Using Photo Ephemeris Web, Part 0: Sign up and Sign in

Stephen

7 minutes ago · Updated

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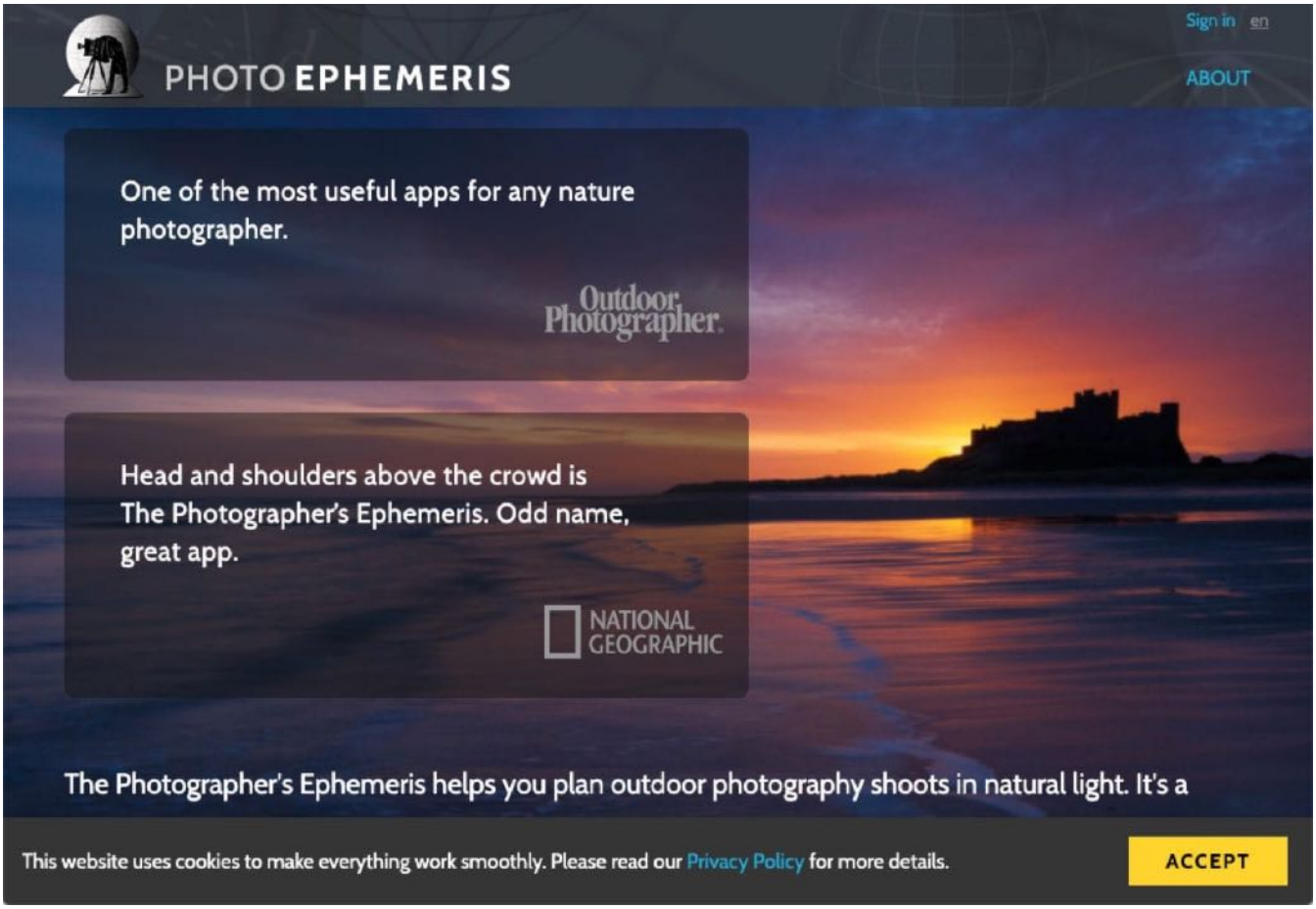
This tutorial is a quick guide to getting signed up and signed into Photo Ephemeris Web 2.0 so you can start planning your next photo trip.

> Already signed in? Skip ahead to Using Photo Ephemeris Web, Part 1: Basics

You'll find the web app app at app.photoephemeris.com. Click the link to get started - just make sure you're browsing happy with an up-to-date browser.

1) Cookies

If you're happy to accept cookies, please click the **Accept** button shown below:



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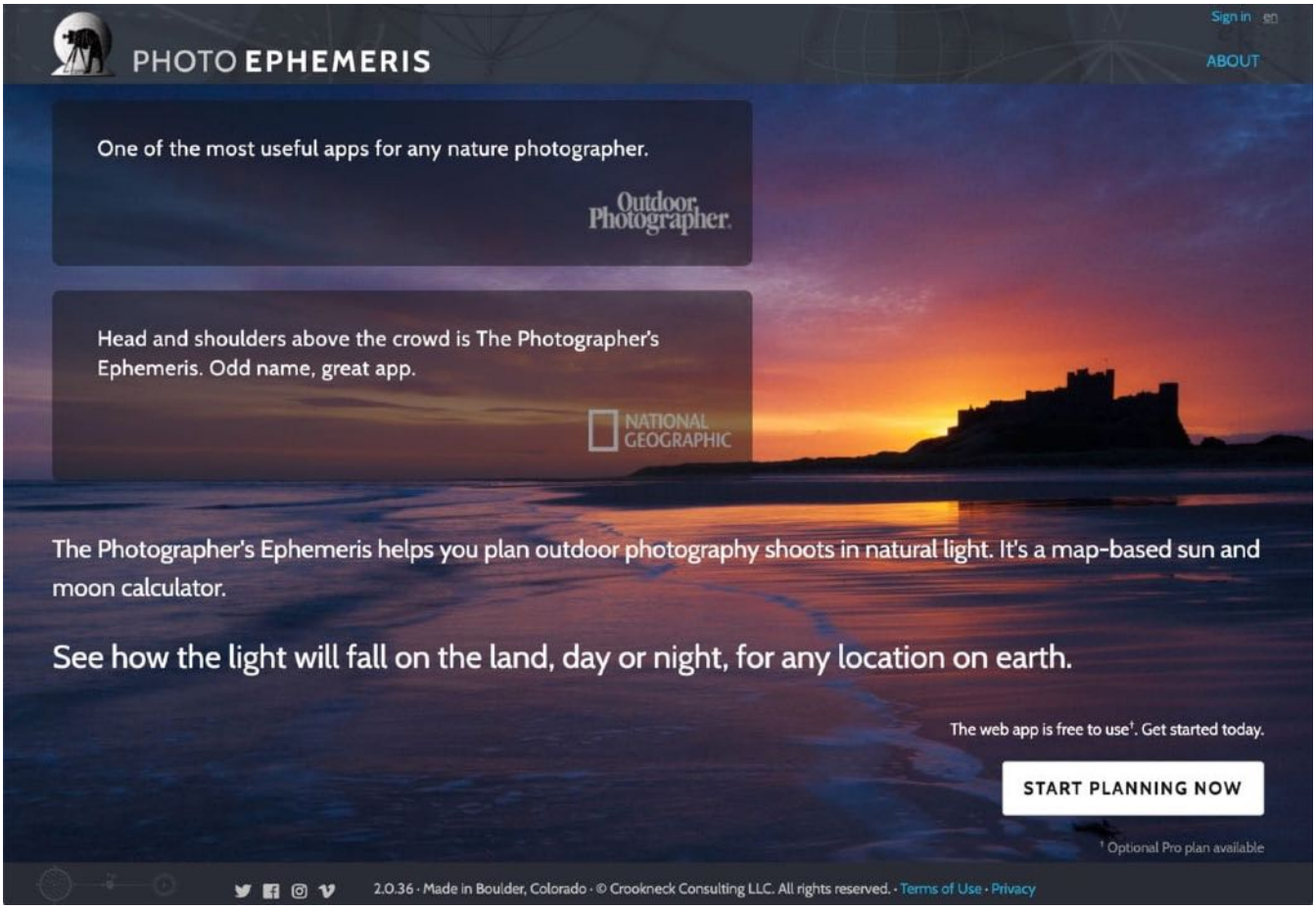
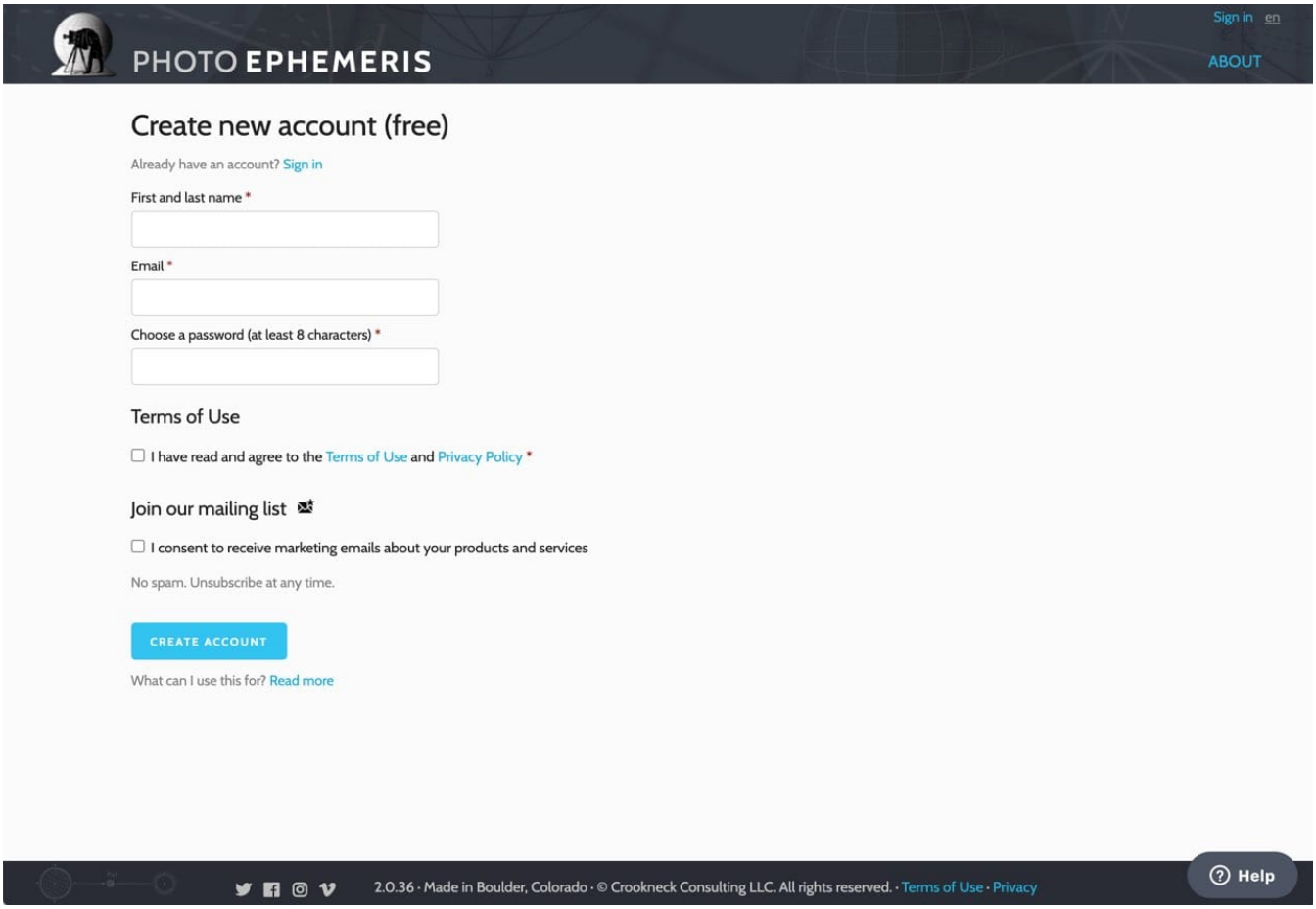
2) Start Planning

Click **Start Planning Now** to sign up:



3) Create a free account

If you don't already have an account, complete the short form to create one – **it's free**:

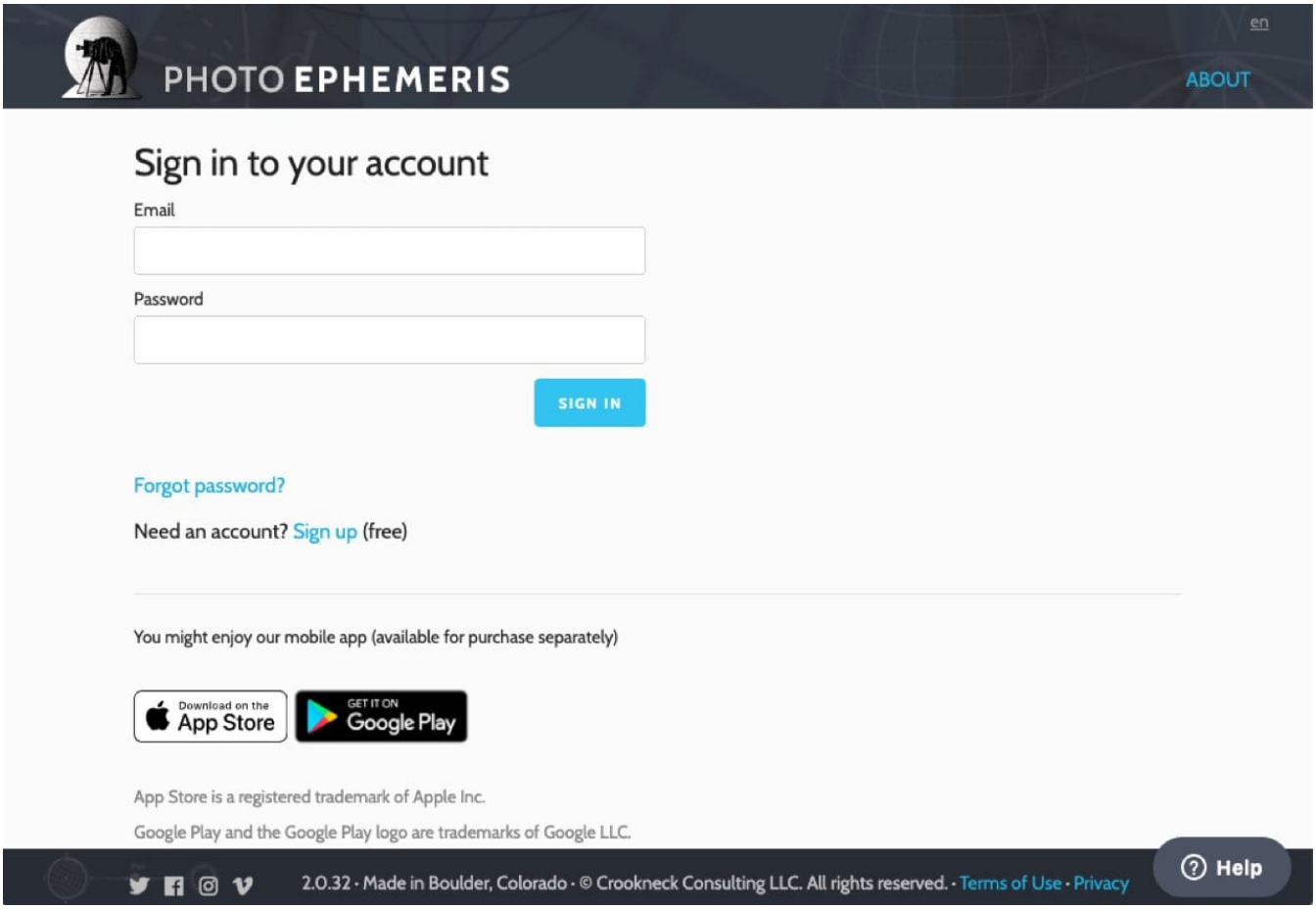


We recommend signing up for the mailing list to receive updates, tutorials, product news and more.

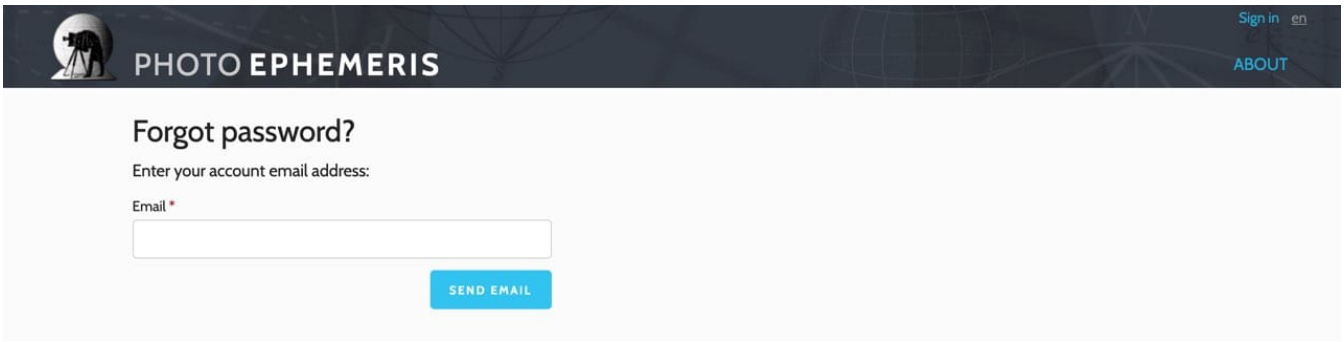
After you create your account, you will receive an email asking you to confirm your address by clicking a link. Please do this within the first day or two - you will need to verify your email to continue using the site.

4) Sign in

Sign in your new account to get start, using the email address and password you chose in Step 3:



If you're forgotten your password, click the **Forgot password?** link and enter your email address to receive a reset link:



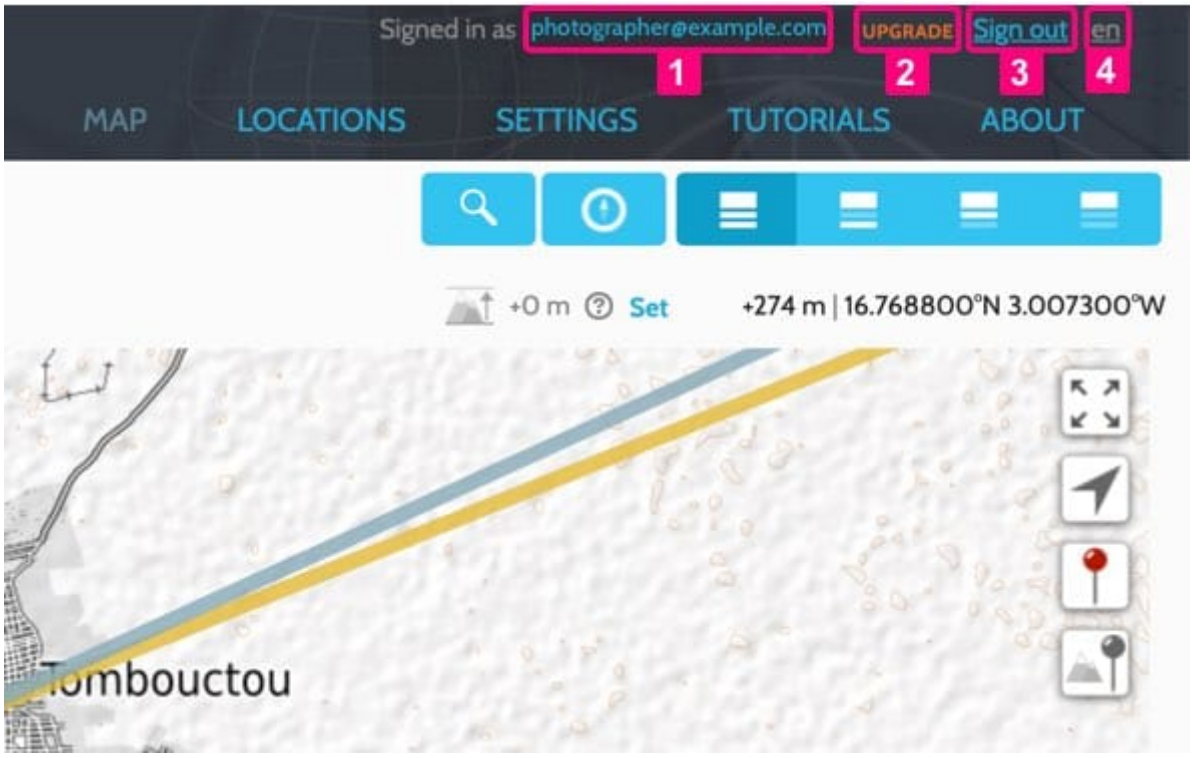
5) Get planning

Congratulations - you're up and running! You can start planning your outdoor photography - if you're ready to jump in, you can skip forward to Part 1 of this tutorial series now.

6) Manage your account

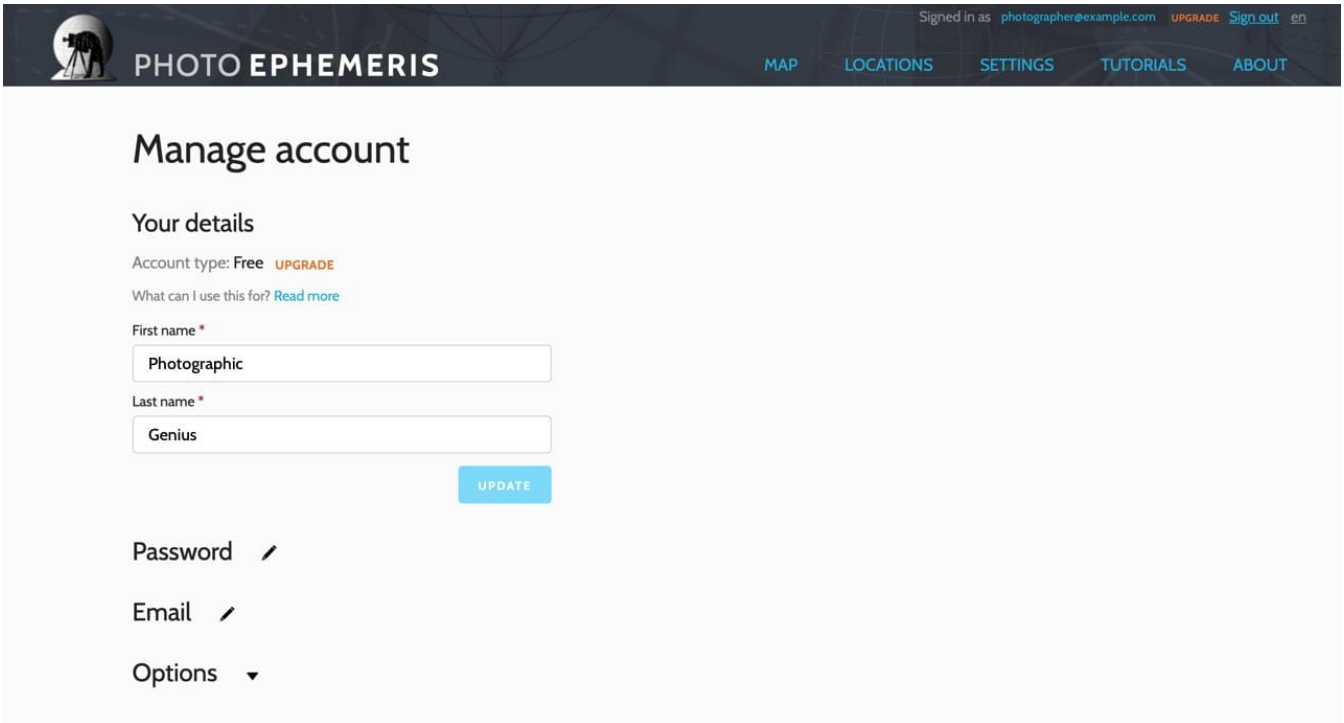
There are a few controls at the top right of the screen to help you manage your account and other

There are a few controls at the top right of the screen to help you manage your account and other features:



1) *Signed in user - click to edit Account* 2) *Upgrade to* **PRO** 3) *Sign out* 4) *Change language*

You can manage your account details by clicking on your email address, which is displayed when you're signed in:



In the **Manage account** page, you can change your first and last name, change your password, change your registered email address, or delete your account.

registered email address, or delete your account.

If you change your registered email address, a couple of things to note:

1. You will need to re-verify the new address - we'll send you a new verification link by email
2. You won't be able to delete your account if you have an active subscription to the paid **PRO** plan (cancel the subscription first)
3. Changing your account email here does not change the email address on file for your mailing list subscription, or with our online merchant of record (reseller), Paddle.com.

Sign out

You can optionally sign out of your account using the **Sign out** link at the top right (3). It's generally more convenient to stay signed in, however - you'll save on loading time, bandwidth and mouse clicks.

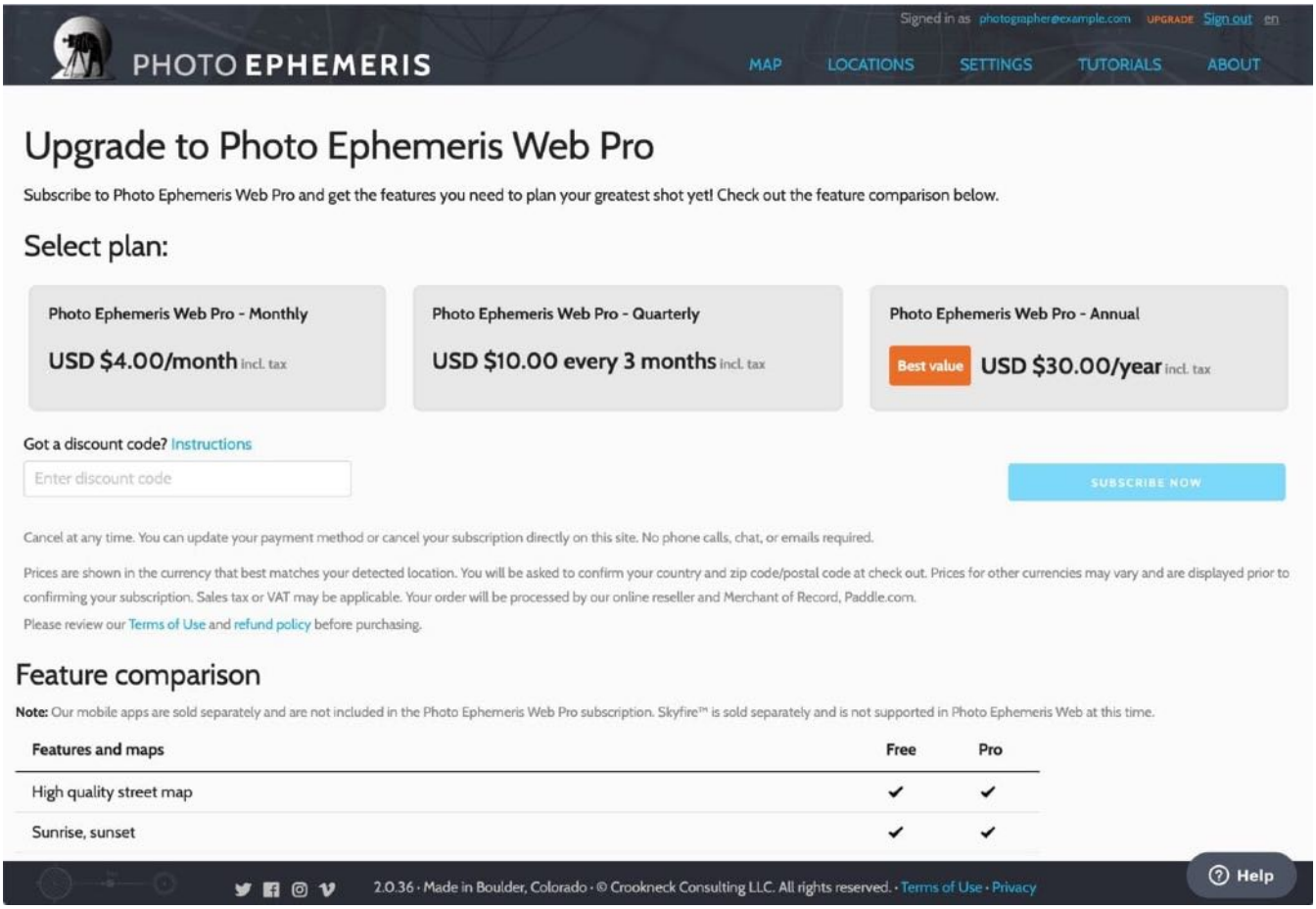
Change Language

You can change the displayed language using the country code links at the top right (4). At the time of writing, we support English and German.

7) Upgrade to PRO

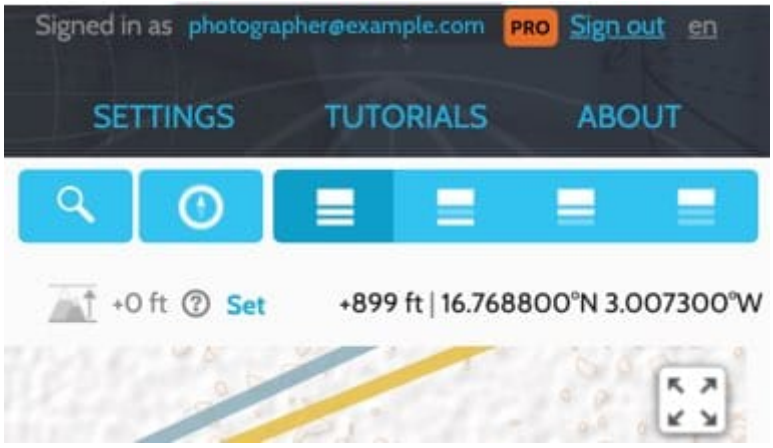
After using Photo Ephemeris Web for a while, if you find it useful in your photo planning, consider upgrading to **PRO**. The **PRO** plan includes a number of benefits, such as many additional maps, Google Street View, improved location search as you type, and more.

Click the **Upgrade** link (2) to view purchase options:



If you have a **Discount Code**, view instructions here: Photo Ephemeris Web Pro: Applying a Discount Code.

PRO subscribers will see a **PRO** badge at the top right of the screen after upgrading:



Please be sure to check out the remainder of the tutorials, continuing with with Using Photo Ephemeris Web, Part 1: Basics.

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Using Photo Ephemeris Web, Part 1: Basics

Stephen

6 days ago · Updated

Follow

Welcome to the first in a series of tutorials on how to use The Photographer's Ephemeris Web App.

TPE was inspired by a number of events during 2008: (i) a winter weekend workshop photographing at Dream Lake in Rocky Mountain National Park which opened my eyes to how to plan landscape shoots using topographic maps, compass, protractor and calculator; (ii) going to shoot Dream Lake again a few months later, and realizing I hadn't planned properly and (iii) heading up to Loch Vale, a much higher lake in RMNP, for a shoot that was a total bust.

After all that hiking (and not a lot of photos to show for it), I realized the importance of proper planning. I reasoned too that I would rather plan at my computer than purchase maps for every location I intended to visit in the world. Finding no tools that combined all the right data or which worked on a Mac, TPE was born.

The screen layout

Let's start by taking a look at the basics of the screen layout.

The most important thing of all is the primary position marker: the red pin. You can drag this freely to exactly the point you need. All information generated within TPE is taken from the position of the red pin.

