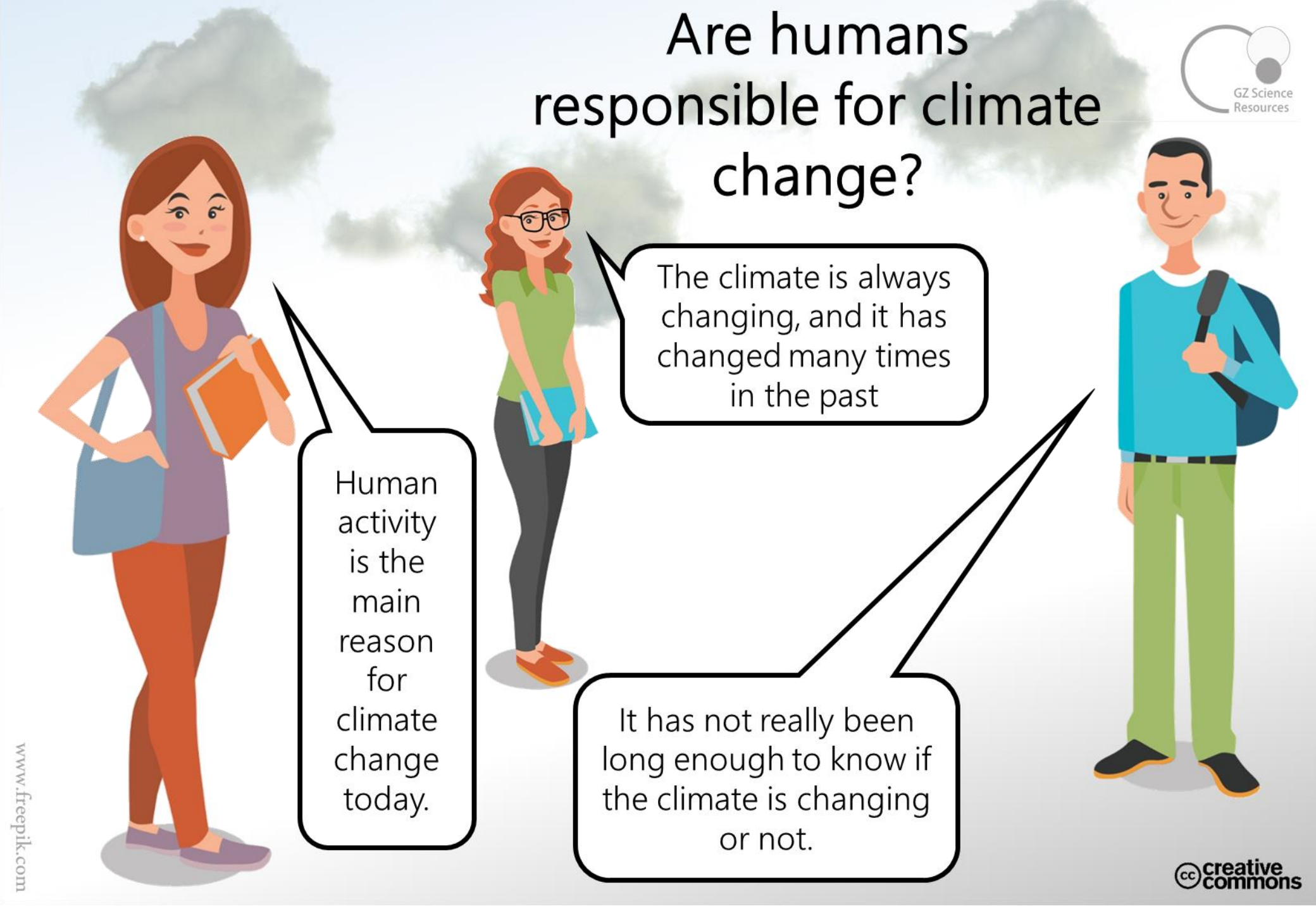
Thinking Cards - Climate Change

Use these cards to share your ideas about climate change with us.

