

PLANET  EARTH

# DESERTS







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The Energy and Resources Institute

## **A note from Dr R K Pachauri**

We live on a truly unique and wonderful planet. It nurtures life, is home to an amazing variety of flora and fauna, and has a breathtaking variety of landscapes. However, in our quest for industrialization and urbanization, we have polluted our air and poisoned our waters; cut down trees to make way for human habitation; and have even caused the melting of polar ice caps.

Protecting our planet and preserving it for future generations in the face of rampant resource depletion is crucial. One way to effect this change is to allow children to appreciate the earth's unique features—vast oceans, hot and cold deserts, lush green forests teeming with life, rivers and lakes that have been our lifeline since ancient times, lofty mountains, and the two extensive icy poles.

This series, while offering a glimpse of our beautiful yet fragile planet to young minds, seeks to both entertain and enrich their thought processes. These books inform readers about the dangers facing landforms and oceans and their inhabitants, and I hope that they will inspire the future custodians of our planet to safeguard it.



R K Pachauri  
Director-General, TERI  
Chairman, Intergovernmental Panel on Climate Change

# Contents

DESERTS: HOT AND COLD	6
WHAT LIES IN A DESERT	8
WHERE IS ALL THE WATER?	10
SAND AND SNOW IN MOTION	12
DRY AND NOT SO DRY	14
BEFORE AND AFTER	16
THE GREEN PATCHES	18
ANIMALS OF THE DESERT	20
EXPLORING THE DESERT	22
USEFUL DESERTS	24
AT HOME IN THE DESERT	26
LET THE DESERT BE	28
WORDS TO REMEMBER	30

# Deserts: hot and cold

About one-fifth of the earth is covered by deserts. But what is a desert? It is a dry region that receives very little precipitation. Precipitation can be rain (in hot regions) or snow (in cold regions). That's right. Deserts are not always hot and sandy! Hot deserts have sand, while cold deserts are filled with ice and snow.