At the top left, the current selected date is shown along with the time zone of the current red pin position and difference from UTC(universal coordinated time – effectively the same as GMT). You can change the

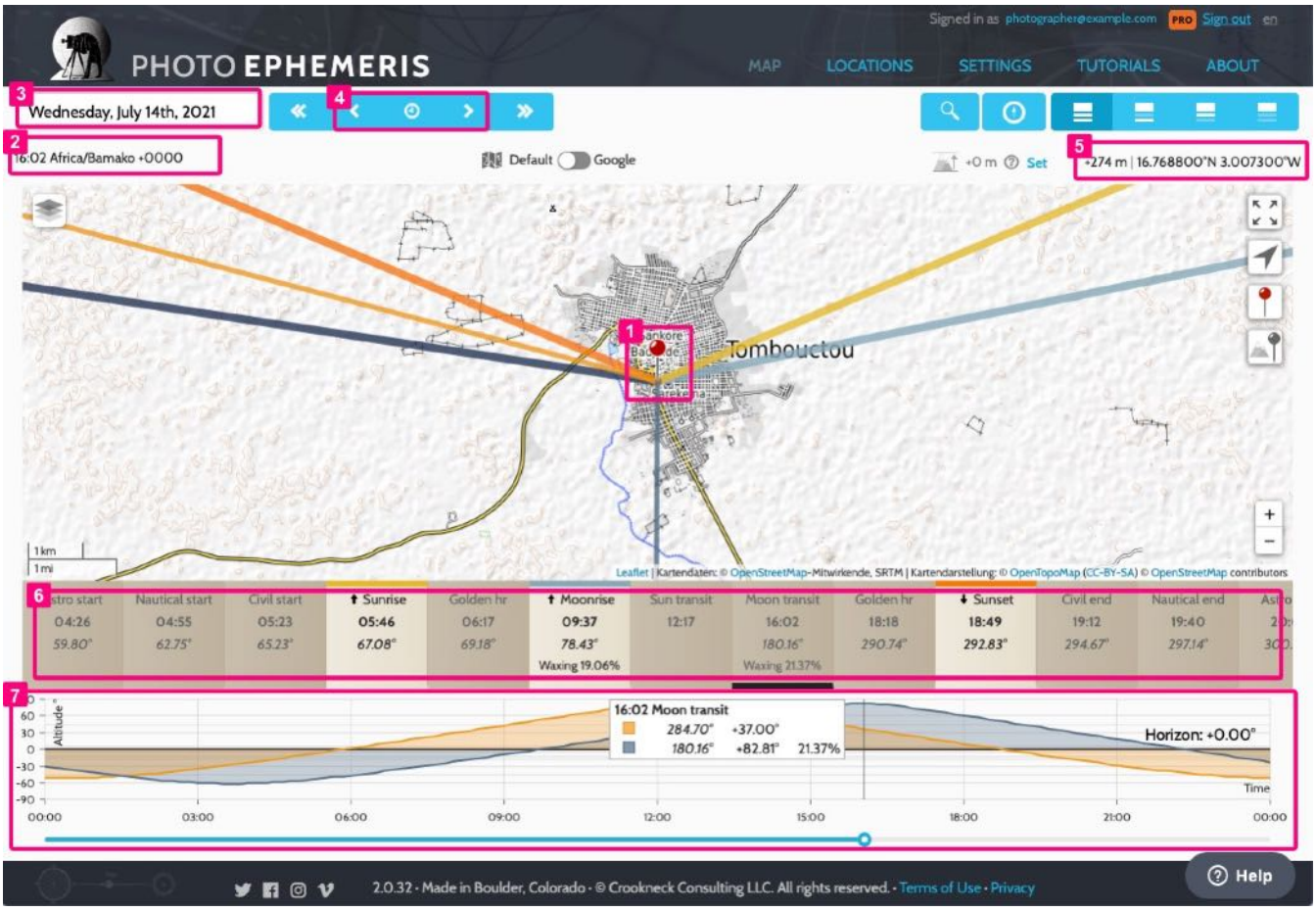
selected date using the date selector; use today in the calendar to set the date to that of your computer.

Alternatively, use the previous and next day buttons to change the date one day at a time. Use the now button to move to your computer's current time displayed in the time zone of the red pin position.

Top right above the map is where the elevation above sea level and latitude/longitude of the current red pin position is displayed.

Under the map the events timeline shows the day's events: times and directions of sunrise, sunset, moonrise and moonset (where they occur) twilight times, moon phase and new moon visibility information. On small screens you can scroll across the events timeline to view all of the day's events.

At the very bottom of the screen the chart shows 24 hour sun and moon altitudes in graphic form. You can Drag the time slider to adjust the time and see the azimuth and altitude information displayed numerically in the legend.



1. *Primary (red) pin*
2. *Current selected time and time zone*
3. *Date selector*
4. *Previous day, Now and Next day buttons*
5. *Elevation and latitude/longitude information*
6. *Timeline*

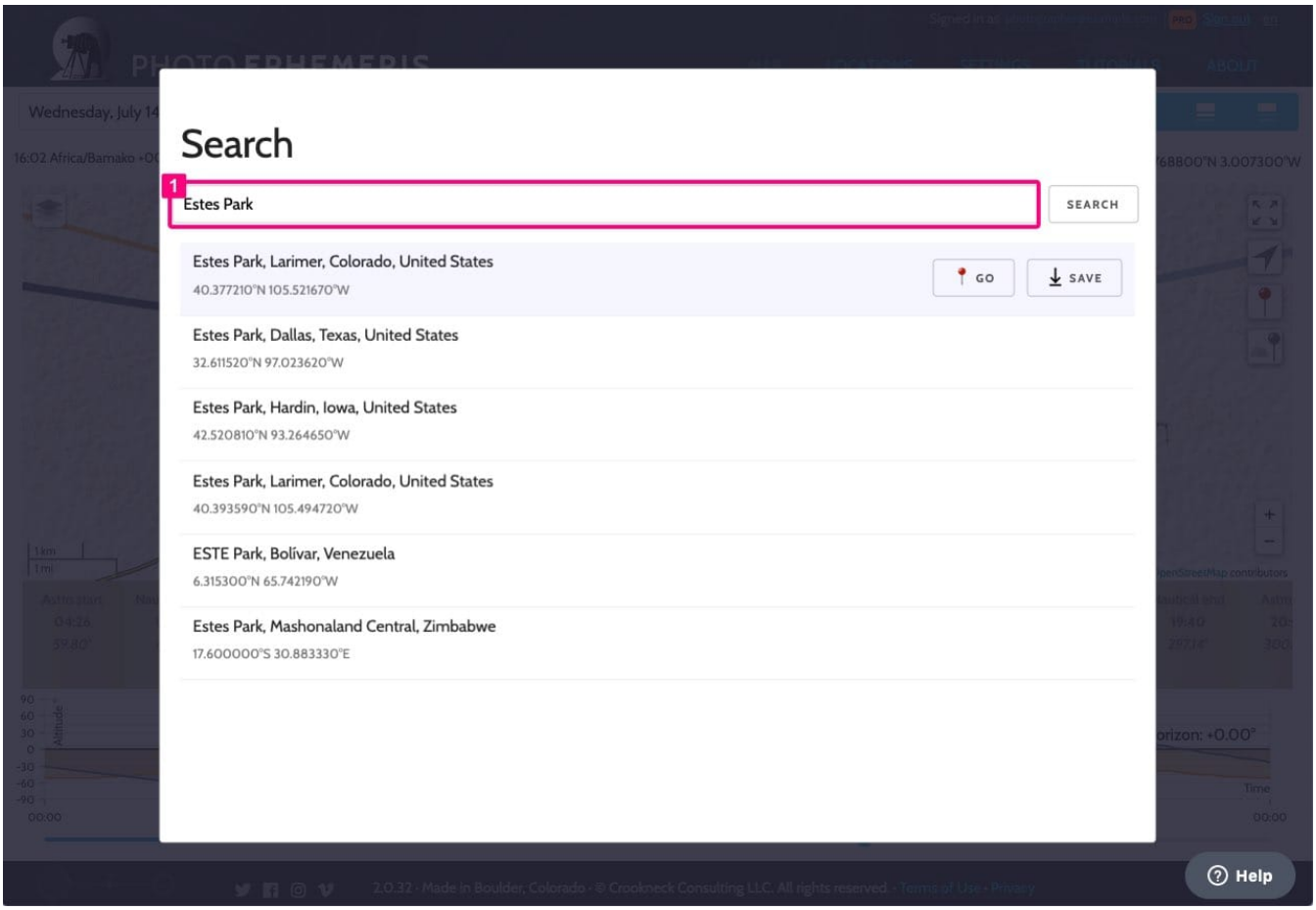
6. *Timeline*
7. *Altitude chart, time slider and legend*

Radiating out from the red pin on the map you can see the azimuths (relative to true north) of sunrise (yellow line), sunset (orange line), moonrise (light blue) and moonset (dark blue). Using the previous and next day buttons you can see the azimuth of an event change over time.

The thinner coloured lines radiating out from the red pin correspond to the azimuth of the sun or moon at the time selected on the time slider at the bottom of the chart. Click and drag the time slider to see the azimuth and altitudes of the sun and moon change over the day.

🔍 Finding a different location

I'm guessing you're probably not planning a shoot in Timbuktu, so let's find somewhere else.



1. *Click the search button above the map to display the Search window. Type the name of the place you're searching for*

We will recreate the trip I took in 2008 but for a date in 2021. Start by typing into the location text field the name of the closest town: Estes Park

Press **enter** to begin the search, or click the search button adjacent to the text box. (If you're a **PRO**

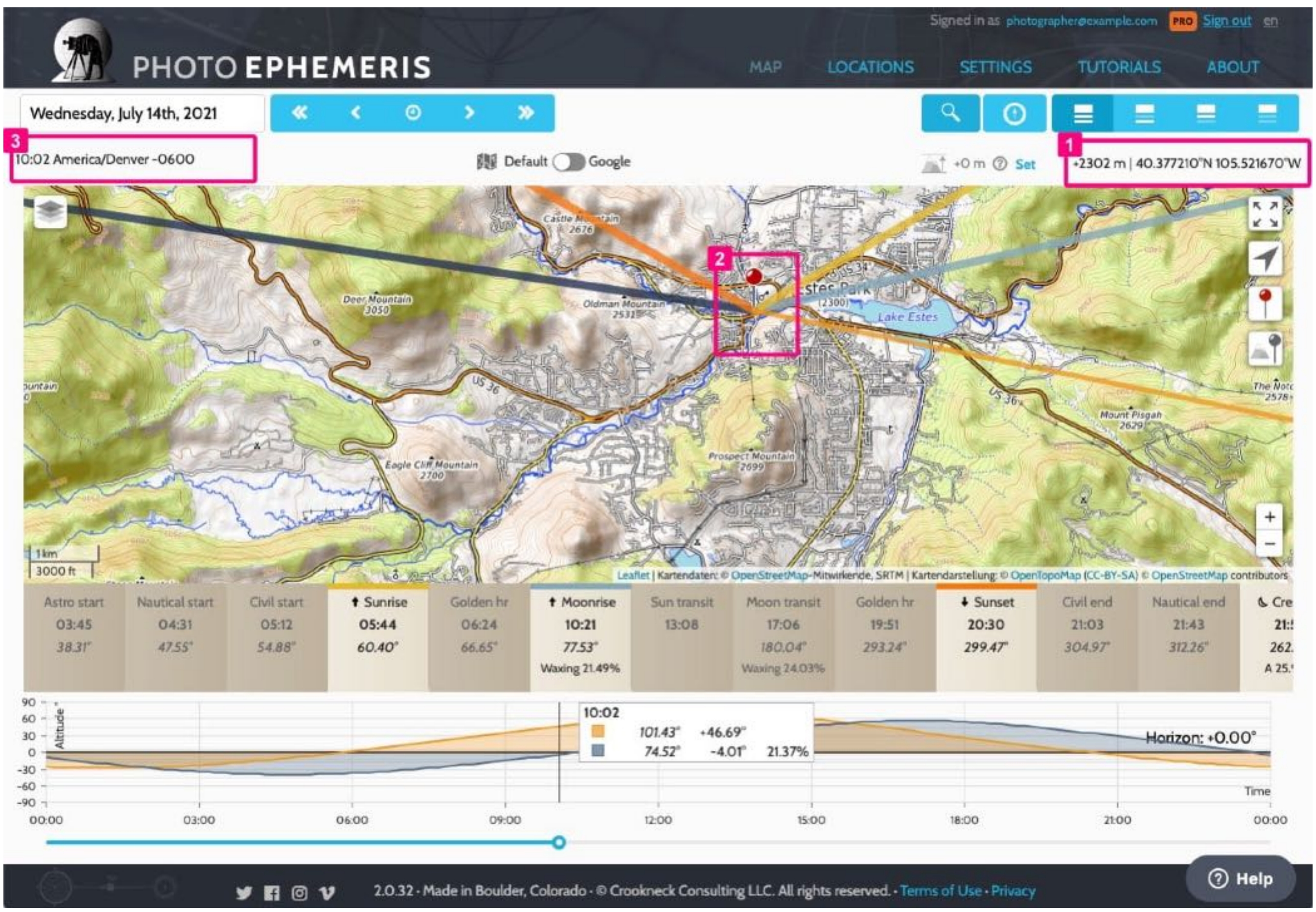
subscriber, you'll see results as you type.) The app will display matching results. Click the **Go** button for the first result to reposition red pin to this location on the map.

You may wish to specify a county, state or province as well as the town name, in order to get the result you want. After all, there's Paris and there's Paris, Texas.

The new location

OK. Now we're in Estes Park, Colorado, USA near the east entrance to Rocky Mountain National Park. There are few things to note:

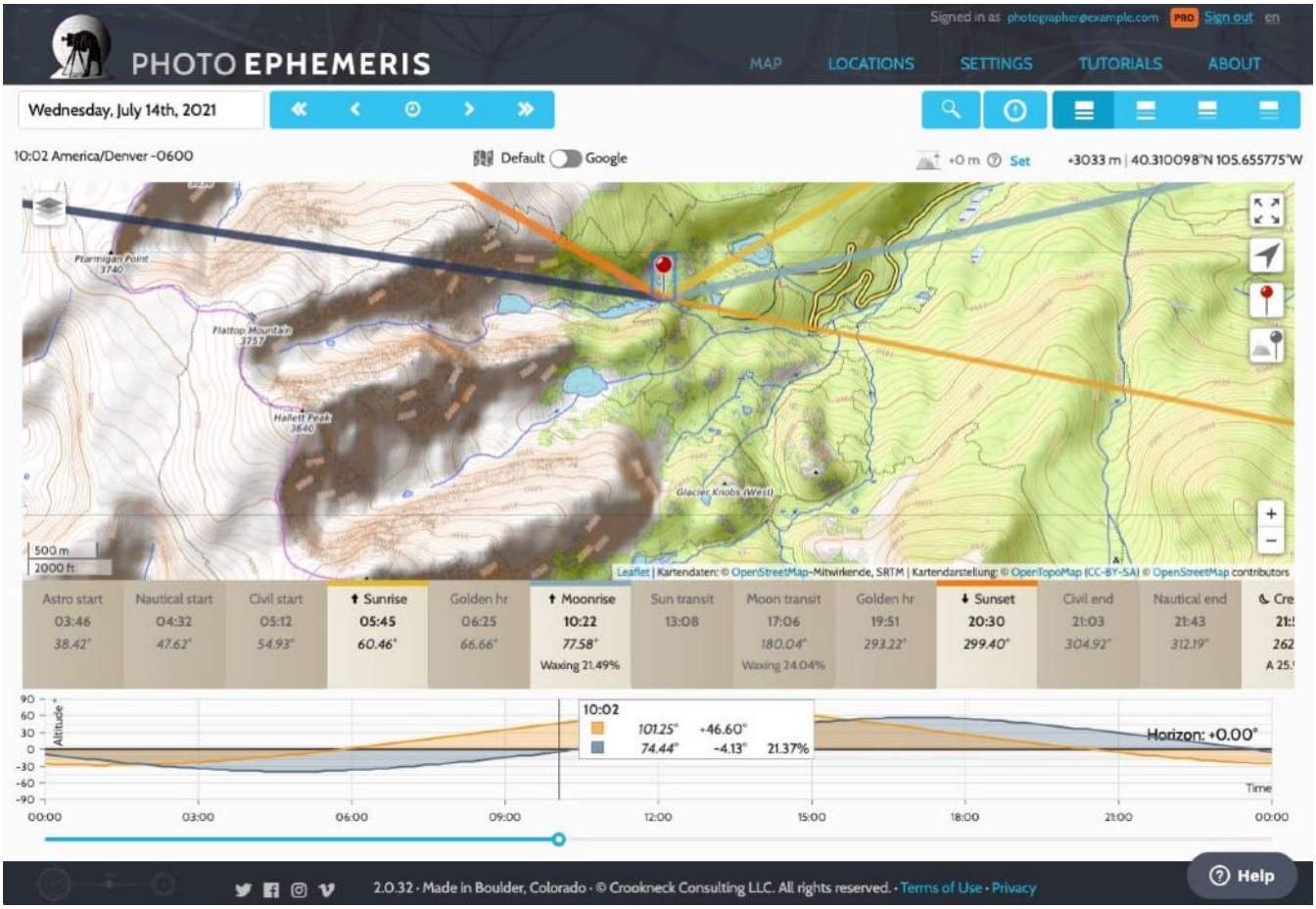
- The elevation and lat/long have updated reflecting the new location
- The red pin lies over the town of Estes Park
- The time zone has changed to 'America/Denver'. TPE will automatically determine both time zone and daylight saving rule for any place and date you select



1. [illegible]
2. *Primary pin*
3. *Time zone of the primary pin location*

Moving into the park

Let's assume we're going to shoot sunrise at Dream Lake. You can manually pan around the map, zoom in and out and drag the red pin to a precise position.
I've moved the red pin to the eastern shore of the lake, from where a photograph of Hallett Peak and Flattop Mountain may be composed.



Where will the light fall?

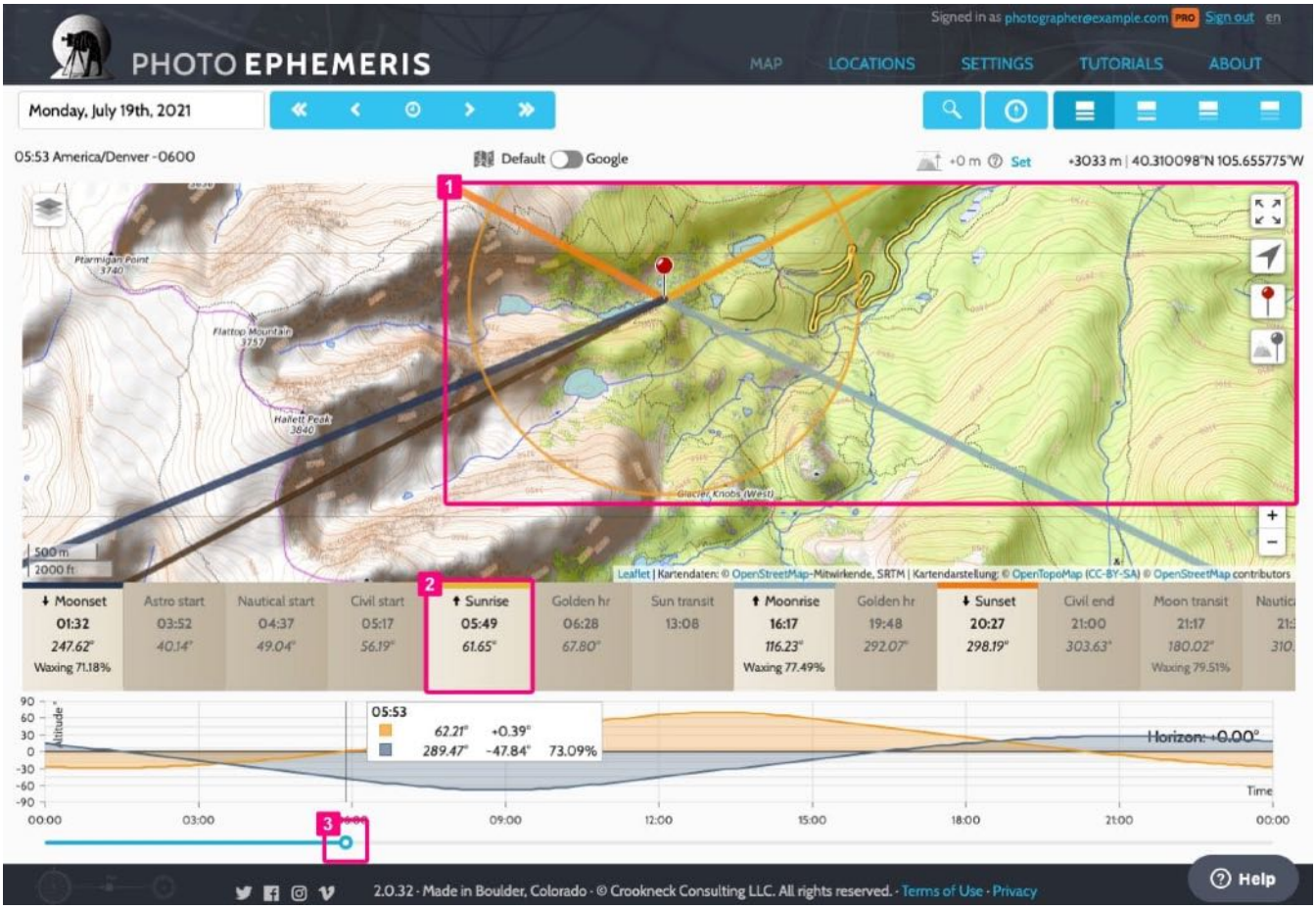
The yellow sunrise line terminates at the red pin position, but our subject lies to the west. As you drag the time slider the sun and moon +6° shadow circle will appear (you can find out more about that feature here - but it's fine to leave it for later too).

I've set the date for Monday 19 July 2021. Look in the timeline and you can see the sunrise is at 05:49. Clicking on this event in the timeline sets the selected time of day to that moment. Use the time slider to advance the time a couple of minutes (or click once on the slider and use your keyboard cursor keys to advance in ten second increments).

The dark line overlaying the sun extension line is the sun shadow line. Advance the time slider to see this shadow line shorten as the sun gets higher in the sky. Notice too that once the sun rises above +6˚, the circle turns black. The yellow circle is just a visual way of indicating when more golden light is typically available.

Click the sunrise event in the timeline again to go back to sunrise and advance the time slider by a couple

Click the sunrise event in the timeline again to go back to sunrise and advance the time slider by a couple of minutes:



1. *+6° shadow circle is shown as the time of day is adjusted with the time slider*
2. *Sunrise time is shown in the timeline*
3. *Time slider is now set to 05:53*

On this date it's clear that the rising sun will come from the north east providing imperfect illumination of Dream Lake and the valley walls above - particularly the north side of the lake, which will be in shadow. Perhaps this is not the perfect time of year for the image...

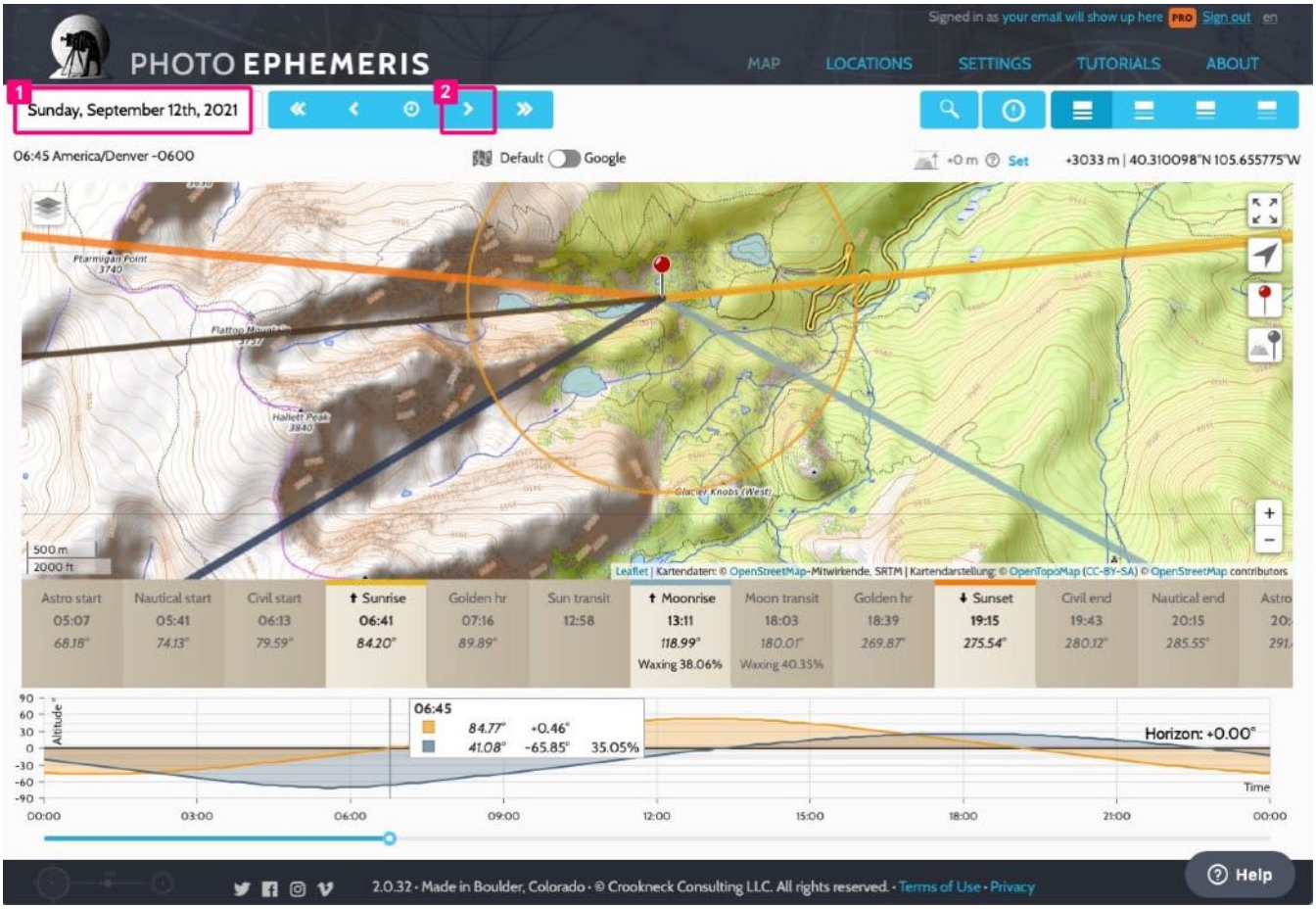
Alternatively, in the above example, you could reposition the marker farther up the valley to see where the light comes from. There are other good reasons to take this approach too, which we'll cover in a subsequent tutorial.

A better date

Let's skip a few weeks ahead to Sunday 12 September 2021, using the date selector or advancing day by day using the Next Day button. As we adjust the time of day, we can see that the rising sun will illuminate the drainage above Dream Lake perfectly, providing the possibility of good light conditions.

The sunrise this time is 06:41, great news! That means you can also have a slightly longer lie-in and still

make the shot.

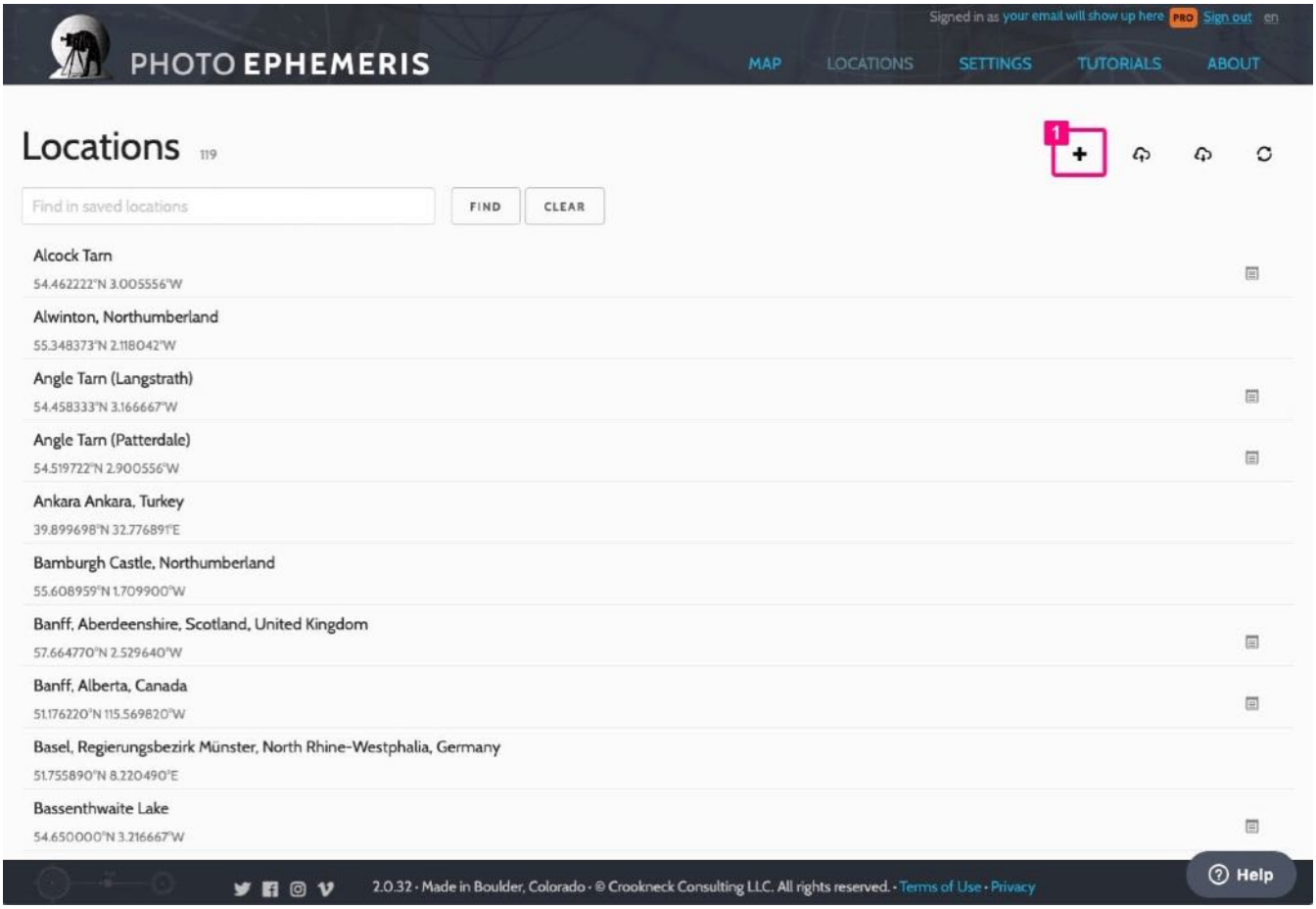


1. *Date selector*
2. *Next day button*

Saving the location

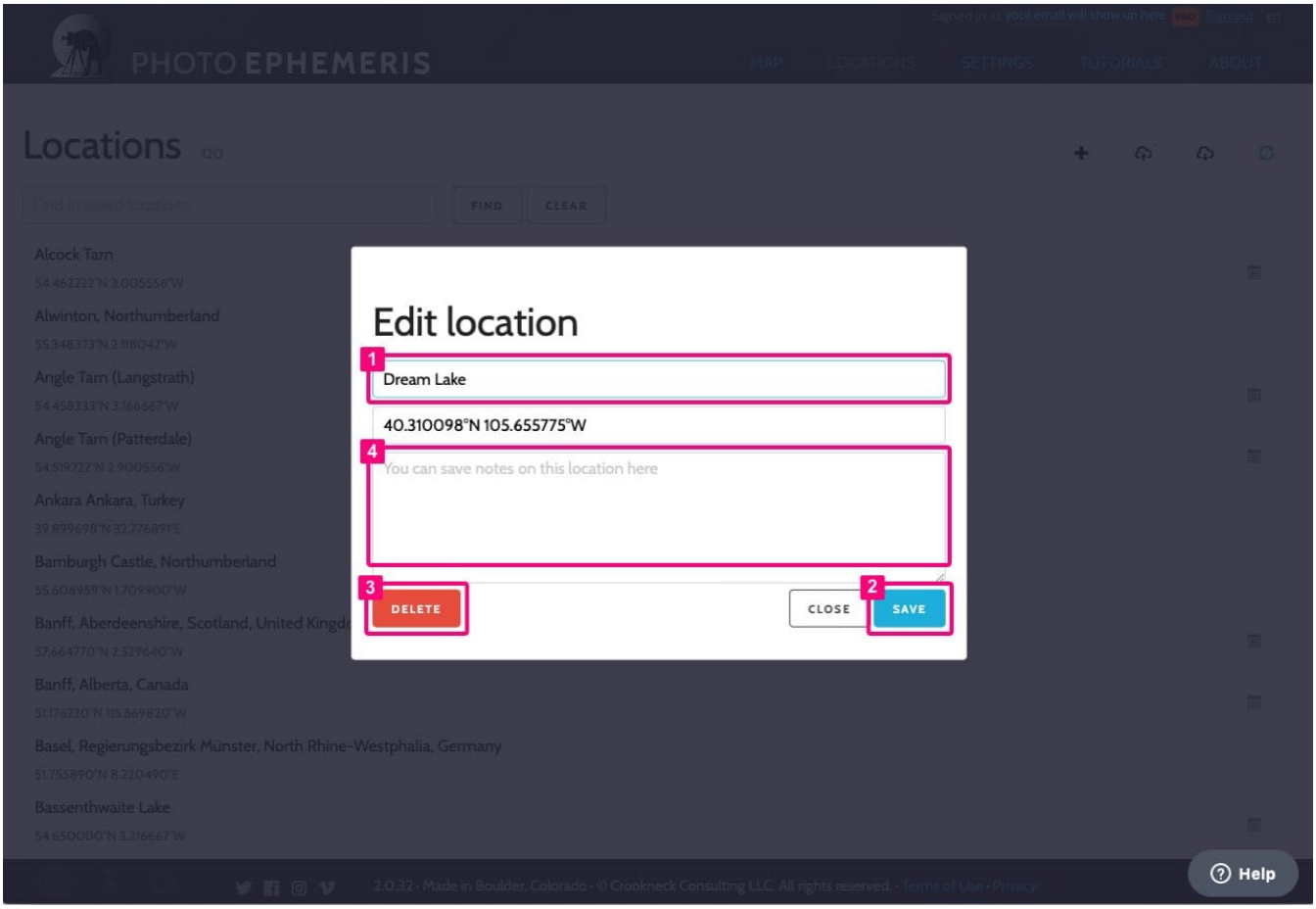
Once you have a location identified, you may wish to save it for future use.

