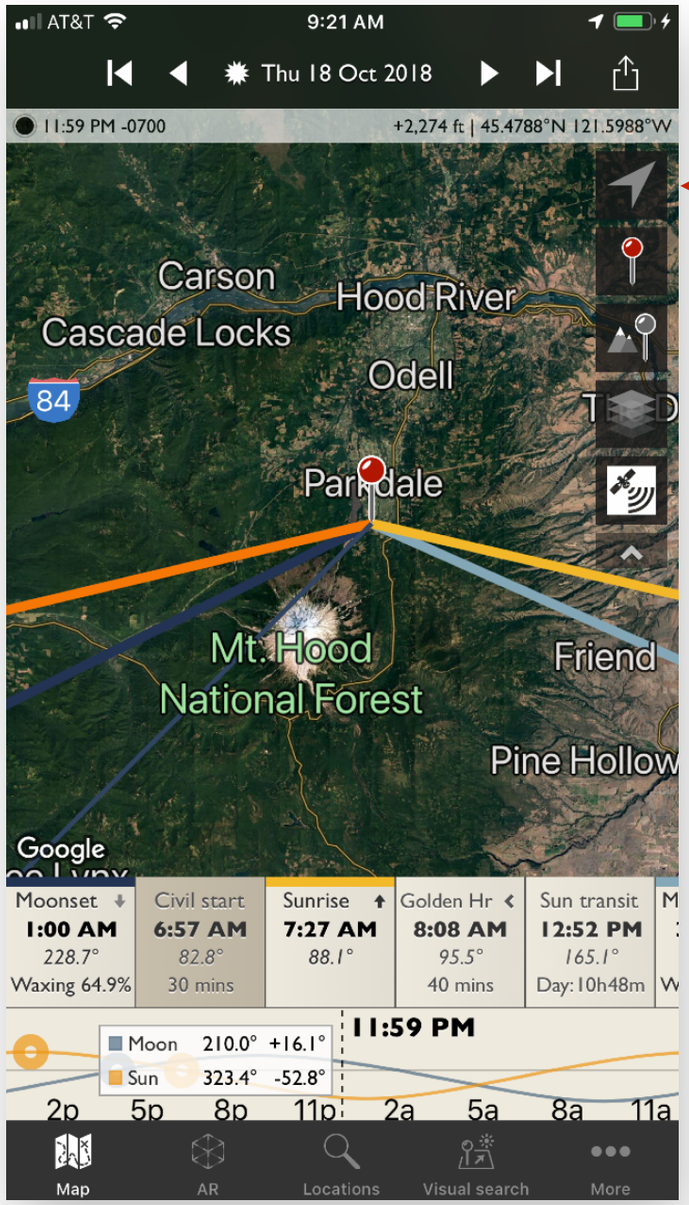
There will be exercises using the gray pin later

Locations

Locations

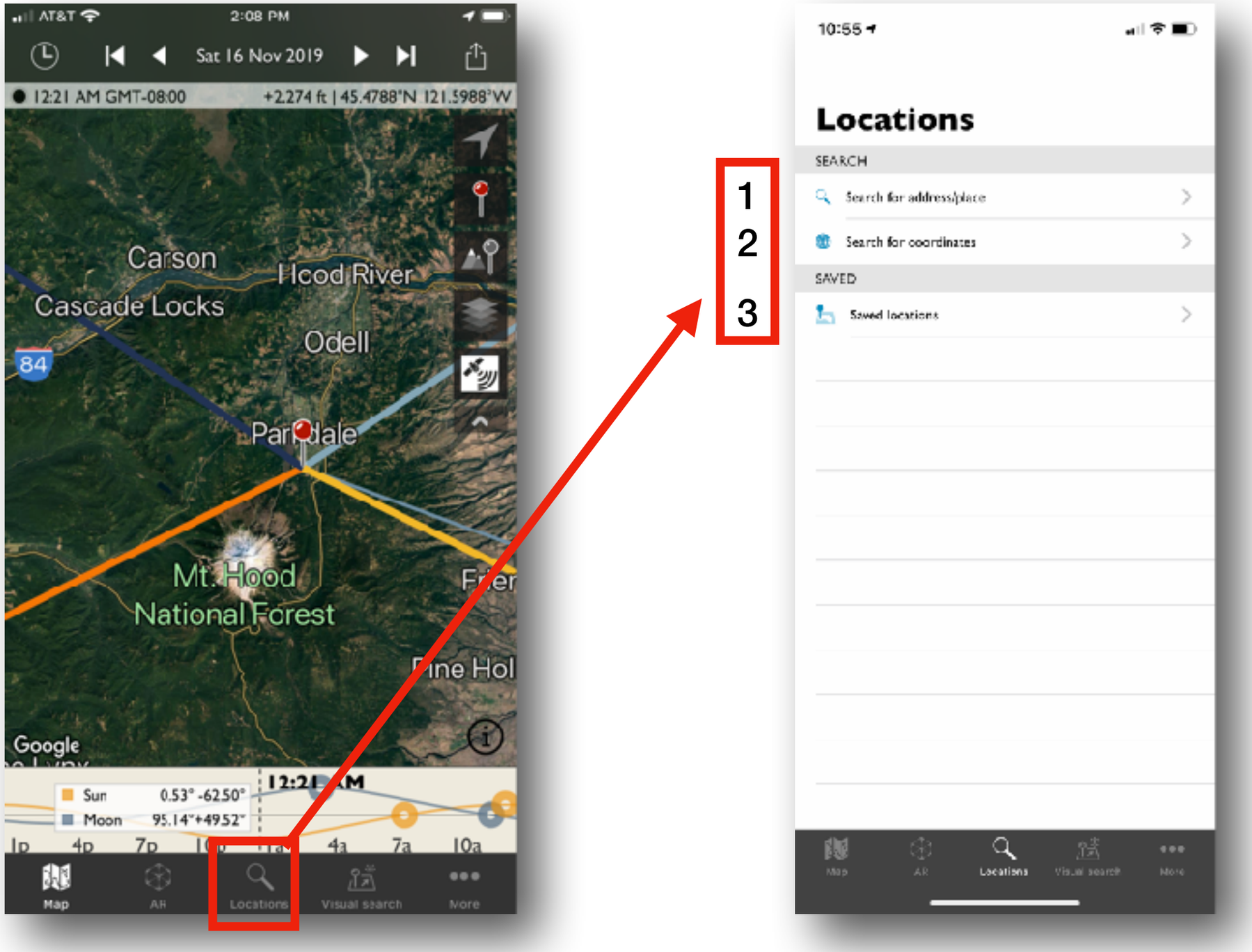
- Jump to current location
- Jump to saved location
- Search for a location
- Saved shoot location (red pin)
- Saved Geodesics information (gray pin)
- Edit locations
- Two basic ways to find locations
    1. Find location manually on the map
    2. Search for a location