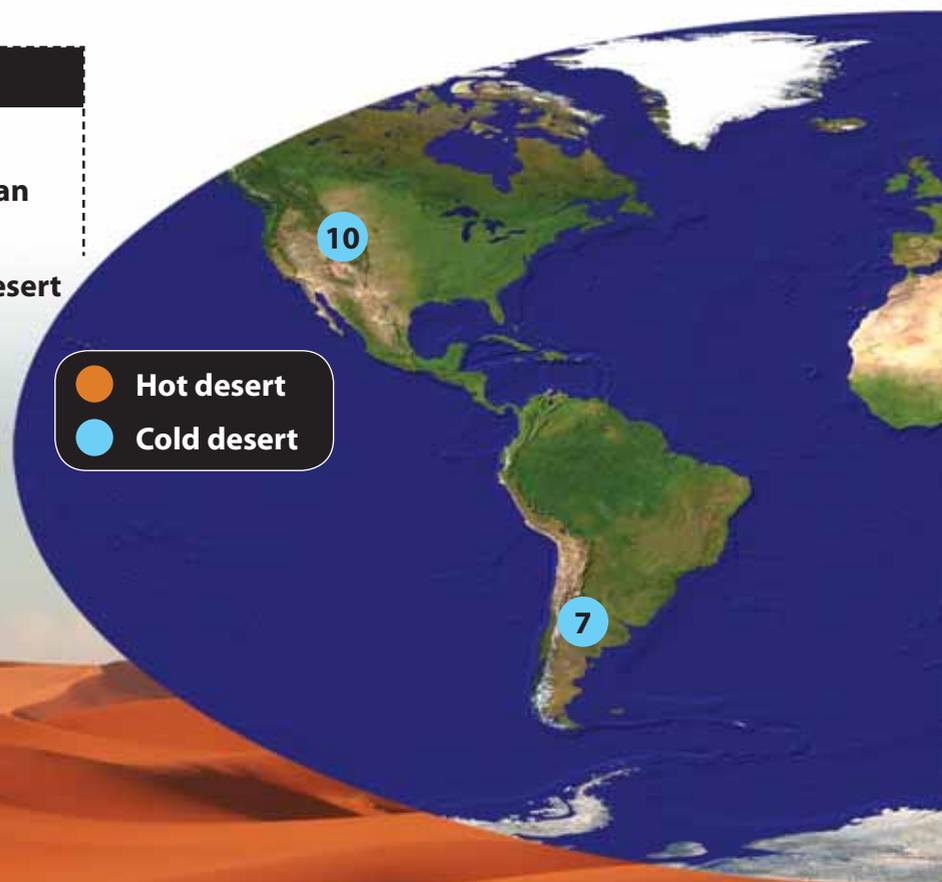
## Blistering sands

Deserts are found in all continents. The Sahara, Arabian, Thar, Australian, and Kalahari are hot deserts. The Sahara is the largest hot desert in the world. It is spread over 9,100,000 square kilometres—about three times the size of India! Normal temperature in hot, dry deserts ranges from 20° to 25°C and double that in summer.

### Hot and cold deserts of the world

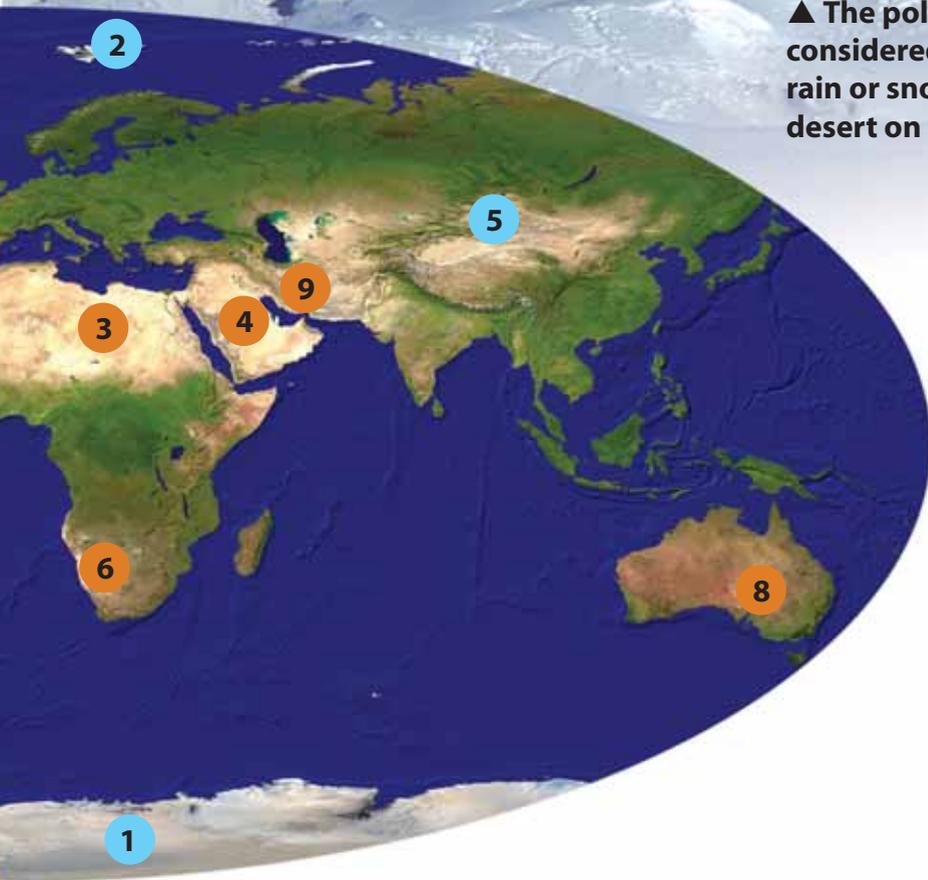
- |              |                       |
|--------------|-----------------------|
| 1 Antarctica | 7 Patagonian          |
| 2 Arctic     | 8 Great Australian    |
| 3 Sahara     | 9 Syrian              |
| 4 Arabian    | 10 Great Basin Desert |
| 5 Gobi       |                       |
| 6 Kalahari   |                       |

▼ The most extreme temperatures are recorded in deserts. The highest temperature, 57.8°C, was recorded in El Azizia (Libya) near the Sahara Desert.