Click **Locations** in header to view your saved locations. Click '+' to save the current primary pin location:



1. *Add primary pin position as a saved location*

You can give a name to the saved location in the Title field and optionally enter some notes for future reference in the Notes field. Click Save to update with your changes. You can also delete a saved location by clicking the Delete button.



1. *Title field*
2. *Click Save to save your changes*
3. *Click to delete*
4. *Optionally, type notes for this location.*

That covers the basics. The same principles apply to any location you want to scout, including cities, for example, when will the full moon rise along 42nd Street in Manhattan.

Next up: Using TPE Desktop Web App, Part 2: Beyond the Basics

5

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Using Photo Ephemeris Web, Part 2: Beyond the Basics

Stephen

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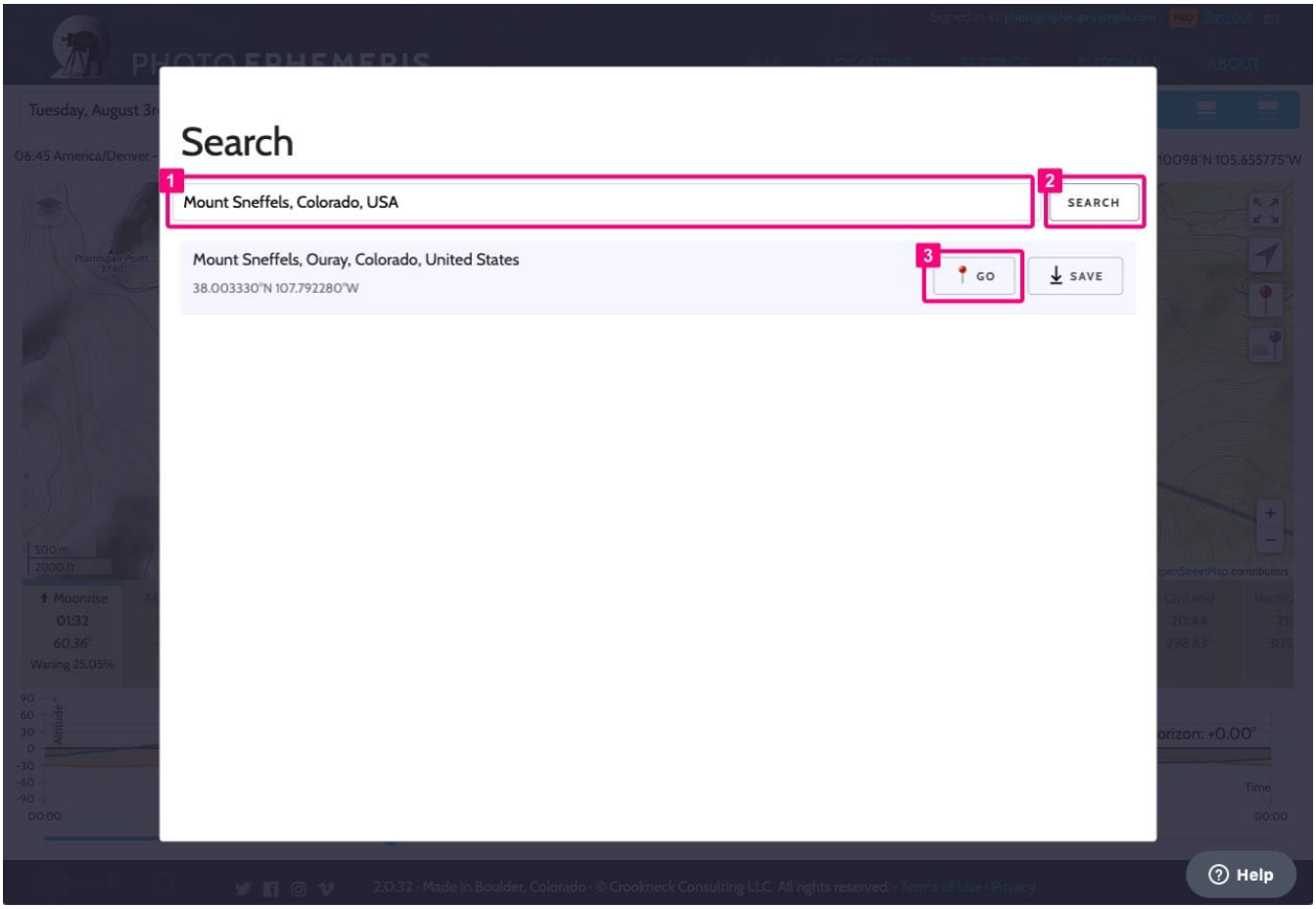
This is the second in a series of tutorials on *The Photographer's Ephemeris* desktop web app.

We covered the basics of using the program in Part 1. In Part 2, we'll cover the guts of TPE: the timeline and the chart. We'll also discuss screen sizing, take a brief look at twilight and see how TPE sets out information on shadows.

This tutorial is based on version 2.0.32.

Choosing a location

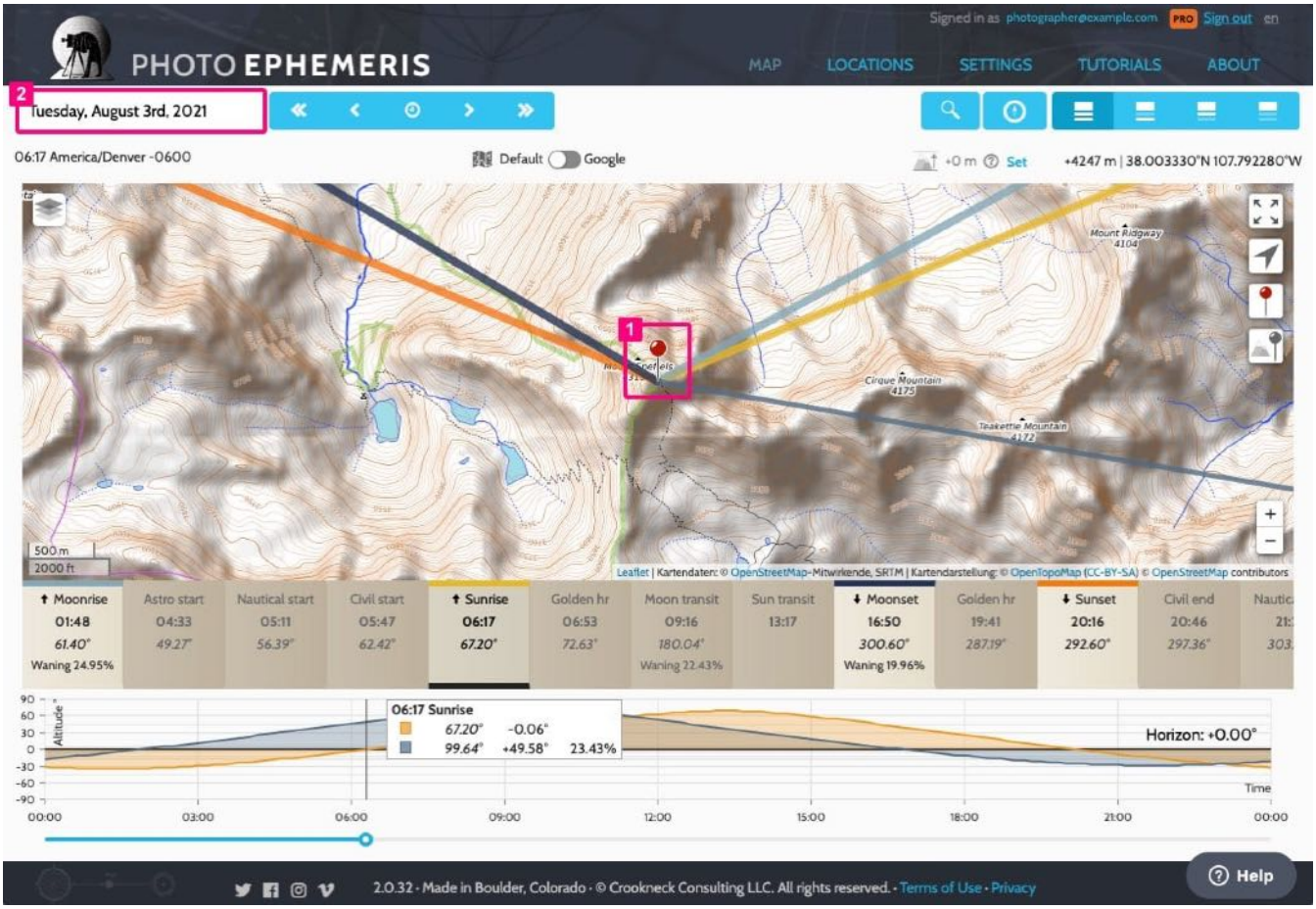
First things first: we need to choose a location for this tutorial that lets us illustrate the relevant features. To get started, let's find our location. Click the **Search** button above the map to open the search form.



1. Type “Mount Sneffels, Colorado, USA”
2. Click search or hit return to perform the search. (If you're a **PRO** subscriber, you'll see results as you type.)
3. Click **Go** on the first displayed result

You should see the primary map marker (the red pin) at the summit of Mount Sneffels, one of Colorado's finest fourteeners (summit over 14,000ft). If you want to follow along, set the date to 3 August 2021. (One nice thing about TPE is that you can look backward as well as forward in time: the information is correct for the date and red pin position you have selected.)

To change the date in the calendar: click on the date selector, choose the date from the calendar, or just type it into the text field and hit enter. Your screen should look something like this:



1. *Primary pin is at the summit of Mount Sneffels*
2. *Date is set to Tues Aug 3 2021*

An introduction to the Timeline

Let's move the red pin to the southwest, along the trail above the highest of the three Blue Lakes. (Why there? Why then? I was there and took some photos! You can see a couple of the of the images here and here.)

You can center the map on the red pin by holding down Shift and clicking the centre pin button, top right on the map, or by using the keyboard shortcut: *Shift C*

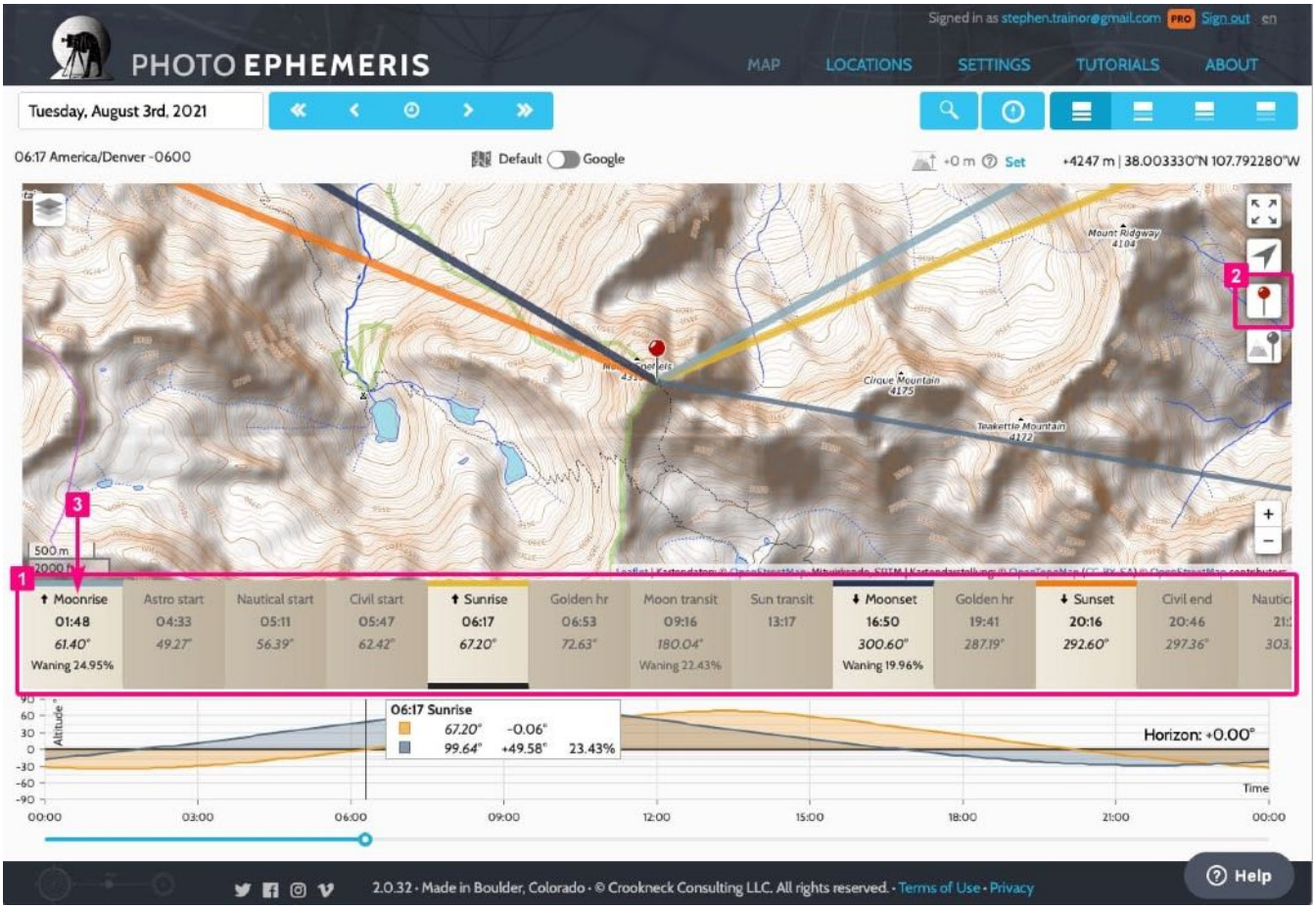
Now, look at the Timeline below the map.

You can see from the timeline that the first "event" for 3 August 2021 is moonset at 01:48.

The next three events are the three standard twilights: astronomical (12-18° below the horizon), nautical (6-12°) and civil (6-0°). After that comes sunrise, golden hour, moon transit, then sun transit, and so on. We define golden hour as the time between sunrise and when the sun climbs to +6° above the horizon (and the time between −6° and sunset). Transit is the time when the sun or moon crosses the local

horizon (and the time between +6° and sunset). Transit is the time when the sun or moon crosses the local meridian (due north or due south) - typically this is also the instant of highest altitude (elevation angle) above the horizon, known as culmination.

The time of moonrise and set vary significantly through the month: certain days will not even have a moonrise or set event. The other information in the moonset box is the azimuth of the moonset, its phase and its percentage visibility. If this were a new moon or a full moon there would be additional information in the box.



1. *Timeline for 3 August 2021*
2. *Recenter the red pin on the map*
3. *Moonrise at 01:48 is the first event of the day*

Size is everything

At this point I want to draw your attention to screen sizing. I am using a small screen for this tutorial and not all of the event information in the timeline is viewable at this size. If you have a small screen just click and drag the timeline left and right with a mouse (or use a two-finger scroll with a trackpad) to view all of the events in the timeline for the day.

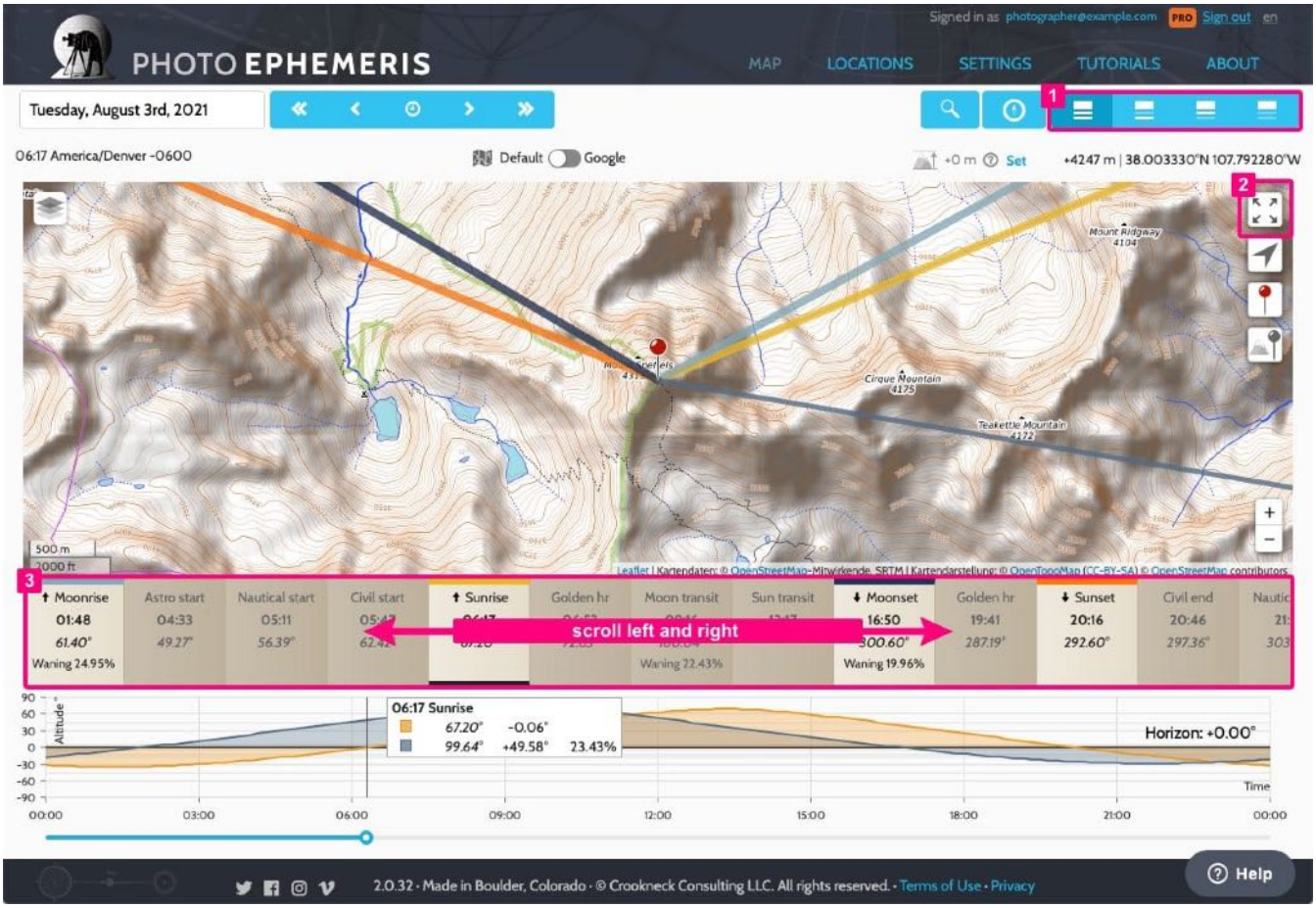
When panning the map in search of a location, it is sometimes desirable to have a bigger map area. There are some controls that allow you to achieve this.

Look at the four blue buttons to the right above the map. They control what is displayed on screen. From left to right:

- Show map, timeline and altitude chart
- Hide timeline
- Hide altitude chart
- Hide both timeline and altitude chart

You can cycle through these options using “T” key on your keyboard.

In addition, there is a Full screen button at the top right of the map which expands the viewable map area by hiding the page header and footer.



1. *Display controls*
2. *Full screen mode toggle on and off*
3. *If you have a narrow window, scroll left and right on the timeline to view all of the day’s events*

An introduction to the chart and time slider

For this section of the tutorial, ensure both the chart and timeline are visible.

Look at the chart: it displays the altitude (elevation angle) of the sun and moon over the course of the

selected day, the sun in orange, the moon in blue.

The time slider, below the chart, allows you to change the time of day.

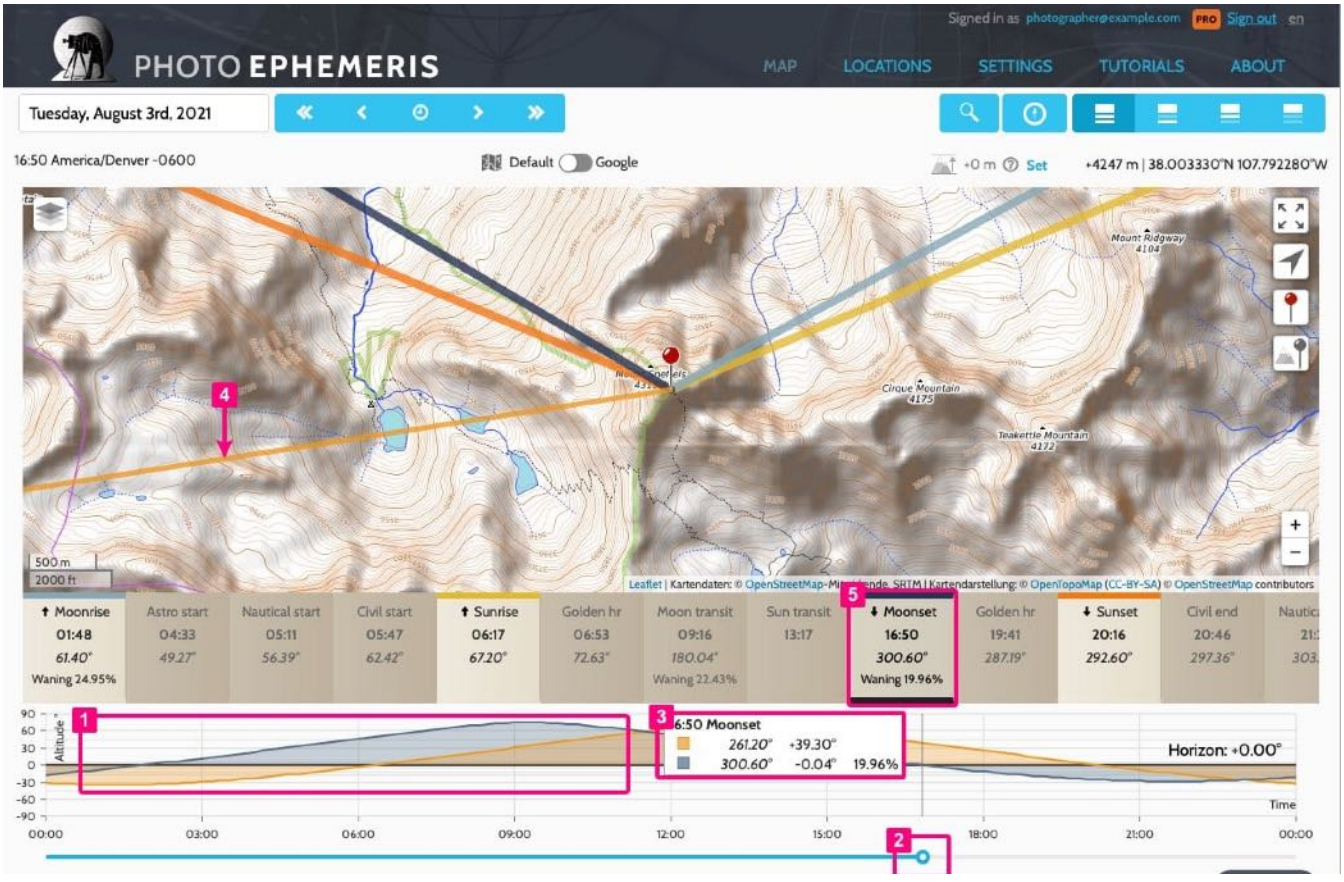
Scrub the time slider left and right. The legend moves with the slider and shows the time selected, plus the azimuth and altitude information for the sun (orange) and the moon (blue). It is important to note that since both azimuth and altitude are expressed in degrees, we add + or – to altitude values to distinguish them from azimuths.

The sun azimuth line shows the bearing of the sun from the red pin at 16:50 (4:50pm), the selected time on the legend. The azimuth line for the sun is orange (the moon appears in blue, but this is the time of moonset).

Scrub the time slider again and watch the lines on the map: notice that thin sun and moon azimuth lines move around between the thicker rise and set lines. If the sun or moon lies above the horizon, these azimuth lines show the bearing you would look along from the red pin position at the selected time.

You can make finer adjustments with the time slider. Click the time slider handle: now use the left and right cursor keys on your keyboard to move the time slider back and forth in ten second increments.

Clicking on an event in the timeline sets the time slider to that time. Try it now, click on the Moonset panel in the timeline. If your date is still set to 3 August 2021, the time slider jumps to 16:50. You can also move left and right through each event of the day's timeline by using the keyboard shortcuts: “,” (comma) and “.” (full stop). In the image below I have clicked on the moonset event for the day. If the selected time of day matches a timeline event, the event title is shown in the chart legend:



1. *Altitude chart*
2. *Time slider*
3. *Chart legend*
4. *Sun azimuth line*
5. *Selected event*

Twilight

The definitions of the three twilight states are as follows: astronomical twilight occurs when the sun lies between 18° and 12° below the horizon; nautical when the sun lies between 12° and 6°; and civil when the sun lies between 6° and 0°. You can find more details on these terms on Wikipedia.

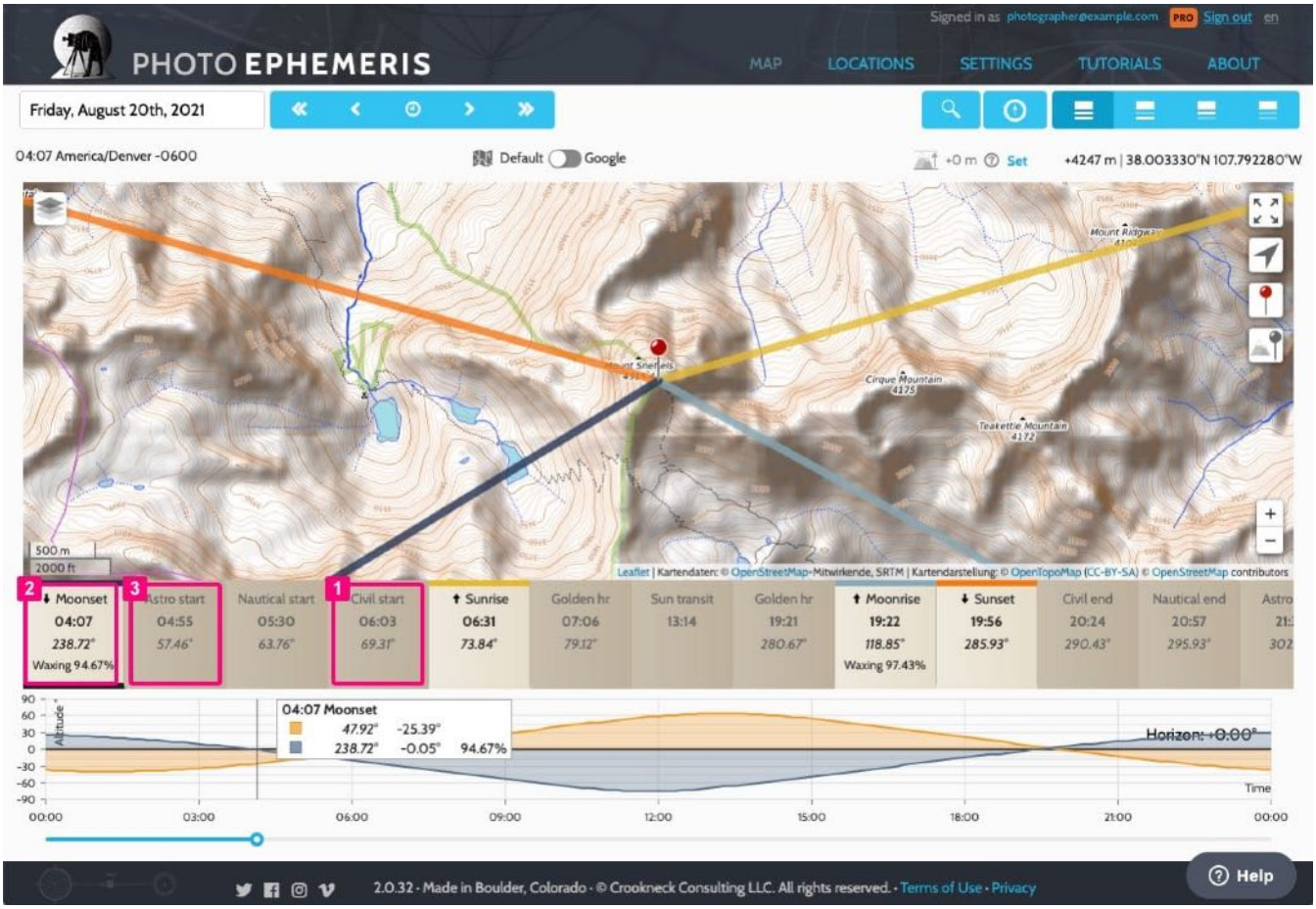
The light of twilight is variously described as more "even", muted or blue than full sunshine. This lower dynamic range suits the camera and can make for great landscape photographs. The blue "hour" is a myth, the actual length of twilight varies significantly by season and by latitude: it is short in the tropics but long in the polar summer. (Read more: Magical Gold and Blue: Confusion in the Twilight Zone)

Twilight can affect photography in a number of important ways. At temperate latitudes, such as here in Colorado (40°N) late Nautical and early Civil twilight offers up more intense sky colours than late Civil twilight. And alpenglow will typically last until 10-15 minutes before sunrise – roughly mid-way through the typical Civil twilight period.

It is important to note that though the sun may not have yet risen (or may have already set), twilight is still directional, hence the inclusion of the twilight azimuth information, along with twilight start or end time, in the timeline. The azimuth corresponds to the brightest point on the horizon.

Let's look at using the twilight information in the timeline for a practical example from our Blue Lakes location on 20 August 2021.

Imagine you wanted to do some night photography of the Blue Lakes and the surrounding mountains with a clear, starry sky overhead. When would be a suitable time to shoot that during the night of 20 August 2021?



1. *Civil twilight starts*
2. *Moonset*
3. *Astronomical twilight begins*

If you're looking to shoot a clear, starry sky, you probably want it to be truly dark, i.e. after the moon has set and before astronomical twilight begins. Using the information in the timeline, you can see that on this particular night, there's only a small window of opportunity: the moon sets at 04:07 am, but astronomical twilight begins at 04:55 am. It's likely that the best time is somewhere between 04:15 and 04:40am. Once astronomical twilight begins, objects such as the Milky Way will become less visible in the sky, disappearing altogether as nautical twilight progresses.

Shadows

We all know that as the sun gets lower in the sky, shadows lengthen towards infinity. The moon casts shadows too, especially noticeable at full moon. In TPE, shadows are represented by the +6° shadow circle. *(NOTE: TPE limits the length of its shadow and azimuth lines to 200 miles.)*

Set the date to 03 August 2021, then click the sunrise event in the timeline. Now view the shadow circle by holding down the handle of the time slider. A dark circle appears within the map, centred on the red

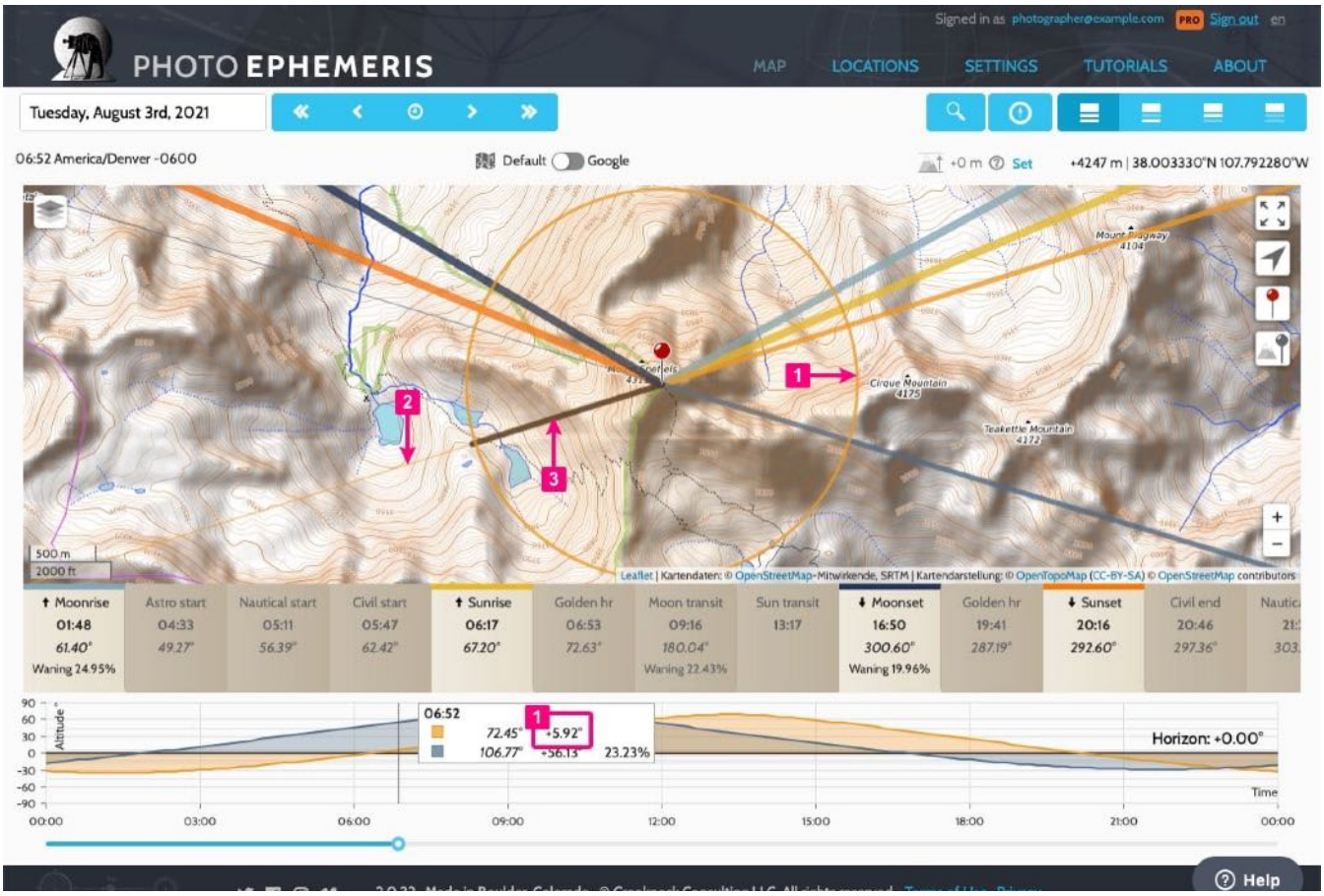
by holding down the handle of the time slider. A dark circle appears within the map, centred on the red pin.

