



Asia: Land of the Highest Highs and the Lowest Lows

What are the extremes of Asia's elevation? Asia is a big place. As the world's largest continent, it covers over 8% of the Earth's surface and nearly 30% of its land area. Such a large continent is bound to have extremes of elevation. What if you could investigate the continent, exploring the extremes of Asia's elevation? Using National Geographic's MapMachine, an online Geographic Information System, or GIS, you can!

Your Mission: Explore Asia's elevation extremes. Be an investigative geographer and think about why these extremes are located where they are. Think about the relationship between elevation, latitude-longitude, ecoregions, and climate.

1. **Access the National Geographic MapMachine** to begin your voyage!
<http://www.nationalgeographic.com/maps>

Select "Road Map", type in "Asia" in the box and click "Find a Place", as follows:



2. To the Heights! Everyone knows that Mount Everest is Asia's highest peak, and also the highest peak in the world. Do you know exactly where it is? Type in "Mount Everest" in the box and click "Find a Place." Examine the overview map (make sure the "overview map" check box is ticked in the lower right).

On the border of what two countries is Mount Everest?

Examine the article "Technology Lifts Everest to New Official Height" on: <http://www.nationalgeographic.com/events/releases/pr991111b.html>

What is the official height of Mount Everest in feet and in meters above sea level?

What technology "lifted" Everest 2 meters above the previously accepted height?

Have you ever used this same technology in school or for recreation? How?

Why do you think it is difficult to measure the exact height of tall peaks?

Go back to your map and change the map type to a Satellite Image map.

Describe what the landscape looks like from space, and what it would look like on the ground.

Examine a few photographs from National Geographic of Mount Everest, on: <http://photography.nationalgeographic.com/photography/photos/mount-everest-gallery/everest-peak-clouds-photography.html>

Does the terrain and the mountain look like you thought it would? Why or why not?

Change the map type to a Physical map.

Describe the difference in the physical geography to the north of Mount Everest versus to the south.

Examine the other mountains in the same range as Mount Everest. **Do you know the name of this mountain range? What is it?**

Change the map type to More Theme Maps, and select Population Density.

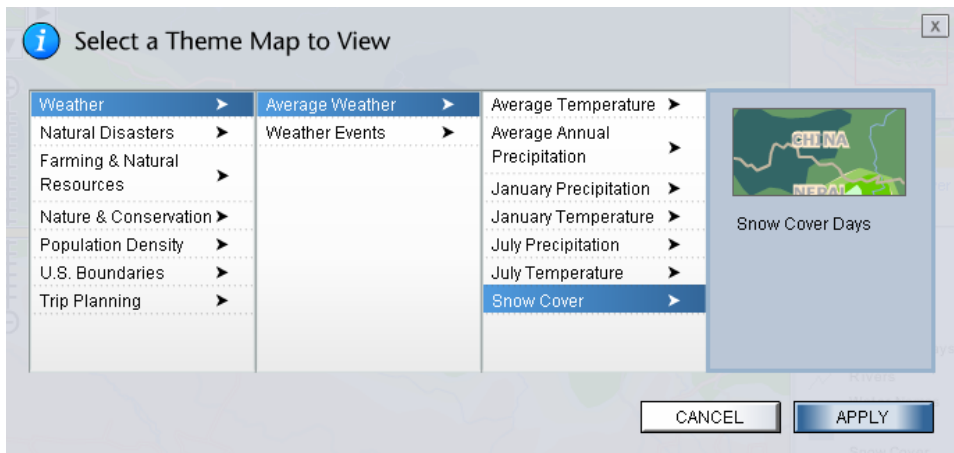


What is the population density in the immediate vicinity of Mount Everest? Why?

Change the map type to More Theme Maps, and select some other themes to help you answer the following question:

Why is there such a big difference between the population density in the region to the south of Mount Everest compared to the region to the north of Mount Everest?