Current Location



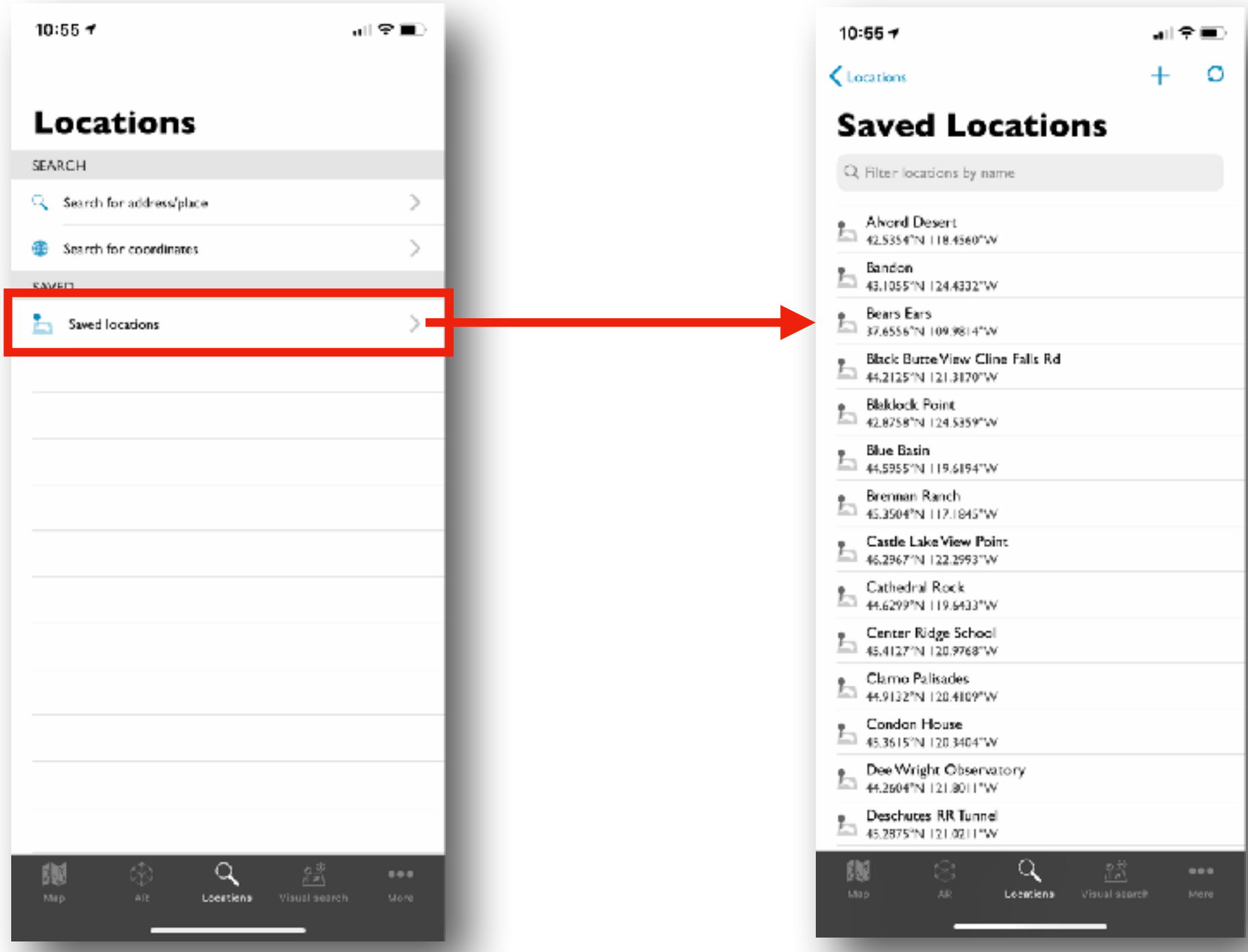
Current Location
(takes you to your current location)

Locations Screen (3 options)



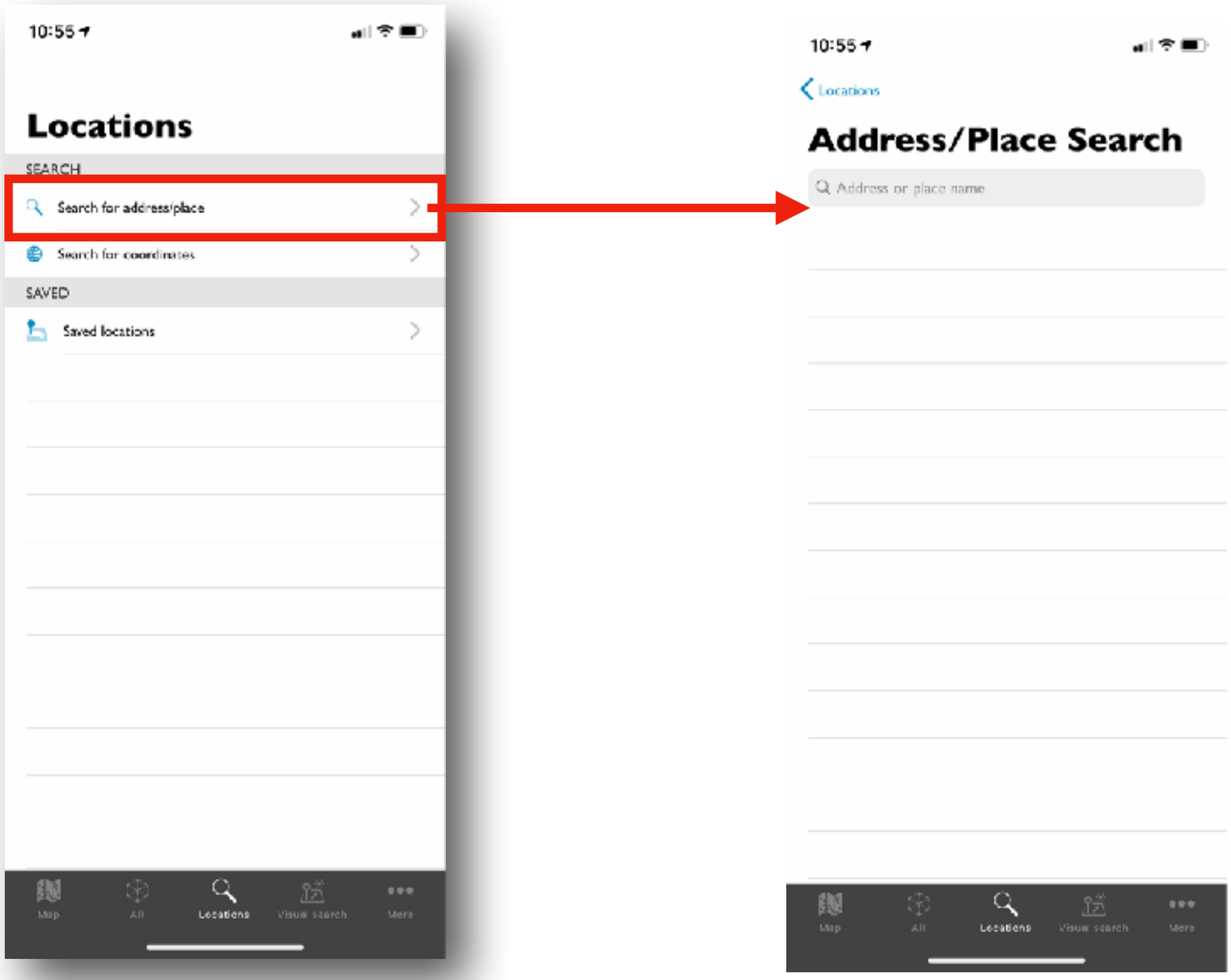
NOTE: TPE remembers the last locations panel you were in