And we will let you know what scientists have to say as well

Are humans responsible for climate change?



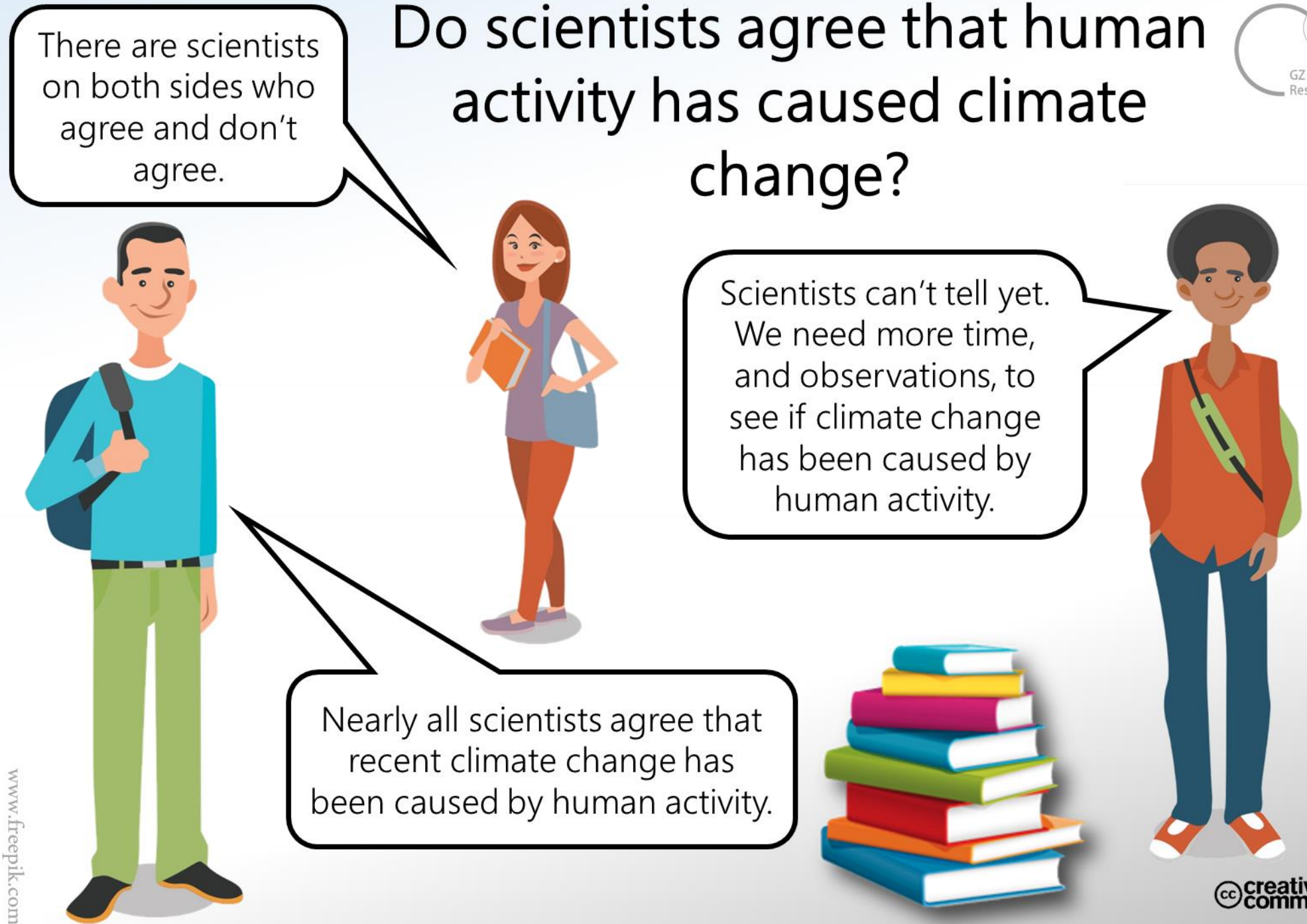
What the scientists say:

We have been able to collect evidence, and use models, to tell the difference between natural sources and human sources of climate change. Evidence also shows that human made CO_2 is the main cause of climate change.