▲ The polar regions—the Arctic and Antarctic—are considered to be deserts, because they get very little rain or snow. In fact, Antarctica is the largest cold desert on the earth.



### Icy expanses

Cold deserts are also found in many parts of the world. Atacama, Patagonia, Gobi, Great Basin, Iranian, Takla Makan and Turkestan are cold deserts. Scientists also include Antarctica and the Arctic regions in this group. The daily temperature in Atacama ranges between  $0^{\circ}\text{C}$  and  $25^{\circ}\text{C}$ , while it is colder in Antarctica, with temperatures ranging from  $-14^{\circ}\text{C}$  to  $-81^{\circ}\text{C}$ . The lowest temperature ever recorded was in Antarctica, at  $-89^{\circ}\text{C}$ .

### Not a drop in years!

Cold deserts are the driest places on earth. The Atacama Desert in South America is called the most 'sterile' place on earth. The average rainfall is 1 millimetre per year and it does not rain for several years in between. Nothing grows in this desert. Some places in Antarctica have not received a snowflake for more than a million years!

► When we overuse or pollute land, we create an artificial desert.

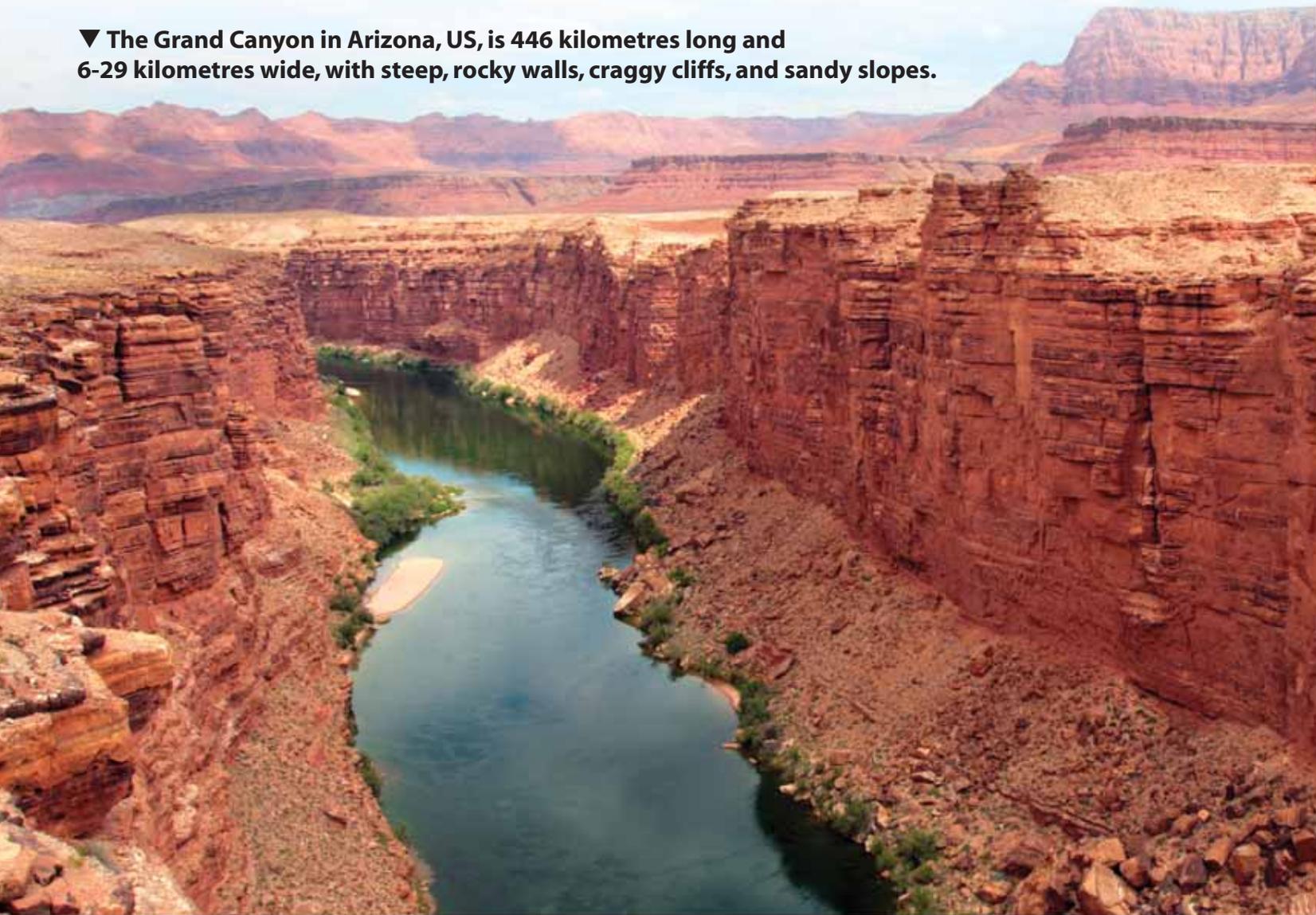
# What lies in a desert

**We always think of deserts as vast empty lands. But most deserts have mountains, underground rivers or volcanoes. Plants, animals, and people live in some deserts. Many deserts in Africa and Antarctica are located below sea level. The land below sea level is dry, and water evaporates rapidly.**

## **Desert rocks**

Rocky deserts, like the Grand Canyon in the United States, have mesas—little flat-topped mountains—valleys, and canyons. During seasonal rainstorms, water collects in pools of rocky crevices. Small, seasonal plants grow here. The seeds lie buried in sand waiting for the next rain. Antarctica, the largest cold desert, has rocky features like the hot deserts. Bare rocks, boulders, gravel, ice, and snow are also found in cold deserts.

