

Text C The long-term development of the climate

In order to understand what will happen with the global temperature, it is necessary first to look at what has happened. We have only used thermometers systematically and globally over the past century and a half (the world's longest record in Central England only goes back to 1659). If we want to know about the long-term development of the climate, we have to look for other ways of measuring temperature.

We can get a grip on the development of temperature by studying how it has affected other objects that we can measure today – the so called proxy indicators. For instance, temperature has in many ways affected the ice that has accumulated in polar regions. When we drill out an ice core, we can count the layers backwards in time and measure the fraction of melted ice, the concentration of salts and acids, the load of pollen or trace gases trapped in air bubbles. Equally, we can estimate temperature by looking at tree rings (because trees grow wider rings in warm weather), corals (measuring growth rings or trace elements), lake and ocean sediments, boreholes etc.

Throughout the past one million years there has occurred a series of eight glacial/interglacial cycles, driven by the changes in earth's orbit around the sun. The last interglacial period – the Holocene, which we still live in – began about 10,000 years ago. The melting ice caused the sea to rise some 120 m while the early temperatures were generally warmer than the twentieth century. The records seem to indicate substantial temperature swings throughout the Holocene on a millennial scale. Some indicators even show changes of 5 to 8 degrees C over 1,500 years. When looking over the long 400,000 years of ice cores, the Holocene appears the longest warm and stable period, which has naturally had profound implications for the development of civilization.

Basically, there is no disagreement that the centuries before 1900 were much colder. This phenomenon is well known in history as the "Little Ice Age," broadly stretching from 1400-1900. Evidence from a wide range of sources shows colder continents where glaciers advanced rapidly in Greenland, Iceland, Scandinavia, and the Alps. Many European springs and summers were outstandingly cold and wet. Crop practices changed throughout Europe to adapt to a shortened and less reliable growing season, causing recurrent famines. Likewise in China, warm weather crops, such as oranges, were abandoned in the Kiangsi Province, and in North America the early European settlers reported exceptionally severe winters.

Summing up, there is no doubt that the temperature of the late twentieth century is greater than many previous centuries. However, this cannot be taken as a simple indication of overwhelming global warming as we are also coming out of a Little Ice Age. The temperature is higher now than at any time throughout the past

1000 years. This claim seems less well substantiated, as the data essentially exclude ocean temperatures, night temperatures and winter temperatures and are based almost exclusively on North American data.

VOCABULARY:

Thermometer	Термометр	Borehole	Скважина
To get a grip	Ухватить	Interglacial	Межледниковый
Proxy indicator	Заслуживающий доверия	Recurrent	Периодически повторяющийся
To accumulate	Накапливать	Substantial	Сильный
To drill out	Бурить	Swing	Колебание
Core	Среднюю часть	Millennial	Тысячелетний
Backwards	Назад	Scale	Масштаб
Fraction	Крупница	Profound	Глубокое
Pollen	Пыльца	Implication	Последствие
Trace	След	Stretching	Растянувшийся
Bubble	Пузырек	Broadly	Широко
Sediment	Осадок	Holocene	Голоцен
Overwhelming	Огромный	To substantiate	Делать реальным
Driven	Управляемый	Evidence	Свидетельства

EXERCISE 1

Ответьте на вопросы: 1. What is it necessary in order to understand what will happen to the global climate? 2. When did people use thermometers systematically and globally? 3. What are the other ways of measuring temperatures? 4. What objects did the temperatures development affect? 5. How many glacial/interglacial cycles have occurred throughout past one million years? 6. Which interglacial period do we still live in? 7. Which are the main characteristics of the Holocene? 8. Were the centuries before 1900 colder or warmer? 9. Why did the crop practices change throughout Europe? 10. What phenomenon is known in history as the Little Ice Age? 11. Why does the claim that the temperature is higher now than at any time throughout the past 1000 years seem less substantiated?

EXERCISE 2

Найдите эквиваленты: для понимания, в течение прошлых полутора веков, долгосрочное изменение температуры, влиять на другие объекты, так называемые проверенные индикаторы, вызванный изменениями,

значительные колебания температуры, в масштабе тысячелетия, естественно имевший глубокие последствия, не иметь разногласий, известный в истории как, нельзя рассматривать как простой показатель, не включать в эти данные, практика ведения земледелия, вегетативный период.

EXERCISE 3

Составьте фразы, соответствующие содержанию текста:

1. We have only used thermometers systematically and globally	over the past century and a half.
	many centuries ago.
	over past 20 years.

2. We can get a grip on the development of temperature by studying how it has affected other objects that we can measure today	– the so called proxy indicators.
	– the main indicators.
	– the unimportant indicators.

3. For instance, temperature has in many ways affected	the ice.
	the pollen.
	the land.

4. Equally, we can estimate temperature by looking at tree rings, because trees grow	wider rings in warm weather.
	wider rings in cold weather.
	more narrow rings in warm weather.

5. Throughout the past one million years there has occurred a series of	eight.	glacial/interglacial cycles, driven by the changes in earth's orbit around the sun.
	five	
	twenty	

6. We still live in the last interglacial period which began about 10,000 years ago	– the Holocene.
	– the Homo Sapience.
	– the Homoclimate.

7. When looking over the long 400,000 years of ice cores, the	the longest warm and stable period.
	the longest cold and stable period.

Holocene appears

the longest warm and unstable period.