Change the map type to Snow Cover days, as follows:



Examine the legend. **What does “snow cover days” mean?**

What is the average annual number of days when snow is on the ground on and near Mount Everest? Why?

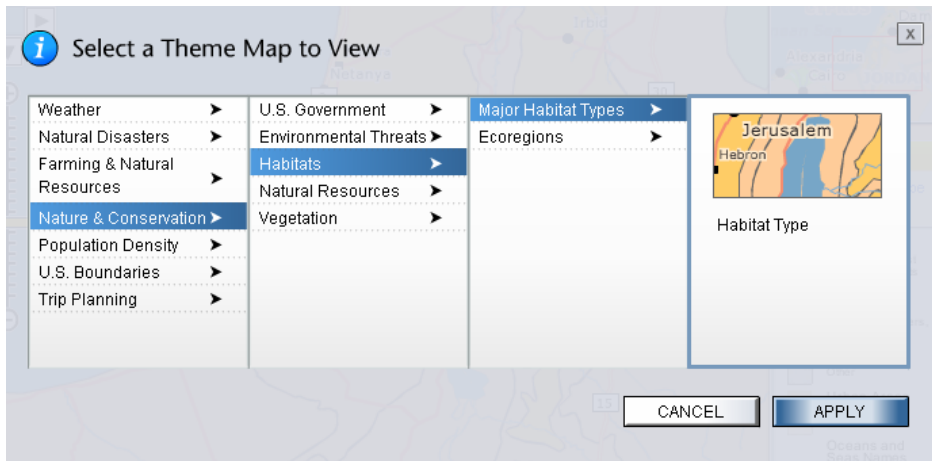
Change the map type to More Theme Maps, and select some weather maps for temperature and precipitation to help you answer the following question:

What is the climate like at Mount Everest?

Enter your city and zoom to where you live. **How is the climate at Mount Everest similar or different from the climate where you live? Why?**

Under More Theme Maps, change the map to a major habitat type, as shown below. These habitat types are really ecoregions—areas with similar plants, soils, animals, elevations, and climates.





What is the name of the ecoregion at Mount Everest?

What is the ecoregion immediately surrounding the ecoregion you identified in the previous question?

Read about this ecoregion on the following National Geographic page:
<http://www.nationalgeographic.com/wildworld/profiles/terrestrial/pa/pa1003.html>

Do you think this ecoregion is at a higher or lower elevation than the ecoregion at Mount Everest? Why?

List at least 3 types of plants and 3 types of animals found in this ecoregion.

Ecoregions are unique places in the world, and yet some are threatened—mostly by human activity. **What are the main threats to the stability of this ecoregion?**

3. To the Depths! Did you know that Asia not only contains the world's tallest mountain, but also contains the world's lowest point? Change the map type back to Road Map, type in "Dead Sea" in the box, and click "Find a Place." Examine the overview map (make sure the "overview map" check box is ticked in the lower right).

In what two countries is the Dead Sea located?

The Dead Sea lies in a valley 1,349 feet (411 meters) below sea level. This is the lowest point on earth, so if you went for a swim and dove under the surface, you would be even lower than the lowest point on earth! **Why do you suppose that the Dead Sea is so low?**