▼ **The Grand Canyon in Arizona, US, is 446 kilometres long and 6-29 kilometres wide, with steep, rocky walls, craggy cliffs, and sandy slopes.**





▲ Sand dunes are formed due to the action of strong winds.



▲ Scientists drill deep into the Antarctic ice sheet and study the chemicals in the ice. This tells them about the changes in the climate over the last half a million years!



▲ The Erta Ale volcano, also called the smoking mountain, is located 75 metres below sea level in the Ethiopian Desert.

## Sand and snow

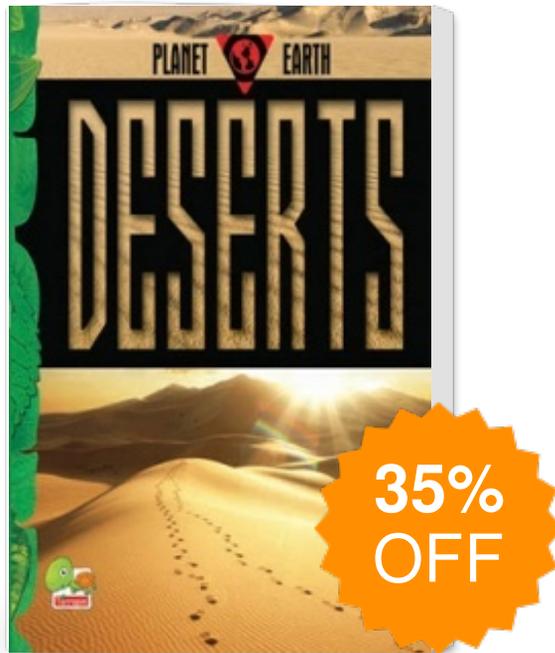
Sandy deserts have ridges of sand shaped by the wind, called sand dunes. Large sand dunes, or 'ergs', are found in hot deserts. Plants bind the sand dunes. Without plants, the dunes move with the wind. In cold deserts, snow dunes are formed on the flat ice surface. Snow dunes are created by dry, fluffy snow blown from one direction.

## Volcanoes

Volcanoes are found in both hot and cold deserts. Erta Ale, found in the remote Ethiopian Desert has been active since 1967. The base of this volcano is located below sea level. Powerful volcanoes lie hidden under the thick Arctic ice sheet. Iceland, located in the Arctic Ocean, has at least five active volcanoes. The icy Antarctic wilderness has more than thirty volcanoes. Mount Erebus is the most active volcano in Antarctica.

► The interior of Antarctica has nematodes, tiny insects, algae, mosses, and lichens. Scientists consider these areas to be natural laboratories where they can study the evolution of plants and animals.

# Planet Earth : Deserts



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