Now slowly scrub the time slider forward from sunrise. Two things immediately happen: a) the circle turns orange and b) the sun azimuth line now has a thinner line extending through the red pin position. This thinner line may well be overlaid with a dark brown line depending on how far you just moved the time slider (more on this later).

The circle turns orange because the sun is now above +0°. Keep scrubbing the slider to the right and the orange circle will turn black again when the sun reaches +6°. A sun altitude of less than +6° corresponds to golden light (due to atmospheric scattering) and a great time for photography. If you scrub all the way towards sunset, the same thing happens at the end of the day. In the image below you can see the sun altitude information in the legend shows that the sun is below +6° for the time selected.

The sun and moon azimuth extension lines have two purposes. First they are useful for finding the time of alignment of the sun or moon with a particular object or landscape feature: scrubbing the time slider and observing the azimuth extension lines allow you determine alignment visually. Many “henge” shots have been planned using this method.

The second purpose of the azimuth extension line is to show shadow length. Shadow length is represented by the thicker dark line that overlays the azimuth extension line (brown for sun, dark blue for moon). Scrub the slider through the day to see the shadow length change. When the sun shadow falls outside the circle this corresponds to the sun’s being below +6° and the circle turns orange.



1. *"+6° shadow circle" is orange when the sun is between +0° and +6°*
2. *Sun azimuth extension line*
3. *Sun shadow line over the sun azimuth extension line*
4. *Sun altitude shown in the chart legend*

Next time we'll get a little bit geeky and look at some more advanced TPE features: Using TPE Desktop Web App, Part 3: Geodetics

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Using TPE Desktop Web App, Part 3: Geodetics

Stephen

6 days ago · Updated

Here's the third in a series of tutorials on *The Photographer's Ephemeris desktop web app*.

We covered the basics of using the program in Part 1. In Part 2, we went a little deeper into TPE's functionality as well as looking at twilight information and shadows. You'll need to have understood the material in those tutorials before tackling this one.

This tutorial is based on version 2.0.32.

Geodesy?

Geodesy? Geodetics? What's that all about? I'll admit that until I started really getting into writing TPE, I didn't have a clue. However, it turns out that it is a very useful thing for a landscape photographer to know.

I'll leave it to Wikipedia to explain the details, but in essence, geodesy deals with the measurement and mathematical representation of the earth.

The earth is round, sort of. In fact, it's sufficiently not round that measuring point-to-point distances on the surface of the earth is only poorly approximated by assuming a sphere. You wouldn't want your airline pilot navigating this way!

An ellipsoid is a much better model to use, but the maths gets hard – so hard, in fact, that a decent solution for calculating point-to-point distances between points on the surface of an ellipsoid was only devised in 1975 by Thaddeus Vincenty.

devised in 1975 by Thaddeus Vincenty.

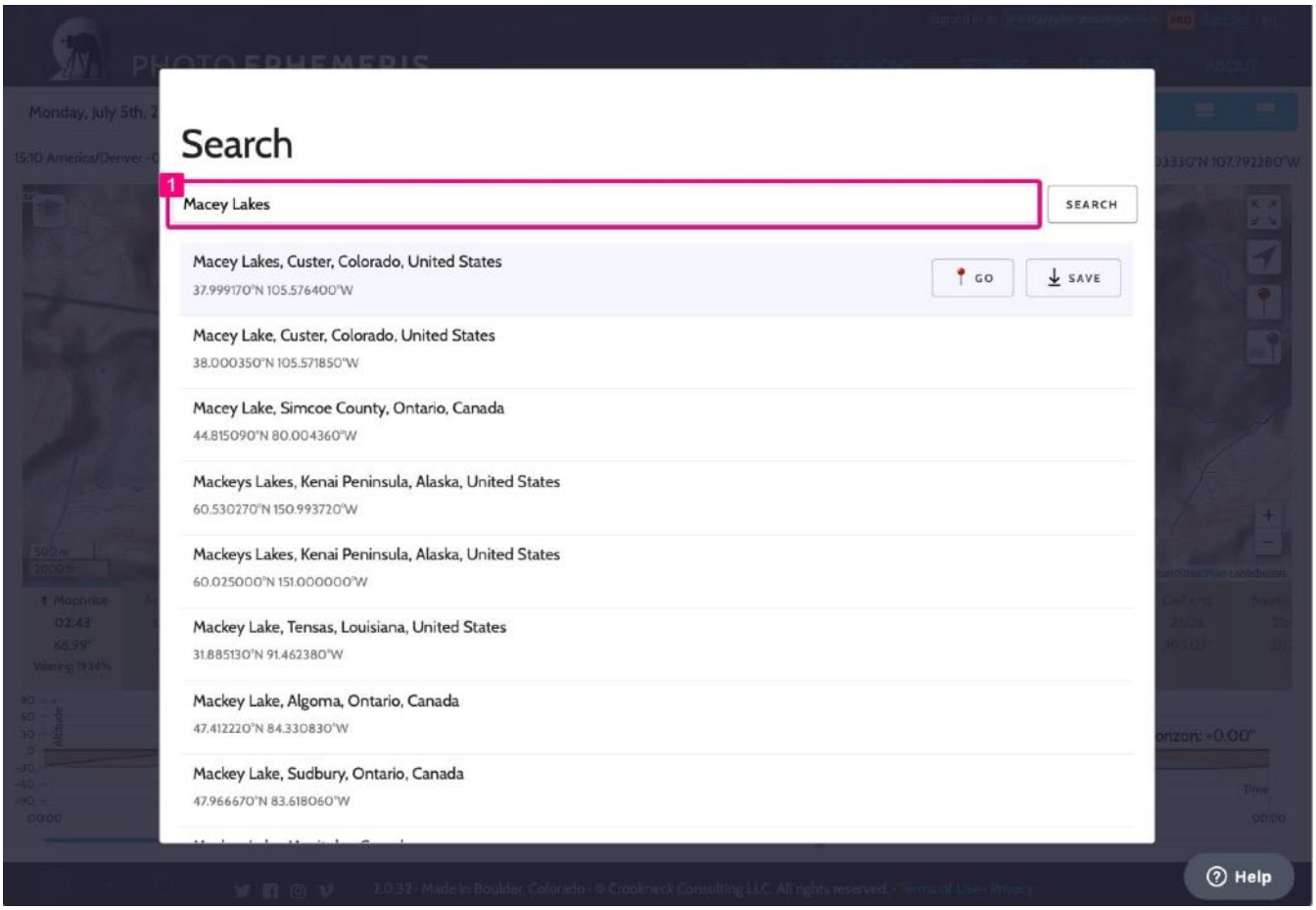
The geodetics panel and TPE's secondary map marker (the grey pin) use Vincenty's algorithms to enable functionality that will help you plan shoots in great detail.

Let's make something absolutely clear here: rises and sets are defined as when the upper part of the sun/moon rises/sets above/below the HORIZON. You may have higher terrain between you and the horizon. That hill behind you is NOT the horizon. To work out when YOU will see or lose the sun or moon behind that hill we use geodesy.

Our destination for this tutorial: the Macey Lakes

Colorado's Sangre de Cristo Wilderness contains some of the most spectacular peaks in the whole of the Rockies. There are around 18 drainages within the wilderness boundaries, many with stunning alpine lakes surrounded by jagged mountainous cirques.

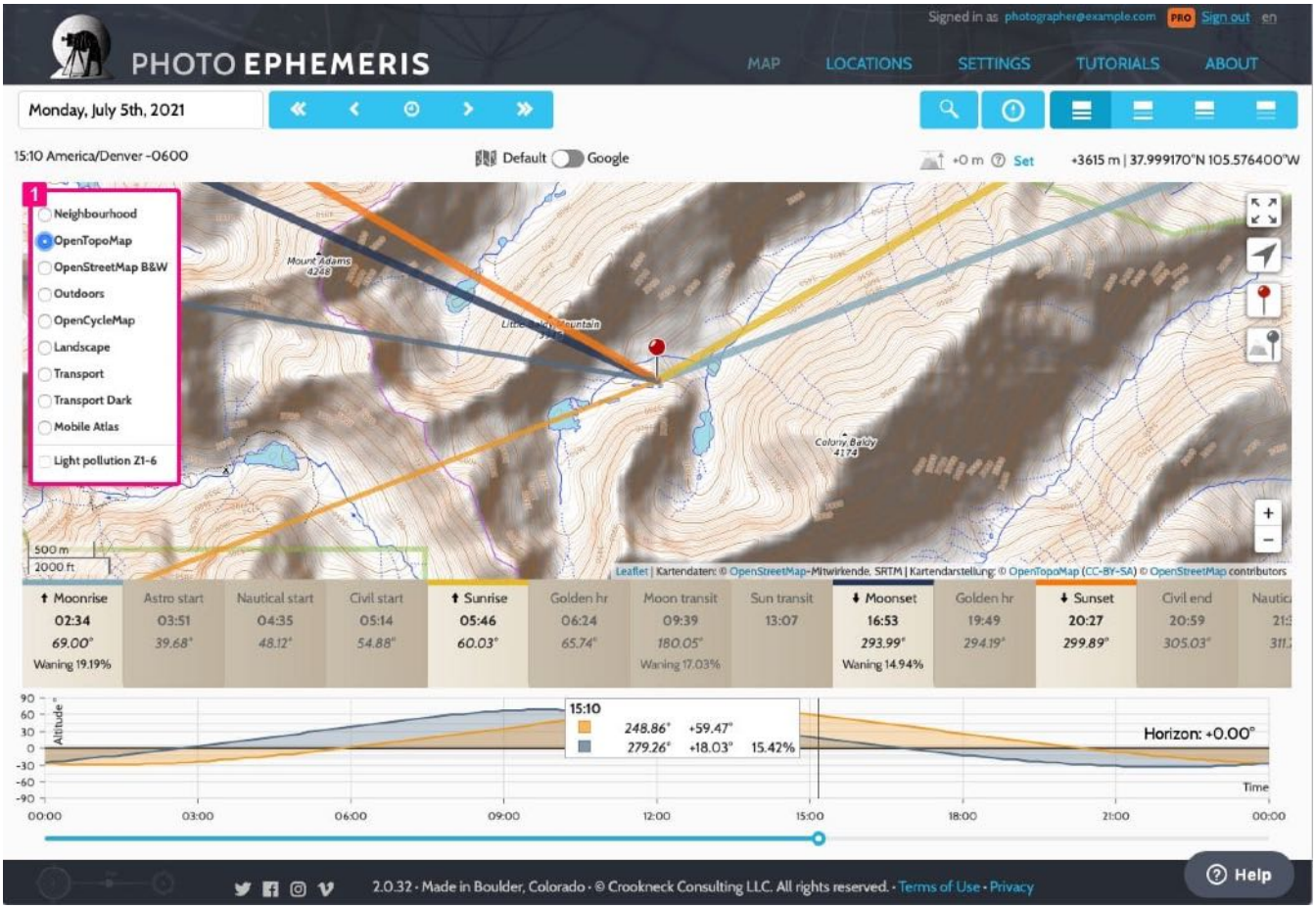
Let's find our location. Press Search above the map, then type 'Macey Lakes' into the field, click search or hit return, then click **Go** to position the primary pin and return to the map:



1. *Type into the search field*

We are going to use a topographic view for the map. If necessary, click the map layers button at the top

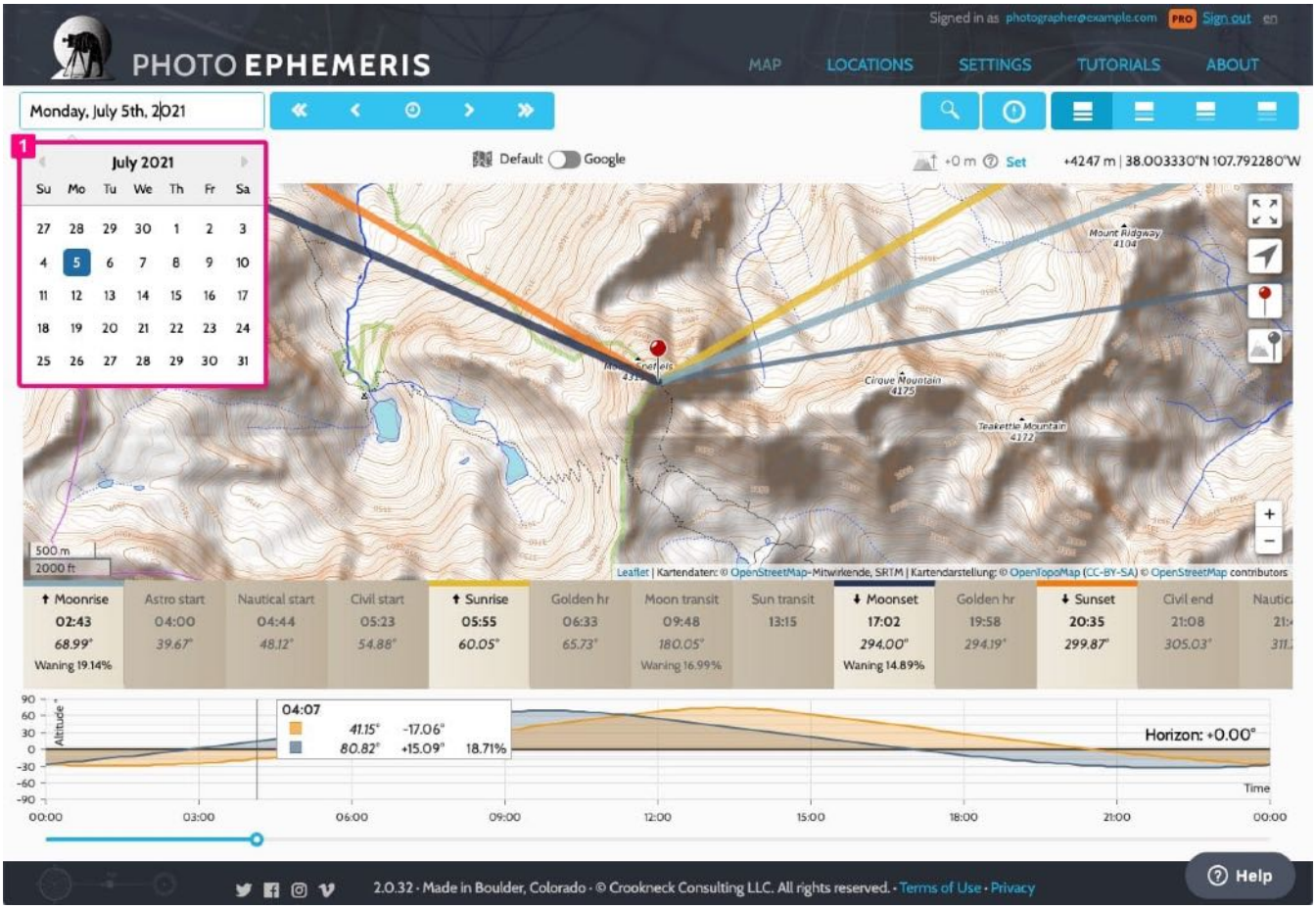
We are going to use a topographic view for the map. If necessary, click the map layers button at the top left of the map and then choose "OpenTopoMap". (If you're a **PRO** user using Google Maps, then click 'Map' at the top left and click the Terrain checkbox.)



1. *Available map types shown after clicking the layers control (map selection shown is for **PRO** users)*

The primary map marker (the red pin) should be positioned over the Macey Lakes.

For the purposes of this tutorial, set your date to July 5th 2021 by clicking the date controls and selecting or typing the date:

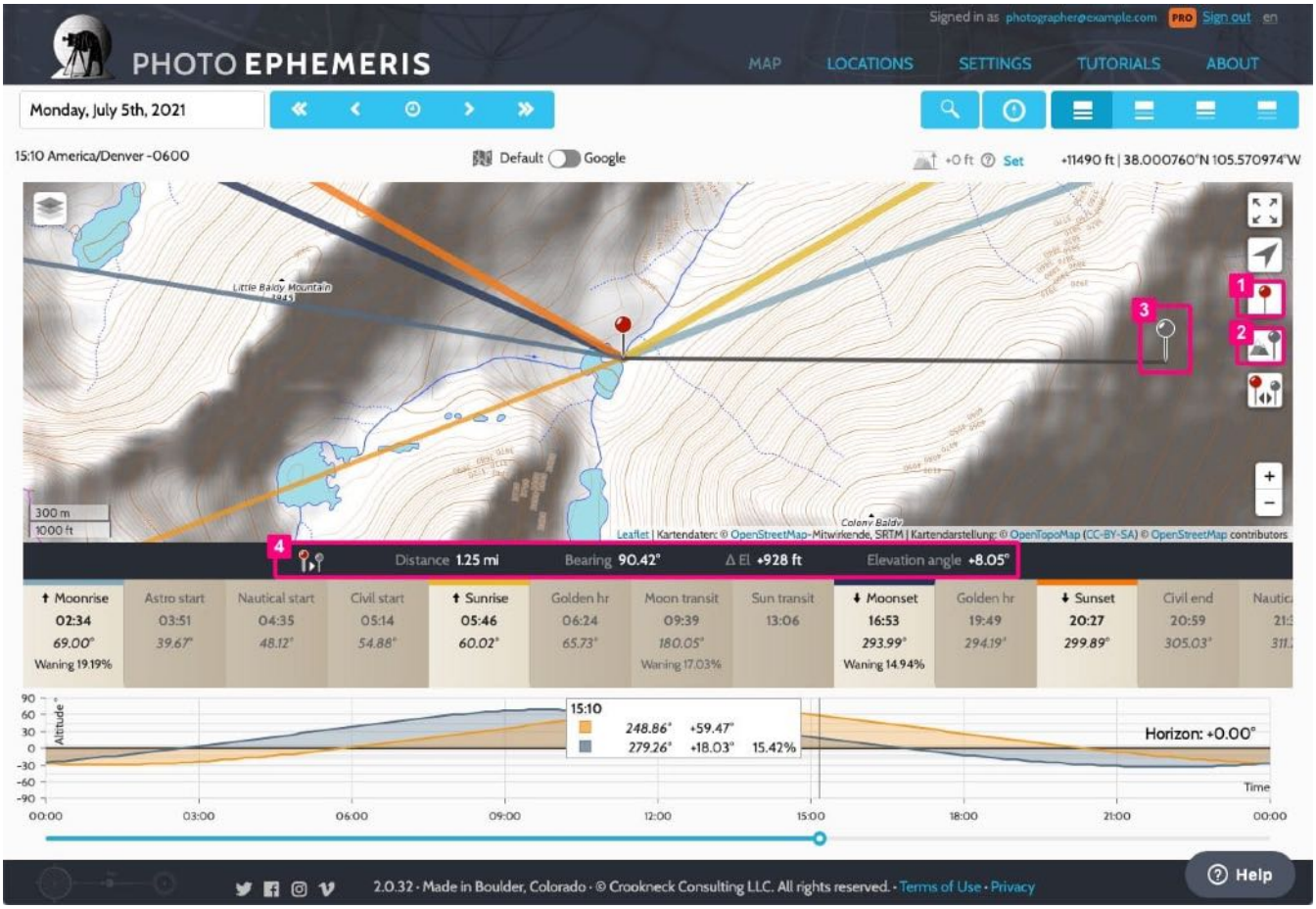


1. *Set the date to 5 July 2021*

Let's set up our shot. Drag and drop the red pin to the north east of the lower lake (the lake closer to the top of the map). Then centre the map on the new red pin position by holding down shift and clicking the centre red pin button or use the keyboard shortcut: Shift C.

Now click the geodetics button (the grey pin button) on the right of the map, or use the keyboard shortcut: G. Two things happen i) the grey pin appears to the east of the red pin and ii) the geodetics panel appears at the bottom of the map.

Meet your new friends!



1. *Hold down Shift and then click the centre red pin button to centre the map on the red pin. Or use the keyboard shortcut:* Shift C
2. *The geodetics button shows or hides the grey pin*
3. *The secondary grey pin appears directly to the east of the red pin the first time you engage it*
4. *The geodetics panel appears along the bottom edge of the map*

Using that grey pin is what this tutorial is all about - we call it the **secondary pin.**

A few things about the secondary pin and the geodetics panel:

- It's optional – you don't have to use it at all if you don't want to. Just click on the grey pin button again to dismiss it
- It is "joined" to the primary pin by a grey line, which indicates the bearing from primary to secondary
- By default, it will always appear to the eastern side of the map the first time you use it. If you dismiss and reapply it, the grey pin will appear at the position you last set it (unless it is outside the bounds of the map, in which case it would default to the due east position). You may have to zoom out to see both pins if you have moved the red pin.
- Moving it won't change your sun/moon rise/set/phase or twilight times (at least, not by default – check back for the next tutorial).

- The geodetics panel shows, by default, the information from the primary to the secondary pin: distance, bearing, change in elevation, elevation angle. You can compare the elevation angle to the altitude of the sun and moon displayed in the chart legend for the selected time.

We won't learn much by leaving the grey pin alone, so let's see what useful information it can provide us.

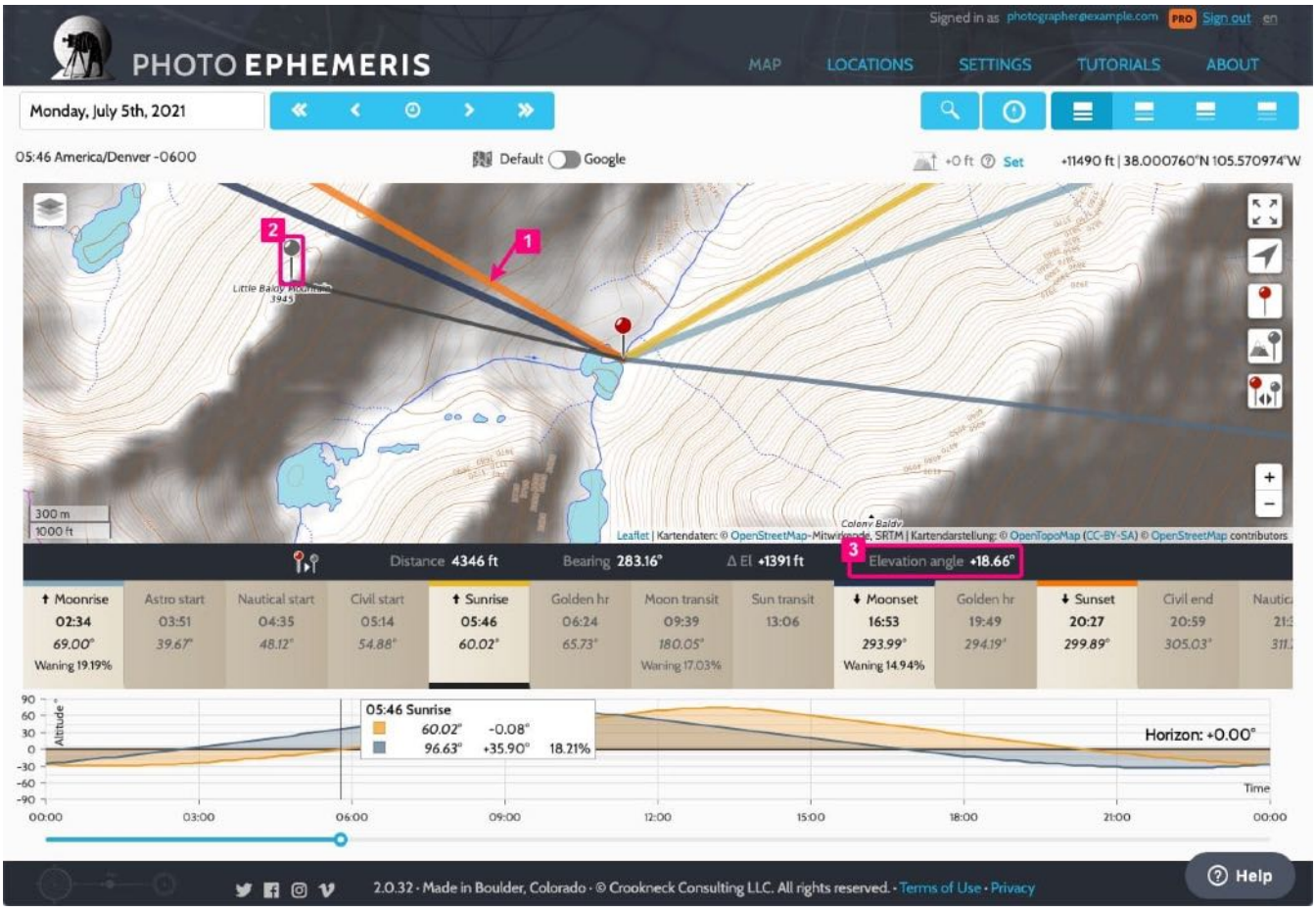
When will I lose direct sunlight on Lower Macey Lake?

Looking at the map, you can see that the sun will set to the north west at this time of year (the dark orange azimuth line). It's also easy to make out the high ridge-line in the same direction. The highest point of the ridge is Little Baldy Mountain. Just eyeballing the contour lines, it seems likely that the sun will disappear behind the ridge well before it actually sets below the true horizon (see What is sunrise?).

But when? We can use the grey pin to find out.

Start by looking at the geodetics panel and note the elevation angle: this is the apparent altitude from the red pin to the grey.

Now, drag and drop the grey pin on the summit of Little Baldy to the west (see the image below for the position). You'll notice that when you do, the geodetics information in the geodetics panel changes, most significantly for our purposes, the elevation angle from the red pin to the grey is now +18.66°. Yours may be a little different: remember the reading is dependent on the exact placement of the map pins.



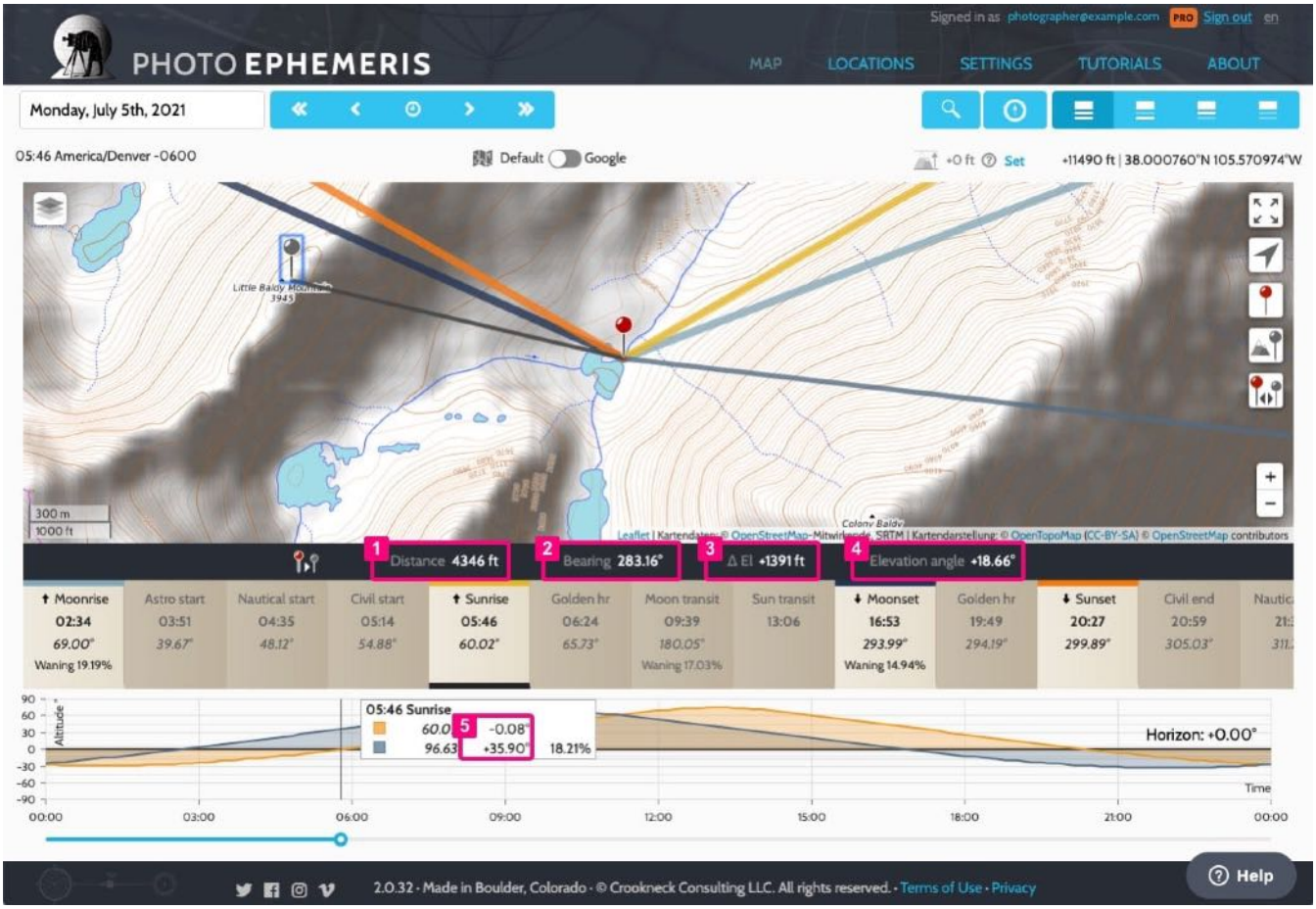
1. *Sunset azimuth line*

2. *Little Baldy mountain is located in the high ridge line to the west of the red pin position*
3. *The geodetics panel Alt information is the apparent altitude from the red to the grey pin*

What does this number tell us? As mentioned, the data displayed in the geodetics panel is referenced in terms of travel from the red pin position to the grey pin position. So let's look at the geodetics panel information from left to right in more detail:

- *Distance and bearing*: distance is the shortest point-to-point distance along a great circle from the red pin to the grey pin. The distance from the red to the grey pin is 4346ft.
- *Bearing*: the map bearing from the red pin to the grey pin in degrees (note: this is relative to true north, *not* magnetic north – the same applies to all azimuths and bearings, **unless** you enable the magnetic declination correct, available to **PRO** subscribers). The bearing from the red to the grey pin, is 283.36°
- *Change in elevation (Δ El)*: elevation refers to height above mean sea level. The change in elevation is measured from the red pin to the grey pin. The change in elevation from the red to the grey pin is +1391ft
- *Elevation angle*: the units of degrees and the use of a + or – give away that this is altitude in the astronomical sense. If you had a sextant and took a sighting to the peak from the red pin position, this is the angle you would measure. This is an 'apparent' value, meaning that the measurement is adjusted for refraction i.e. the bending of light caused by passage through the atmosphere. The apparent altitude from the red to the grey pin is +18.66°
- *Sun apparent altitude*: the apparent altitude of the sun for the time selected by the time slider. The apparent altitude of the sun is -0.08° (assuming your time slider is set to sunrise, 05:46)
- *Moon apparent altitude*: the apparent altitude of the moon for the time selected by the time slider. The apparent altitude of the moon is +35.90° (again, assuming your time slider is set to sunrise, 05:46)

Note: the elevation angle is *not* exactly what you'd get by dividing the elevation change by the distance and calculating the inverse tangent: the calculation accounts for the curvature of the earth's surface and adjusts the result for refraction.