Saved Locations



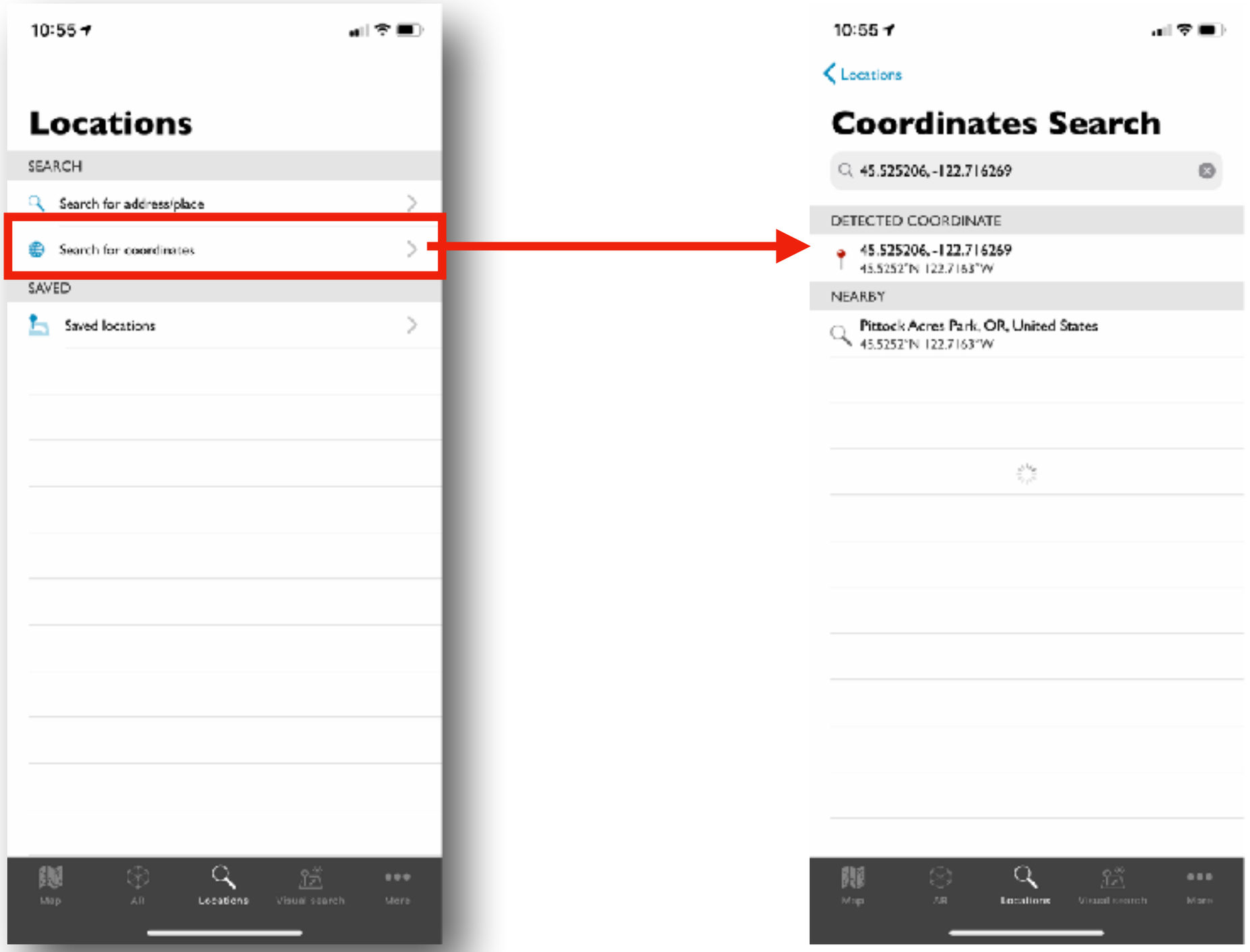
NOTE: TPE remembers the last locations panel you were in

