

Grand Canyon Microclimatology: Treelines

⚠ This is a preview of the published version of the quiz

Started: May 18 at 4:40pm

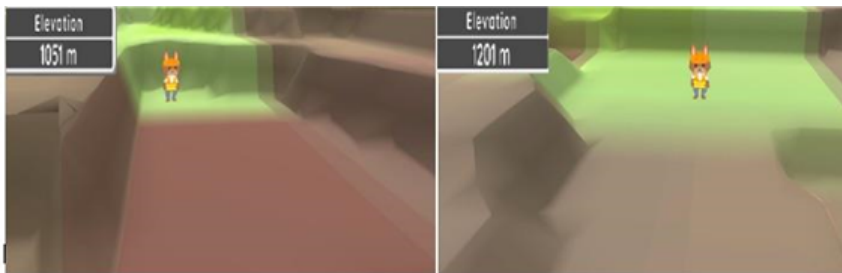
Quiz Instructions

Exposure of a slope can have a dramatic impact on vegetation due to differences in surface heating and the resulting evaporation. What you'll be looking at next is how treeline varies between north versus south facing slopes on walls in the Grand Canyon. This portion of the lab will task you with finding the lowest elevation for the treeline on either north facing or south facing slopes, comparing 3 different locations.

One is for north-facing slopes. The other is for south facing slopes. You will have two questions like this:

EXAMPLE QUESTION: Fast travel to the three coordinate locations in the geovisualization. What is the slope orientation (north facing, south facing) and mean (average) height of the transition zone between desert (brown, no trees) and pinyon-juniper woodland (green, leafy trees) for these locations?

Part of the task has you understand the compass in the geovisualzation. What direction is the slope you are sent to facing. Then, the other part is taking the elevations and averaging them. Two examples are given below, but you'll have three spots in the question. Look only at the cliff you begin at; you may see spots of vegetation down below your fast travel location, but those are not related to answering this question - they could be related to a natural spring and associated with a riparian habitat. Just focus on the treeline present on the cliff the coordinates take you to.



For this simple example, treeline elevation = $(1051 + 1201) / 2 = 1126$ meters.

HINT: the answer choice in canvas will probably not be EXACTLY what you calculated. The reason is that where you locate your avatar will be slightly different from where we put our avatar. These slight differences will mean that you should pick THE CLOSEST ANSWER. The incorrect choices will be either be far off or facing the wrong direction.

Question 1

4 pts

Fast travel to the three coordinate locations below in the geovisualization. What is the slope orientation (north facing, south facing) and mean height of the transition zone between desert (brown, no trees) and pinyon-juniper woodland (green, leafy trees) for these locations?

Location 1: 36.2621, -111.9174

Location 2: 36.0166, -111.8922

Location 3: 36.0098, -111.9324

- South facing slopes with a treeline of roughly 1350m
- North facing slopes with a treeline of roughly 1500m
- North facing slopes with a treeline of roughly 1350m

- South facing slopes with a treeline of roughly 1500m

Question 2**4 pts**

Fast travel to the three coordinate locations below in the geovisualization. What is the slope orientation (north facing, south facing) and mean height of the transition zone between desert (brown, no trees) and pinyon-juniper woodland (green, leafy trees) for these locations?

Location 1: 36.2056, -112.2364

Location 2: 36.2049, -112.2556

Location 3: 36.1192, -111.9541

- South facing slopes with a treeline of roughly 1770m
- North facing slopes with a treeline of roughly 1450m
- South facings lopes with a treeline of roughly 1450m
- North facings slopes with a treeline of roughly 1770m

Question 3**1 pts**

From your calculations, what is the treeline difference between north facing and south facing cliffs? Why do you think this might be?

- South facing has a lower treeline, due to cooler temperatures, more evaporation of moisture
- North facing has a higher treeline, due to cooler temperatures, less evaporation of moisture
- North facing has a lower treeline, due to cooler temperatures, less evaporation of moisture
- South facing has a higher treeline, due to cooler temperatures, more evaporation of moisture

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