(Center for climate and energy solutions)

Are humans responsible for climate change?

Do scientists agree that human activity has caused climate change?

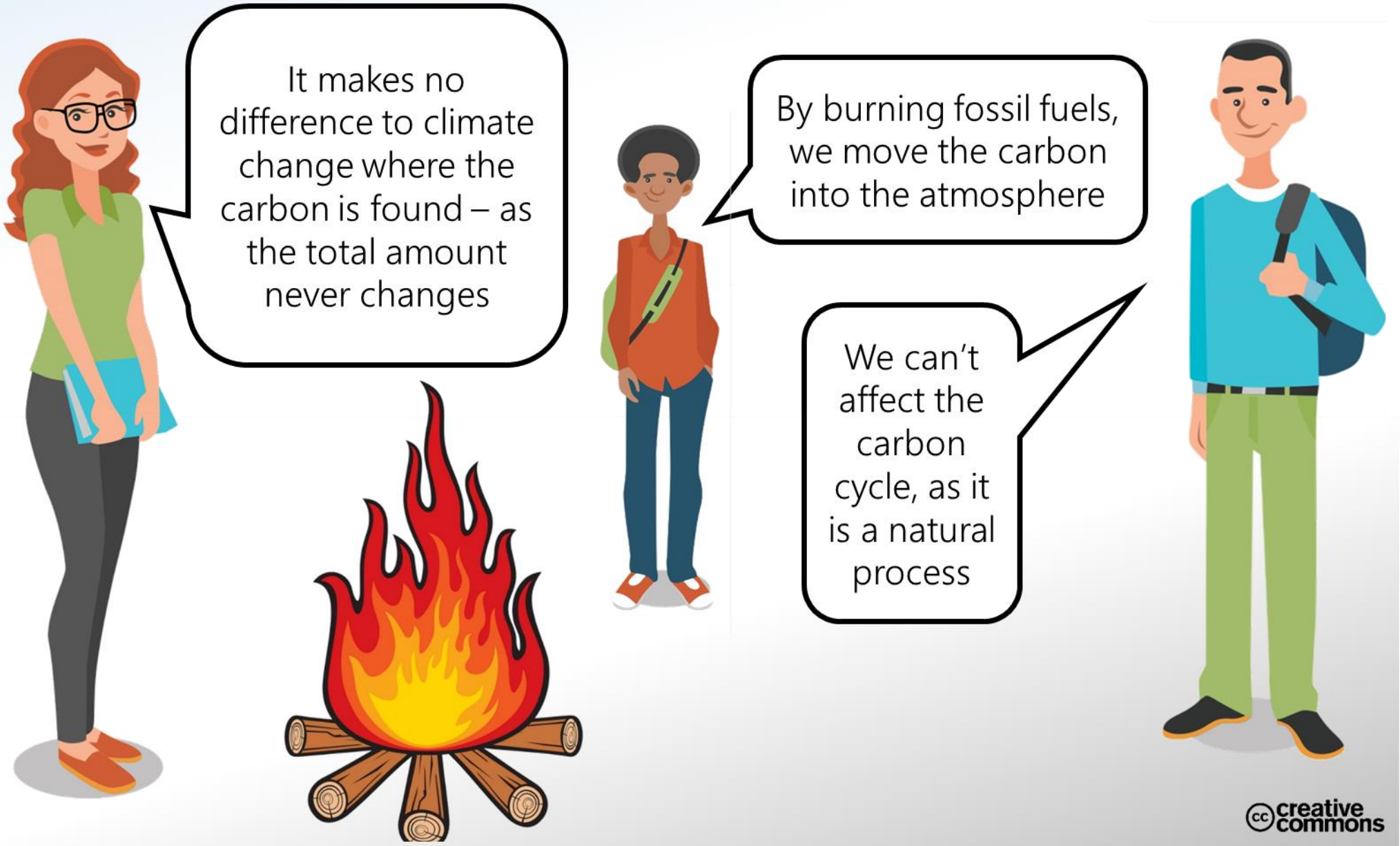


What the scientists say:

