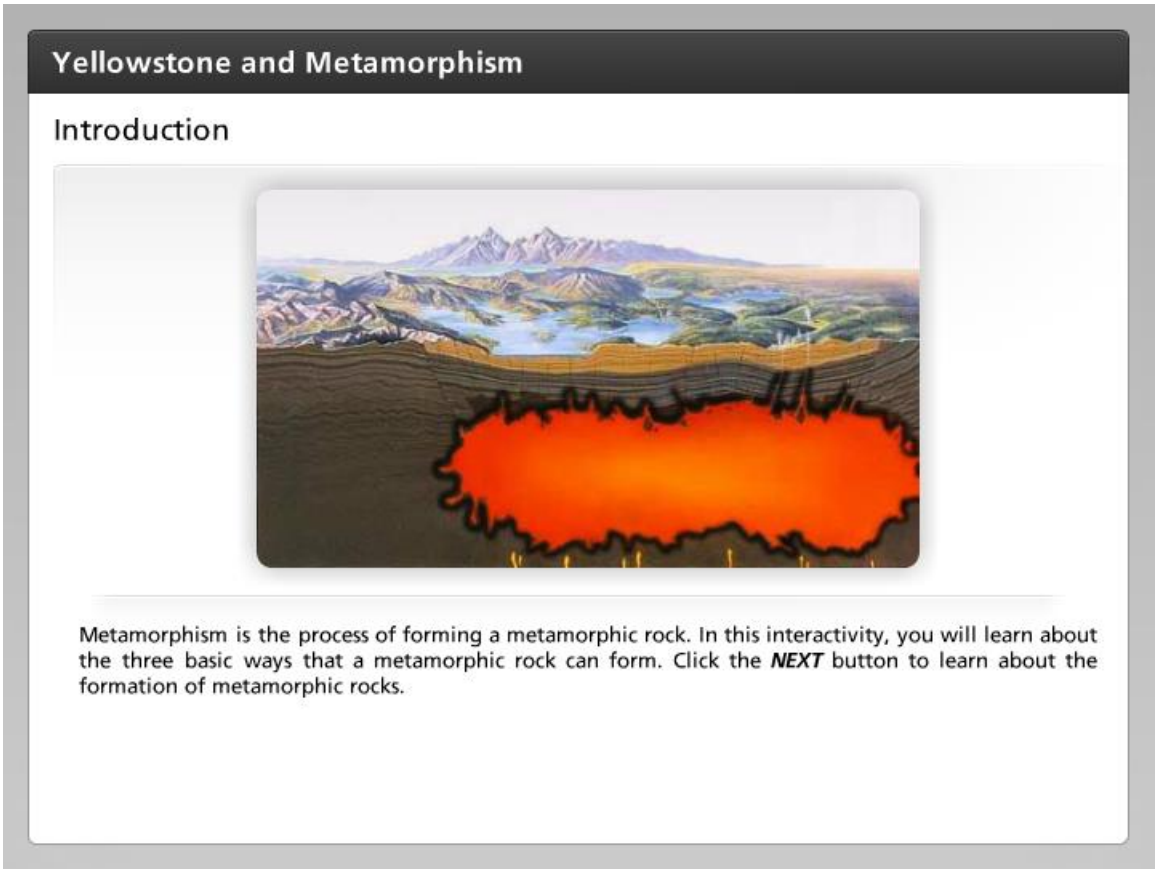
Module 6: Rocks
Topic 3 Content: Yellowstone and Metamorphism Notes

Introduction



Metamorphism is the process of forming a metamorphic rock. In this interactivity, you will learn about the three basic ways that a metamorphic rock can form. Click the ***NEXT*** button to learn about the formation of metamorphic rocks.