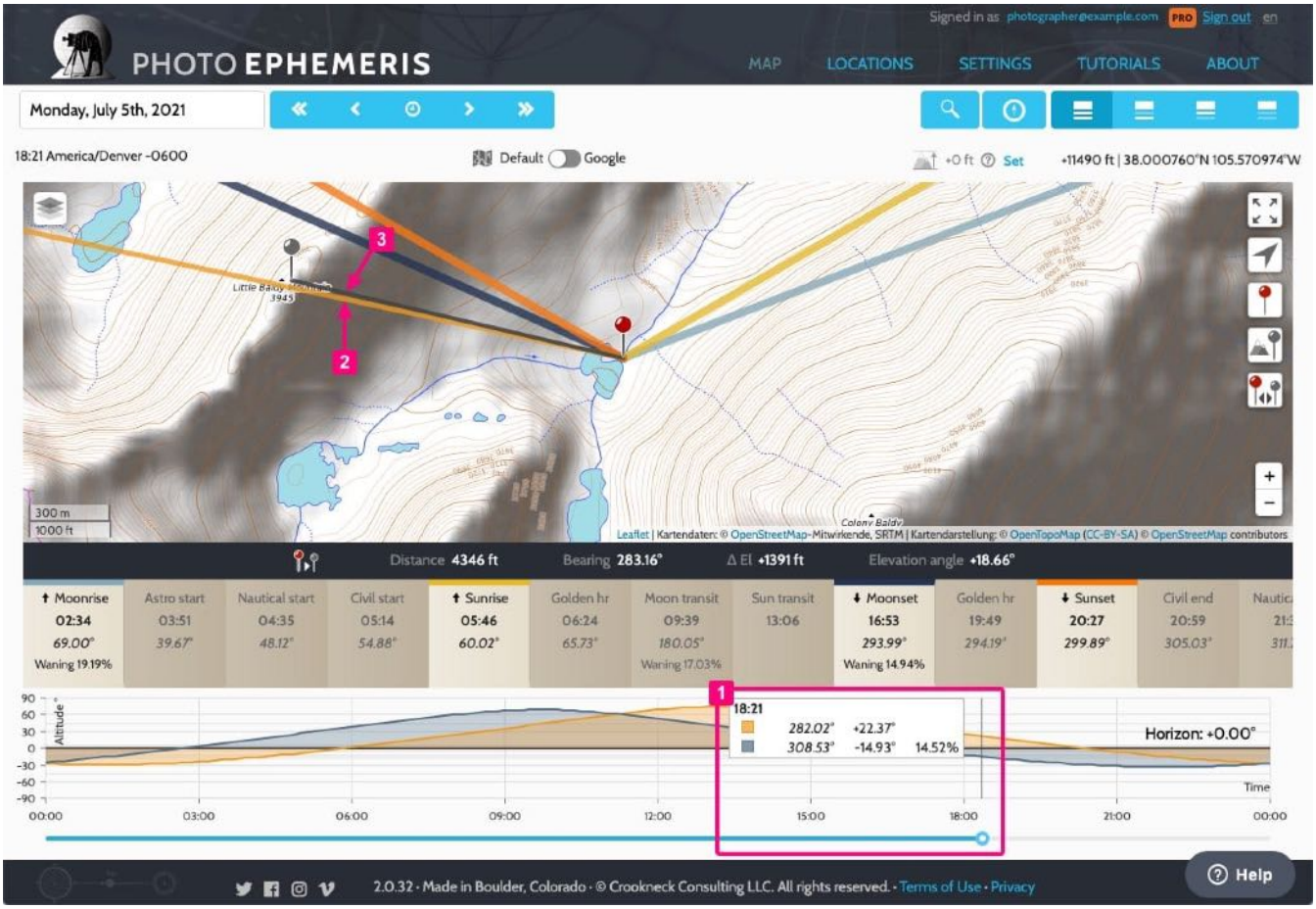


1. *Distance*
2. *Bearing relative to true north (with settings as shown)*
3. *Difference in elevation above sea level*
4. *Elevation angle*
5. *Apparent altitude of the sun and moon at 05:46*

OK, now we know what we're looking at, let's find out the altitude of the sun when it passes through the same bearing at the peak of Little Baldy, where the grey pin is positioned.

Start by estimating when you think the sun will disappear behind the ridge, just pick a time, say around 18:20. Scrub the time slider to 18:21.

You'll see the sun azimuth line move around during the course of the day. When I get to 18:21 in the time slider, my sun azimuth line lies near to the pin azimuth line.



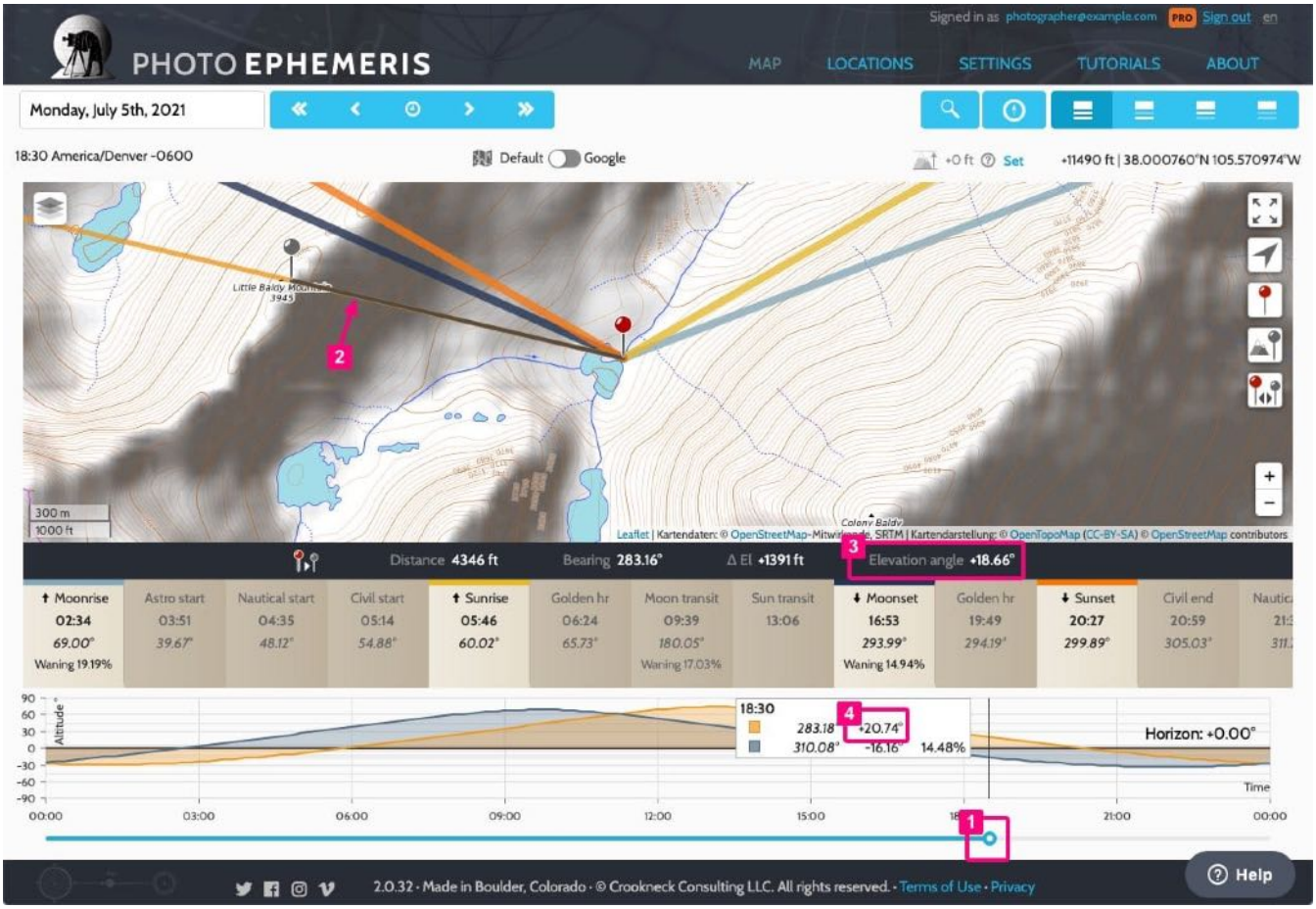
1. *Use the time slider to select 18:21*
2. *Sun azimuth line moves with the time slider*
3. *Primary to secondary bearing line*

I can advance the time slider in ten second increments by clicking on the time slider then using my keyboard left and right cursor keys. If I advance bit by bit the sun azimuth line will align with the pin bearing line (and, therefore with the summit of Little Baldy) at around 18:30.

But will it be visible from our red pin position?

We know the peak of Little Baldy lies at +18.66° from the red pin. Looking at the sun's altitude in the Details panel, you can see that it lies at +20.74°, that's +2.08° above the peak of Little Baldy.

So, the sun would still be visible at 18:30 from our spot on the shore of Lower Macey Lake.



1. *The time is now set to 18:30. Clicking on the time slider and then using the keyboard left/right cursor keys allows you to advance the time slider in ten second intervals*
2. *The sun azimuth line is aligned with the pin bearing line and sits directly on top of Little Baldy*
3. *Comparing the elevation angle of the grey pin with the apparent altitude of the sun determines whether the sun is still visible from the red pin position*

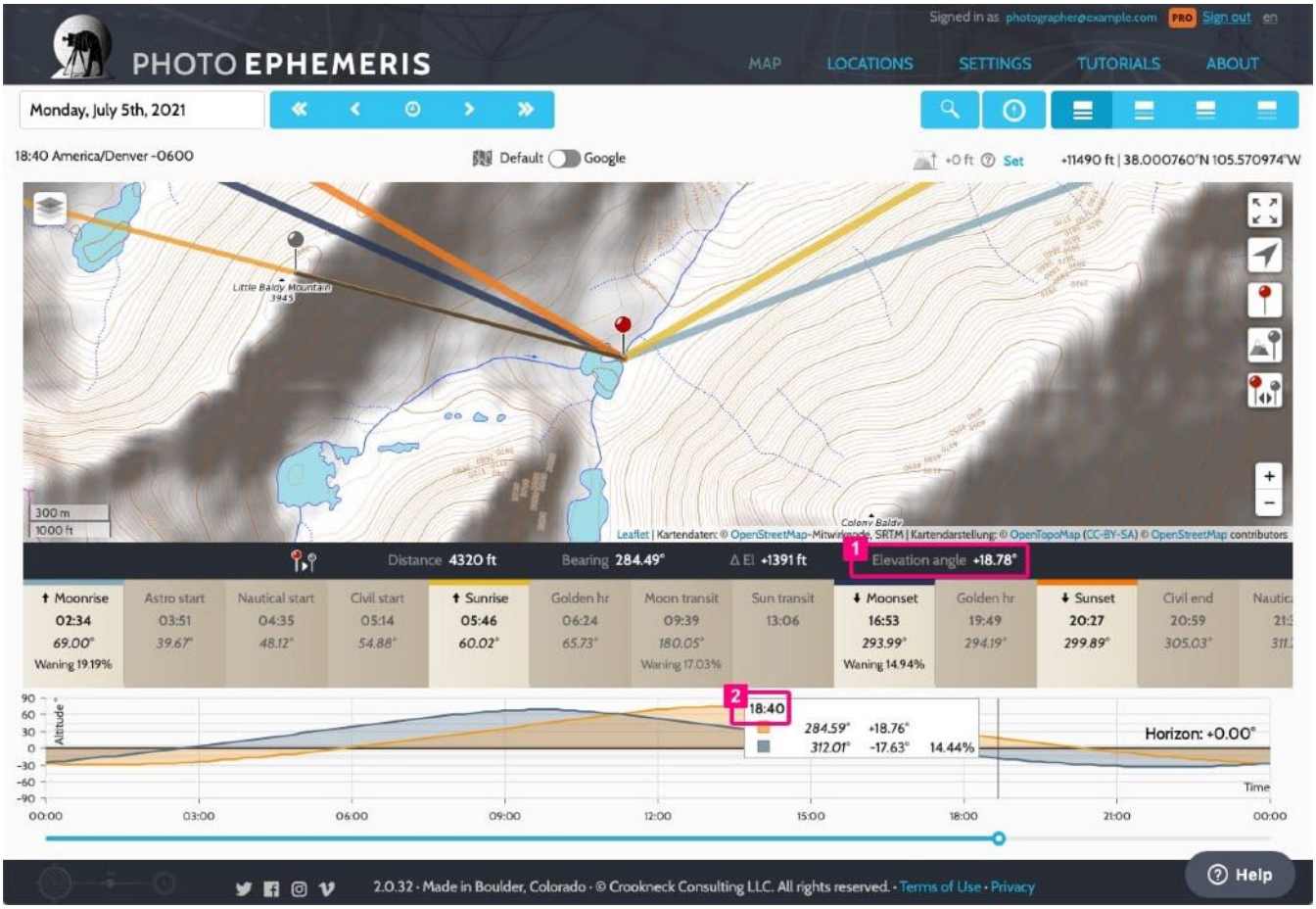
We need to look a little further to find out exactly when we will lose the sun from our red pin position.

Let's start by moving the time slider a little later to 18:42. The sun's azimuth moves around closer to the sunset azimuth. Look at its apparent altitude: it is lower in the sky. Drag the grey pin a little farther to the north-east along the ridge line to sit on top of the sun's azimuth line again. Note your apparent altitude from the red pin to the grey. The sun's altitude is still slightly greater than the apparent altitude from the red pin to the grey, so the sun is still visible front the red pin position.

By repeating this procedure you can establish that the sun is likely to drop out of sight around 18:40, that's 107 minutes before sunset at 20:27.

You'll need to apply some judgement here and look at the contours of the topographic map (it's difficult to do using other non-topographic map types) and see where the sensible test points should be. We'll look at

this in more detail below.

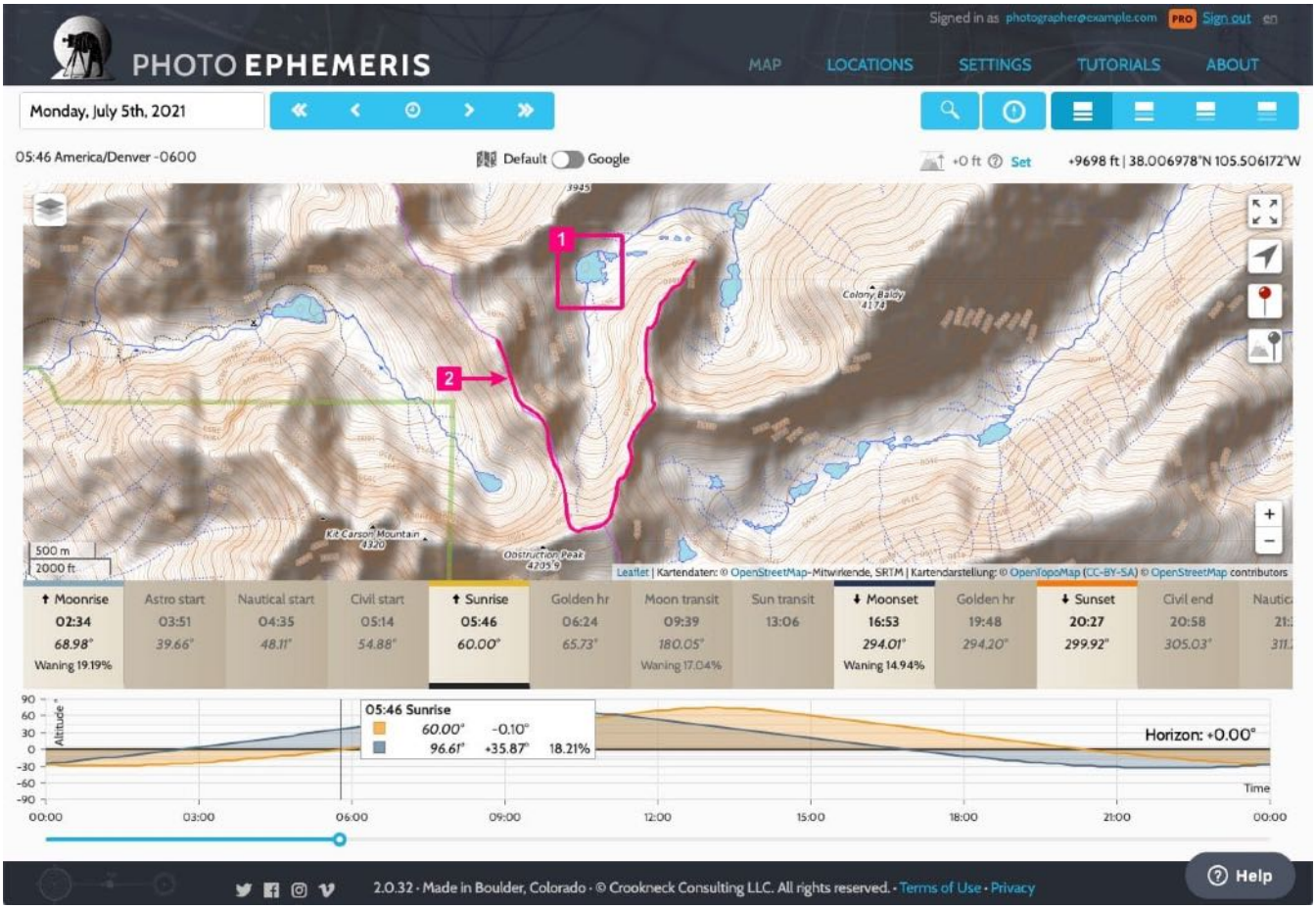


1. *The sun's apparent altitude sits below the elevation angle of the grey pin and is therefore out of sight from the red pin position*
2. *At 18:40 the sun is obscured by the ridge*

Ok, here's an exercise to try if you are feeling confident about using the geodetics function in TPE: find the mountain called Colony Baldy to the southeast of the red pin. Determine how high on the northwest flank of the mountain you will observe direct light in the moments just before sunset. Hint 1: you'll need to relocate both markers. Hint 2: you may need to move the grey pin farther than you think. Answer at the end.

Will the rising sun strike Point 13,200'?

Now we'll look at a different question. Zoom out one step on the map. Let's say you want to make a sunrise image of Upper Macey Lake (the larger lake to the southwest of the red pin position), and you'd like to take in the cirque to the south of the lake. However, the image will likely only work if the top of the cirque catches the rising sun. You can use TPE to determine if the rising sun will be obstructed or not:



1. *Upper Macey Lake*
2. *The cirque surrounding the lake to the south: we are trying to find out if the sun will illuminate the southwest of the cirque at sunrise*

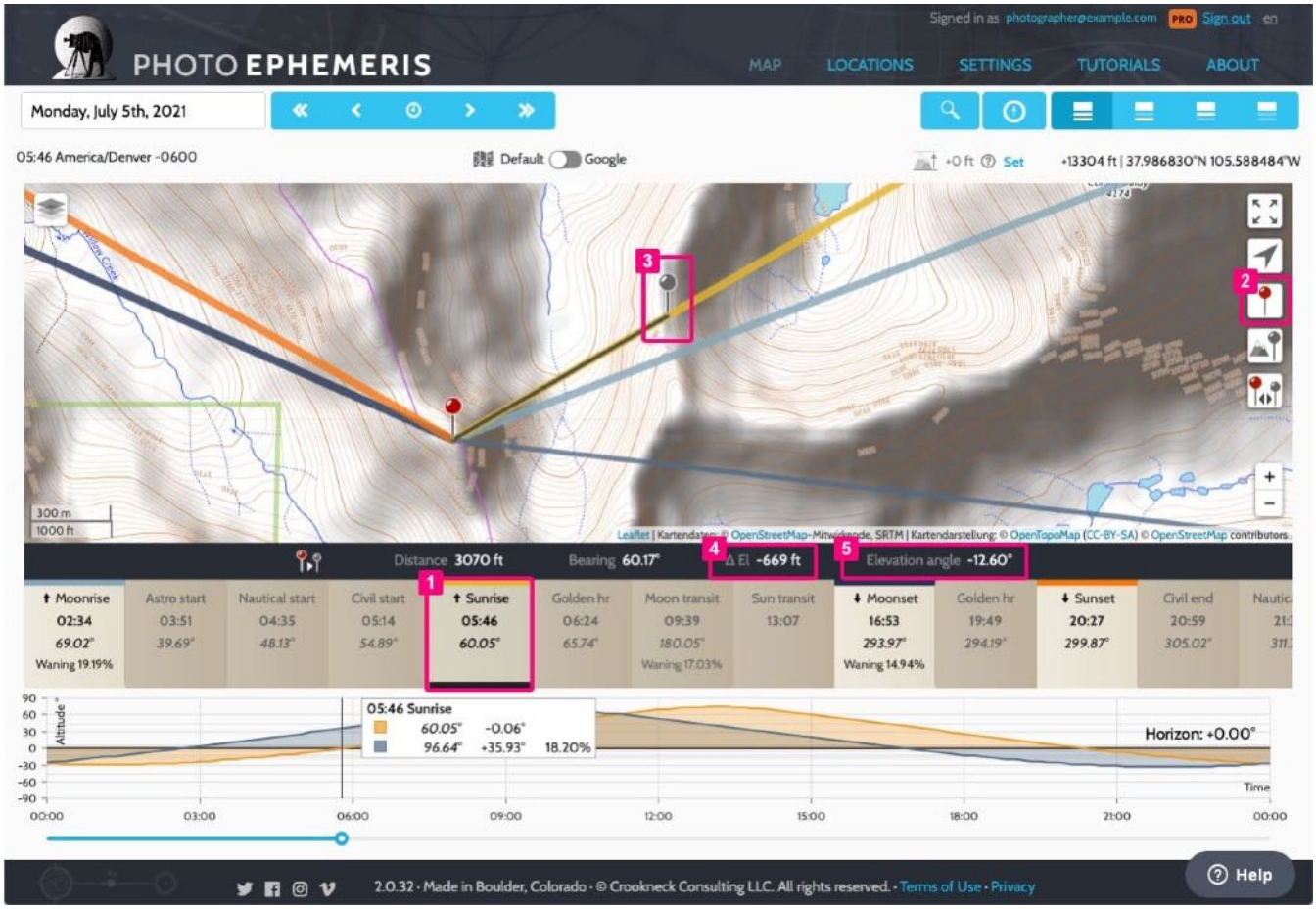
First click on the sunrise event in the timeline, the time slider and legend jump to 05:46.

Now that we have located our position, you can zoom in again on the map. If the red pin is now outside your map area just hit the centre red pin button to move it to the centre of the map or use the keyboard shortcut: *C*

Move the red pin to the top of the peak near the contour label 13,200' on the map. Engage the geodetics function again by either clicking the grey pin button on the right of the map, or use the keyboard shortcut; *G*. If your grey pin is still in the old position this will turn the function off, just engage it again to place the pin to the east of the red pin in the visible map.

Now place the grey pin along the sunrise azimuth line on the first ridge line to the north east.

Notice the elevation angle and change of elevation figures: that ridge line sits below our peak and will not obstruct the rising sun.



1. *Clicking the sunrise event moves the time slider and legend to that moment*
2. *Click the centre red pin button to centre the red pin on the map, or use the keyboard shortcut:* C
3. *The grey pin is set on the first ridge we can see along the sunrise azimuth*
4. *The elevation of the ridge line to the northeast is 669ft below the red pin position*
5. *The apparent altitude from the red pin to the grey is -12.60°*

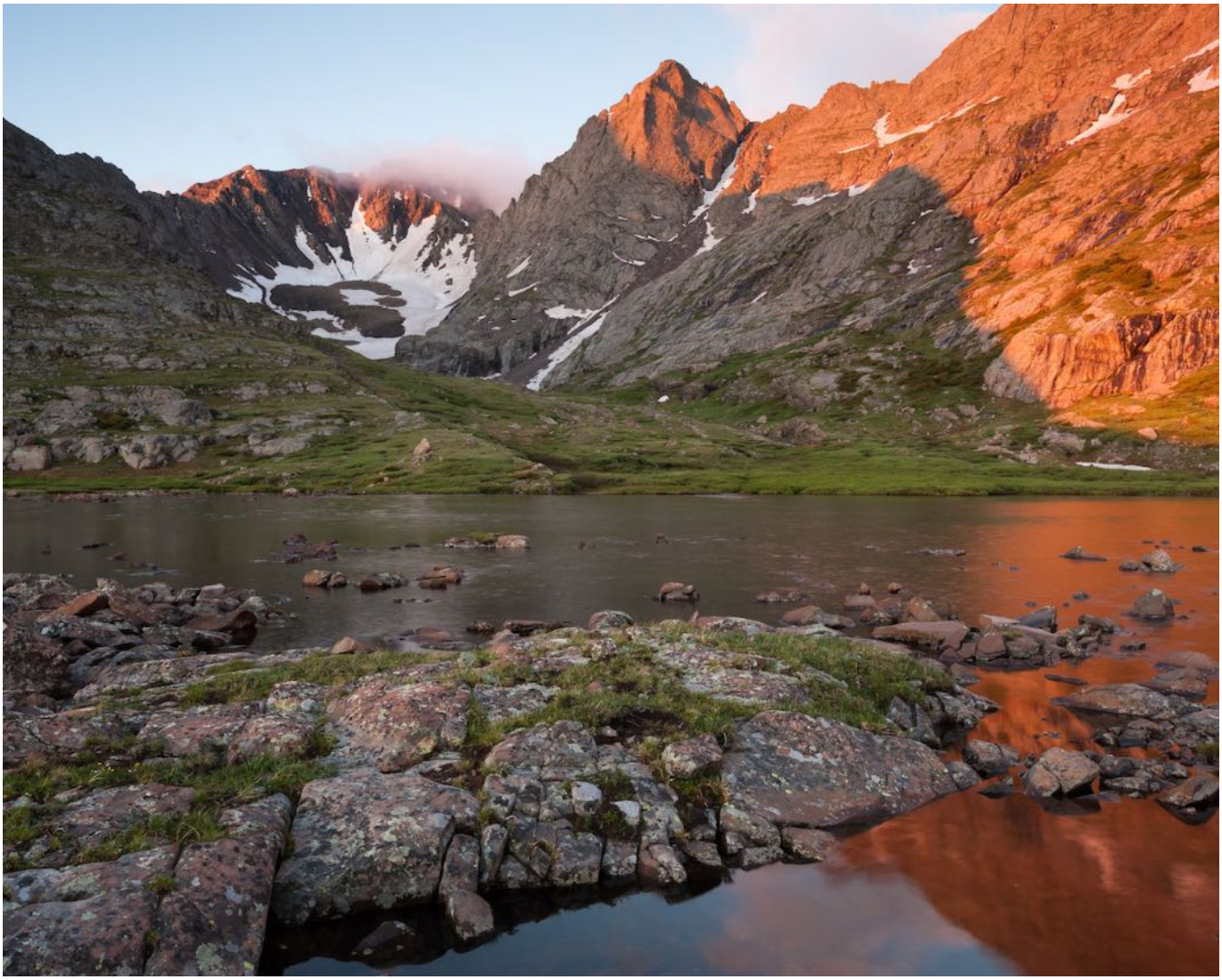
So far, so good: the first ridge line lies below our peak by some margin, so we should get some direct light. However, to be sure, let's check to see if Colony Baldy, that large mountain to the northeast, will cause us any problems.

Zoom out one click on the map. Move the grey pin out along the sunrise azimuth line again and drop it on the flank of Colony Baldy.

Note the apparent altitude is still negative (around -3.9°), indicating that the sun will clear Colony Baldy and strike our high ridge line in the cirque above Upper Macey Lake.

Good news. We should be able to make the shot. We can already see from the basic sun rise line that we should get good light over the lake itself at the moment of sunrise. Now that we know our rugged mountain ridge will also receive some direct light, we can hope for a good shot.

And now for the reason we set this date and selected this location: here is a shot of the lake in question taken on this day of the year!



Upper Macey Lake

Can we really see the ridge line?

In this example you'll see why elevation angle and apparent altitude are so important.

Let's say we want to determine the angle of view to the ridge line in the cirque to the west of the upper lake. Will the ridge line actually be visible from the lake? This would be good to know before we set out on that exhausting hike to "Upper" Macey Lake.

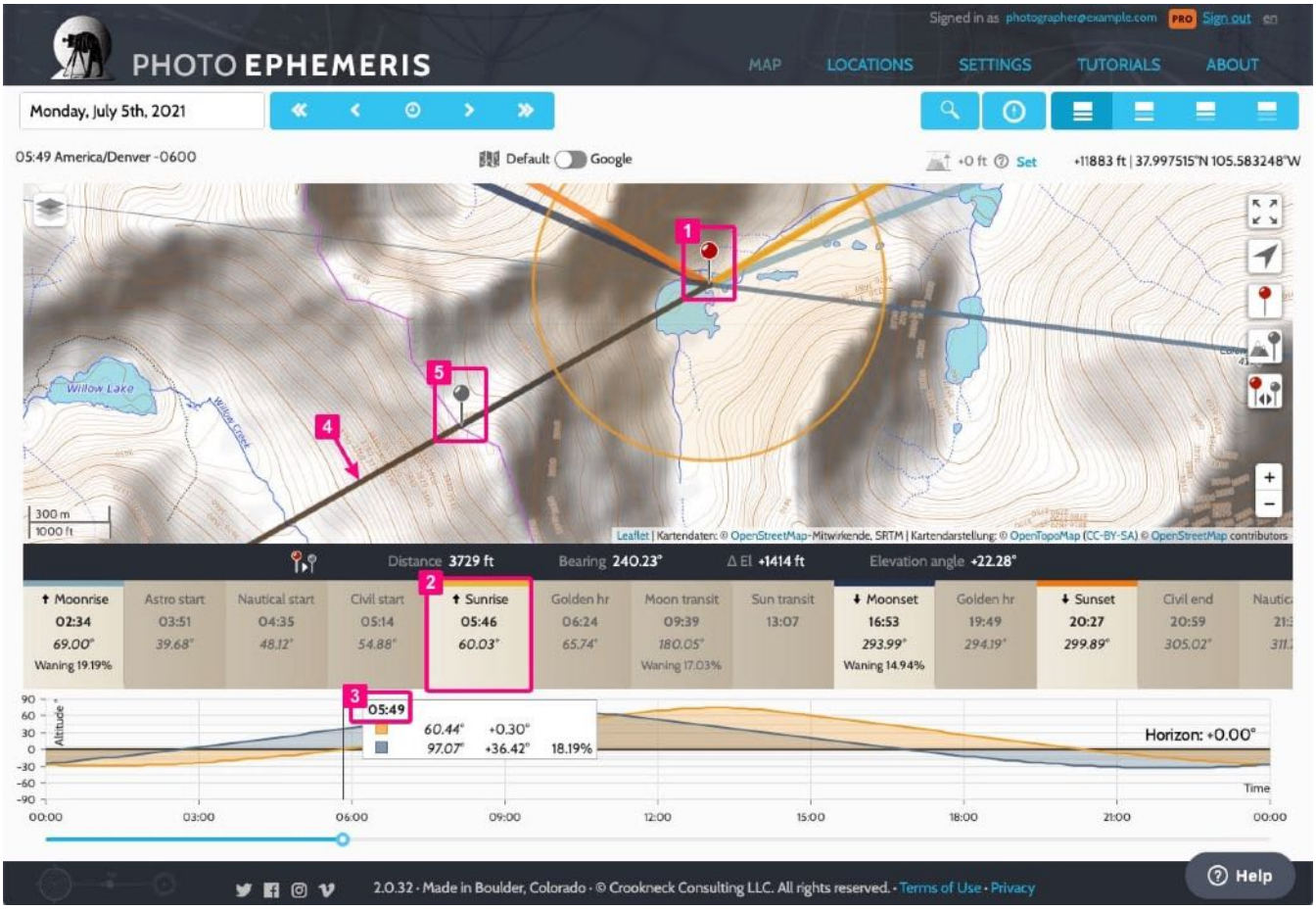
Let's move the red pin to where we plan to shoot from by the lake . Now move the grey pin to the ridge line south west of the lake, opposite where the sun will rise.

To find a position opposite sunrise click the sunrise event in the timeline. The time slider and legend should now be at 05:46. Click on the time slider then advance the time by 3 minutes. As you adjust the

slider, the sunrise extension line is displayed under the sun shadow: the line extends through the red pin and continues to the south west. When you release the mouse from the time slider, the shadow lines are

hidden. Hold the shift key down to show the extension lines, then move the grey pin to where the sun extension line crosses the ridge line.

The apparent altitude from the red pin to the grey is +22.28°.



