Lithification of Sedimentary Rocks

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Chapter 1. Lithification of Sedimentary Rocks

What steps led to this rock formation?

What do you see? The rock is a sandstone, so first there were rocks that weathered and eroded. The cross-bedding indicates that the sand was deposited in a dune. The sand was then buried deeply enough that it turned into rock. This concept will explore how something like sand could become a rock.

Sedimentary Rock Formation

Accumulated sediments harden into rock by **lithification**, as illustrated in the Figure 1.1. Two important steps are needed for sediments to lithify.

1. Sediments are squeezed together by the weight of overlying sediments on top of them. This is called **compaction**. Cemented, non-organic sediments become **clastic** rocks. If organic material is included, they are **bioclastic** rocks.
2. Fluids fill in the spaces between the loose particles of sediment and crystallize to create a rock by **cementation**.

The sediment size in clastic sedimentary rocks varies greatly (see **Table** in Sedimentary Rocks Classification).
Summary

- Sedimentary rocks are made of fragments of older rocks or pieces of organisms.
- Compaction and cementation lead to lithification of sedimentary rocks.
- Compaction is the squeezing of sediments by the weight of the rocks and sediments above them. Cementation is when cement from fluids bind sediments together.

Review

1. How does compaction lead to lithification?
2. How does cementation lead to lithification?
3. What is the difference between clastic and bioclastic sedimentary rocks?
Explore More

Use this resource to answer the questions that follow.

1. Describe the first step of lithification.
2. What happens when the water is pushed out?
3. What is the material located between the mineral grains called?

References

1. Timo Kamph. A cliff made of sandstone. CC BY 2.0