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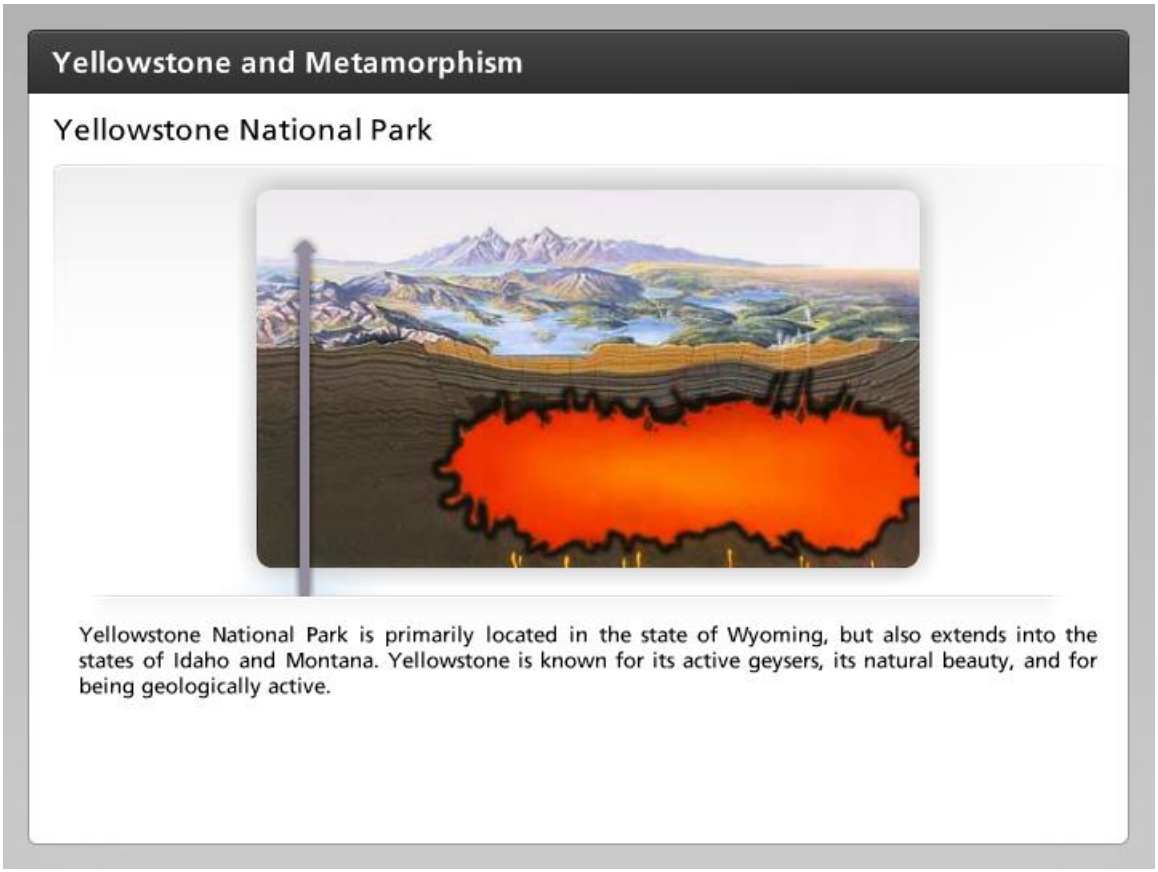
Yellowstone National Park



Yellowstone National Park is primarily located in the state of Wyoming, but also extends into the states of Idaho and Montana. Yellowstone is known for its active geysers, its natural beauty, and for being geologically active.

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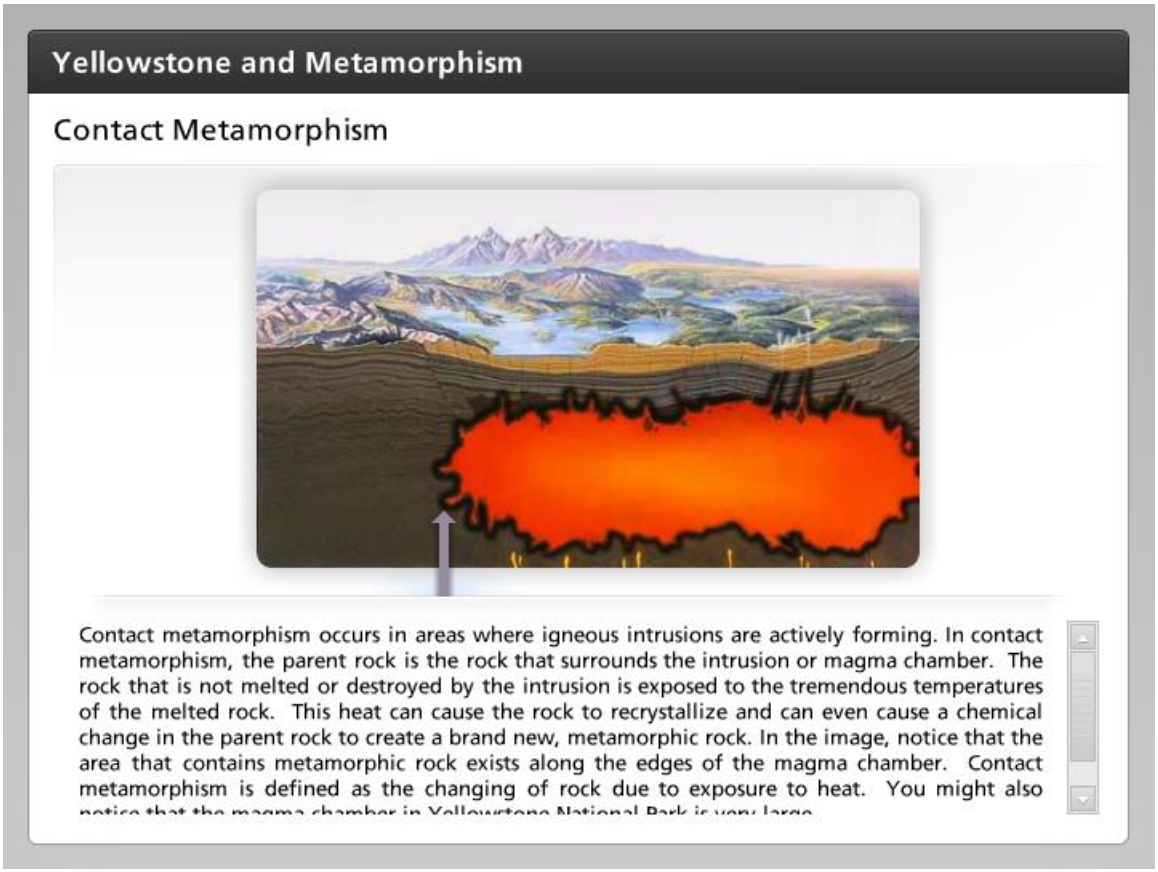
Contact Metamorphism



