

Earth Science Series

The Work of the Wind

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**KG1176DVD
Teachers Guide**

PROGRAM OVERVIEW

This program investigates dune formation in the Great Sand Dunes in Colorado, types of dune formation, the conditions necessary for a dune to develop, plant and animal life in the dunes and movement of single grains and entire dune movement.

QUESTIONS FOR THOUGHT & FURTHER DISCUSSION

1. Discuss how blowing wind can carry with it large quantities of sand. Ask students to recall a time when they had sand in their eyes on a windy day. When the wind stops blowing the sand settles.
2. Do all deserts have drifting sand and sand dunes?
3. Make a list of dune areas which can be found in your state and in the United States.
4. Where are dunes usually found?
5. What are necessary conditions for dune formation to occur? (good wind, sand supply, geographic barrier to stop wind)
6. List the major types of dunes (barchan, transverse, longitudinal, reversing).
7. On a large flat surface place some sand and gravel. Use an electric fan and point it at the flat surface. Observe how the sand collects.
8. Name some geologic features which are formed by the wind's erosive powers (arches, pinnacles, windows, balanced rocks, etc.).
9. Sand dunes can be cemented into sandstone. What would be needed for this to take place? (seas would have to move in to cover the area; sand grains would cement together).
10. Look up the Great Sand Dunes in Colorado and compare these to the White Sand Dunes in New Mexico.
11. Can dune formation be stopped? How might you stop dunes from forming?
12. Ancient sand dunes which have been hardened into sandstone can be found all over the southwest. It is called Navajo Sandstone. When were these sands first laid down?

GLOSSARY

Barchan Dune: A crescent shaped dune with wings or horns pointing downwind. The dune has a gentle windward slope and a steep leeward slope inside the horns. About 100 feet in height and 1000 feet wide from horn to horn. Moves with the wind about 25-50 feet per year across flat surfaces where there is limited sand.

Climbing Dune: A dune which has piled against a cliff and has the appearance of trying to climb over it.

Dune: a mound or ridge of sand piled by the wind.

Longitudinal Dune: A long ridge of sand in the general direction of wind movement. A small one is less than 10 feet in height and 200 feet in length. Dunes larger than this are called Seif dunes.

Reversing Dune: A dune made by sand that has blown or fallen over a cliff.

Saltation: The mechanism by which a particle moves by jumping from one point to another.