Over 97% of climate scientists agree that human activity is the main cause of recent climate change. Scientists publish their research in journals, that is checked by other scientists. Large scientific organisations around the world have also made public statements that agree with climate scientists. (NASA)

Do scientists agree that human activity has caused climate change?

Has human activity affected the carbon cycle?

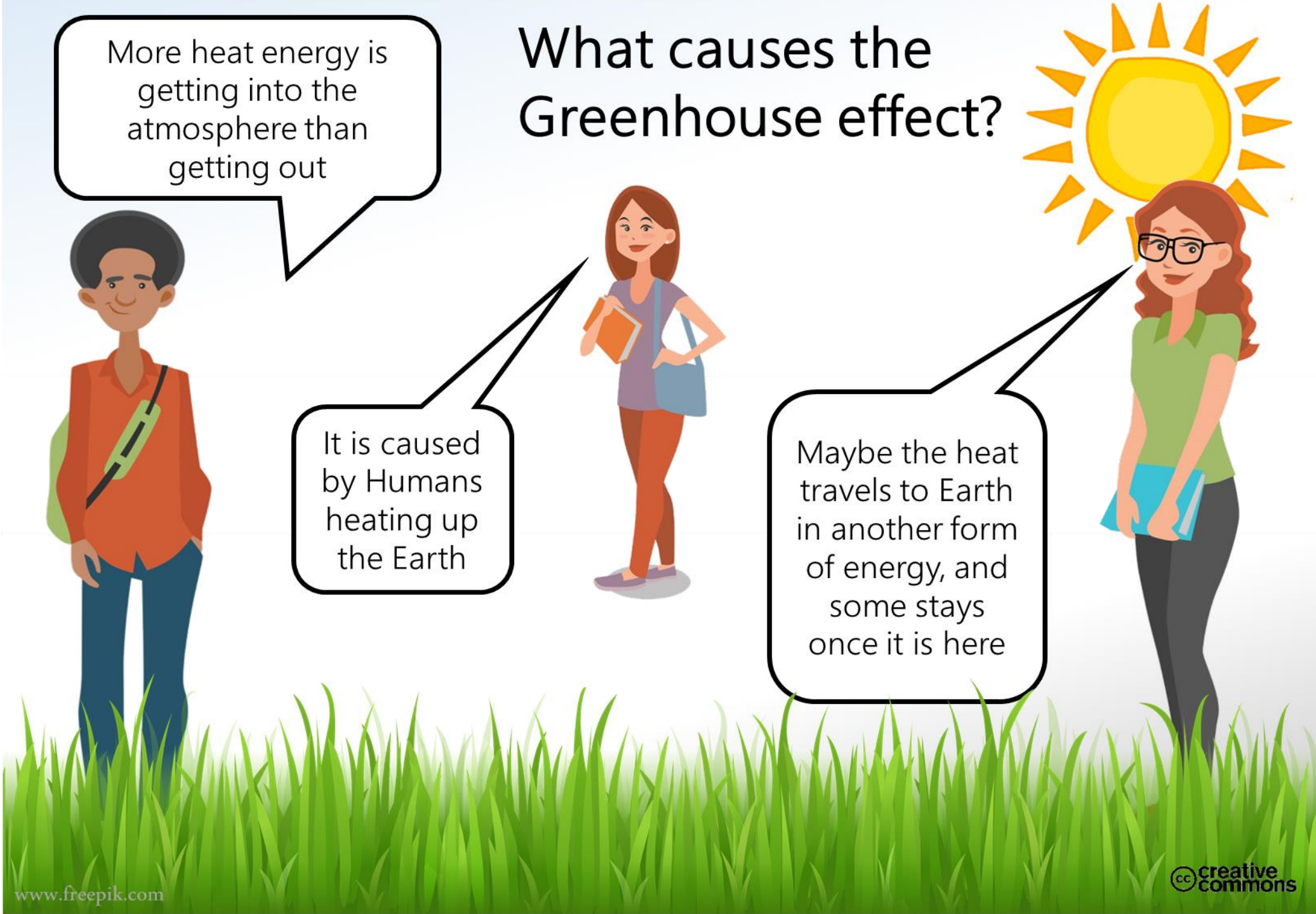


What the scientists say:

Humans increase the shift of carbon, locked up in fossils fuels, into the atmosphere, by using them as fuels. This also increases the amount of CO_2 moving into the ocean. Due to human activity, the CO_2 levels in the atmosphere are higher than at any time in the last 800,000 years, and the influence on the climate system is clear. (IPCC)

Has human activity affected the carbon cycle?

What causes the Greenhouse effect?

