Научно-исследовательская работа

Английский язык

ICE – PAST, PRESENT AND FUTURE.

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INTRODUCTION

The icy regions of our planet are among its few truly wild places. They were the last parts of the world to be explored, thanks to their extreme climates and hostility to life. Indeed the great ice sheets of Greenland and Antarctica are the most lifeless places on Earth, but when winter loses its grip on the land, the melting snow reveals a landscape ready to burst into life.

Mountains throughout the world have similar icy climates that make life hard or even impossible for plants and animals. The highest peaks are barren rock, snow and ice, but their lower slopes are grassy meadows grazed by tough, sure-footed animals such as mountain goats. They are stalked by hunters like the snow leopard, while smaller animals are targeted by soaring birds of prey.

People have lived in some of these places for centuries, hunting, fishing, and herding. The world is changing, however. In particular, the way people live all over the globe is changing the climate. Polar seas that were once frozen throughout the year are now open water in summer, and icy landscapes and glaciers are melting away. Animals such as polar bears, which depend on the ice, may fade away, too, as their fragile world disappears beneath their feet.

So I hope that this article will inspire us to help save these frozen worlds for future generations to marvel at, just as we do.

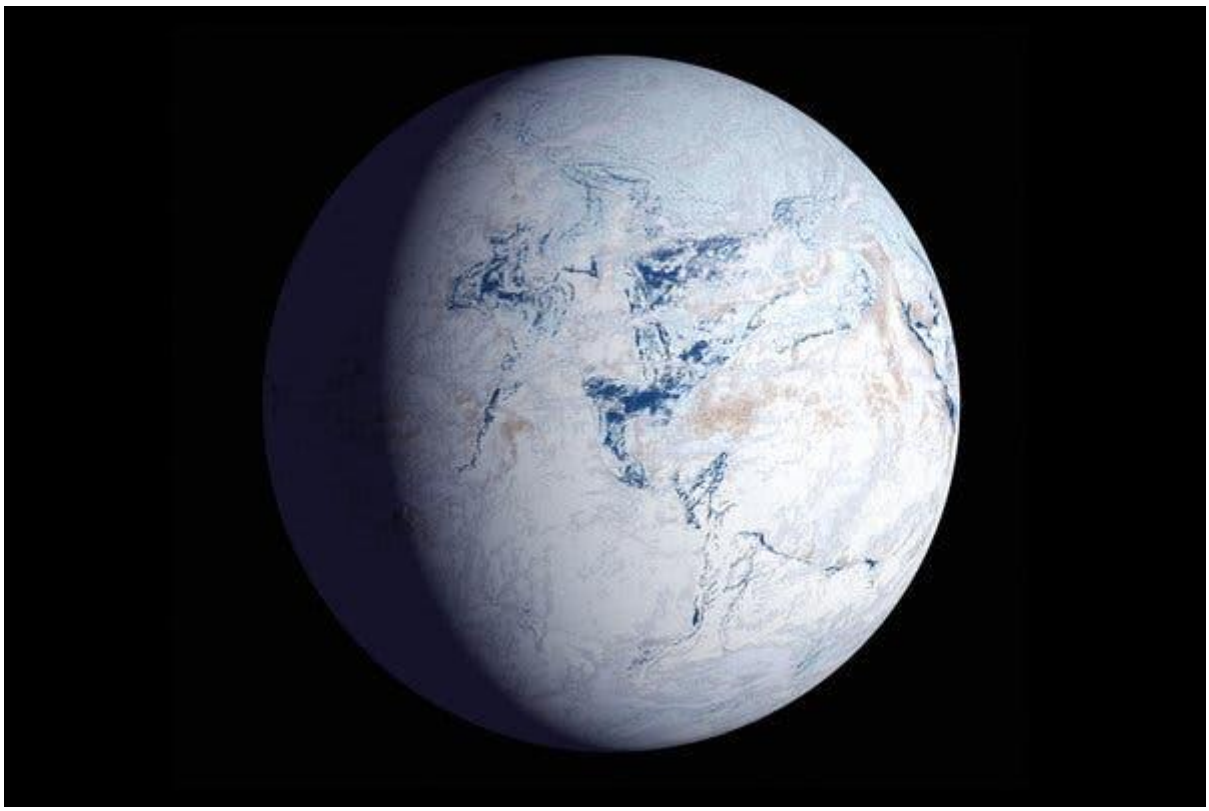
THE ICE AGES

There have been at least five periods in Earth's history when the global climate has chilled and have become covered by vast sheets of ice. These ice ages have lasted for millions of years, but each one has had colder and warmer phases. We are currently living in an ice age during which the ice sheets reached their greatest extent 23000 years ago, but which has now entered in a warmer phase.