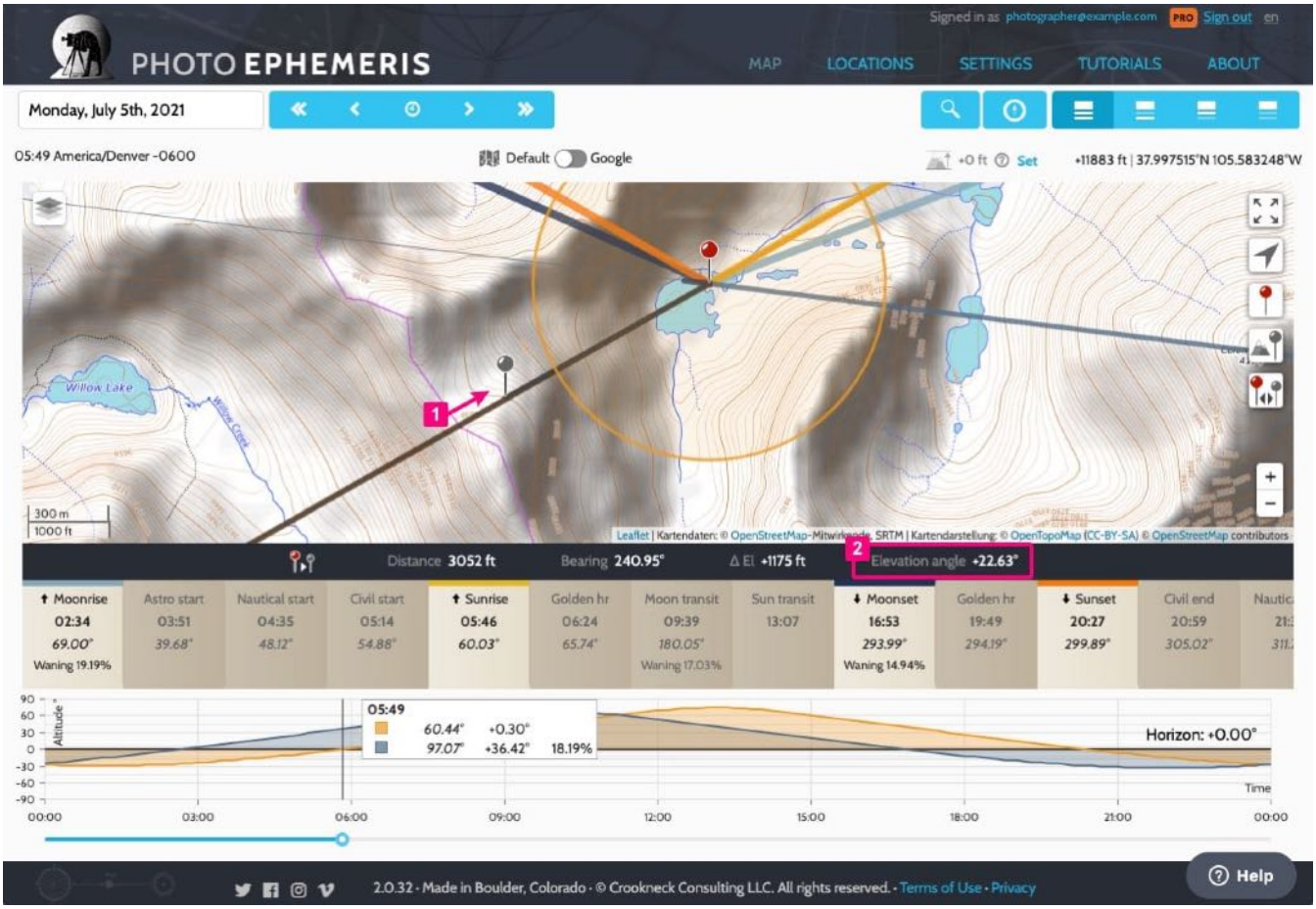
1. *The red pin is set on the north east shore of Upper Macey Lake*
2. *Clicking the sunrise event in the timeline moves the time slider and the legend to that moment*
3. *Use the time slider to advance the time by 3 minutes*
4. *Holding down the shift key enables the sun azimuth extension line*
5. *The grey pin is placed on the sun azimuth extension line where it meets the ridge line above the lake*

OK. But this is where some trial and error (and map reading skills) come in. It might be that we'll be looking at a false summit in front of the ridge line as seen from our position on the lake shore.

Let's test it by moving the grey pin down the slope a little to where the contours appear a little steeper. Note the increased apparent altitude, it's now +22.63°. This means that while the elevation may not be as great as the position at the top of the ridge line, the apparent altitude from the red pin to the grey pin position here is steeper by +0.35°.

In this instance the forward thrusting buttresses of the cirque wall probably won't impact our images

In this instance the forward thrusting buttresses of the cirque wall probably won't impact our images significantly, but it's important to be on the look out for these details in some situations.



1. *Move the grey pin down the slope from the ridge line to where the contour lines on the map appear closer together*
2. *The apparent altitude from the red pin to the grey pin is now +22.63°*

Gotchas

The Geodetics calculation can determine distance and bearing quite happily just from the map marker positions (which we always know by definition – you placed the markers). However, to do anything more, we need to know the elevation above sea level for both marker positions. Some potential gotchas:

- Photo Ephemeris Web uses a mix of elevation data from SRTM1, SRTM3, AsterGDEM and GTOPO30
- The underlying elevation data points are usually spaced either every 30 or 90 metres (1 or 3 arc-seconds). Relying on this for high precision, short distance work is not recommended - you should conduct a site survey.

That said, for most landscape photography uses, this will work well. However, if you have a once-in-a-lifetime shot that requires critical planning, I recommend that you:

- Consult multiple reliable sources for sun/moon information (I highly recommend Jeff Conrad's Sun/Moon Calculator – Jeff has kindly provided invaluable feedback and guidance for TPE over the years).
- Obtain a large-scale topographic map of the area of your shoot from a reputable publisher and take careful measurements of distance and elevation.
- Consult the online tools from the National Geodetic Survey and perform your own geodetic calculations.
- Maintain your sanguine disposition when, though the clouds cooperated, the sun or moon did not appear quite where or when you expected. Even if all your preparation and calculation was perfect, the vagaries of atmospheric refraction may result in an unexpected outcome.

Answer to the exercise

I make it ~13,300ft. The ridge line of Little Baldy isn't the limiting factor – you need to look at the next ridge line farther north west which lies even higher. Place the secondary marker there, and then adjust the primary marker up and down the north west flank of Colony Baldy until you obtain an apparent altitude of around zero. From that point upwards, you should see direct light from the setting sun. More or less :)

The next tutorial will cover **Elevation at the horizon.** If you're shooting in high places, this could be significant: Using TPE Desktop Web App, Part 4: the Horizon

Using Photo Ephemeris Web, Part 2: Beyond the Basics

Using Photo Ephemeris Web, Part 1: Basics

Using Photo Ephemeris Web, Part 0: Sign up and Sign in

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Using TPE Desktop Web App, Part 4: Horizon

Stephen

6 days ago · Updated

Follow

Here's the fourth in a series of tutorials on The Photographer's Ephemeris.

We covered the basics of using the program in Part 1. In Part 2, we went beyond the basics. In Part 3 we covered the use of the secondary map marker (the grey pin) and looked at geodetics. You'll need to have understood the material in those tutorials before tackling this one.

This tutorial is based on version 2.0.32.

The Horizon

Why should the photographer care about the horizon? Simply put, it's the visible boundary above which the sun or moon rises and below which they set. Knowing where that boundary lies can be important for setting up your shots.

It's common experience that you can see farther when stood atop a mountain, a tall building or when flying in an aircraft. The distance to the visible horizon increases in proportion to your height above the ground. If you can see farther, then you'll see the rising sun sooner or the setting sun later than if you were back on the ground.

So, in short, height above the horizon changes the precise times of sun/moon rise/set.

TPE can adjust for height above the horizon. In this tutorial we'll walk through the steps to accomplish that.

It's *optional*

One important note: this is quite advanced, meant for specific terrain and entirely *optional*. By default, TPE's times for rise/set match those of the vast majority of other online sources, where rise/set is stated from ground level to the ideal horizon. Very few of these correct for height above the horizon.

You likely won't run into many problems as a result of not using this feature. In fact, the usual landscape photographer's sound advice applies: arrive at your location early and be prepared to stay late. Do that, and the differences in rise/set times due to height above the horizon won't concern you.

So when does this matter?

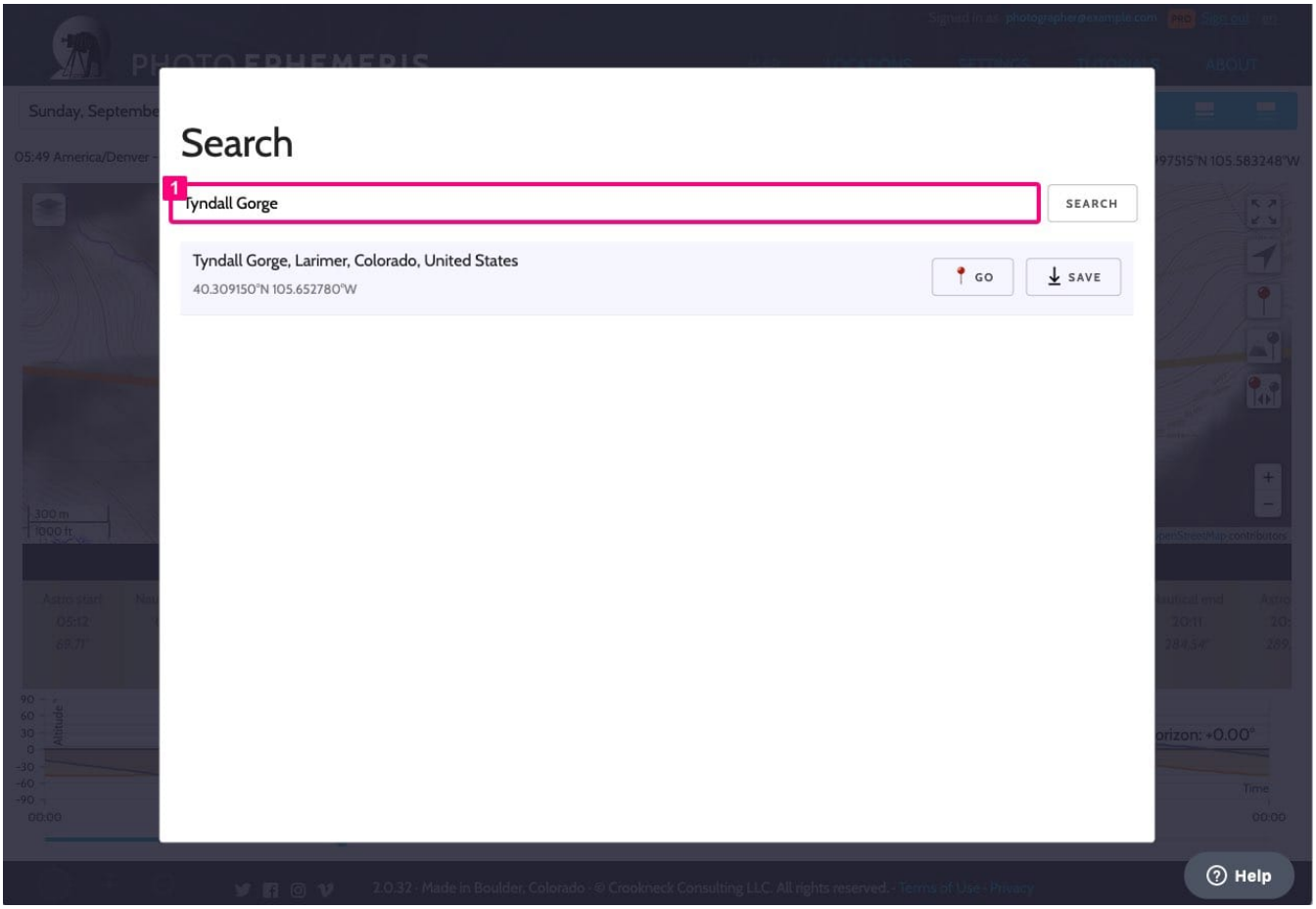
Here are some example situations when knowing about the horizon will help your photography planning:

- Shooting sunrise from a mountain peak (e.g. looking east across the San Juans from the summit of Mt. Sneffels)
- Shooting last light striking a mountain peak (take your pick of summits)
- Shooting a seascape from a high sea cliff at sunrise/sunset (when and where will the sun set as seen from the 601m high Slieve League in Donegal, Ireland?)
- You need to know how far you might be able to see from a high point on the landscape (e.g. can I see Shiprock, New Mexico from Mesa Verde, Colorado?)
- You are planning a shot that requires precise alignment between sun/moon and an object in the landscape, and you're shooting from a point high above the surrounding terrain

Let's discover how this works in TPE.

Back to the Rockies

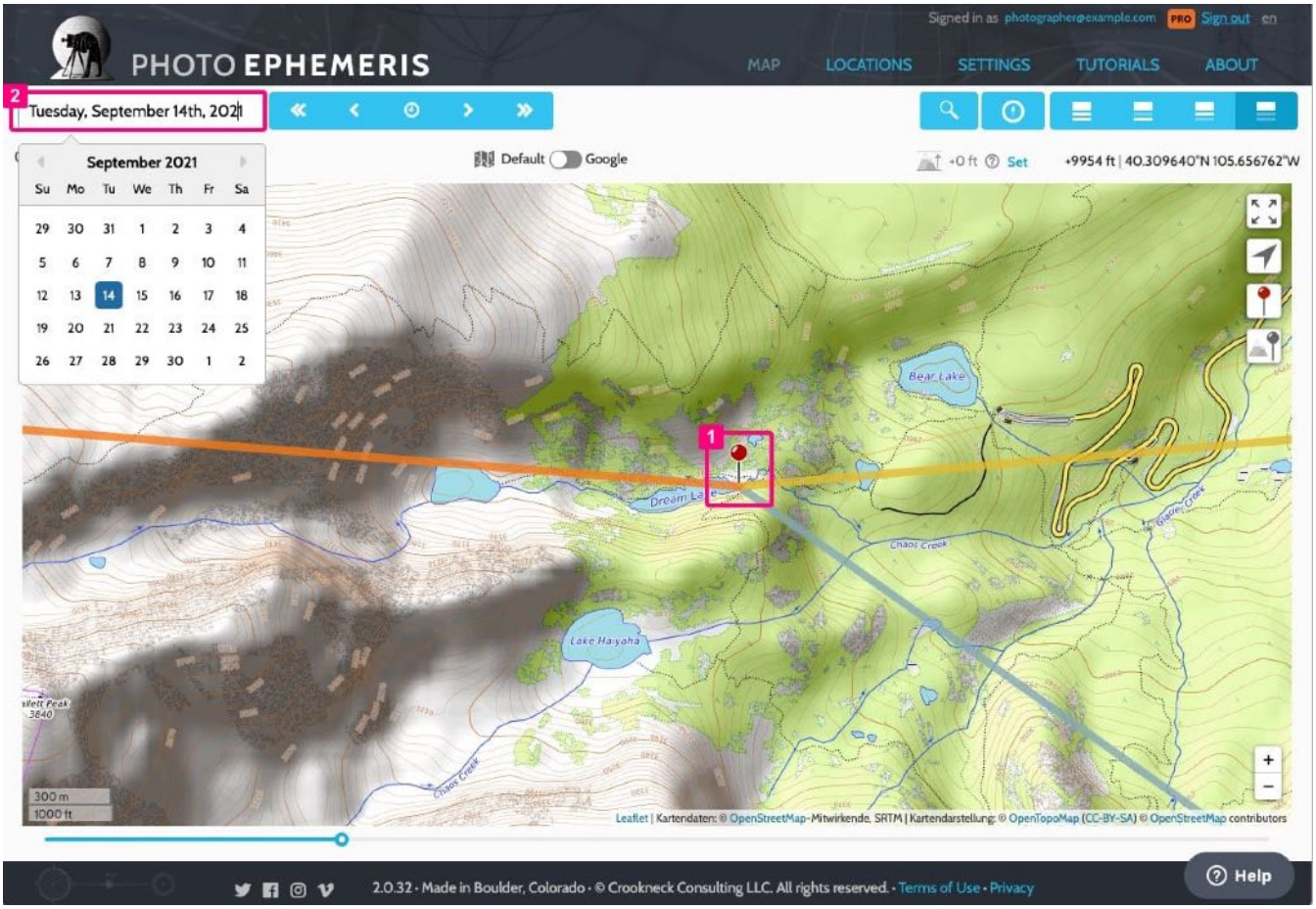
Search for "Tyndall Gorge" (yes, we're back in Rocky Mountain National Park). You should see Dream Lake just slightly to the west after clicking **GO** to position the primary pin:



1. *Type Tyndall Gorge into the search field in the form displayed after clicking the Search button above the map, then hit Enter. Select the first result by clicking* ***GO***

Next, let's position ourselves for the shot: drag and drop the primary map marker (the red pin) to a point at the east end of Dream Lake. When setting up a pin position it is sometimes a good idea to see a bit more map. You can do this in TPE by using the blue buttons above the map to the right. Here I've hidden the timeline and altitude chart.

Set the date to September 14 2021. Note: no, your eyes are not deceiving you, (and no, TPE is not broken) there is no moonset for this date, so no moonset azimuth is shown.



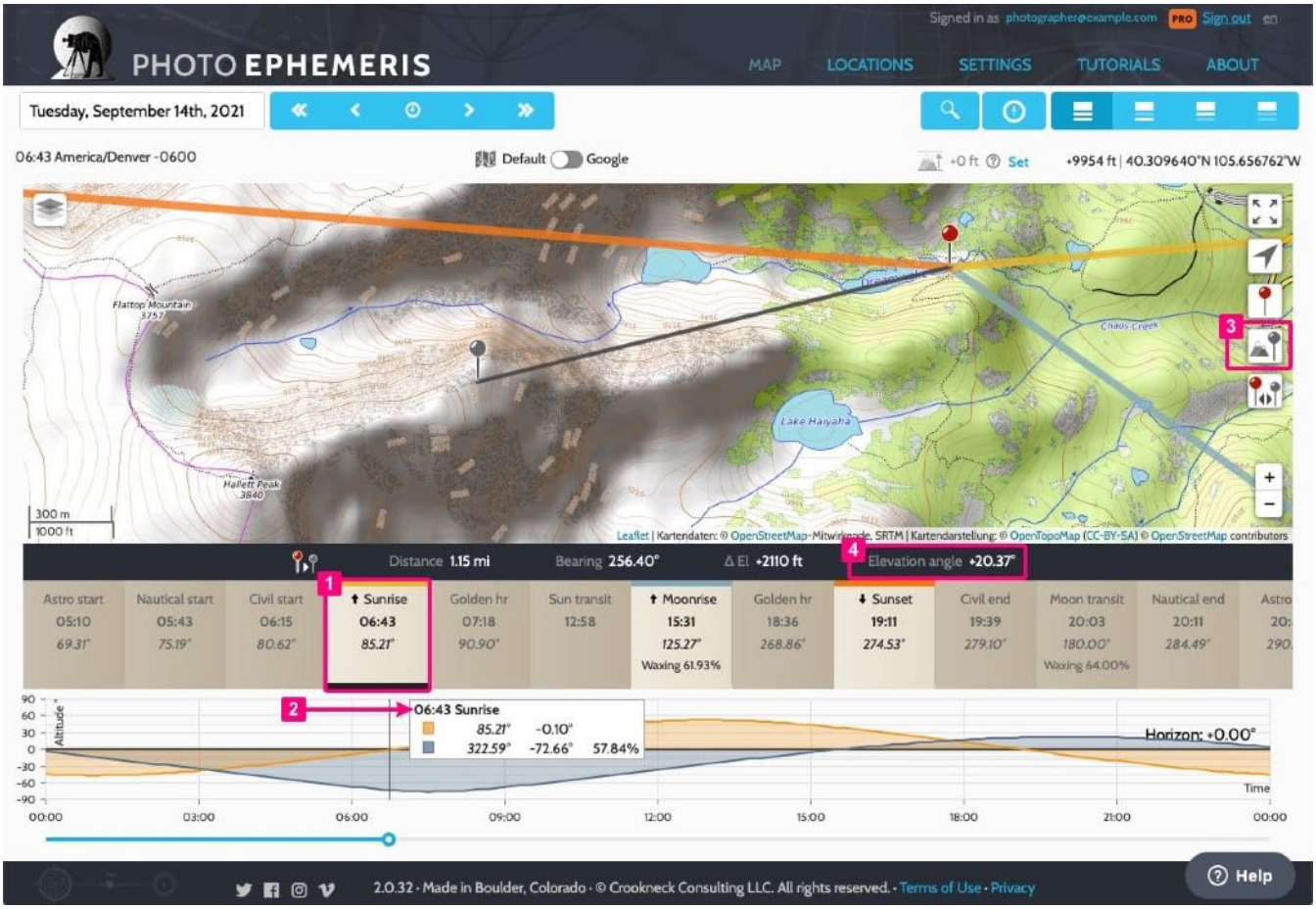
1. *The red pin is positioned at the east end of Dream Lake*
2. *The date is set to 14 September 2021*

We now need to see the top of Hallett Peak (to the west of Dream Lake) as well as the red pin. You may need to zoom out and move the map to get both points visible on your screen.

It's going to be a sunrise shot, so let's set our time correctly. Click the sunrise event in the timeline. The time slider and legend will jump to the moment of sunrise for the position of the red pin and the chosen date: 06:43.

Click the grey pin button to engage the geodetics function or use the keyboard shortcut: *G*. Drag and drop the secondary marker (the grey pin) to a point on the eastern flank of Hallett Peak, aiming for the most tightly packed contour lines

Note that the elevation angle from lakeshore to mountain flank (from primary pin to secondary pin) is +20.37°:



1. *The time is set to sunrise by clicking the sunrise event in the timeline*
2. *The chart legend shows the matching timeline event and the sun/moon altitude and azimuth*
3. *Switch geodetics on: use the button or press 'G'*
4. *The apparent altitude from the red pin to the grey is +20.37°*

But what we are really shooting?

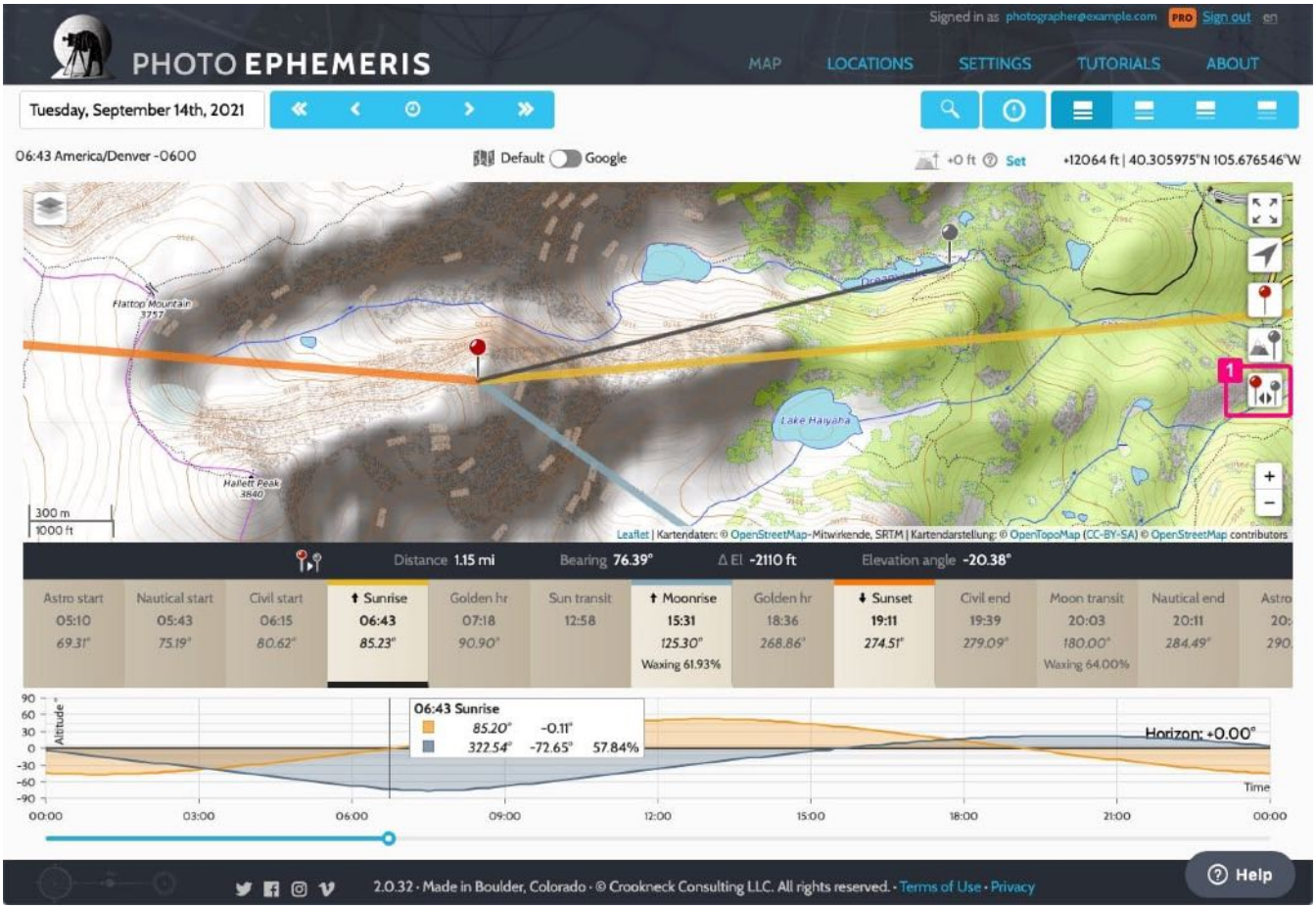
Perhaps it's time to think about what we are planning to shoot here. Where will the rising sun fall?

Hallett Peak from Dream Lake (this was taken in March rather than September, but the rising sun is at a similar azimuth)

Really, we should have our red pin on the mountainside: that's where first light will strike – not the ground under our current tripod position. We need to reverse the pin positions. Fortunately, there's an easy way to do that:

Click the Swap button on the map or use the keyboard shortcut: *S* – the red and the grey pins swap positions.

Remember, information in TPE is always expressed for the position of the red pin, and the geodetics information always shows travel from the red pin to the grey pin. Note how the information has changed in the geodetics panel: the change in elevation and altitude numbers are now negative and the sun and moon apparent altitudes have changed slightly to match the new red pin position for the time slider's selected time.

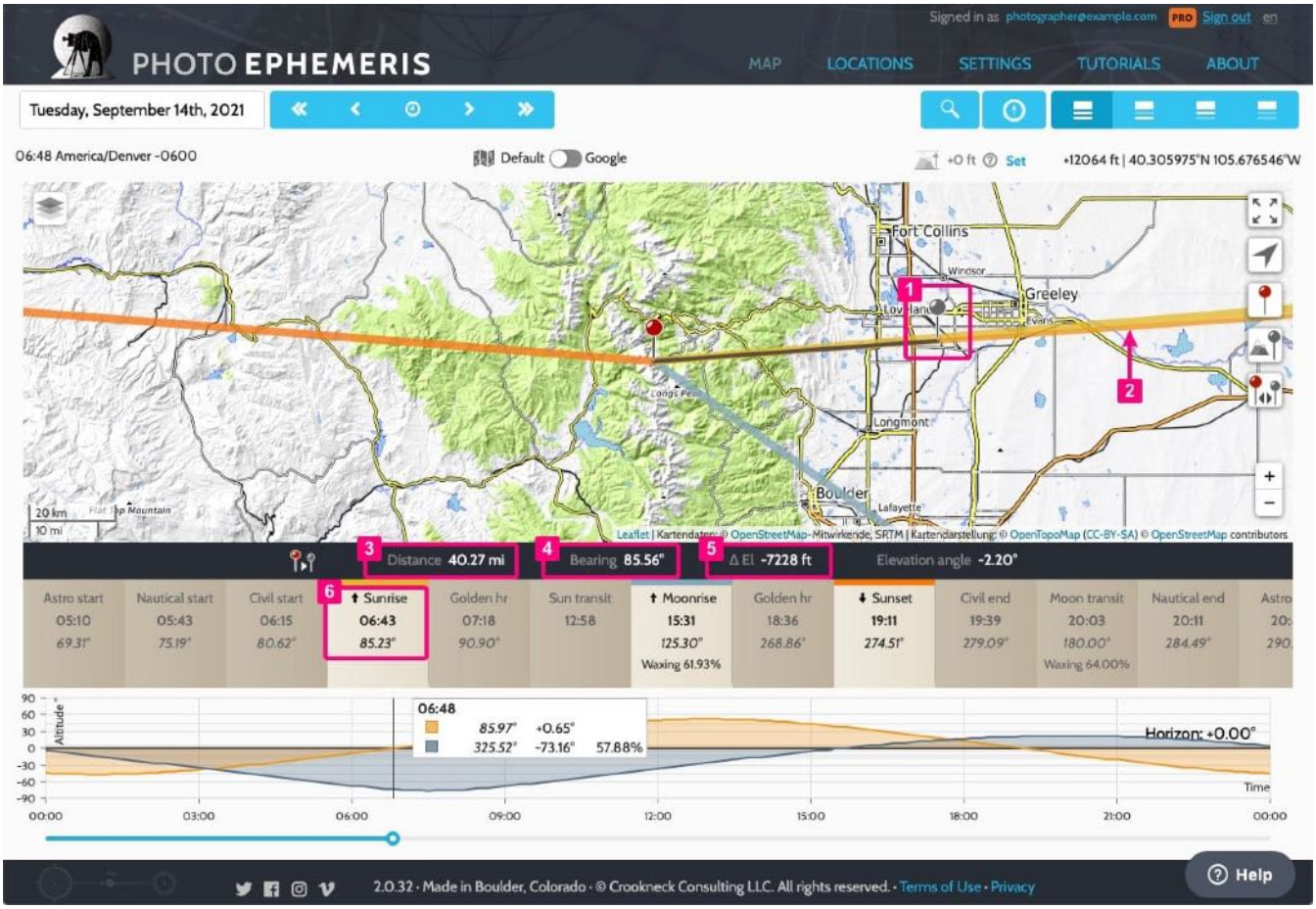


1. *Use the swap button to swap the positions of the red and grey pins, or use the keyboard shortcut:* S

The point we're photographing is significantly higher than the lake – over +2000 feet. From Rocky Mountain National Park you can see clear to the east for a rather long way because the plains lie several thousand feet lower in elevation. Let's find out exactly how much lower.

Zoom out so you can see the plains of eastern Colorado as shown. Move the grey pin out along the sunrise azimuth line, dropping it somewhere beyond Interstate 25/highway 87. Finally, advance the time slider a few minutes to 06:48 so we know the sun is fully above the horizon.

The Geodetics panel tells us that the distance between the pins is over 40 miles and that the change in elevation is more than 7,000 feet. The azimuth from the red to the grey pin is 84.20° the same as the sunrise azimuth.