Search for Address/Place



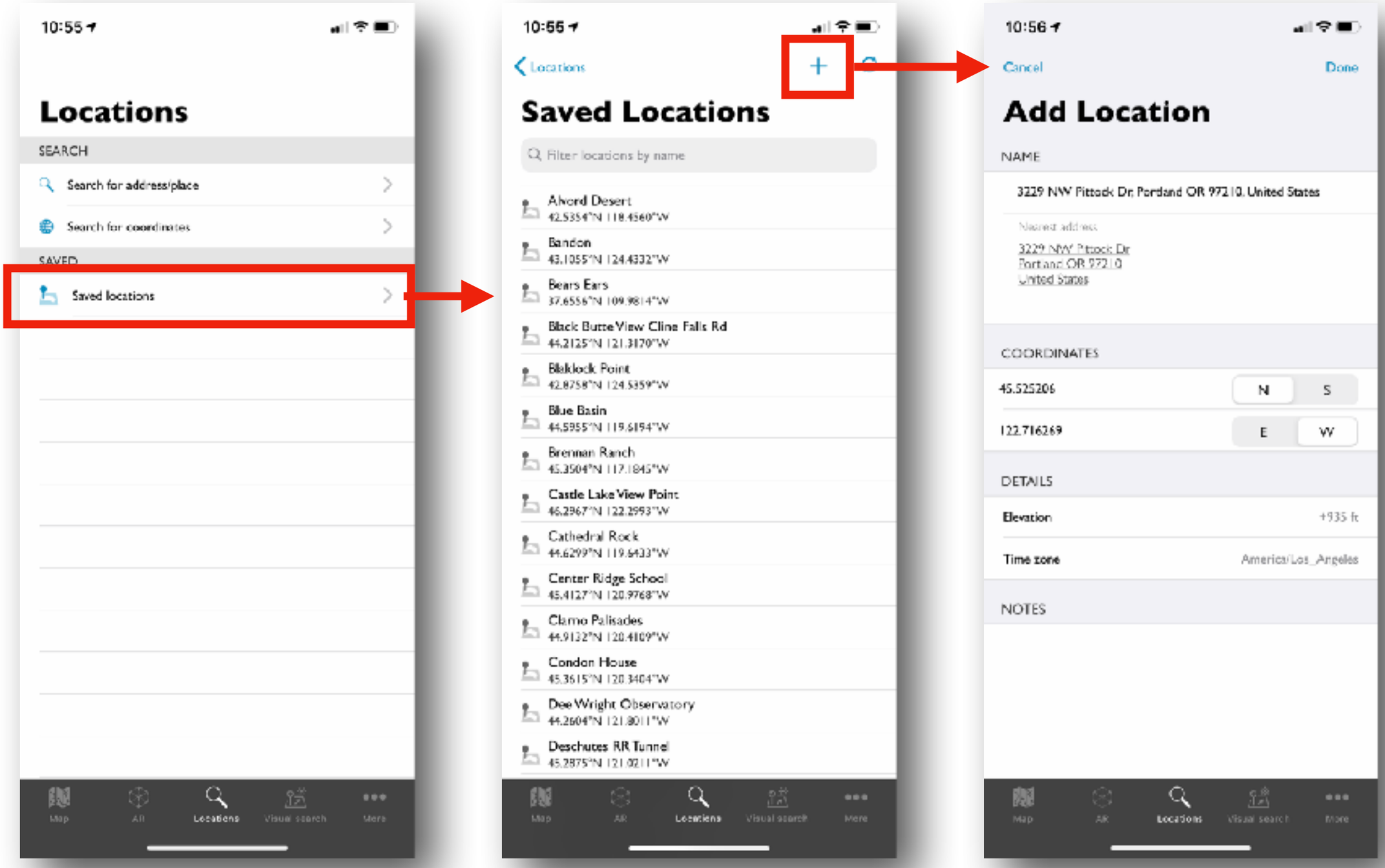
NOTE: TPE remembers the last locations panel you were in

Saved Locations



NOTE: TPE remembers the last locations panel you were in

Add Location (save a location)



NOTE: TPE remembers the last locations panel you were in

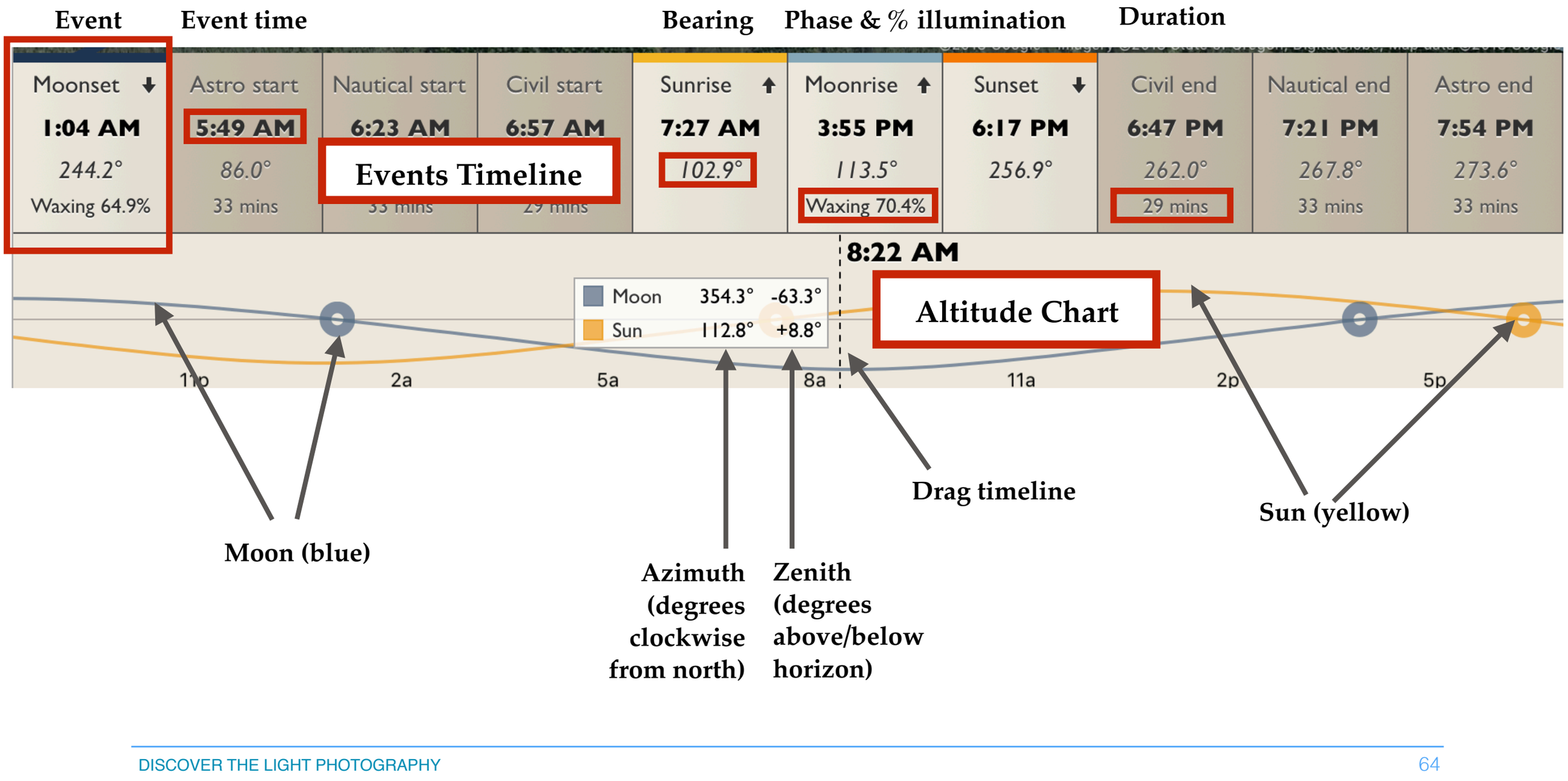
Altitude Chart

Events Timeline

Sun and Moon

Altitude Chart and Events Timeline

- Sun and moon position
- Moon phase and % illumination
- Timeline events (sunrise, sunset, moonrise, moonset, twilight periods, etc.)
- Event bearing, time and duration (where applicable)