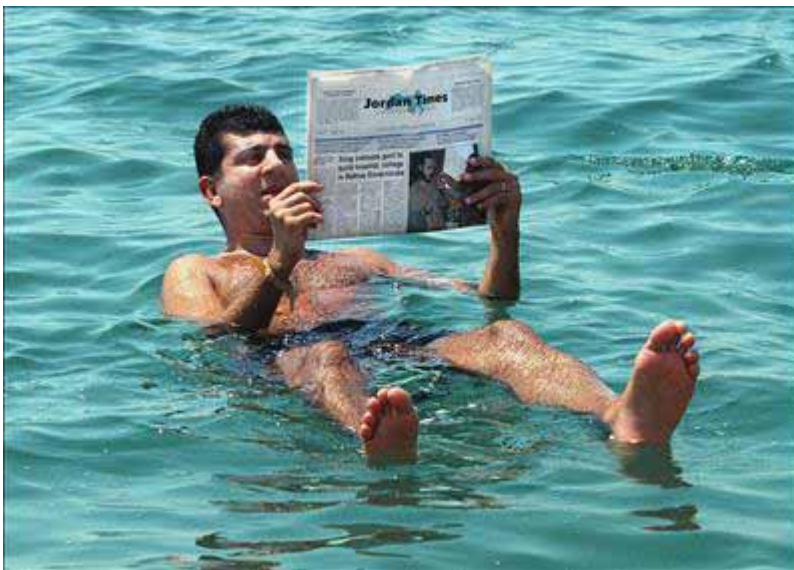
How can land or water on the Earth's surface be below sea level?

The water of the Dead Sea is composed of about 25% salt—seven times saltier than the ocean.

Why do you suppose the Dead Sea is so salty?

The sea is called "dead" because its high salt content means no fish or water plants can live in it, although small quantities of bacteria and fungi are present.

Study this photograph of a man reading a newspaper while floating in the Dead Sea:



Would you be able to do what this man is doing, without flapping your arms to stay afloat, if you were floating in an ordinary swimming pool or in the ocean? Why or why not?

The sea is so buoyant because of the salt that most swimmers can't put their feet down.

On your map, examine the Jordan River that flows between the Sea of Galilee and the Dead Sea.

Which direction do you think this river is flowing? Why?

Does any river flow out of the Dead Sea? Why or why not?



Look at the Mediterranean Sea to the west. **Does any river connect the Dead Sea to the Mediterranean Sea?**

Switch the map type to a physical map.

What do you think is the elevation of the Mediterranean Sea?

What prevents the waters of the Mediterranean Sea from spilling over into the Dead Sea?

Change the map to a major habitat map. **What is the ecoregion name that surrounds the Dead Sea?**

Read the description of this ecoregion on:

<http://www.nationalgeographic.com/wildworld/profiles/terrestrial/pa/pa1303.html>

List at least 3 types of plants and 3 types of animals in this ecoregion.

What are the main threats to the stability of this ecoregion?

Change the map type to More Theme Maps, and select some weather maps for temperature and precipitation to help you answer the following question: **What is the climate like here?** Zoom to where you live and back to the Dead Sea. **How is the climate here similar or different from the climate where you live? Why?**

4. **Dig Deeper.** Use the MapMachine to examine other peaks in the Himalayas that are among the world's 10 highest peaks. Conduct some research to determine what the world's 2nd through 10th tallest peaks are. **How are they similar or different from Mount Everest?**

Conduct some research to determine what the world's other places below sea level are. Use the MapMachine to discover more about these places. **How are these other low points similar or different from the Dead Sea?**

In this activity, you have used an online GIS to investigate Asia. Use other web-based mapping tools such as:

3-D ArcGIS Explorer (<http://www.esri.com/arcgisexplorer>),
ArcWeb Explorer (<http://www.arcwebservices.com/awx>),
and WorldMapper (<http://www.worldmapper.org>)
to deepen your understanding of the continent.



Use a desktop GIS such as ArcView (<http://www.esri.com/arcview>) together with lessons on <http://www.esri.com/gaw> to ask questions and explore spatial relationships among population, biodiversity, climate, trade, elevation, culture, and other aspects of this fascinating continent.

Print your own high-resolution Asia political map on:
<http://plasma.nationalgeographic.com/pdf/asiapol.pdf>

Print your own high-resolution Asia physical map on:
<http://plasma.nationalgeographic.com/pdf/asiaphy.pdf>

Travel to Asia someday! Use the National Geographic travel planner below to plan your trip!
http://www3.nationalgeographic.com/places/continents/continent_asia.html