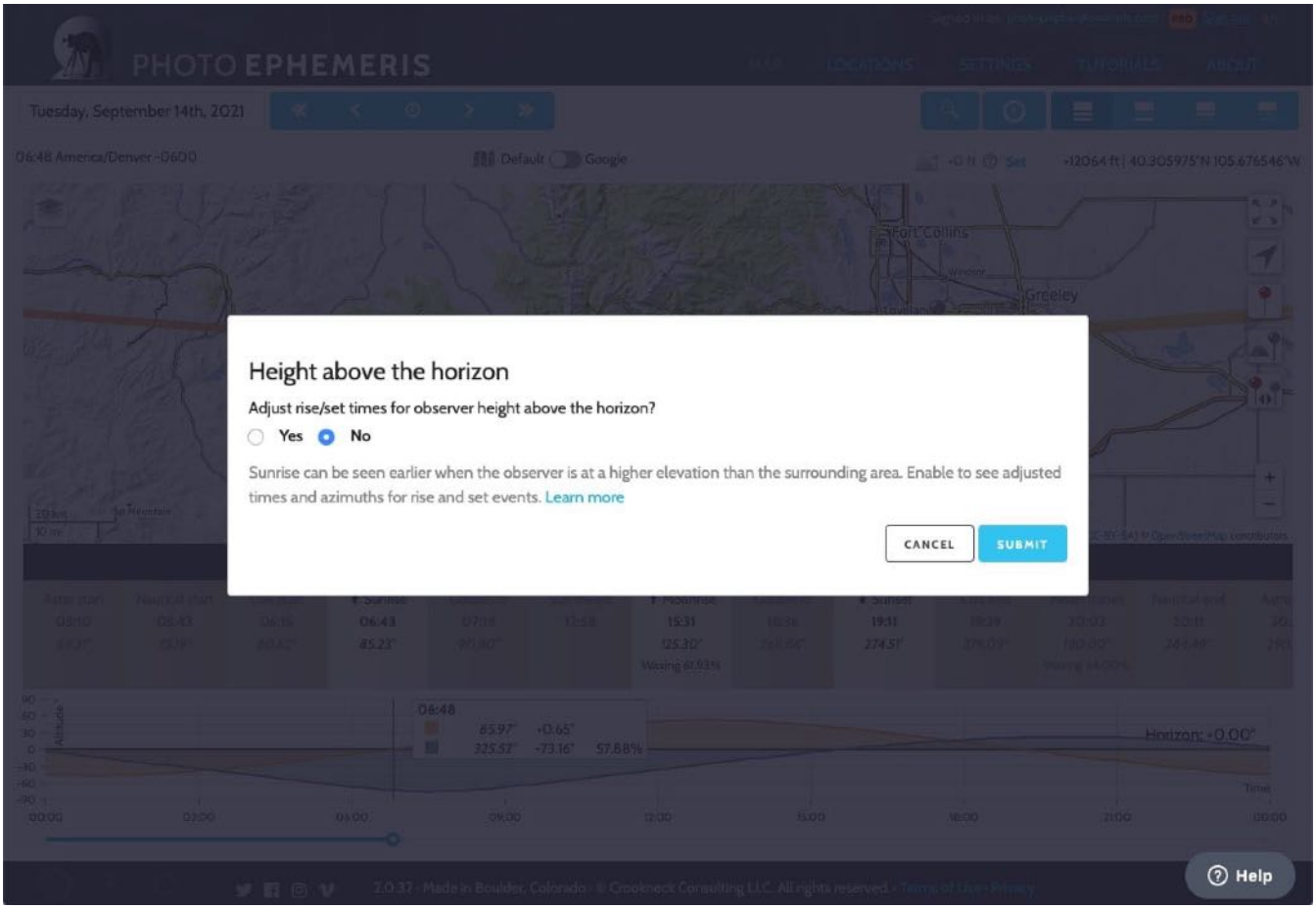
1. *The grey pin is moved out onto the eastern plain along the sunrise azimuth*
2. *The darker sun azimuth, just south of the sunrise azimuth, shows our time slider set time of 06:48*
3. *The distance between my red pin and grey pin is 40.27 miles*
4. *The change in elevation is 7,228 feet*
5. *The azimuth from the red pin to the grey is 85.56°*
6. *Sunrise is at 06:43 at an azimuth of 85.23°*

Setting the Elevation at the Horizon

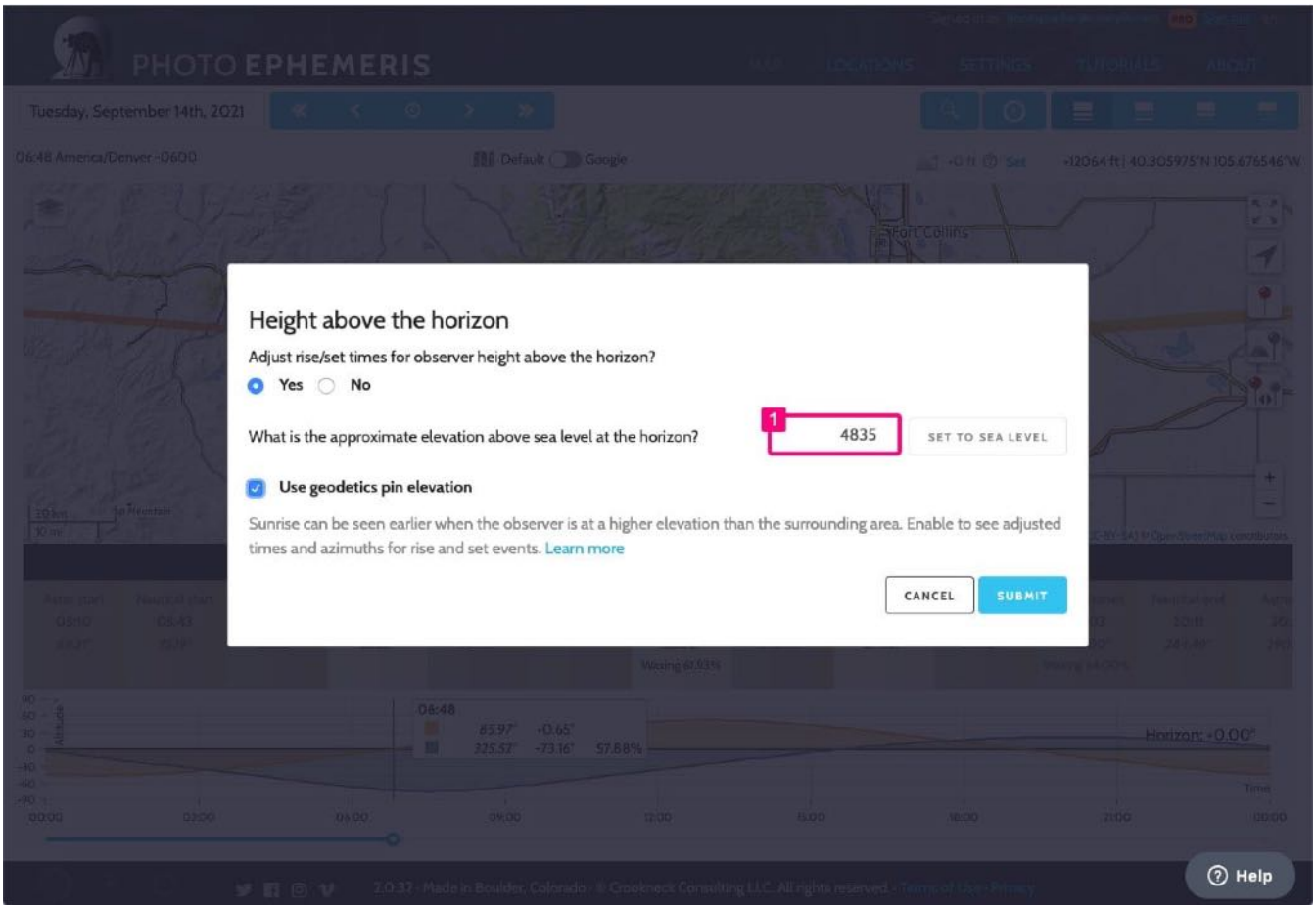
This is the critical step.

Knowing that the plains are just that – plains, and therefore flat – we can use our roughly positioned grey pin to set the *elevation at the horizon*. TPE knows the elevation at both red and grey pin positions, so can take the difference to calculate the elevation *above* the horizon, which is the number we need to adjust the rise and set times.

Look at the top of the map towards the right. Click the 'Set' button next to the mountains icon: this allows us to set the elevation at the horizon. Choose Yes:



Once enabled, some additional controls are shown. Check the 'Use geodetics pin elevation'. You will see that the field for the approximate elevation at the horizon is populated (your value may vary slightly from the one shown below, due to small differences in the secondary pin position):



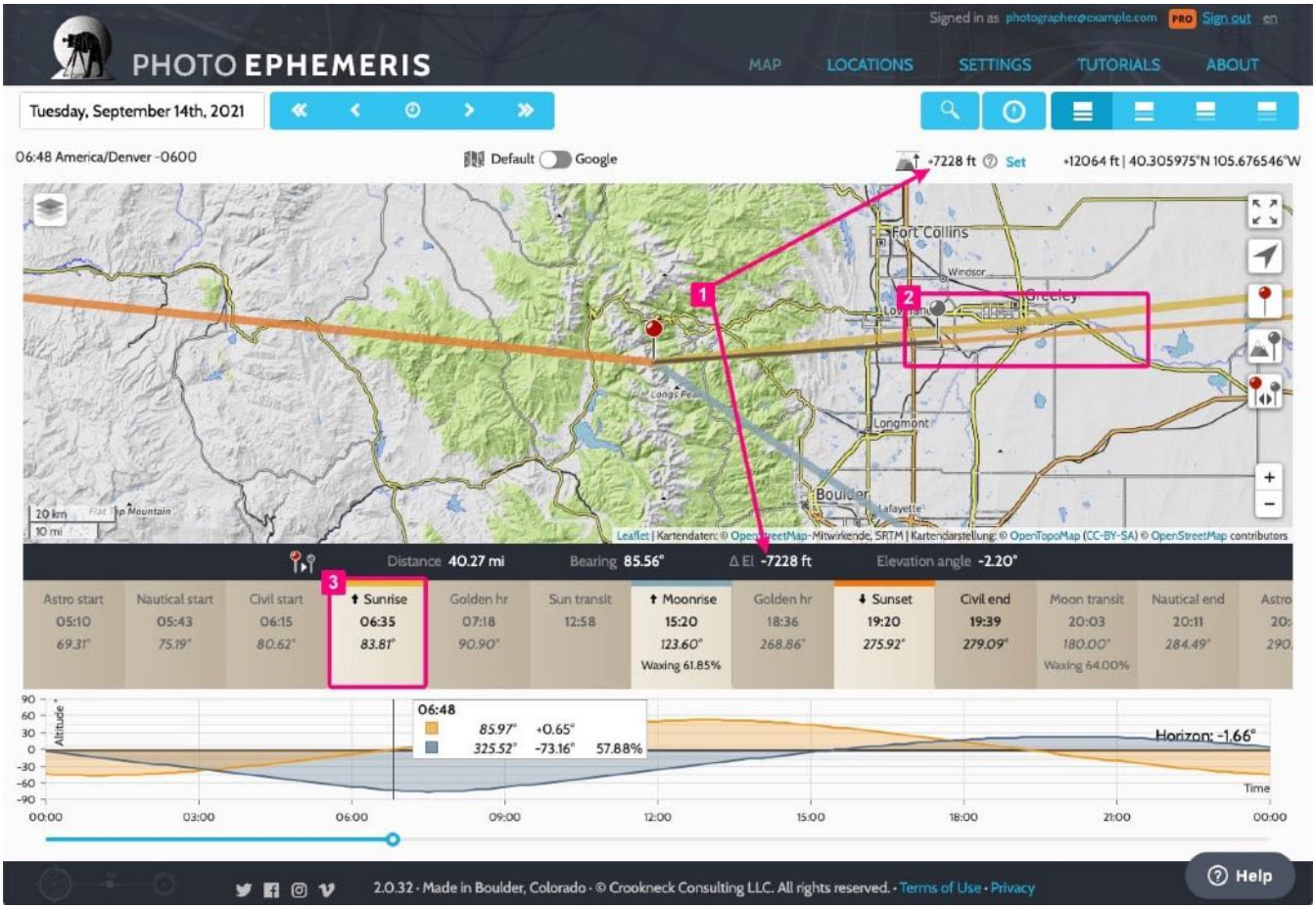
1. *Elevation at the horizon is set to +4835ft - this is taken from the secondary pin position*

You can also manually type a value by unchecking the "Use geodetics pin elevation" checkbox, and then typing in your chosen value.

Click **Submit.**

Now look at the time of sunrise, it has changed to 06:35 rather than 06:43. The sunrise azimuth has changed also, it is now further north of our grey pin – and, although our time of day setting hasn't changed, now that we're accounting for height above the horizon, sunrise is sooner and occurs farther to the north.

That eight minute difference is the effect of the elevation above the horizon as observed from high on the flank of Hallett Peak:



1. *Setting the elevation **at** the horizon means we can easily calculate the elevation **above** the horizon: +7228 ft*
2. *While the grey pin bearing and sun azimuth remain the same, the sunrise azimuth is now farther to the north: the sun rises earlier!*
3. *The sunrise time is now eight minutes earlier at 06:35 (was 06:43) and the azimuth is now 83.81° (was 85.23°) - quite a large difference*

You may be wondering, just because we dropped the grey pin somewhere east of the I25 highway, is that where the visible horizon actually is?

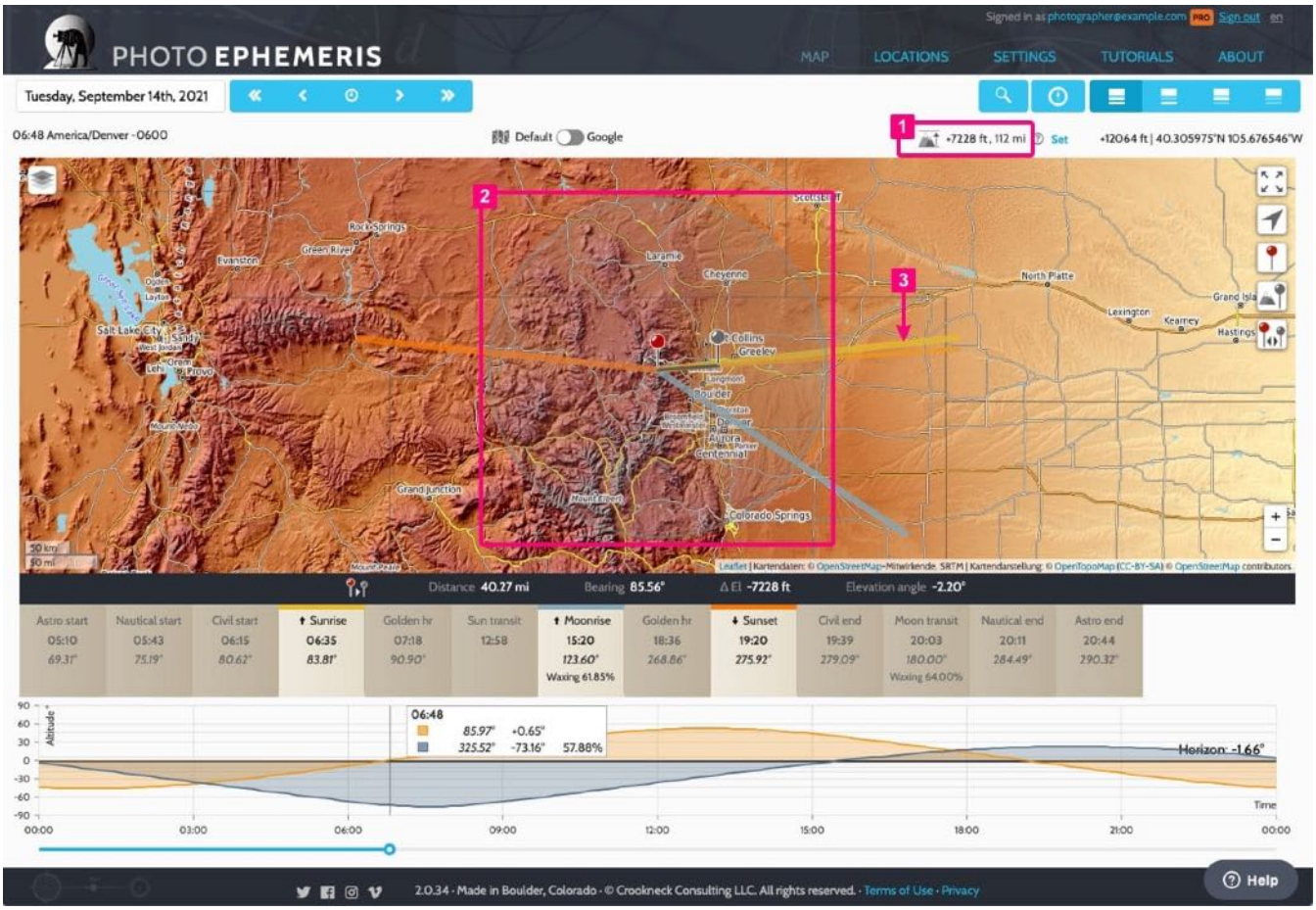
Well, no: it's an estimate.

Remember the trial-end-error elements of Tutorial 3? This is another case where trial and error produces a acceptable results. However, the program gives us a clue as to how close we might be.

Zoom out a little on the map (you may need to zoom out 2 or 3 times).

You will see a grey circle centred on the red pin. This is the horizon overlay and is a visual indication of the implied distance to the horizon. The calculated distance to the horizon from the red pin's position is indicated next to the horizon lock, above the map. For my red pin position it stands at ~112 miles

The rise and set azimuths look quite stunted from this far out. TPE limits all azimuths to 200 miles, except for the pin azimuth. Note: as stated before, there is no moonrise on this date, so no moonrise azimuth is shown.



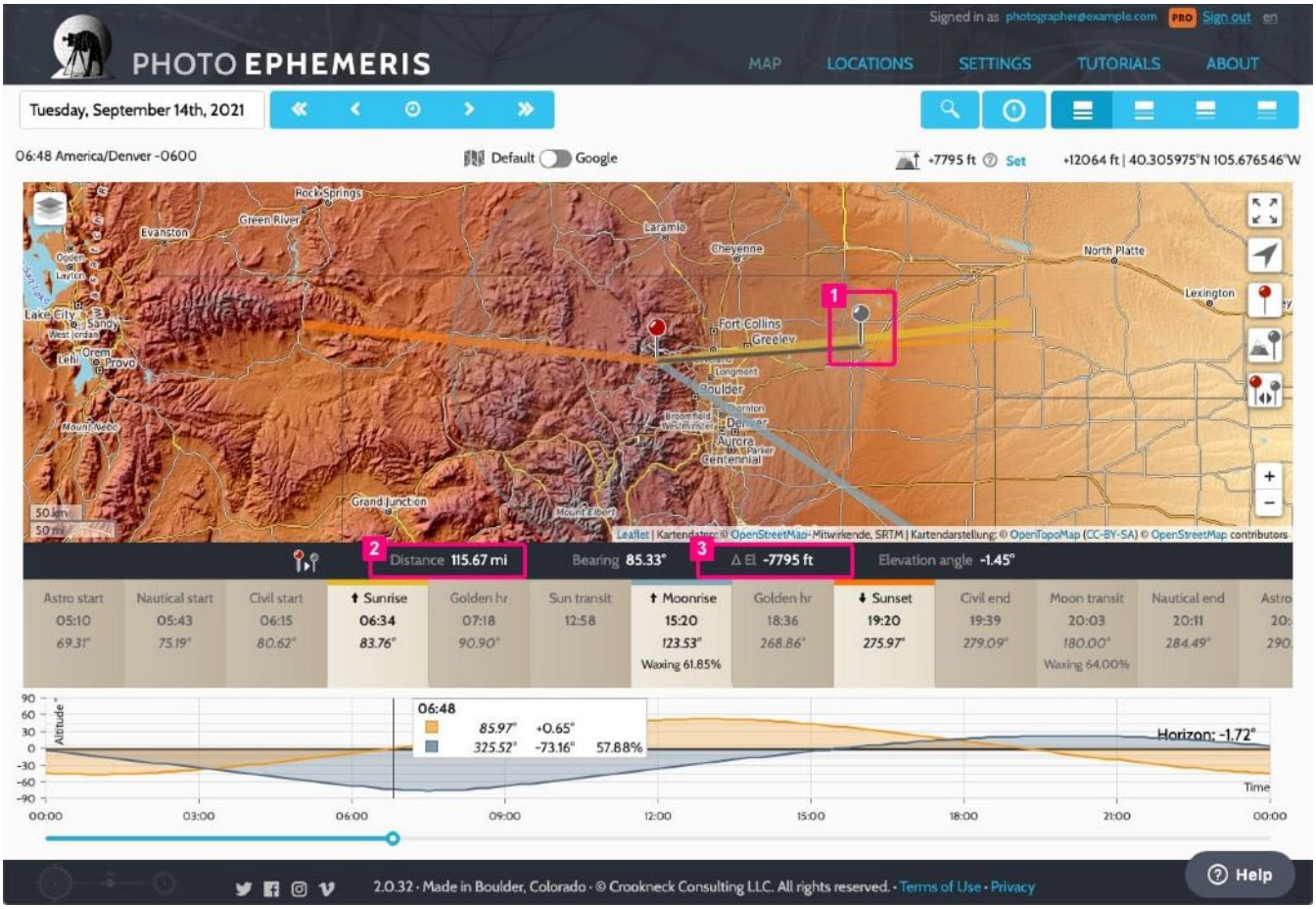
1. *The calculated distance to the horizon for my red pin position is ~112 miles*
2. *The horizon overlay is a visual indication of the implied distance to the horizon*
3. *You can see the ends of the azimuth lines when zoomed out this far*

So, from the flank of Hallett Peak, if the elevation above the horizon is over 7,000 ft (implied by our pin locations), we *should* be able to see ~112 miles to the east. It's important to understand the distance is an estimate, based on theoretical (but reasonable) calculations and assumes a 'standard' set of atmospheric conditions. See Andrew Young's Distance to the Horizon page for more details – there's some interesting background material here too.

Having zoomed out and seen that the implied distance to the horizon is much farther out along the plain than our first trial and error placement of the grey pin, it makes sense to adjust and double check - this is the trial and error part.

Place the grey pin out along the sunrise azimuth, where it intersects with the visible horizon overlay circle.

You'll see that elevation above sea level is slightly lower again at this location, and the distance to the visible horizon increases slightly, but not significantly



1. *The grey pin has moved out along the sunrise azimuth to where it intersects with the horizon overlay*
2. *The distance to the visible horizon number has changed slightly*
3. *The change in elevation between the red and grey pins has increased*

What have we achieved with all this?

Let's review:

- The premise is that we are shooting sunrise on some mountain peaks high above an extensive plain
- We know that the sun will be seen from the mountain peaks *earlier* than it would at a lower elevation because the distance to the horizon is greater
- If we want to correct the rise and set times for this "dip of the horizon", we need to tell TPE what the elevation above sea level is *at* the horizon
- Adopting a simple trial and error approach, we can drop the grey pin in a likely-looking location, *Lock* the elevation at the horizon to the grey pin position and let the program recalculate
- By zooming out we can see the implied distance to the horizon and use that as a hint of where to try the grey pin next
- With a little trial and error, we can get a decent estimate of where the visible horizon will lie

- You can see by now that if you were shooting *from* the mountain peak (as opposed to shooting the peak itself) the distance to the horizon will show you what landscape features you might see in your shot

Gotchas

The same gotchas apply as from Tutorial 3 – you need elevation above sea level for both pin positions. However, in addition:

- The distance to the horizon will vary depending on which direction you look. Therefore, it's important to establish the horizon in the direction from which the light appears or in which you plan to shoot. (In the example above, the distance to the horizon in the east is very different from the distance to the horizon in the west.)
- You need to pay attention to the contour information contained in the topographic map in order to make educated trial and error attempts. In varied terrain, you may need to test more horizon overlay locations than the flatter terrain used in this example
- If you need to establish the elevation at the horizon, but still wish to use the secondary marker for other purposes (e.g. as per Tutorial 3), then do the following: (i) establish the elevation at the horizon first, using the Lock function; (ii) once set, unlock the horizon by clicking the horizon lock again – this leaves the grey pin free but the elevation at the horizon remains set
- To clear the elevation at the horizon, click on the value in the horizon text box, delete the value and then hit return.

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Using TPE Desktop Web App, Part 5: Locations

Stephen
6 days ago · Updated

This tutorial outlines the locations features in the TPE web app. In TPE, a location is defined as a map coordinate: latitude and longitude.

When saving a location, TPE records the red pin position along with the map zoom level. The elevation and time zone of the location are also stored as reference data.

Searching for locations

We covered the basics of searching for a new location in Part 1 of this series - please review that now if you haven't read it already. There are a few more things to add.

Types of search terms

You can search for address, place names, post codes, ZIP codes or coordinates. Type your search term in the field as shown:

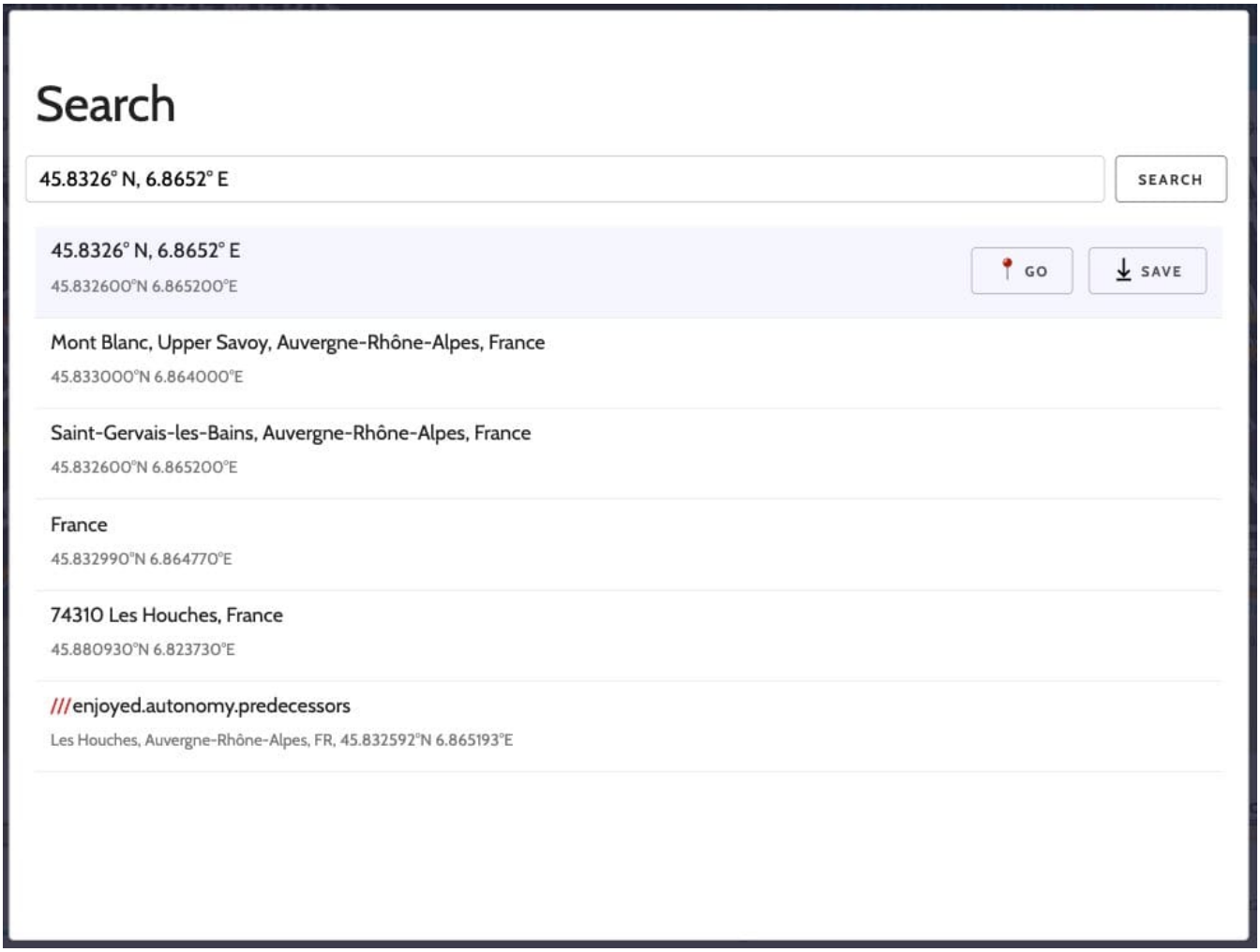
If you're a **PRO** subscriber, you will see auto-complete suggestions as you type. If you don't have a **PRO** subscription, hit Enter or click the Search button to see results.

Note: autocomplete suggestions may differ from the results you see when you click Search. This is because autocomplete tries to make best guess matches to what you're typing. The search button finds specific matches only.

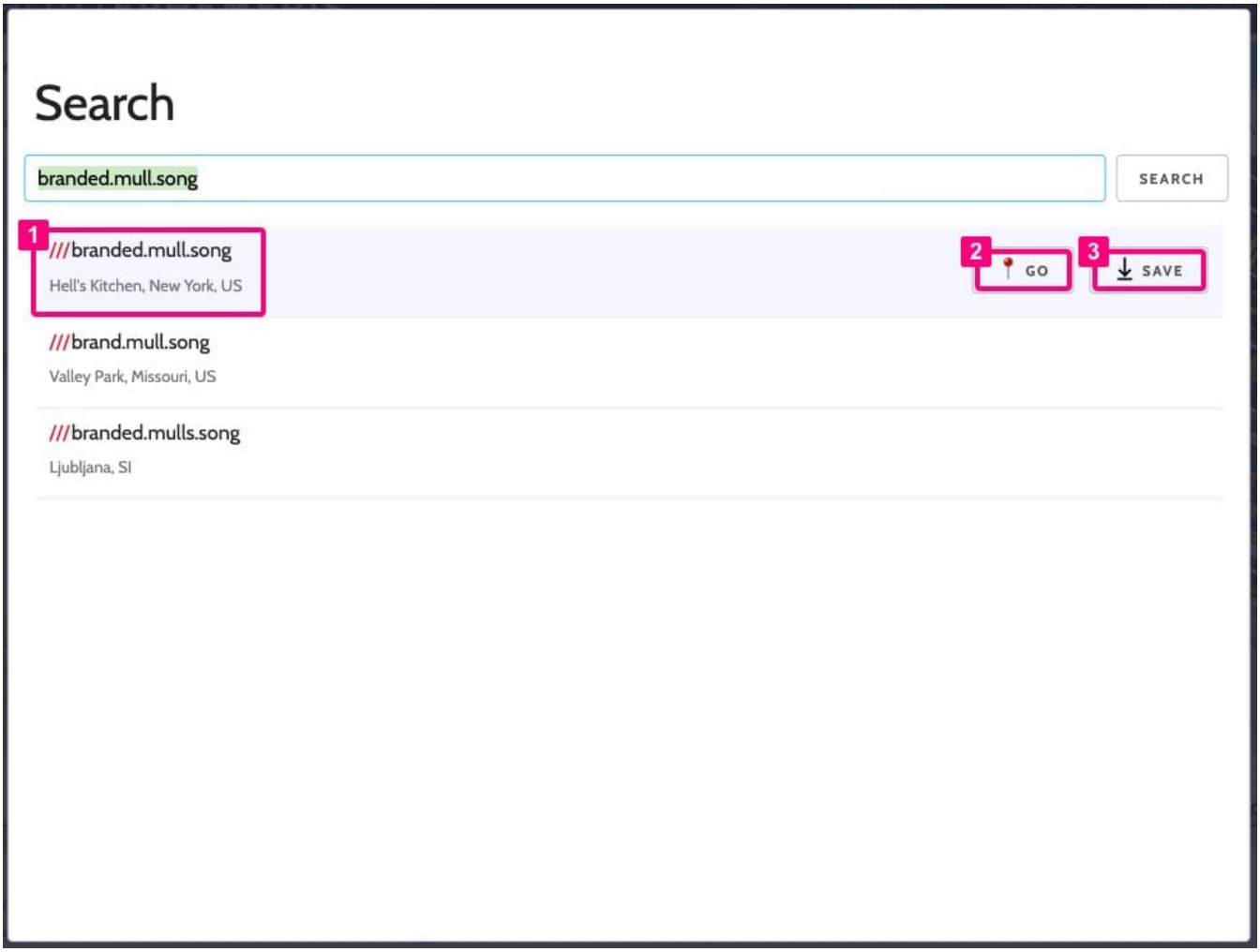
Here are some examples of things you can search for:

- Place names: e.g. Stonehenge, Schwabacher's Landing
- Addresses: e.g. St Paul's Churchyard, London, EC4M 8AD
- Post codes: e.g. WC2E 9DD
- Zip codes: e.g. 10023. This returns places in Poland and Italy in addition to New York - the USPS doesn't have a monopoly on numeric postal code systems
- Coordinates (formatted in decimal degrees): e.g. 45.8326° N, 6.8652° E - the summit of Mont Blanc
- Three word addresses: e.g. branded.mull.song. what3words.com has divided the planet into 3 x 3m squares (~10 x 10ft) and given each a unique name - this can be great way to communicate about otherwise unnamed spots that landscape photographers may wish to reference.