SNOWBALL EARTH. Many scientists agree that the coldest period in Earth's history happened between around 720 and 635 million years ago. Clues in rocks suggest that there were two severe ice ages, called "Snowball Earth" periods, when the entire planet froze over from pole to pole. Life on the surface of the land was wiped out, but microorganisms survived under the sea ice. Soon afterward, the first complex organisms began to appear.

THE LAST ICE AGE. At the peak of the most recent ice age, 23000 years ago, the polar ice cap covered nearly all of Canada and northern Europe. Sea levels were lower than now, making coastlines different from today.

TODAY. We now live in a warmer period called an interglacial, which started around 10000 years ago. Although the polar ice cap has retreated, there are still vast ice sheets covering Greenland and Antarctica.



THE ARCTIC

At the top of our planet is a freezing-cold habitat: the Arctic. It includes the ice-topped Arctic Ocean, with the North Pole in the middle and a large expanse of treeless, icy land around the sea. Although it's one of the coldest, windiest places on Earth, it's home to many plants, animals and people.

NIGHT AND DAY. There are just two seasons in the Arctic. In the six months of icy winter, it's dark nearly all day and night. During the warmer six-month summer, it stays light for most or all of the time. Around March 21, the sun rises at the North Pole. It then circles through the sky every day for six months before setting at the start of winter.

FACTS. The sea ice breaks up into floating chunks in the summer months. These freeze back together in winter.

In winter, animals use sea ice as a bridge to travel and find food.

About four million people live in the Arctic. Their ancestors learned to survive in the harsh conditions over many thousands of years.

Late summer sea ice in the Arctic has fallen by about 70 percent over the past 40 years. This trend is likely to continue, eventually resulting in ice-free summers.

ANTARCTICA

Nowhere on Earth is less hospitable to life than Antarctica – the coldest, driest, darkest and windiest continent on Earth. Antarctica is nearly twice the size of Australia but 98 percent of its land is buried under ice sheets up to 2 km deep. In winter, the sea around it freezes too, doubling the area covered by ice. Despite the brutal climate, Antarctica is home to many kinds of animals, nearly all of which live around the coast and depend on the sea for food.

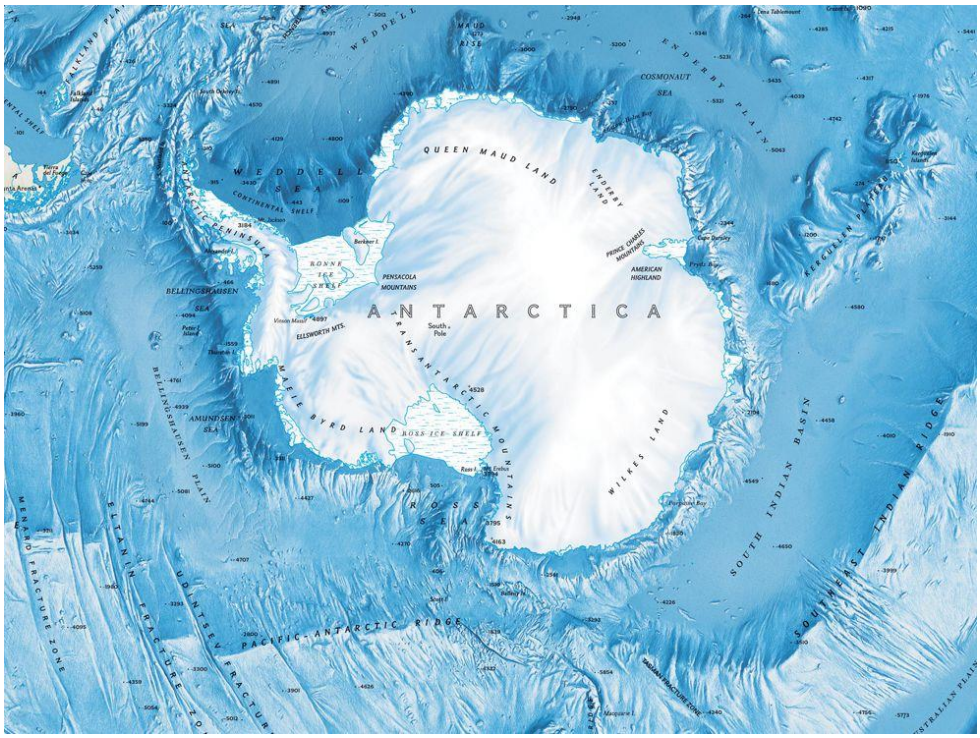
ANTARCTIC MAMMALS. The only land-living mammals in Antarctica are seals, most of which live not on the mainland but on ice or on the small islands around Antarctica, where the weather is milder. Southern elephant seals are the world's largest seals and rely on their great bulk to stay warm. A male southern elephant seal can weigh around 4 tons – more than a female African elephant.