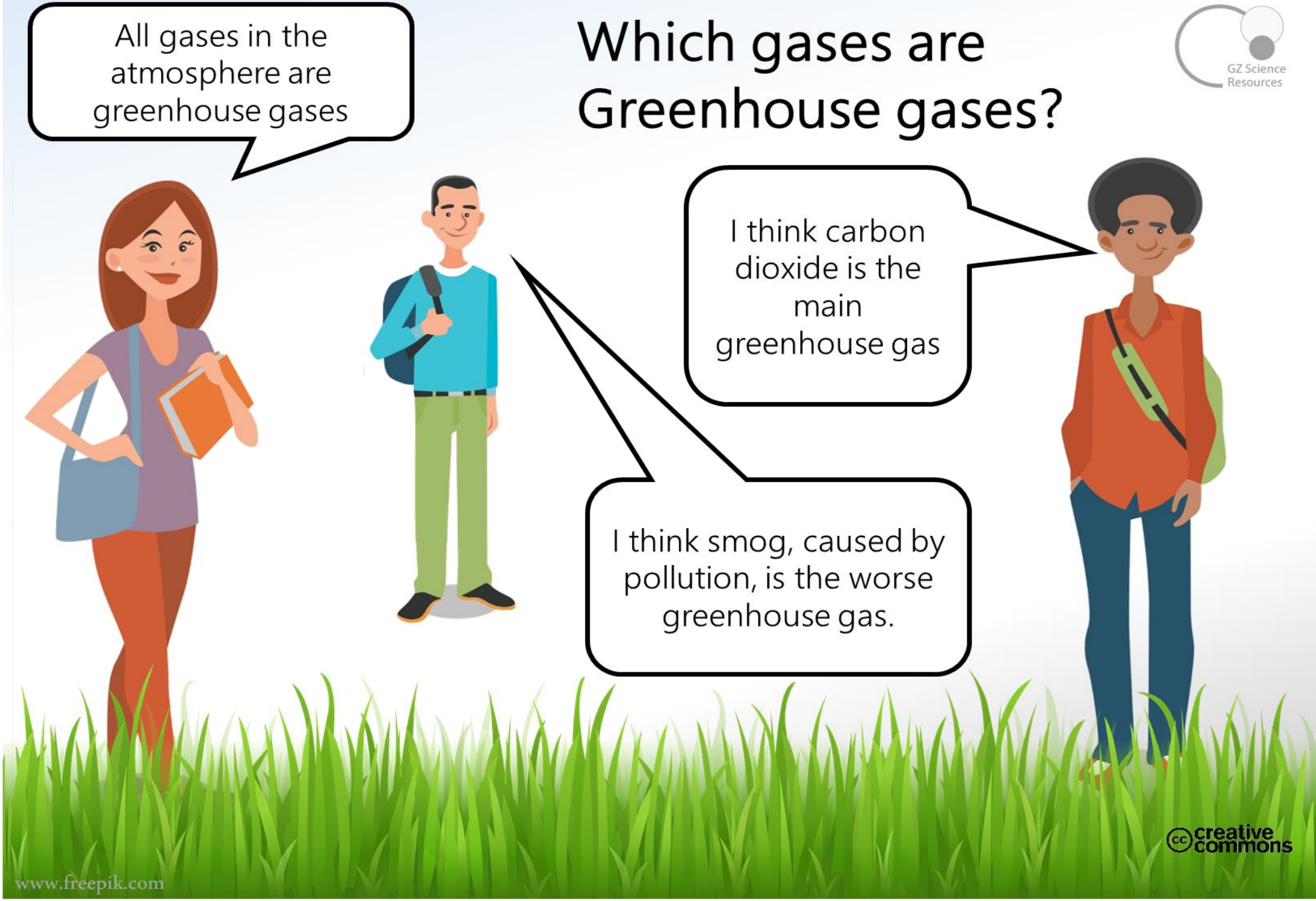


What the scientists say:

Energy from the Sun travels to the Earth mostly as light. Light passes through the atmosphere easily to reach the Earth's surface, and then it is absorbed. Energy is then 'emitted' from the cooler earth mostly as heat. Heat energy is absorbed by greenhouse gases such as CO_2, and prevented