Events Timeline

Definitions

- **Civil start/stop** - the period just after sunset (or before sunrise) when the sun lies between 0 and 6 degrees below the horizon.
- **Nautical start/stop** - the period when the sun lies between 6 and 12 degrees below the horizon.
- **Astro start/stop** - the period when the sun lies 12 to 18 degrees below the horizon.
- **Sunrise/set** - the moment the sun is at the horizon.
- **Moonrise/set** - the moment the moon is at the horizon.
- **Crescent (when applicable)** - shows time, azimuth and altitude of a crescent moon.

Moonset	Astro start	Nautical start	Civil start	Sunrise	Moonrise	Sunset	Civil end	Nautical end	Astro end
1:04 AM	**5:49 AM**	**6:23 AM**	**6:57 AM**	**7:27 AM**	**3:55 PM**	**6:17 PM**	**6:47 PM**	**7:21 PM**	**7:54 PM**
244.2°	*86.0°*	*91.9°*	*97.7°*	*102.9°*	*113.5°*	*256.9°*	*262.0°*	*267.8°*	*273.6°*
Waxing 64.9%	33 mins	33 mins	29 mins		Waxing 70.4%		29 mins	33 mins	33 mins

Notes:

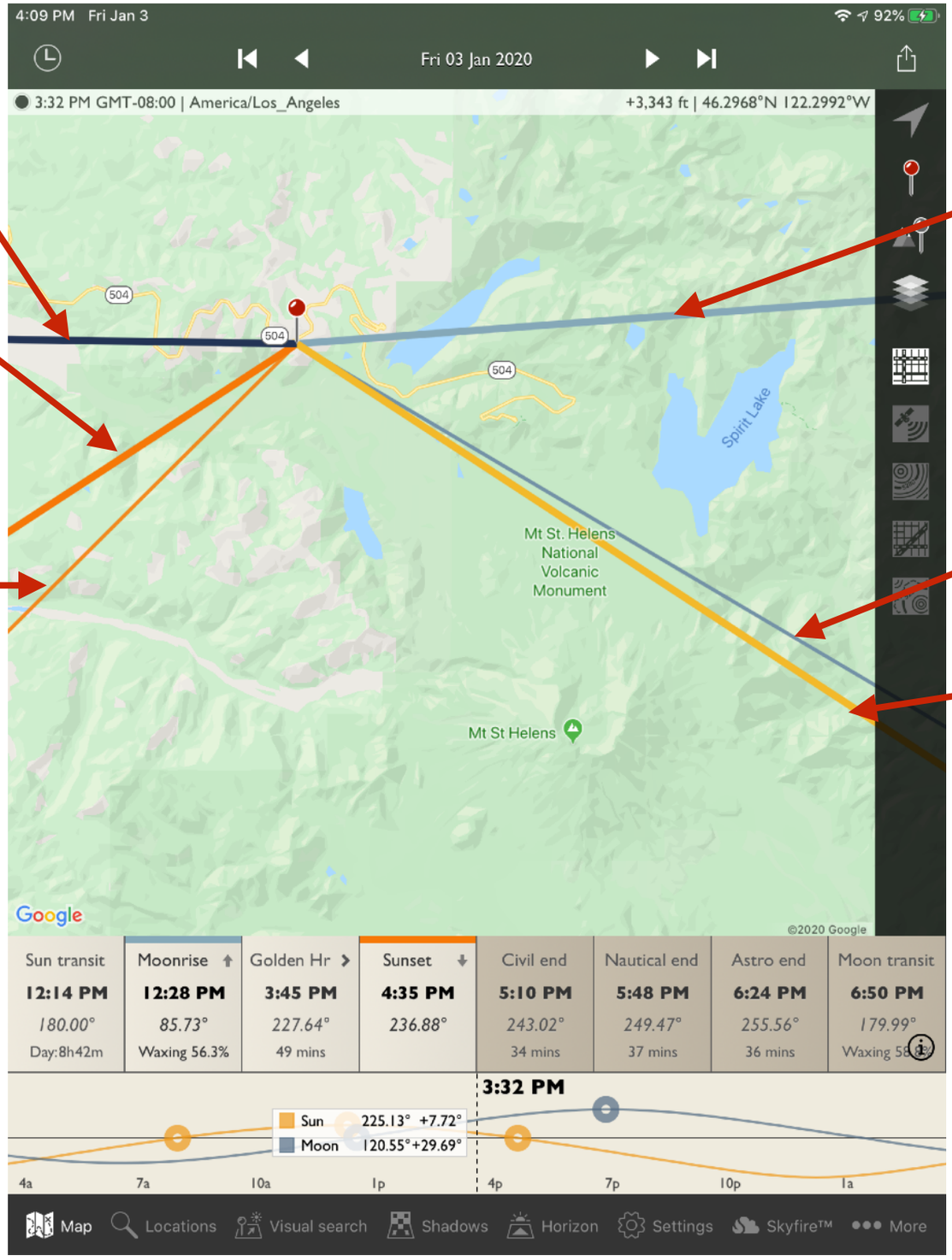
- Sun and moon rise and set times are at the theoretical horizon (does not take into account land features).
- Moonrise and moonset shows percent of moon illumination.
- Sunrise, moonrise, sunset, and moonset boxes show the corresponding colors of the lines that appear in the map for that item.
- Tap (or click) on an event to move to that time on the map.

