

PLANET  EARTH

ANIMALS





An imprint of The Energy and Resources Institute

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First published in 2011 by
The Energy and Resources Institute
TERI Press

Darbari Seth Block, IHC Complex, Lodhi Road, New Delhi 110 003, India

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India +91 ■ Delhi (0)11

Email: teripress@teri.res.in ■ Website: <http://bookstore.teriin.org>

ISBN 978-81-7993-337-4

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(page 26): Nick Powell/National Science Foundation; Polar ice sheet (pages 26-27): Peter

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National Science Foundation

Printed and bound in India

This book is printed on recycled paper.

POLARIS



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

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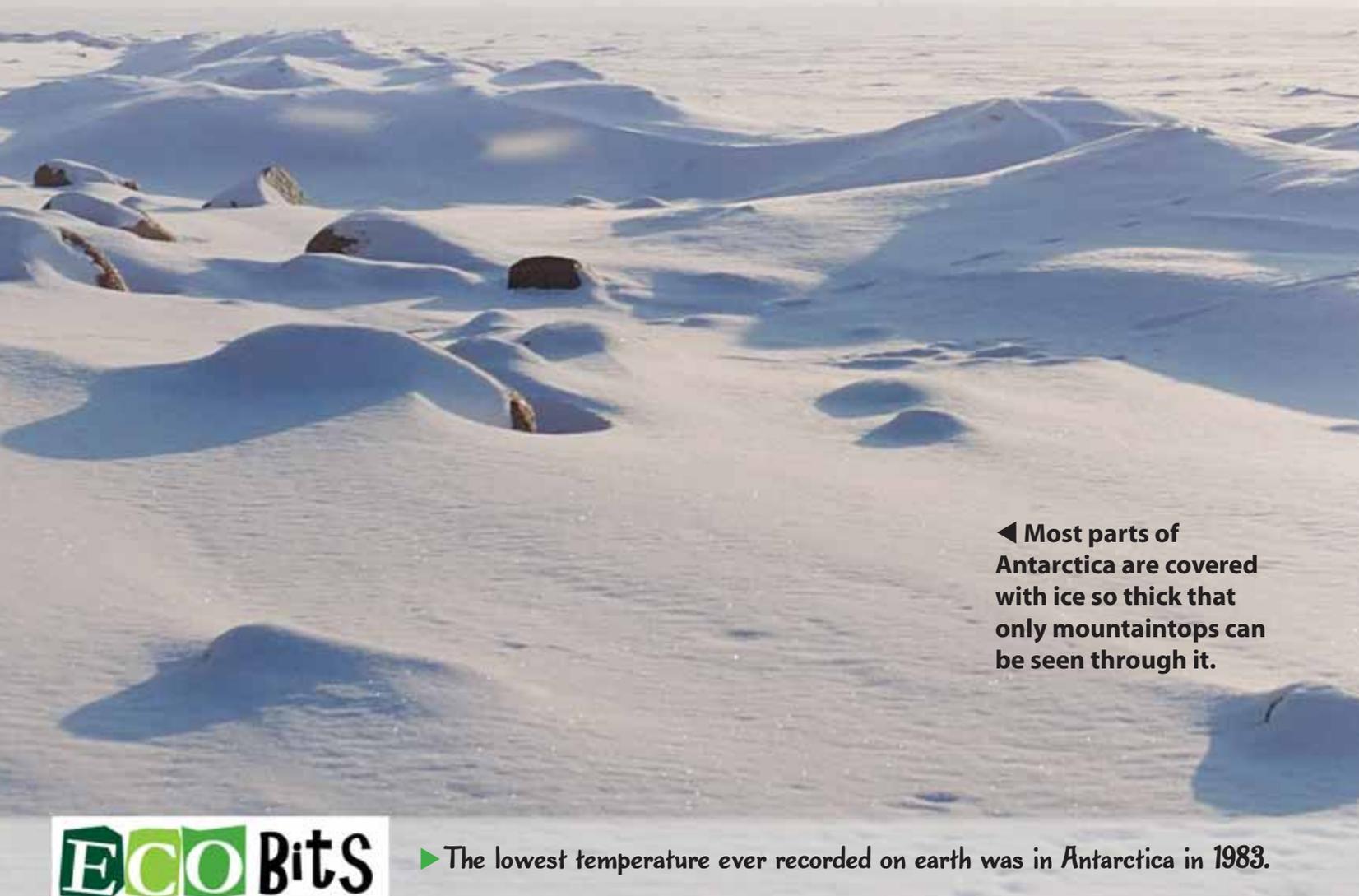
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At the ends of the earth

The earth is not a perfect sphere, but is flattened, or squished at both ends. The two extreme points of the earth's surface are the North Pole and South Pole. The areas surrounding the poles, called the polar regions, are the coldest places on earth.

Frozen deserts

The polar regions are vast deserts of snow and ice. In summer, the sun never sets here, but its rays are so spread out that the temperature remains near freezing point, that is, 0°C. In winter, the sun does not rise for almost six months. The long, dark winters are bitterly cold, with average temperature around -34°C at the North Pole. The South Pole is even colder, with temperature around -58°C! The soil, called 'permafrost', remains frozen round the year. There are frequent cyclones, especially along the coasts, while strong winds and gusts of snow are quite common in the interiors during winter.



