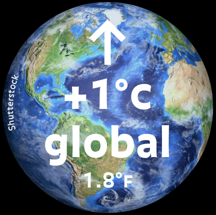
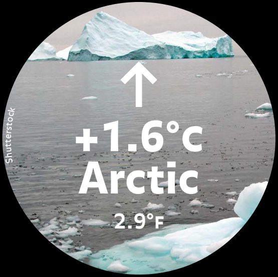
What's Happening to the Arctic?



Increase in average temperature since 1900



The warming observed globally is magnified in the Arctic. While worldwide average temperature climbed about 1°C (1.8°F) since 1900, the Arctic warmed by 1.6°C (2.9°F) over the same period. This is partly connected to the loss of sea ice and snow cover, which reduces how much sunlight is reflected off ocean and land surfaces. **Warming threatens Arctic peoples' livelihoods and endangers fragile ecosystems.**

MAPPING CHANGE

SLIDE to move
north and south

SLIDE to move through time

N

S

EXPLORE THE MAP

Can you find how your region is changing?

Do you see differences over the land
and oceans?

Causes of Glob

Human activity is warming
use of coal, oil and gas bec
1750, **humans have added**
tons* of heat-trapping ca
atmosphere, where it can
years. While burning fossil
of warming, deforestation
also contribute. The effect
from region to region, but
are affected by climate cha

**Human CO_2 emissions, 1750–2011:*
2,040 ±310 gigatons

al Warming

the planet. Since the
ame widespread after
about 2,040 billion
rbon dioxide to the
linger for thousands of
fuels is the main driver
and cement production
s of rapid warming vary
all of Earth's systems
ange.

Major Sources of Emissions

George Steinmetz/National Geographic

FORESTRY AND AGRICULTURE

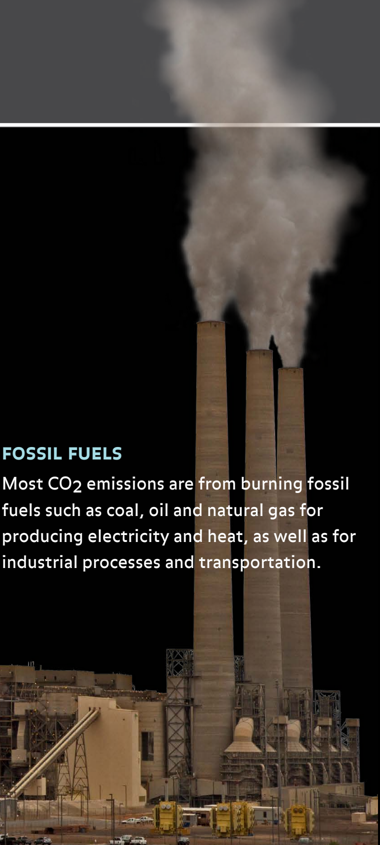
Agriculture and loss of the world's forests produce significant CO_2 emissions.

iStockphoto

CEMENT PRODUCTION

Raw materials used for making cement release CO_2 during the production process.

Jim West/Alamy



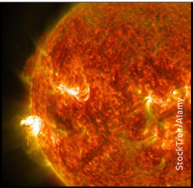
FOSSIL FUELS

Most CO_2 emissions are from burning fossil fuels such as coal, oil and natural gas for producing electricity and heat, as well as for industrial processes and transportation.

Natural Factors

StockTrek/AGE Fotostock

Eruption of Mount Pinatubo in the Philippines, 1991



StockTrek/Alamy

Solar activity

Climate varies naturally, so how can we distinguish between natural climate drivers and human causes? Many natural factors affecting climate, such as volcanic eruptions and changes in solar energy, are well understood—and they simply cannot account for the warming we see today. The only factor that explains the timing and magnitude of current warming is the impact of greenhouse gases released by human activity.

WHAT'S CAUSING CLIMATE CHANGE?

PRESS THE BUTTONS to compare different influences on climate

MAJOR NATURAL FACTORS

Changes in Earth's orbit

Energy from the Sun

Volcanic eruptions

MAJOR HUMAN FACTORS

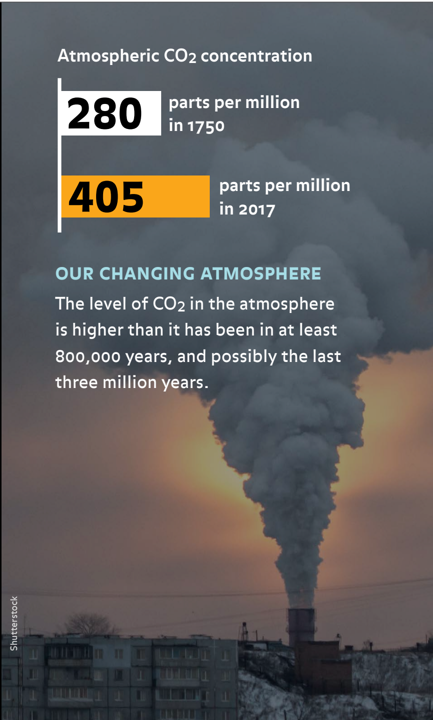
Greenhouse gas emissions

Aerosol pollution

Combined human and natural factors

The CO_2 released today can stay in the atmosphere for **thousands of years.**

Fossil fuels form over several hundred million years from the carbon in deeply buried remains of organisms. Burning these fuels releases carbon into the atmosphere as CO_2 in just minutes. Living things, oceans and rocks can remove CO_2 from the atmosphere, but not quickly enough to balance fossil fuel emissions.



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Atmospheric CO_2 concentration

280 parts per million in 1750

405 parts per million in 2017

OUR CHANGING ATMOSPHERE

The level of CO_2 in the atmosphere is higher than it has been in at least 800,000 years, and possibly the last three million years.