Sun and Moon - iPad shown (iPhone similar)

Direction of the moon at moonset
(thick dark blue line)

Direction of the sun at sunset
(thick orange line)

Current direction of the sun
(thin yellow or orange line)



Direction of the moon at moonrise
(thick light blue line)

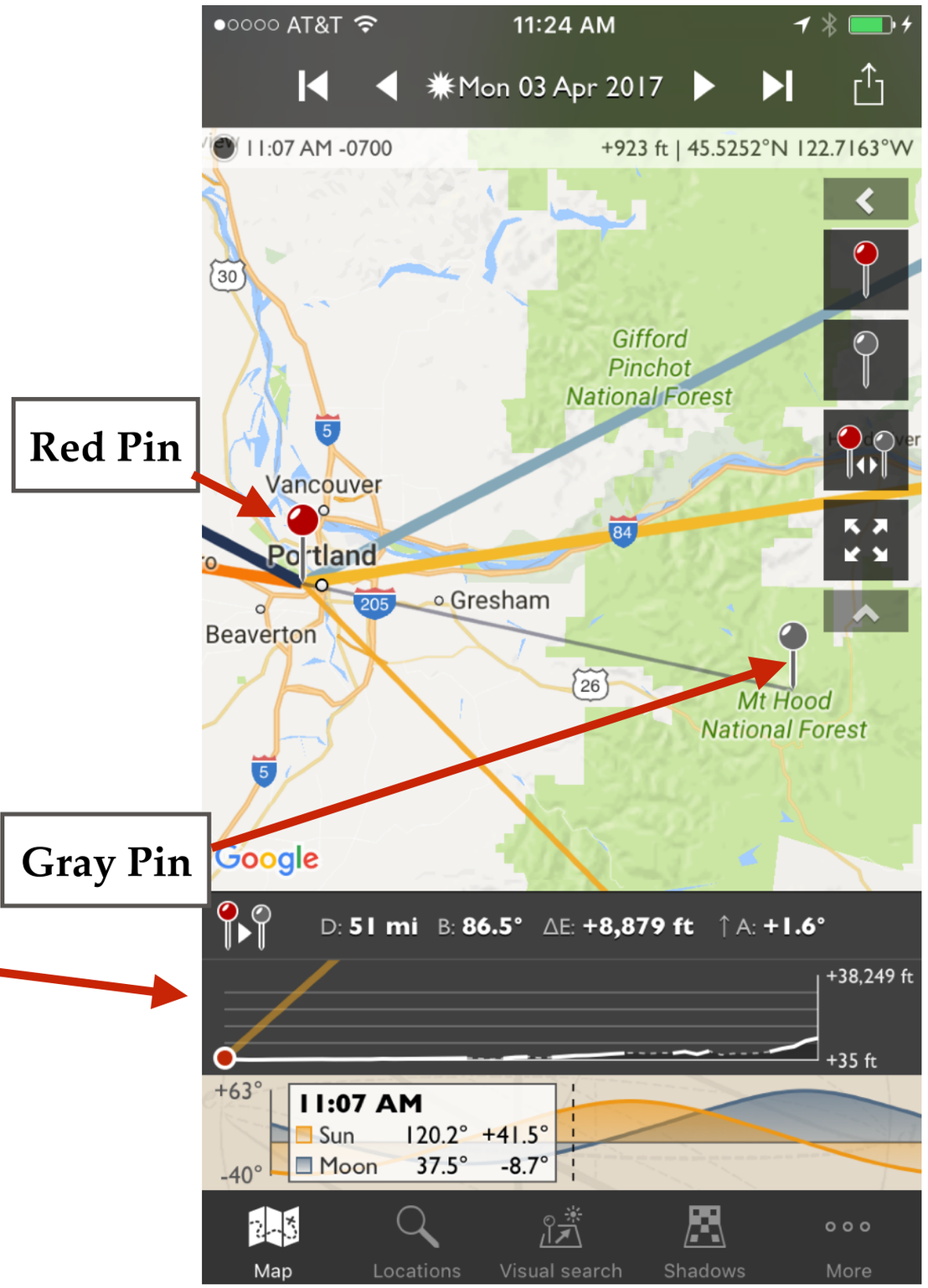
Current direction of the moon
(thin light or dark blue line)

Direction of the sun at sunrise
(thick yellow line)

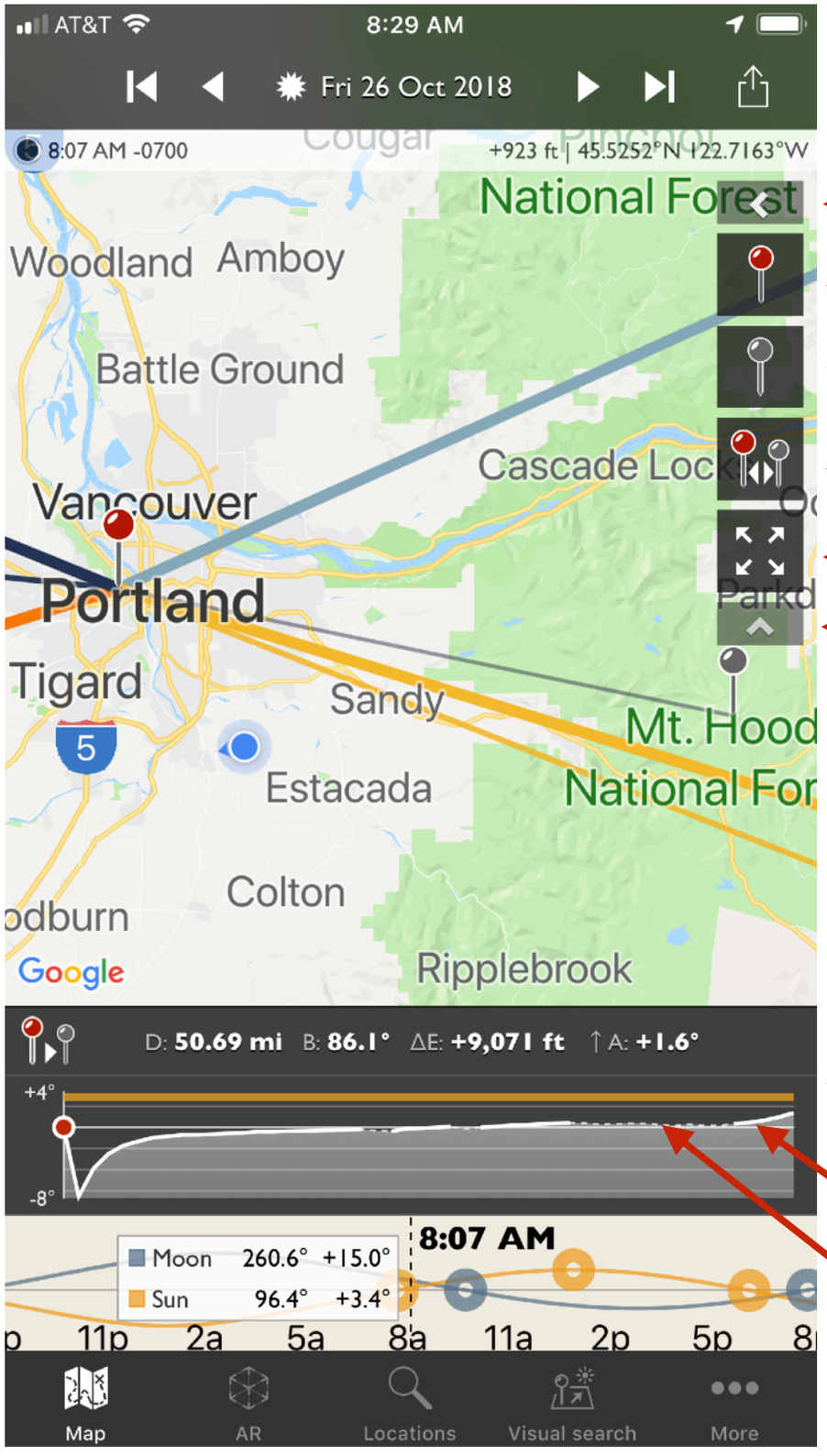
Geodesics (Gray Pin)