If you enter coordinates, the app will also look up nearby places. In this example, I've entered the latitude/longitude of Mont Blanc. As you can see, the 'reverse geocoding' process finds nearby places, the first of which is, naturally, Mont Blanc:

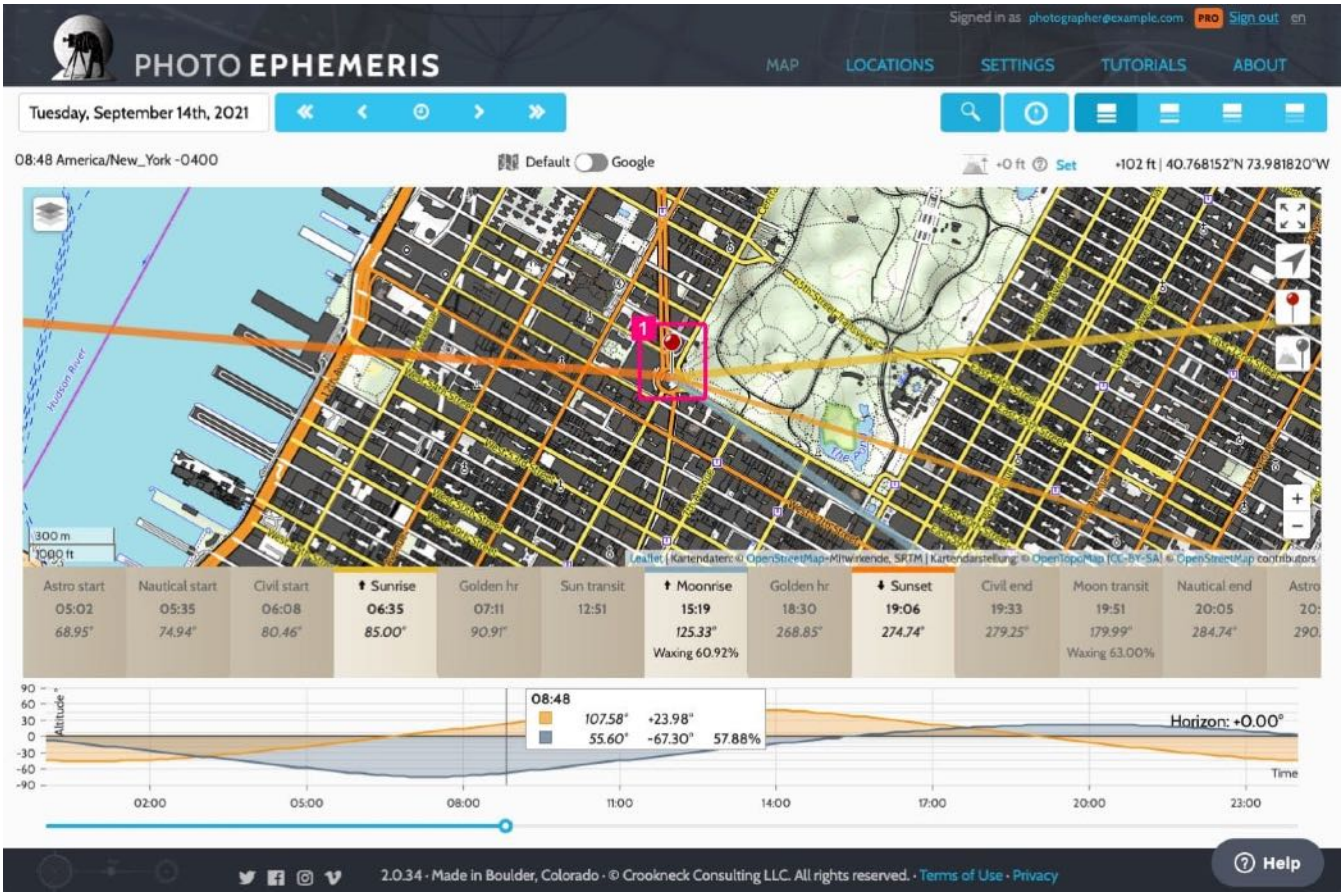


Once you've found the search result you want, you have two options: (i) **Go** and (ii) **Save**:



1. *Three word address found from search term*
2. *Go sets the primary pin to this location*
3. *Save will add it to your saved locations list*

After clicking **Go**, the primary (red) map pin is set to the correct coordinate:



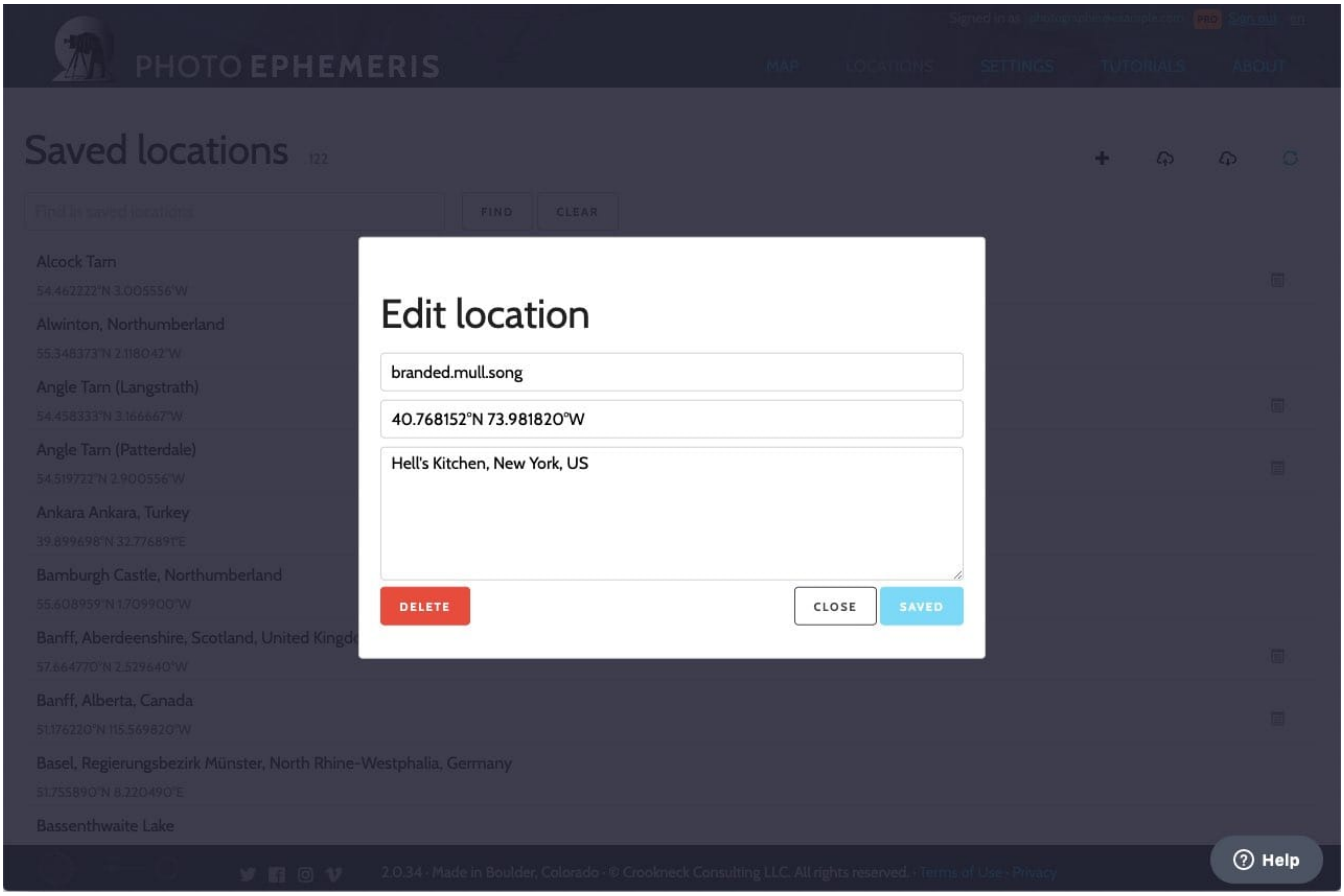
1. *Primary pin is positioned to Columbus Circle, New York*

For some results, it may be necessary to use the map buttons to zoom in or out. If you have zoomed to where your red pin is no longer in view, use the centre red pin button to move the red pin to the centre of the map; alternatively, you can use the keyboard shortcut Q.

Sometimes after positioning the red pin, you might move the map until the red pin is out of view. To centre the map on the red pin, use the keyboard shortcut *Shift-C*.

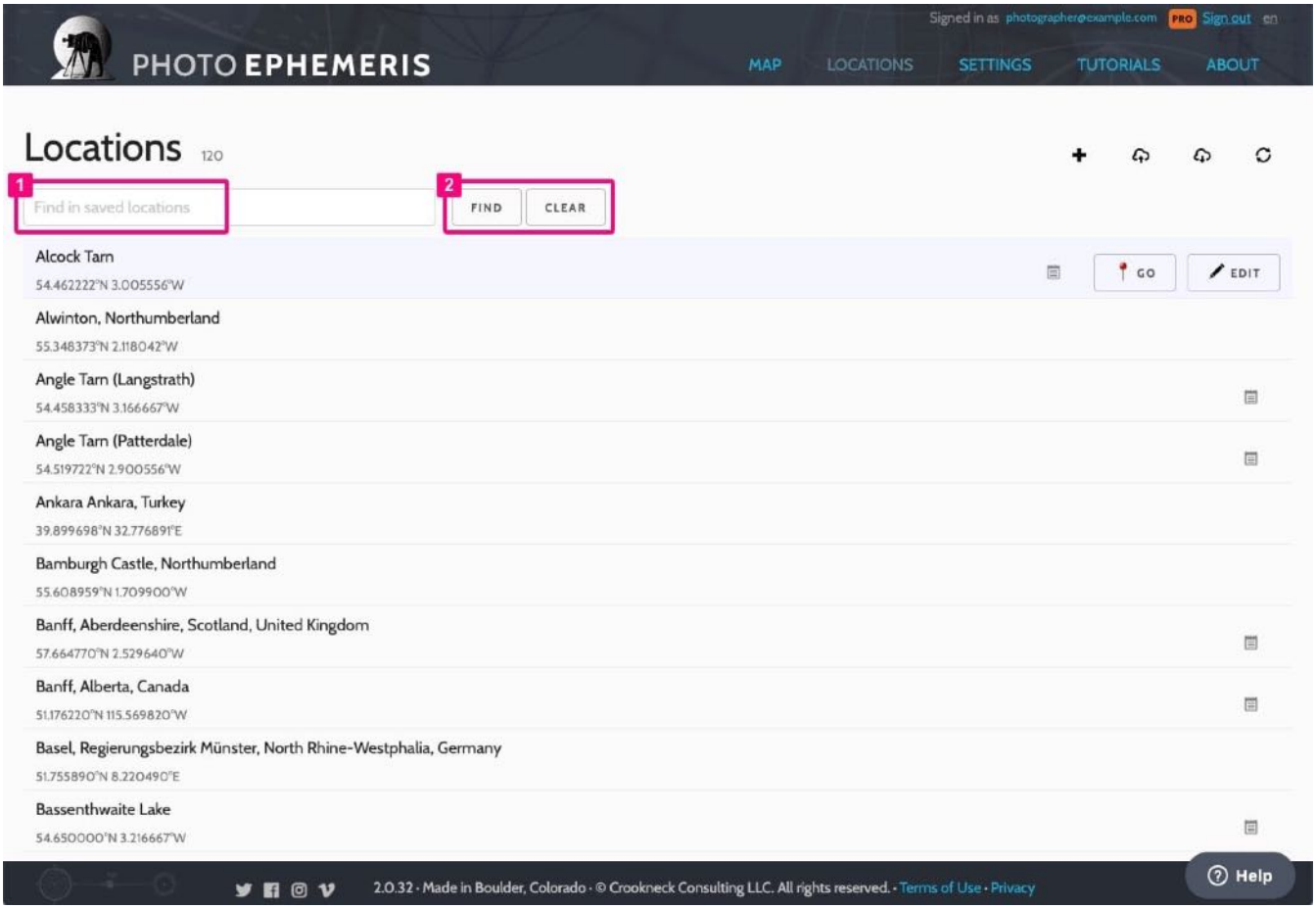
Saving locations and the Locations page

If you wish to save a search result to your locations list, click **Save** as shown above. The app will navigate to the Saved Locations page and you will be able to rename the location, edit the coordinates and optionally enter some notes:



When done, click **Save** if you made changes, or otherwise, just click **Close.**

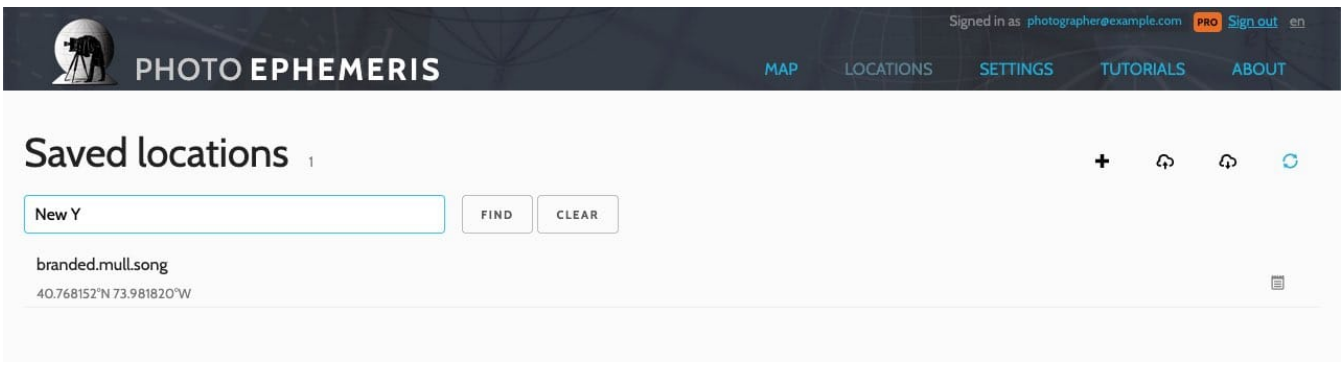
If we want to go back and edit the saved location, you'll need to be able to find it again in your list. We can search our list by typing in the 'Find in saved locations' field:



1. *Find in saved locations field*
2. *Find and Clear buttons*

Remember, this is **not the same** as searching for a new (unsaved) location: to find new places, use the Search button on the map page. To find saved locations, use these controls on the Saved Locations page.

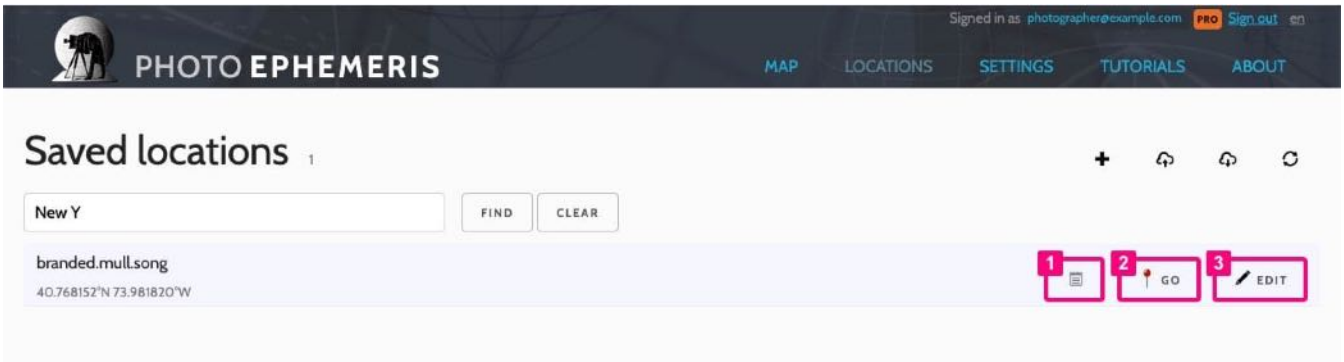
The search function will find matches within both the title and notes fields of your saved locations. So, for example, to find the three word address we saved above, I can type 'New Y' (as the notes field included the words 'New York'), and it will be found:



You can click Clear to display the unfiltered locations list

You can click Clear to display the unfiltered locations list.

If you click the location displayed above to select it, some additional controls appear:



1. *Icon to indicate that the saved locations has Notes content*
2. *Set the primary pin to this location*
3. *Edit the saved location record*

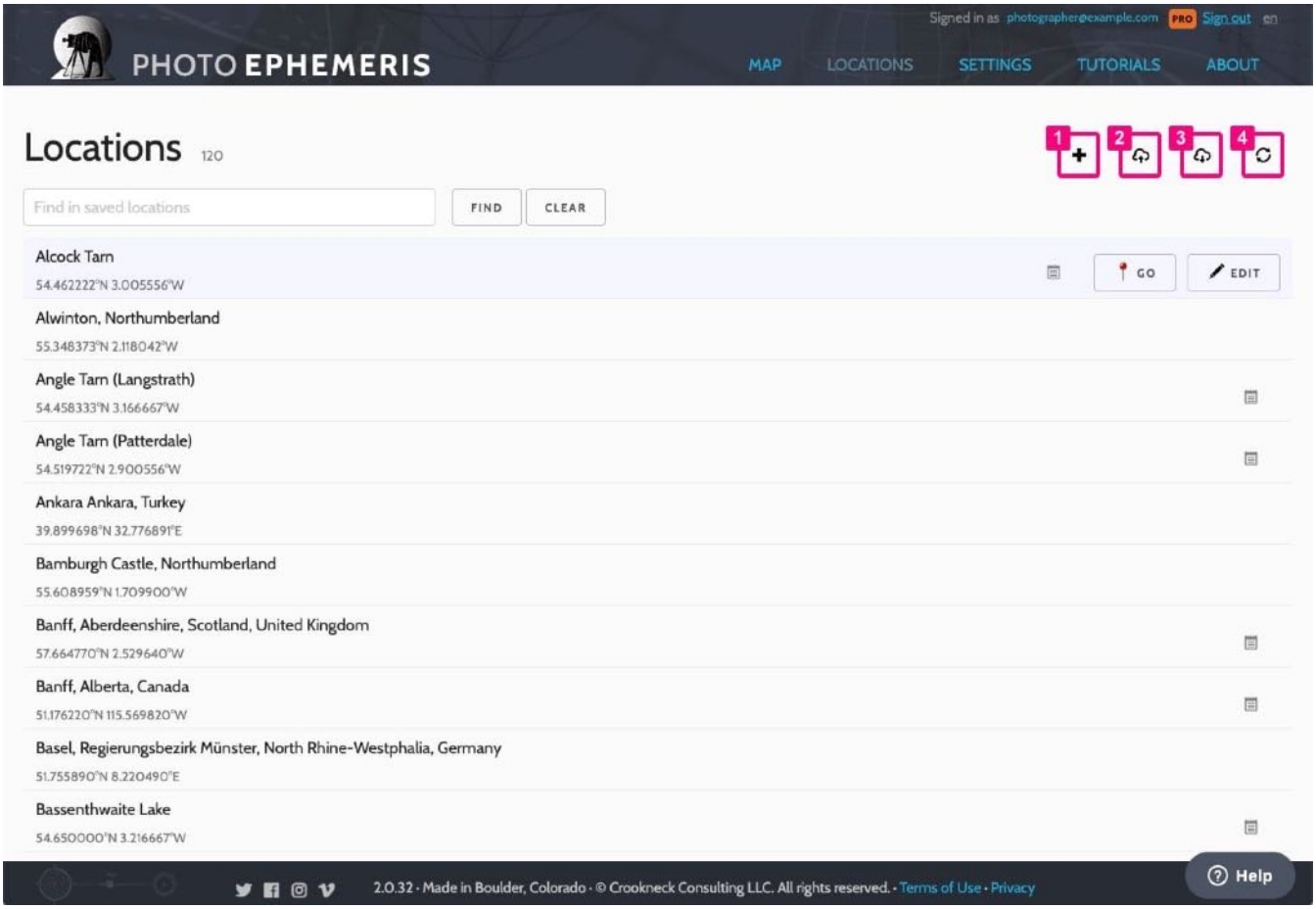
For saved locations, it can be useful to set up a naming convention for your locations from the start. Examples of possible naming conventions include:

1. Country, province, location name: a search for “Mali” or “Lichtenstein” will display just the saved locations in those places
2. A “project” name added to a location

A project name can help you distinguish between saved locations. In Colorado there are a number of mountains over 14,000ft that are known as “fourteeners”. If I filter my locations list using the search term “14er” (a common shorthand form), this would bring up any saved location with the word “14er” in the title. By adding the term “14er” to a saved location name, I can distinguish these particular Colorado mountains from other locations in my list.

You don’t have to use a naming convention: you can just rely on the default name given to the location when it is created. However, after using TPE for a while, you may end up with a long list of saved locations. Remember the most important consideration when naming a saved location is that it is easy to find again: don’t get too cryptic!

Additional controls



1. Add current primary pin position as a saved location - see Part 1 for details
2. Import locations from KML
3. Export locations to KML
4. Synchronize Locations

Importing and exporting locations

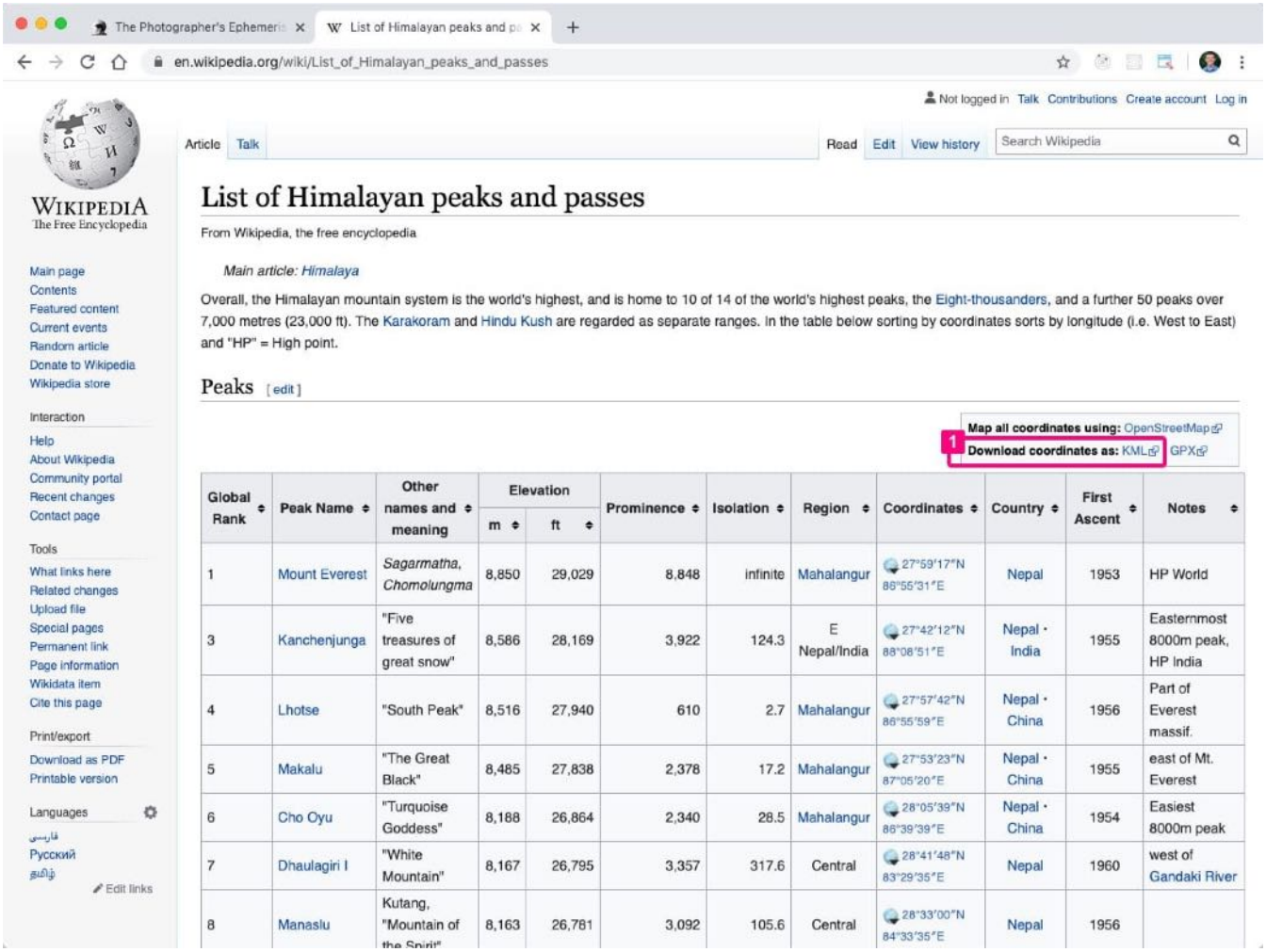
In TPE you can easily import and export locations using the ".kml" file format for 2D and 3D map-based data. Google Earth uses the same file format. You can view exported TPE locations in Google Earth and vice versa.

Import a KML file to TPE

KML is a standardised format for geographic information. TPE can import KML files that include Placemarks.

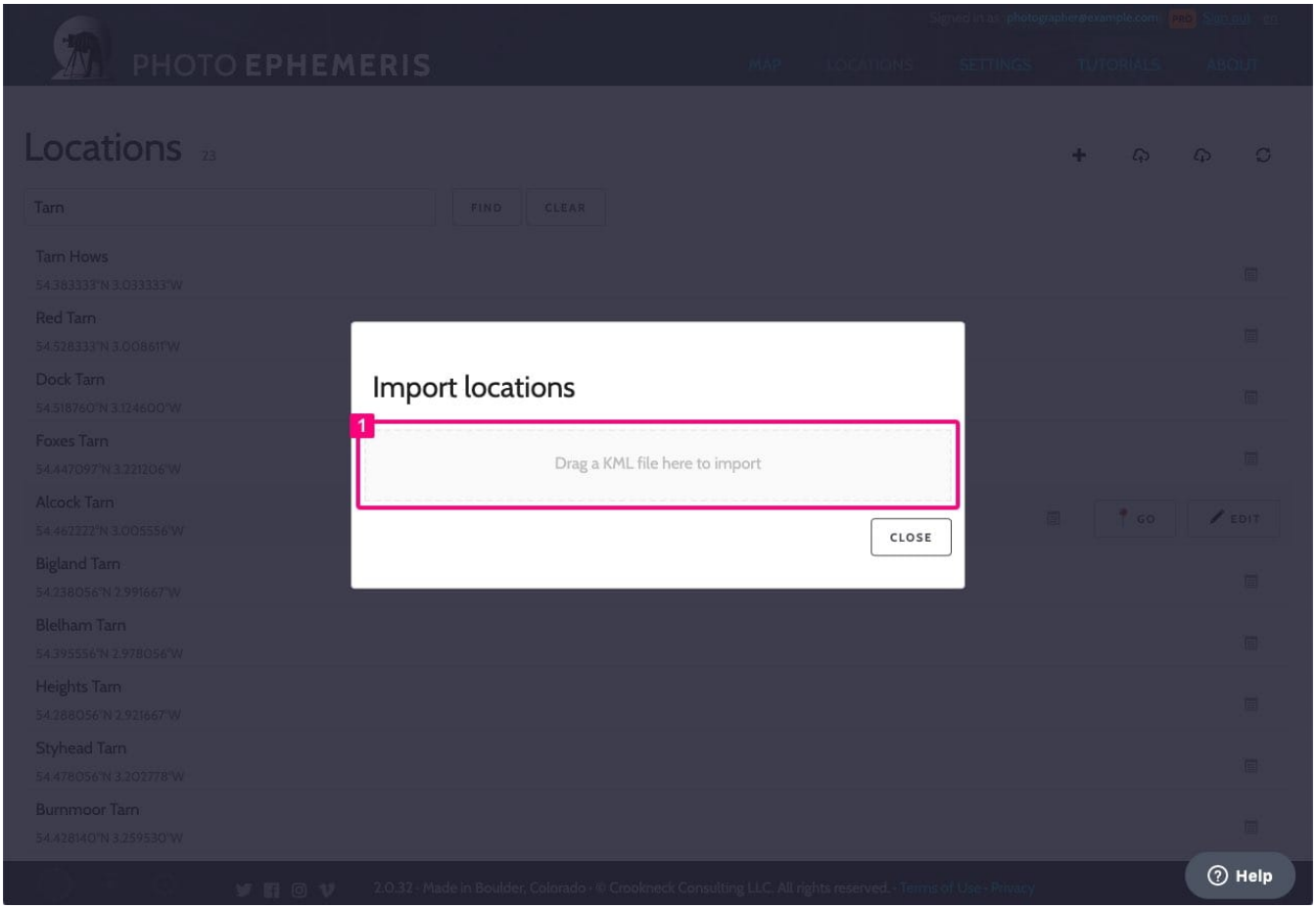
> **Note**: not all KML files include Placemarks, so you may find some files that generate zero locations when imported.

As an example, we'll use some KML downloaded from Wikipedia. Wikipedia has all sort of lists of interesting places. Grab the KML from the List of Himalayan Peaks and Passes:



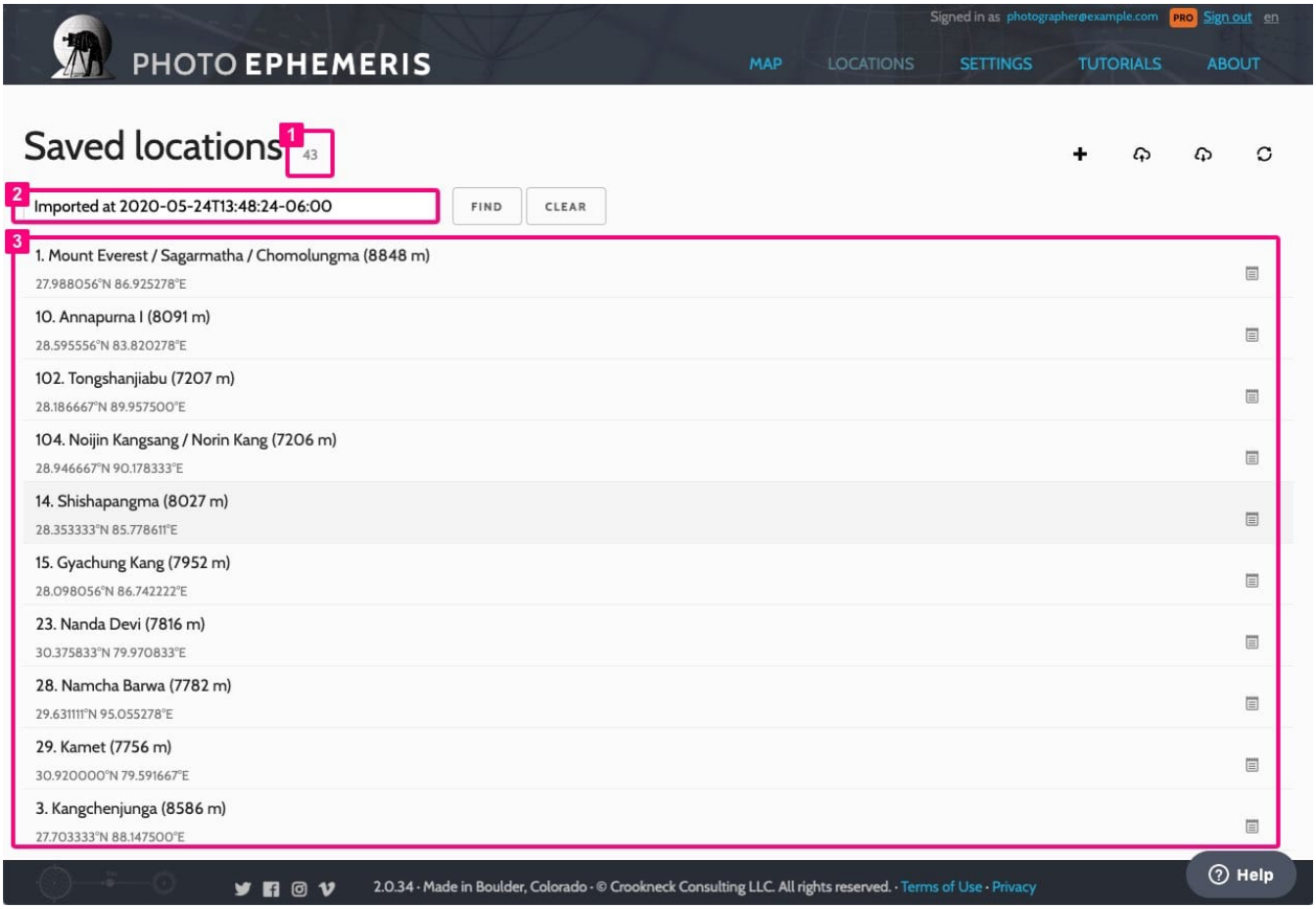
1. *Download the KML as shown by clicking the link. This will normally end up in your browser's Downloads folder.*

Next, click the **Import** button (labelled **2** in the last but one screenshot). Drag and drop the downloaded KML file to the pop-up form:



1. *Drag and drop the KML file to the area indicated. Alternatively, click in the grey area to display a file selection dialog. Only one file can be uploaded at a time.*

You should see 43 new locations imported. The app tags these with the time at which they were imported, and sets the filter to show only the newly created locations:



1. *43 locations imported*
2. *"Imported at" tag set in the filter field*
3. *New locations listed*

Click **Clear** to view the full locations list once again.

Export a KML file from TPE

By default, TPE exports all locations on view in the locations page. On clicking the export button without filtering a list, TPE will automatically export **all** of your saved locations. To export just one location, or a small selection, use the filter field to restrict the list to only the locations you wish to export. Once filtered, TPE will only export the visible, filtered locations.

a) If you want to export a filtered list, filter the locations first
b) Click the “Export” button
c) The KML file is generated and can be found in your browser’s default download folder.

Note: we recommend you back up your saved locations regularly by exporting them from the app.

Synchronization

Your saved locations are automatically synchronized to our server from time to time. When the **Synch** button (4 above) is shown in blue, that means there are pending changes on your local machine to synch to the cloud. Otherwise, locations are synched every few minutes while the locations page is open, and also when you first navigate to it and when you leave it.

Synch works on the principle of '**last change wins**'. If you save changes (let's call them Edit A and Edit B) to the same location on two devices (let's call them Machine 1 and Machine 2), then Edit B will overwrite Edit A unless you synch **both devices in order** after making the first change. The first synch writes Edit A from Machine 1 to the server. The second synch pulls Edit A down to Machine 2.

In general, just follow the habit of edit, then synch, and things work pretty much as you'd expect.

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