Contact metamorphism occurs in areas where igneous intrusions are actively forming. In contact metamorphism, the parent rock is the rock that surrounds the intrusion or magma chamber. The rock that is not melted or destroyed by the intrusion is exposed to the tremendous temperatures of the melted rock. This heat can cause the rock to recrystallize and can even cause a chemical change in the parent rock to create a brand new, metamorphic rock. In the image, notice that the area that contains metamorphic rock exists along the edges of the magma chamber. Contact metamorphism is defined as the changing of rock due to exposure to heat. You might also notice that the magma chamber in Yellowstone National Park is very large.

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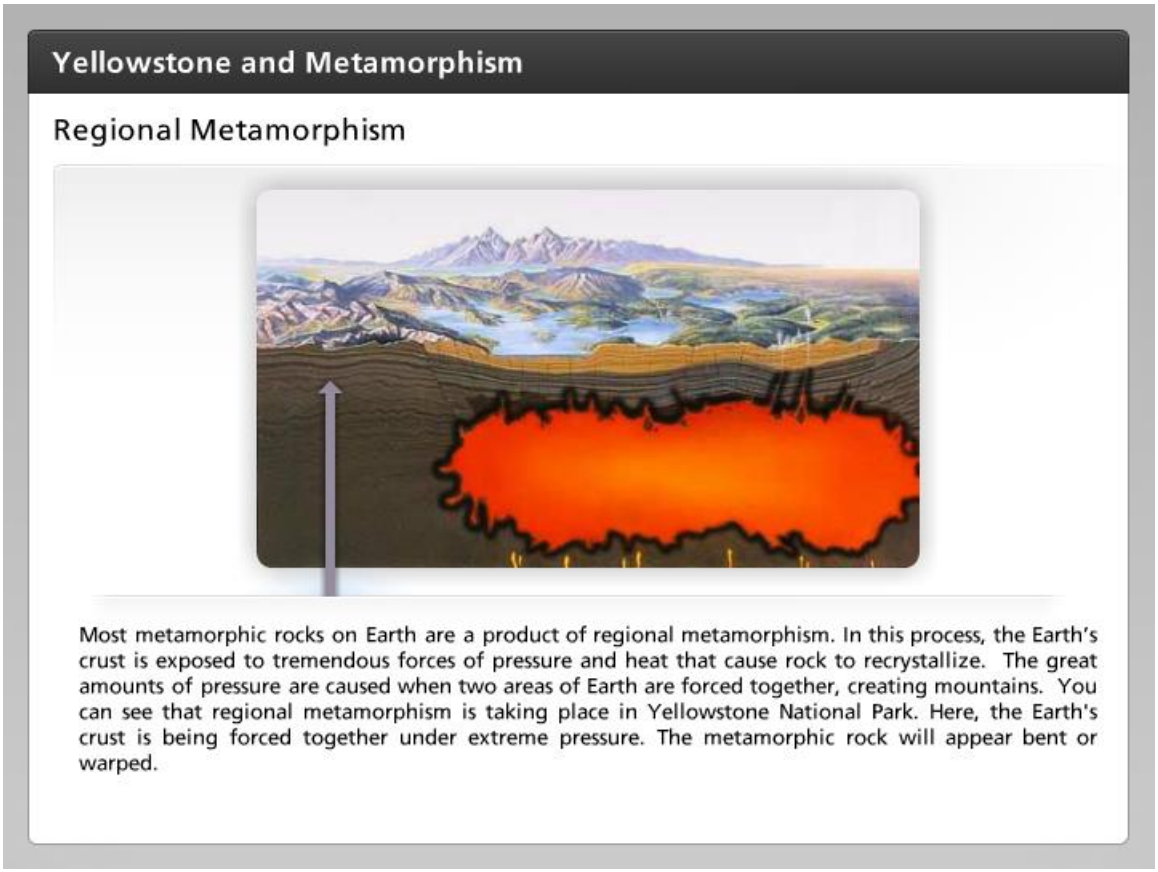
Regional Metamorphism