Geodesics - Shoot Direction and Distance

- Defines your shooting direction and distance
- Determine the best time, location, visibility, and position for your shoot.
- Determines whether the sun and/or moon is visible from your actual location.
- Tapping the gray pin activates geodesics and places the gray pin on the map.
- Events timeline replaced by profile chart.



Geodesics Screen



Disable (exit) Geodesics

Center red pin

Center gray pin

Swap red/gray pins

Fit red & gray pins in map

Hide icons (iPhone only)

Profile Chart

- Distance between red and gray pins (D)
- Difference in elevation between red and gray pins (△E)
- Bearing of red-gray direction (B)
- Altitude angle from red to gray pin (↑A)
- Sun (yellow line) or moon (blue line) position relative to profile
- Solid lines in profile indicate visible land features as viewed from red pin location
- Dashed lines in profile indicate land features not visible from red pin location

Three Ways to Move Gray Pin

NOTE: Geodesics must be enabled (gray pin on map) for any of these steps to work

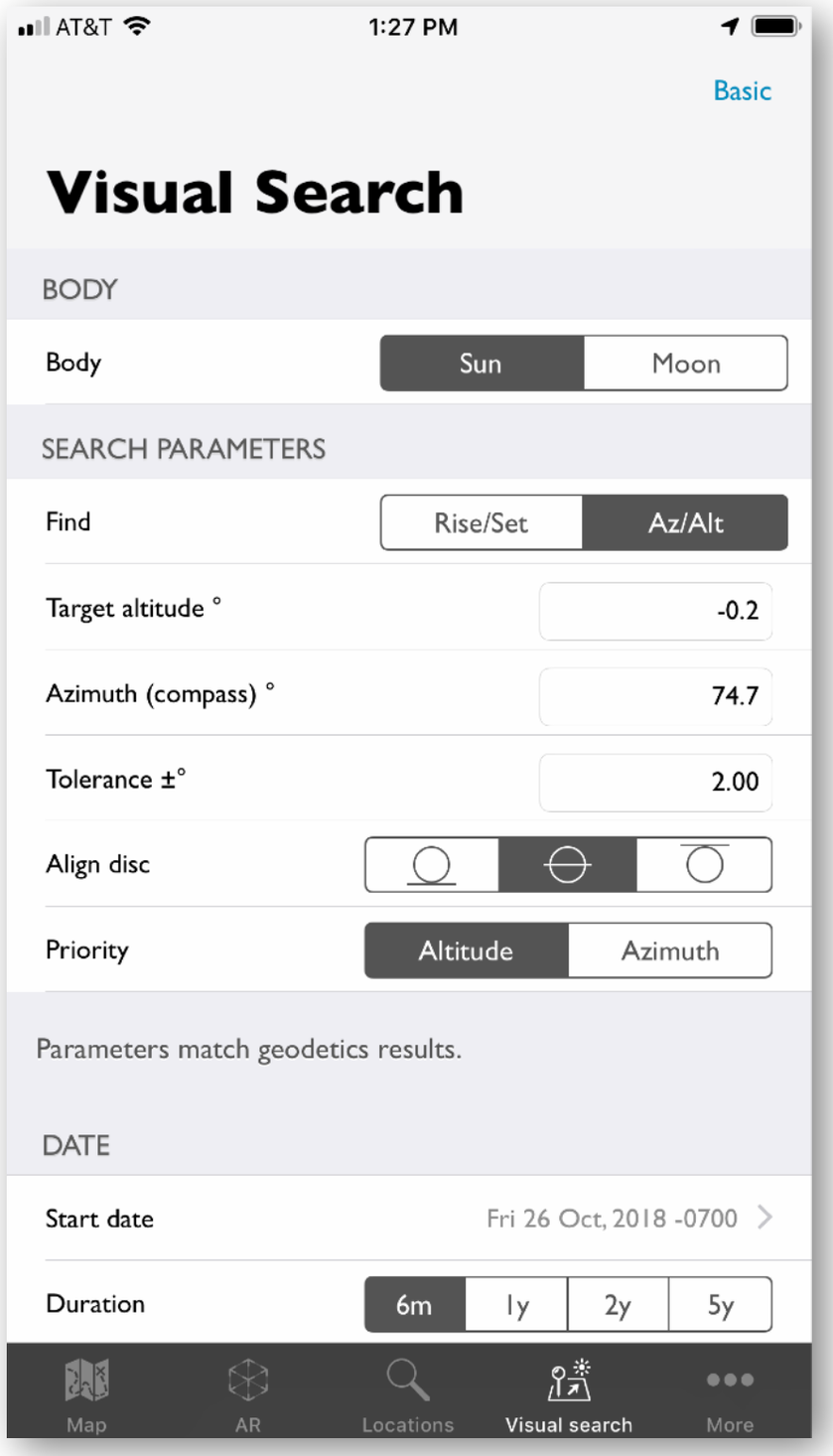
1. Manual method (most difficult) - tap and hold near gray pin until screen jumps and then drag the gray pin.
2. Cross hairs method (easiest) - move the map cross hairs to the location you want the gray pin and tap the gray pin icon.
3. Retrieve from saved location (used in this exercise) - gray pin can be set from the saved locations list.

Visual Search

Visual Search

Chances are your TPE data (position of the sun and/or moon, red pin, and gray pin) won't occur on the active date. Use geodesics data to search for days/times that may best match your data.

Visual Search allows you to determine specific times and dates when the sun or moon will be positioned relative to the gray pin based on geodesics data (red and gray pin).