from escaping from the atmosphere. The more CO_2 in the atmosphere, the more heat is absorbed. The Earth's atmosphere heats up as more energy enters than released, changing the Earth's 'energy budget'. This is called the Greenhouse Effect. (IPCC)

What causes the Greenhouse effect?

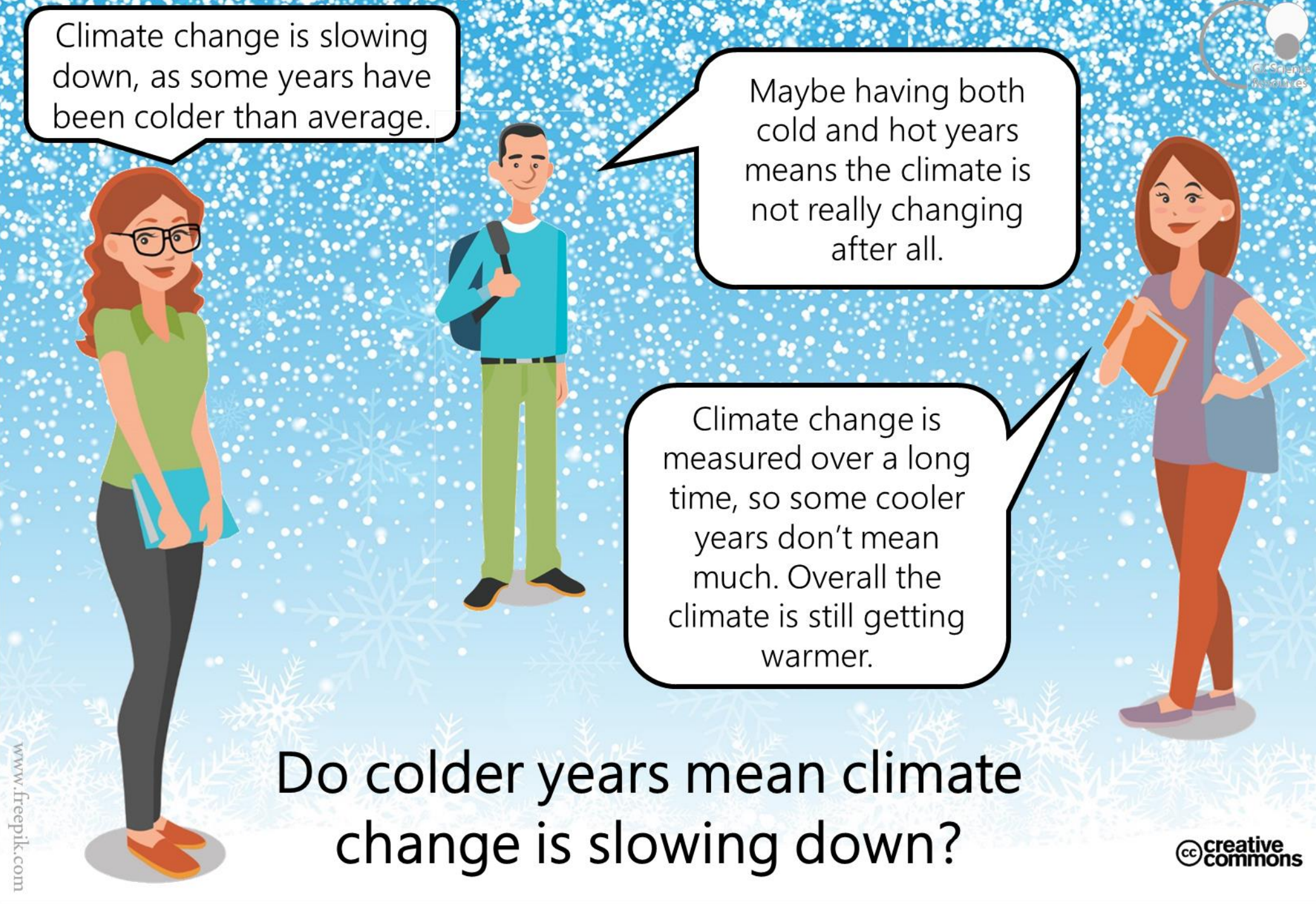
Which gases are Greenhouse gases?



