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Topographic map lab earth science

Explain how to read and interpret topographic maps. Explain how the bathymetric map is used to determine the underwater characteristics. Explain what geological maps show. The contour map contours of the bathymetric intervals of the topographic map are very useful to Earth scientists to represent the geographical characteristics found above and below sea level and to demonstrate the geology of the region. Stone units and geological structures are shown on geological maps. What is a Topographic Map? Mapping is an important part of Earth's science. Topographical maps represent the location of geographical features, such as hills and valleys. Topographical maps use confinement lines to show different heights on the map. Contour lines are a type of isoline; in this case, the same height line. If you walk along the contour lines, you won't go up or down the hill. Mathematically, the confinement line is a curve in two dimensions where the functional value of $f(x, y)$ is a marker. Contour Lines and Interval Contour Lines connect all the points on the map that have the same height and therefore reveal the location of hills, mountains, and valleys. While the road map shows where the road goes, the topographical map shows why. For example, a bending road to go around the hills or stop at the top of the mountain. On the contour map: Each contour line represents a certain height and connects all points that are at the same height. Each of the fifth contour lines is bold and labeled with numeric height. The contour line runs next to each other and NEVER cross. After all, one eye can only have one height. Two contour lines adjacent to each other are separated by continuous height differences (such as 20 feet or 100 feet). The difference between contour lines is called contour intervals. The map legend gives the contour interval. Stowe's topographic map, Vermont. How do you calculate the contour interval on the Map of Stowe, Vermont (see Figure above)? Calculate the height difference between the two contour lines. Divide the difference by the number of contour lines between them. On the Stowe map, the difference between the two contour lines is 100 feet and there are five lines between them, so the contour interval is 20 feet (100 feet/5 line = 20 feet/line). The value of paya Canyon Topographic Map in Bryce Canyon National Park, Utah (shown in Figure below) is extremely durable, with steep canyon walls and valleys below. View of The Swamp Canyon in Bryce Canyon National Park. The map of the visitors in figure below shows important locations. What's missing from this map? This map does not represent landscapes. Swamp Canyon Loop in Bryce Canyon National Park. The green trail shows the main road, the black dotted line is a route, and there are markers for camping sites, picnic areas, and shuttle bus stops. With contour lines to show height, the topography in Rajah below shows the appearance of the earth. Paya Canyon Route Section topographic map of Bryce Canyon State Park. Canyon. Contour Map How does Bryce Canyon map reveal the region's terrain? Some principles are important for reading the topographic map: 1. The contour line shows the form of 3 dimensions of the soil (Fig below). What is the distance of the contour lines indicated? Carefully aligned contour lines show steep slopes, as height changes rapidly in small areas. The seemingly touching contour lines show a very steep rise, such as a cliff or a canyon wall. Widely spaced contour lines show shallow slopes. Part of the USGS Stowe topographic map, Vermont. Just to the right of the city Stowe is a steep hill with a sharp rise of about 200 feet which is becoming less steep towards the right. 2. Concave circles show hills. When the contour line forms a closed loop all together in the same area, this is the hill. The smallest loops are higher elevations and larger loops downhill. On the map of Stowe, which hill has a height of 1122 feet? If you find Cady Hill, on the left side of the map, you're right. 3. A concave circle of hatching shows depression, as seen in Figure below. Hatching signs are short lines, perpendicular inside the circle. The deepest circle of the hatch will represent the deepest part of the depression, while external circles of the hatch represent a higher altitude. On a contour map, a circle with an incoming hatch shows depression. 4. V is shaped extensively the confinement line indicates a flow valley. Where the flow crosses the ground, Vs in the contour line points up. The flow channel through the V point and the V open end represents the downstream section. If the stream contains water, the line will be blue; otherwise, the V-pattern indicates that the direction water will flow. In the map of Stowe, where the stream runs downhill into the lake? Start on T in Stowe. The blue stream went downhill (northwest) into the lake. Get out of T on the other side, you can follow uphill blue streams (southeast). Where water flow is light weight or nonexistent, there is no more blue lines, but contour lines indicate that the flow channel is still present (see the Stowe map in Figure above). 5. The scale on the topographic map indicates a contour distance. scale can be used to calculate the soil slope (vertical height/horizontal distance). The usual scale used in the US Geological Services (USGS) map includes the following: 1:24,000 scale – 1 inch = 2000 feet 1:100,000 scale – 1 inch = 1.6 miles 1:250,000 scale – 1 inch = 4 miles Animation shows the contour line and the slope they represent. The bathymetric map of bathymetric maps in Figure below is like a topographical map with contour lines representing depth below sea level, rather than the height above. The numbers are low near sea level and become higher with depth. Map help oceanographers depict landforms at the bottom of the lake, bay, and oceans as if water removed. Loihi volcanoes grow on the rim of the Kilauea volcano in Hawaii. Black lines in the inset show ground surfaces above sea level and blue lines showing topography below sea level. Geologic Map Geological map shows the geological characteristics of the region (see example in Figure below and Figure below). The stone unit is color-coded and identified in the keys. In the map of Yosemite (Fig below), the brown volcanic rock, the Tuolumne Intrusive Suite is a peach, and the metamorphosed sediment rocks are green. Structural features, such as folds and faults, are also shown on geological maps. The area around Mount Dana on the east side of the map has an offensive line. Geological map of Yosemite National Park. On large-scale geological maps, the color represents geological territory. Summary Topography Map Lessons is a 2-dimensional representation of the surface feature of 3 dimensions of an area. The topographical map has a contour line that connects the same height point above sea level. The contour line runs next to each other. Adjacent contour lines are separated by continuous height differences, usually pasted on the map. The topographical map has a contour scale to show the distance of the contour. People use topographic maps to find surface features in certain areas, to find their way through specific areas, and to determine water flow direction in certain areas. Oceanographers use a map of bathymetric to describe the underwater bodies. Geological maps exhibit stone units and geological features of the region of any size. A small map displays individual stone units; large-scale map shows the geological territory. Check Questions On the topographic map, the contour line creates a bunch of concave and closed loops. Which of the following features can this show? Cliff hilltop deployment channel Describes a pattern on a topographical map that will show the valley of the flow. How do you determine the trend of water? On the topographic map, five contour lines are very close together in one area. The contour interval is 100 feet. What features show? How high is this feature? On the topographic map, explain how you can tell a steep slope from a shallow slope. On the topographical map, a river is shown crossing from Point A in the northwest to Point B in the southeast. Point A is at the 800-foot contour line and Point B is at the 900-foot contour line. Where is the direction of the river flowing? On the topographical map, six contour lines cover the map distance of 0.5 inches. The scale is 1 inch equivalent to 2,000 feet. How far is the first and sixth lines? On the geological map of the Grand Canyon, a stone unit called Kaibab Limestone takes the entire surface of the region. Down some steep topographical lines are very thin stone units called Toroweap Formation and down many topographical lines into the canyon from it are another thin unit, Coconino Sandstone. Explain how these three stone units sit relative to each other. Which is the oldest and the youngest? Further Reading/Additional Points Links to Consider How might a civil engineer use a topographical map to build roads, bridges, or tunnels through the area as shown in figures above? What are the best topography for bridges? Which areas might need a bridge? Where might the tunnel be useful? If you want to participate in orienteering, would it be better to have a topographic map or road map? How will the topographical map help you? If you are the captain of the ship, what kind of map do you want and why? Why?

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