Night Mode

Night Mode - iPad shown (iPhone similar)

Night Mode features:

A. View the position and orientation of the Milky Way.

B. View the galactic center (large bright spheres).

C. Line shows where the center of the GC is.

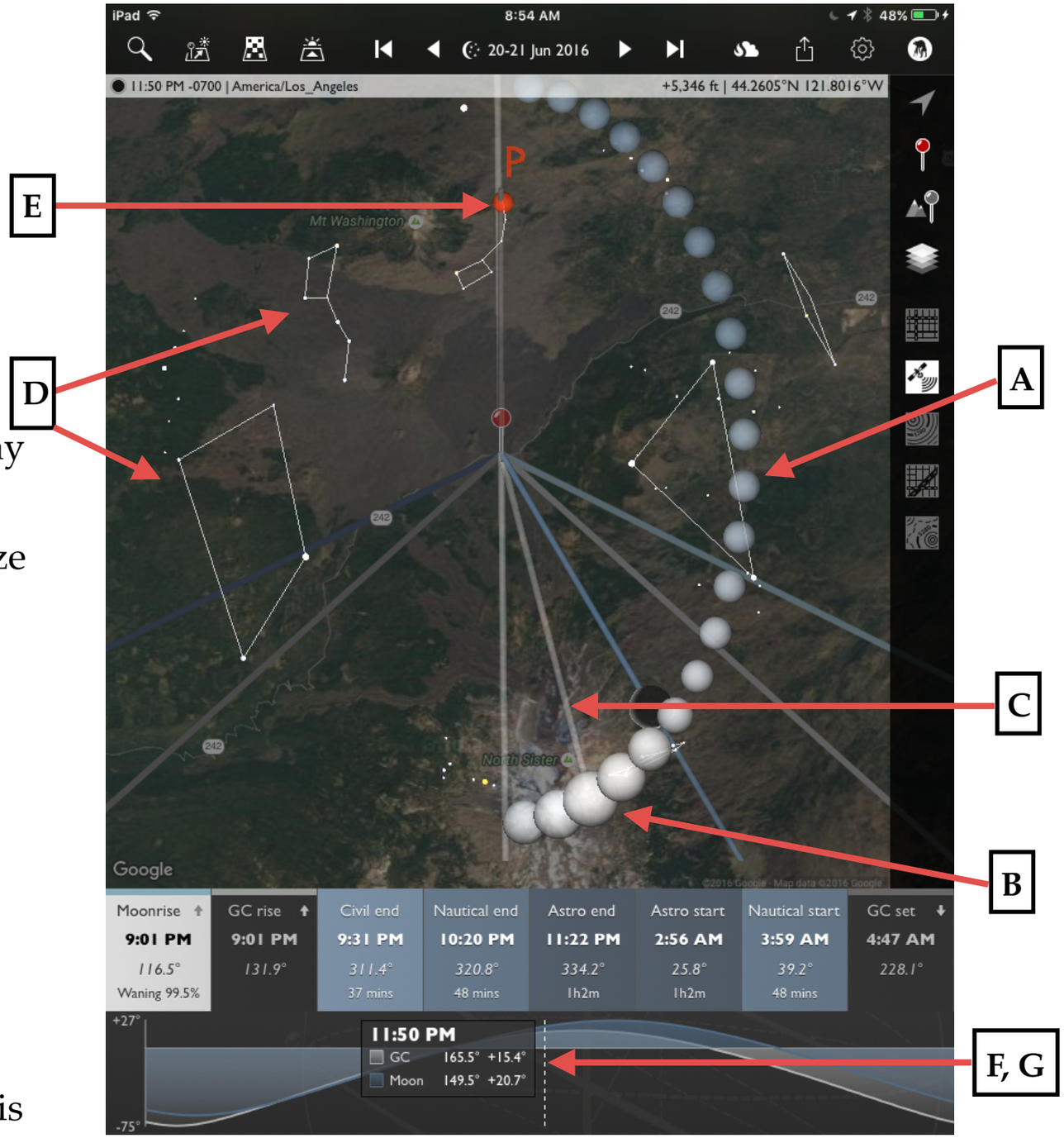
D. View major constellations relative to your viewing point.

E. View the position of Polaris.

F. Move the Events slider to see how the Milky Way moves throughout the night.

G. Moving the Events slider also helps you visualize when the Milky Way is dim (during daylight/ twilight hours) or most visible (during Astro Twilight).

H. View light pollution.



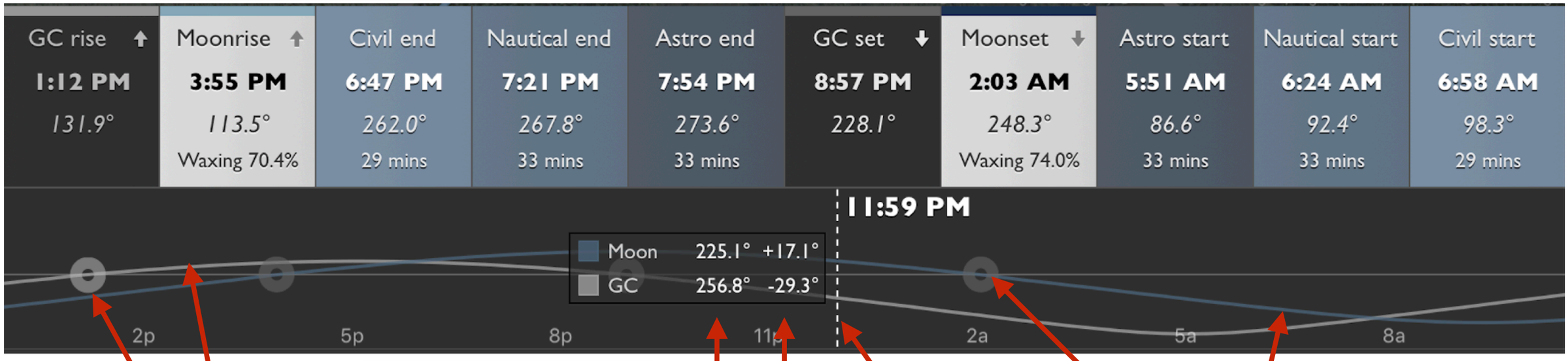
Night Mode limitations:

- Geodesics (gray pin) has little use.
- Visual Search not applicable in Night Mode.
- Land features can be difficult to see when screen is dark.

Altitude Chart and Events Timeline

Events Timeline

NOTE: Sunrise and sunset not shown in night mode



Altitude Chart

Galactic center (light gray)

Azimuth (degrees clockwise from north)

Zenith (degrees above/below horizon)

Drag timeline

Moon (blue)