

US EPA ARCHIVE DOCUMENT

Expedition to the Alps to Learn About Snowpack

Part 1. Introduction.



Narrator: Grab your skis, because we're heading to some of the best ski slopes in the world! They're nestled in the mountain range called the Alps, which covers parts of seven countries in the heart of Europe.

The Alps are a popular destination for skiers and others who enjoy the snowpack, which is the layer of snow that builds up on the ground during the winter.

But this snowpack provides more than just a winter wonderland for tourists. When it melts in the spring and summer, it fills the streams and supplies Europe with drinking water.

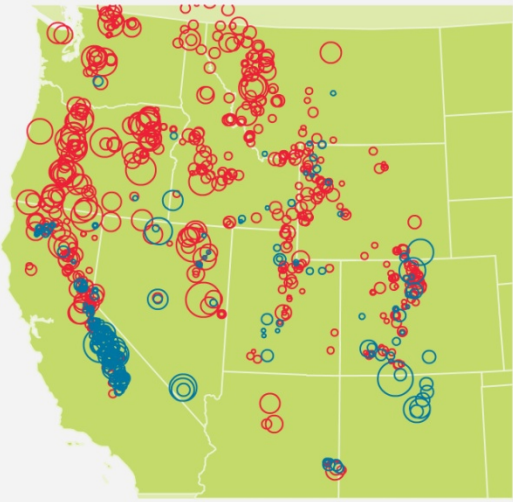
Part 2. The Climate Connection.

Narrator: Climate change is shrinking the amount of snowpack in the Alps and in other mountain ranges around the world. That's because warmer temperatures mean many places are getting less snow and more rain in the winter. Warmer temperatures are also causing snowpack to melt earlier in the spring than it used to.

Part 3. Test Your Knowledge!

Test Your Knowledge!

Changes in Snowpack from 1950 to 2000
Red = decrease. Blue = increase. Bigger circles represent bigger changes.



Question

Snowpack increased in some areas. Does that mean climate change isn't happening?

Choose the correct answer:

- Yes. If climate change were really happening, snowpack would be decreasing everywhere.
- No. Climate change is happening, but it doesn't affect every location exactly the same way.

Narrator: Let's test your knowledge. This map shows snowpack measurements in the western U.S. See all the red circles? Those are places where snowpack decreased between 1950 and 2000. Blue circles are places where snowpack increased.

If snowpack increased in some areas, does that mean climate change isn't really happening? What do you think?

The text on the screen says: "Snowpack increased in some areas. Does that mean climate change isn't happening?" You have two choices:

- Yes. If climate change were really happening, snowpack would be decreasing everywhere.
- No. Climate change is happening, but it doesn't affect every location exactly the same way.

Answer: The correct answer is no. Climate change *is* happening. Most places are already seeing less snowpack, which is why you see a lot more red circles than blue circles on the map.

Part 4. Mountain Snowpack: The Earth's Water Tower.

Narrator: Mountain snowpack is an important part of the water cycle. Water stored in snowpack during the winter is released in the spring and summer when it melts, filling nearby streams. Streamflow from melting snowpack is a major source of water for many areas, including many parts of Europe and the western U.S.

As the snowpack shrinks, communities that rely on mountain snowpack for their water may have less water coming into their reservoirs. In addition, mountain snowmelt is occurring earlier due to warming temperatures. This early melting can cause flooding in the spring and water shortages in the summer—just when people need water the most.

Part 5. Ecosystem Effects.

Narrator: Less snowpack and earlier snowmelt can also affect plants and animals. For example, if there's not enough melting snow to keep streams and rivers flowing, it could disrupt the migration and spawning of fish such as salmon and trout.

Early snowmelt could also throw off the lifecycles of mountain wildflowers, which start to grow as soon as there's no more snow on the ground. If these plants start growing too early, they can be damaged by frost. This leads to fewer seeds and flowers, which means less food for insects and birds. The effects can ripple through the entire ecosystem.

Part 6. High Stakes for Ski Slopes.

Narrator: A thick snowpack makes the Alps a popular winter sports destination, and tourism is an important part of the economy here. But as climate change continues, mountains will tend to get less snow and more rain, shrinking the snowpack and making it harder for some ski areas to stay open.

Part 7. Test Your Knowledge.

Narrator: Taking steps now to adjust to the effects of climate change is called “adaptation.” What do you think a smart ski resort operator might do to prepare for less snow in the future?

The text on the screen asks: “What might ski resorts do to prepare for less snow in the future?” You have four choices:

- A. Make artificial snow.
- B. Add activities like mountain biking to attract business during other seasons.
- C. Shift to higher elevations and north-facing slopes.
- D. All of the above.

Answer: The correct answer is D. These are all examples of how ski areas might prepare for climate change.

Part 8. Adapting to Climate Change.

Narrator: Ski resort operators aren't the only people who will have to cope with shrinking snowpack. We can all put less of a strain on water supplies by using less water. In the western U.S., many water utilities are already planning for the future by improving the efficiency of their plants and pipelines and by teaching their customers how to conserve water.

People are also finding new ways to capture and store the water from melting snowpack so it can be used later in the year.

Preparing for the effects of climate change can be challenging, and many people's needs will have to be considered. For example, making artificial snow could keep skiers happy, but it is also expensive, takes lots of energy, and uses water that could serve other needs, like drinking water.

Part 9. What Have You Learned?

Narrator: The ski season is coming to a close, and so is your journey to the Alps. What have you learned?

Onscreen text: In many places, snowpack is shrinking and melting earlier in the spring.

Narrator: Because of climate change, temperatures are increasing in many parts of the world. As a result, mountain snowpack overall is shrinking and melting earlier in the spring.

Onscreen text: Less snowpack and earlier snowmelt could cause water shortages and shorten the winter sports season.

Narrator: Less snowpack and earlier melting could lead to water shortages. It could also shorten the winter sports season, which could hurt people who make a living from winter sports and tourism.

Onscreen text: Changes in snowpack and snowmelt can affect some animals and plants.

Narrator: Changes in snowpack and snowmelt can disrupt the lifecycles of some kinds of animals and plants.

Onscreen text: People can take steps to adapt to changes in snowpack and snowmelt.

Narrator: People can take many steps to adapt to changes in snowpack and snowmelt, like better water management and conservation.

Part 10. Congratulations!

Narrator: Congratulations! You've earned a passport stamp by learning how climate change affects snowpack.

Onscreen code: 850624