FACTS. Antarctica's ice flows from land to sea, but very slowly. It takes 50000 years for a snowflake to travel from the South Pole to the ocean.

Antarctica has vast mountain ranges, but they are mostly buried in ice, with only the peaks showing through. The highest mountain is mount Vinson, which is standing 4892m tall.

In 1983 the temperature in part of Antarctica fell to -89,2 degrees Celsius, the lowest ever recorded on Earth.

Scientists believe the West Antarctic Ice Sheet is beginning to melt but the larger East Antarctic Ice Sheet is intact.



SLICK SWIMMERS

Penguins are the ultimate ocean birds, specialized for hunting underwater for fish, squid, and shrimplike krill. Though clumsy on land and unable to fly, they are agile and fast in the water. Penguins can also endure the coldest weather on Earth.

Too short for flight, penguin wings are the ideal size and shape for propelling the bird underwater. The long, sharp bill is ideal for seizing fast-swimming fish and squid. A penguin's eyes have lenses that are specially adapted to see clearly both in air and in water. A penguin's pale belly helps it escape its enemies by making it harder to see from below. The large, webbed feet act as rudders for steering when swimming.

INCUBATION. King penguins breed in big colonies on rocky islands in the Southern Ocean around Antarctica. Each female lays just one large egg, which has to be incubated for seven to eight weeks. The male and female take turns, keeping the egg warm for 12 to 21 days, while the other hunts at sea. When it hatches, they also take turns keeping the chick warm for three to four months, gathering food when they are not on duty.

! Warming waters due to climate change could make hunting much harder for king penguins, and up to 70 percent of them could vanish by 2100.

MOUNTAINS

Life changes the higher you climb up a mountain. In the leafy forests that blanket the lower slopes of the Himalayas, the climate is warm. But higher up, it gets colder and windier, and forests give way to meadows and rocky slopes. The peaks of many mountains are clad in snow and ice year round – a challenge for the animals and plants that live there.

Mountain ranges form when rocks push up as Earth's surface plates move. Some of the most famous are the Andes in South America, the Rockies in North America, the Alps in Europe and the Himalayas in Asia.

HIMALAYAS. The Himalayan mountains stretch across Asia, covering parts of China, India, Nepal and Bhutan. They include ten of 14 highest peaks and hold the world's third-largest reserve of snow and ice after the poles. The mountain range is so large that it blocks the path of rain-bearing weather systems, making the land to its south green and lush but casting a «rain shadow» over the arid grasslands and deserts to the north.

FACTS. At 8848 m tall, Mount Everest is the highest peak and the loftiest habitat on Earth.

At heights of over 8000 m, the air is too thin for humans, but birds such as bar-headed geese can survive.

The Himalayan jumping spider is one of the highest-living animals on Earth. It sits on rocks in sunny weather, waiting to pounce on small flies.

! Global warming threatens the flow of rivers that rely on meltwater from mountain snow and ice, while deforestation is a threat to forest animals at lower attitude.

HUMAN ON ICE

People have lived in the Arctic for thousands of tears, surviving mainly by hunting and fishing. By contrast, the very existence of Antarctica was unknown to humanity before 1820, and its only long-term residents have been explorers and scientists.

HUNTING ON ICE. The Inuit have lived in Alaska, Arctic Canada, and Greenland for a thousand tears or more. For most of that time, they lived by hunting and gathering wild food. They traveled as nomads for much of the year, relying on the animals they caught to provide both food and materials for clothing, tools, and weapons.

ICE HOUSE. The ingenious Inuit survived the freezing Arctic winters by using their snowy surroundings to construct igloos. As these nomadic people moved around, their homes had to be easy to build. Ice houses were crafted, in under an hour, from blocks of compacted snow with air between the crystals providing insulation. The Inuit made clothes from the pelts of reindeer and seals to keep warm.

NEW LIVES. While traditional skills are still important to the Inuit, most now combine these with earning money from ordinary jobs. Many live in houses in permanent settlements, and their traditional nomadic culture is under threat.

! Temperatures are rising faster in the Arctic than almost anywhere else, melting the sea ice that is vital to the Inuit way of life.