Most metamorphic rocks on Earth are a product of regional metamorphism. In this process, the Earth's crust is exposed to tremendous forces of pressure and heat that cause rock to recrystallize. The great amounts of pressure are caused when two areas of Earth are forced together, creating mountains. You can see that regional metamorphism is taking place in Yellowstone National Park. Here, the Earth's crust is being forced together under extreme pressure. The metamorphic rock will appear bent or warped.

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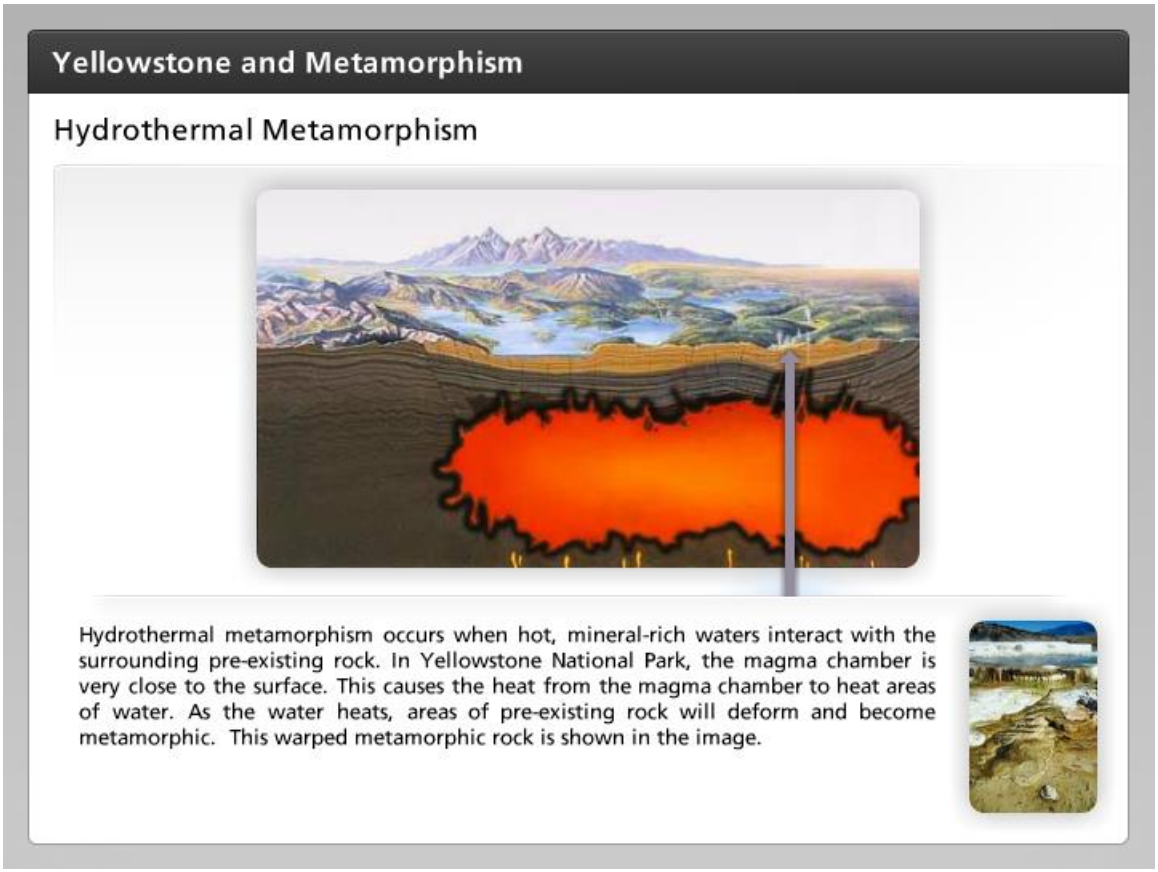
Hydrothermal Metamorphism



Hydrothermal metamorphism occurs when hot, mineral-rich waters interact with the surrounding pre-existing rock. In Yellowstone National Park, the magma chamber is very close to the surface. This causes the heat from the magma chamber to heat areas of water. As the water heats, areas of pre-existing rock will deform and become metamorphic. This warped metamorphic rock is shown in the image.