◀ Most parts of Antarctica are covered with ice so thick that only mountaintops can be seen through it.



▲ In the Arctic Circle, there is one day every year when the sun does not rise at all, and one entire day when it does not set.

The Arctic Circle

The area around the North Pole is known as the Arctic Circle. Much of it consists of the frozen Arctic Ocean. The only land within the Arctic Circle is near its edges and includes parts of Europe, Asia, North America, and Greenland.

The Antarctic Circle

The land surrounding the South Pole is a frozen continent called Antarctica—the only continent without any human habitation. No country owns this continent. An international treaty has declared Antarctica as a natural reserve where scientists from various countries live and carry out research work. The boundaries of Antarctica contain a permanent layer of ice called polar ice cap, which shrinks during summer and expands in winter.



▲ Antarctica is the world's coldest, driest, and windiest continent.

► That was when the mercury dipped to an all-time low of -89°C !

A white world

The polar landscape is a massive sculpture of ice formed out of frozen fresh water. About 70 per cent of the earth's fresh water is trapped inside the polar ice. Mountains, underground lakes, ice shelves, volcanoes, icebergs, and ice sheets are all found in the polar regions.

Polar rocks

A few rocky areas appear amidst the desert-like expanse of snow and ice. This is where one finds boulders, gravel, and so on. Barren rocks make up about 2 per cent of the South Pole. Rocky portions—called 'Nunatak'—of a ridge or mountain, sometimes peek through the massive Antarctic ice sheets.

Snowy sculptures

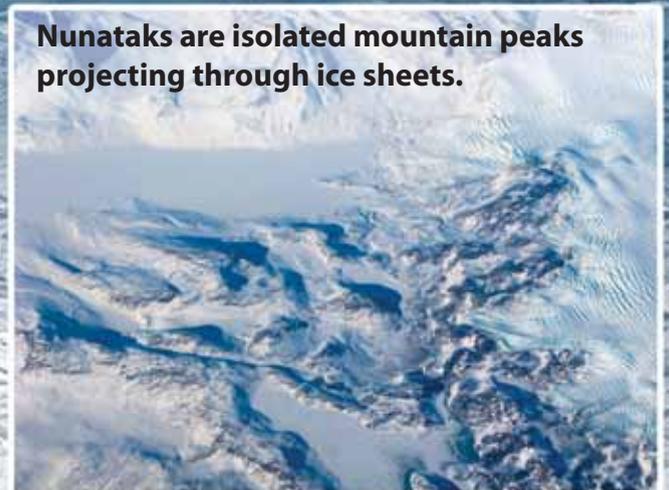
Winds carve out dunes of snow on the polar ice. Sometimes, the dry and fluffy snow is blown away by strong gusts, resulting in blizzards. The most impressive of these natural sculptures is the sastrugi—long, wave-shaped ridges formed by erosion and deposition of snow.

Icy structures

Over a long time, as layers of snow accumulate on top of one another, the lowermost layers turn into solid ice. This is how the permanent ice cap on the South Pole was formed. This exerts great pressure from above, which at times results in the formation of huge sheets of ice called glaciers. Sometimes, the ice sheets drift to a coastline and form a thick floating platform known as ice shelf.



Strong gusts of wind create wave-like ridges of snow known as sastrugi.



Nunataks are isolated mountain peaks projecting through ice sheets.

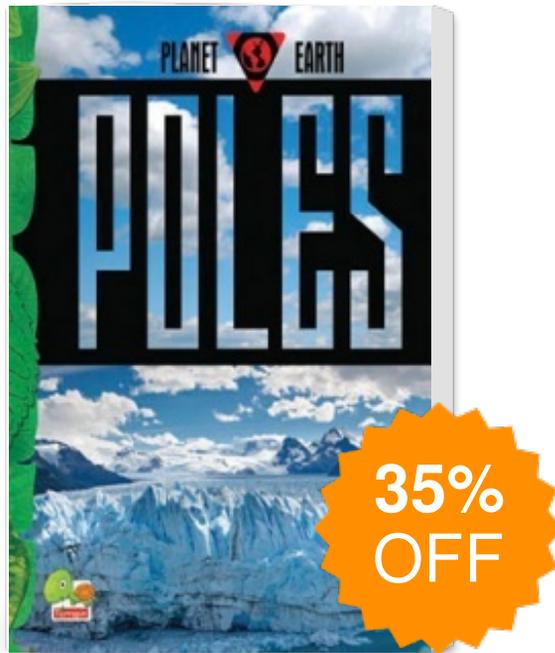
▲ Most of the world's ice shelves are found in Antarctica. However, ice shelves can form wherever ice flows from land into the cold ocean waters.

Below the surface

Active volcanoes, lakes, and hydrothermal vents lie hidden under the massive polar ice sheets. Hydrothermal vents are underwater geysers that release gases and steam. Mineral deposits of copper, gold, and other precious metals are often found on the seafloor around these vents.

► In the polar sea, ocean currents form polynya, or holes of open water surrounded by ice.

Planet Earth : Poles



Publisher : **TERI Press**

ISBN : **9788179933374**

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Type the URL : <http://www.kopykitab.com/product/8432>



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