MOUNTAINEERING

The wonder of the mountains has caught people's imagination for thousands of years. Ancient civilizations worshipped them as sacred places for their gods. By the 18th century, scientists were studying mountains, and mountaineering as a sport soon followed as climbers began scaling the summits of the world's highest peaks.

Mountaineering became popular in the 18th century when British climbers started tackling peaks in the Alps. The highest, Mont Blanc, was first conquered by French doctor Michel-Gabriel Paccard in 1786. All the major alpine summits had been reached by the 1870s.

FACTS. Italian Reinhold Messner (1944-) was the first mountaineer to climb every mountain over 8000 m tall. He was the first to conquer Mount Everest alone without oxygen.

In 1975, Junko Tabei became the first woman to reach the summit of Mount Everest.

! Rising temperatures are melting glaciers in many of the world's mountains, forcing climbers to find new routes to the summit.

CLIMATE CHANGE.

The world is warming up – and in the mountains and polar regions ice is melting. The main reason for this is the release of carbon dioxide (CO2) when coal, oil and other fossil fuels are burned to generate energy. The CO2 acts like a blanket around the planet, stopping heat from escaping into space. As the oceans warm and ice melts, sea levels rise, threatening coastal cities. And as the world gets warmer, extreme weather events such as hurricanes, droughts and wildfires are likely to become more common.

NATURAL DISASTERS. Rising sea levels could cause coastal erosion, leading to landslides. Hotter summers are also causing stormier weather and more frequent hurricanes.

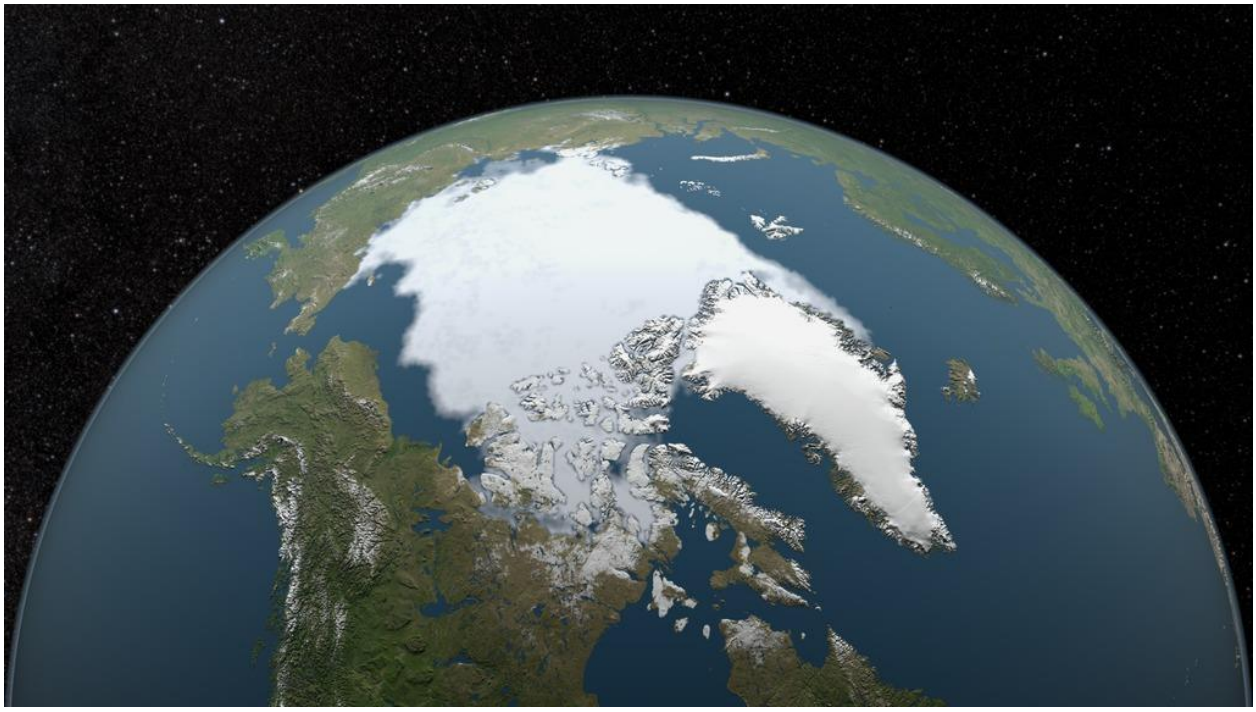
WILDLIFE. Animals adapted to particular climates may be forced to move to new areas. But those that live in the coldest places, such as polar bears, have nowhere to go and may die out.

HUMAN IMPACT. Many nations are threatened by flooding, drought or extreme weather. If farmers lose their crops, people may starve, and the rule of law may collapse, leading to mass migration.

WHAT CAN WE DO? We must use less energy generated by coal, oil or gas to slow the rate of climate change. This means turning down the heating, reducing travel and conserving energy.

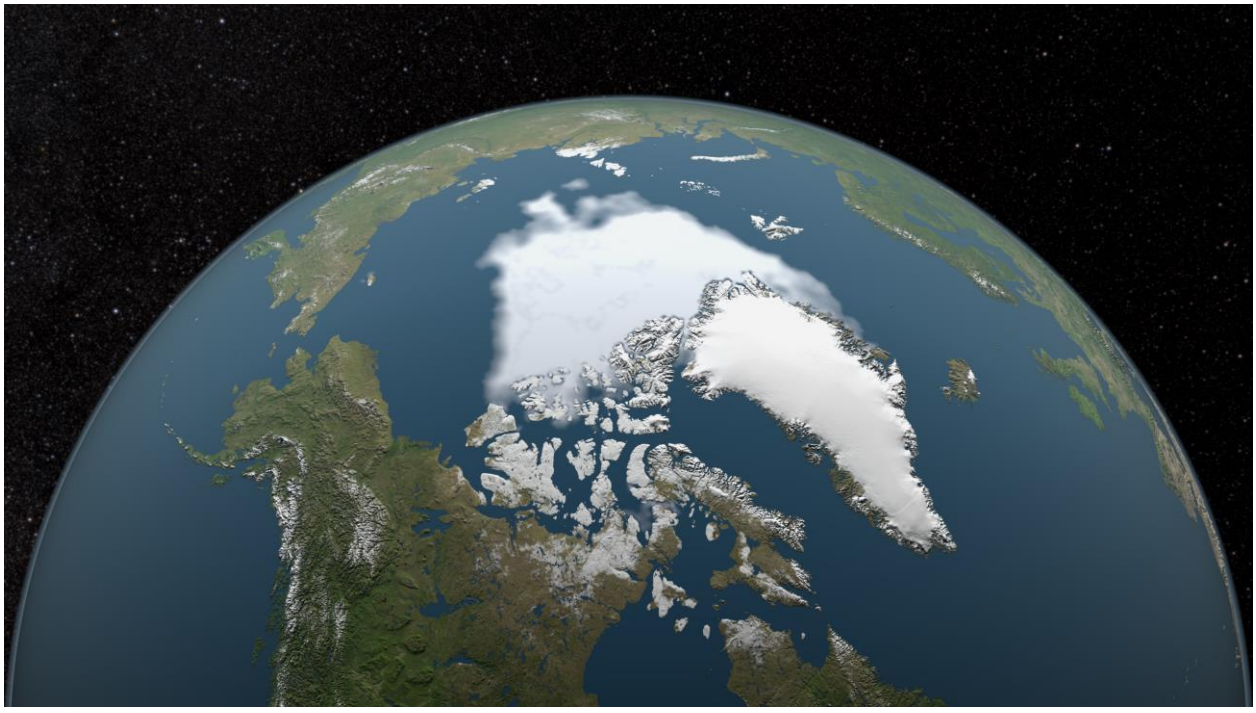
ARCTIC SEA ICE 1979.

One measure of climate change is the way Arctic sea ice is disappearing. This image made from satellite data shows the sea ice in the summer of 1979. It stretched right across the Arctic Ocean from Greenland to Russia.



ARCTIC SEA ICE 2012.

Since 1979, the area covered by Arctic sea ice has been shrinking. This image shows its extent in the summer of 2012, with a huge tract of open water off Russia. Some scientists think the ice could vanish completely by 2030.



CONCLUSION.

If the world temperature rises by two degrees, mountain glaciers and rivers will start to disappear and mountainous regions will see more landslides, as the permafrost that held them together melts away. This increases the possibility of huge flooding in the coast area.

By 2100, sea levels could rise by a metre, displacing 10% of the world's population. Archipelago countries such as Indonesia, Maldives and the Oceania will be submerged. People will also die in greater numbers as they struggle with the increasing heat. The ecosystem will collapse and a third of all life on earth will face extinction. Plant growth will slow, then stop. The world's food centres will become barren and, within 85 years, one third of the planet will be without fresh water.

Nature only works in accordance with what we, humans already did. We can't blame nature, for it's our consequences from the overexploitation humans have done for hundreds of years. We should keep encouraging world leaders on regulating laws in response to climate change. We could also help by doing individual steps on practicing sustainable consumption and production.

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