What the scientists say:

Carbon dioxide (CO_2) is naturally found in the atmosphere, and it is able to absorb heat emitted from Earth (transformed from Sun light) to keep the Earth warm, so it is called a Greenhouse gas. Methane and water vapour also act as greenhouse gases, but they disappear from the atmosphere quicker, so have less effect than CO_2. Pollution and smog are not greenhouse gases. Human activity is increasing the amount of greenhouse gases in the atmosphere, especially CO_2, so the Earth is becoming warmer. (IPCC)

Which gases are Greenhouse gases?


Climate change is slowing down, as some years have been colder than average.
Maybe having both cold and hot years means the climate is not really changing after all.
Climate change is measured over a long time, so some cooler years don't mean much. Overall the climate is still getting warmer.
Do colder years mean climate change is slowing down?
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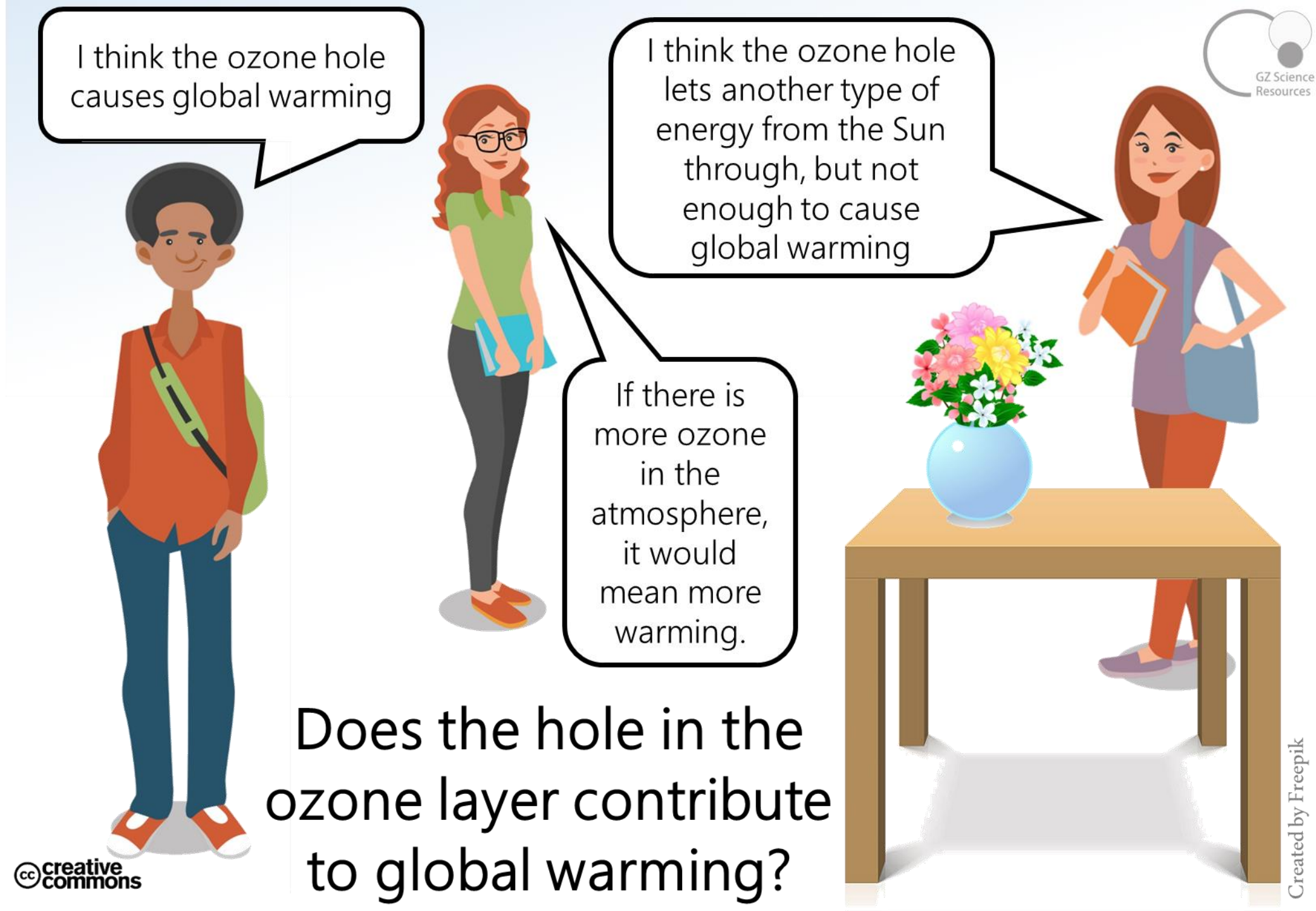
What the scientists say:

Short time periods (less than 10 years), can show some cooling, which lead some people to think climate change is not true. Climate refers to longer term patterns of over 30 years, and this shows that the average surface temperature of the Earth has increased. Powerful computers, based on observations, can help scientists predict, with much confidence, that the Earth will continue to warm, due to human created climate change.

(Center for climate and energy solutions)

Do colder years mean climate change is slowing down?


I think the ozone hole causes global warming
I think the ozone hole lets another type of energy from the Sun through, but not enough to cause global warming
If there is more ozone in the atmosphere, it would mean more warming.
Does the hole in the ozone layer contribute to global warming?
GZ Science Resources
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What the scientists say:

The ozone hole does not cause global warming. The ozone hole, which forms in spring over Antarctica, is a thin patch of ozone (O_3) gas. It was caused by pollutants like CFC, found in refrigerators and spray cans, but they are banded now. Ozone blocks UV light only (less than 8% of all energy from the Sun), and the hole allows an even smaller amount through. This additional amount of energy is too small to have any impact on global warming, and therefore, climate change. (climate.gov)

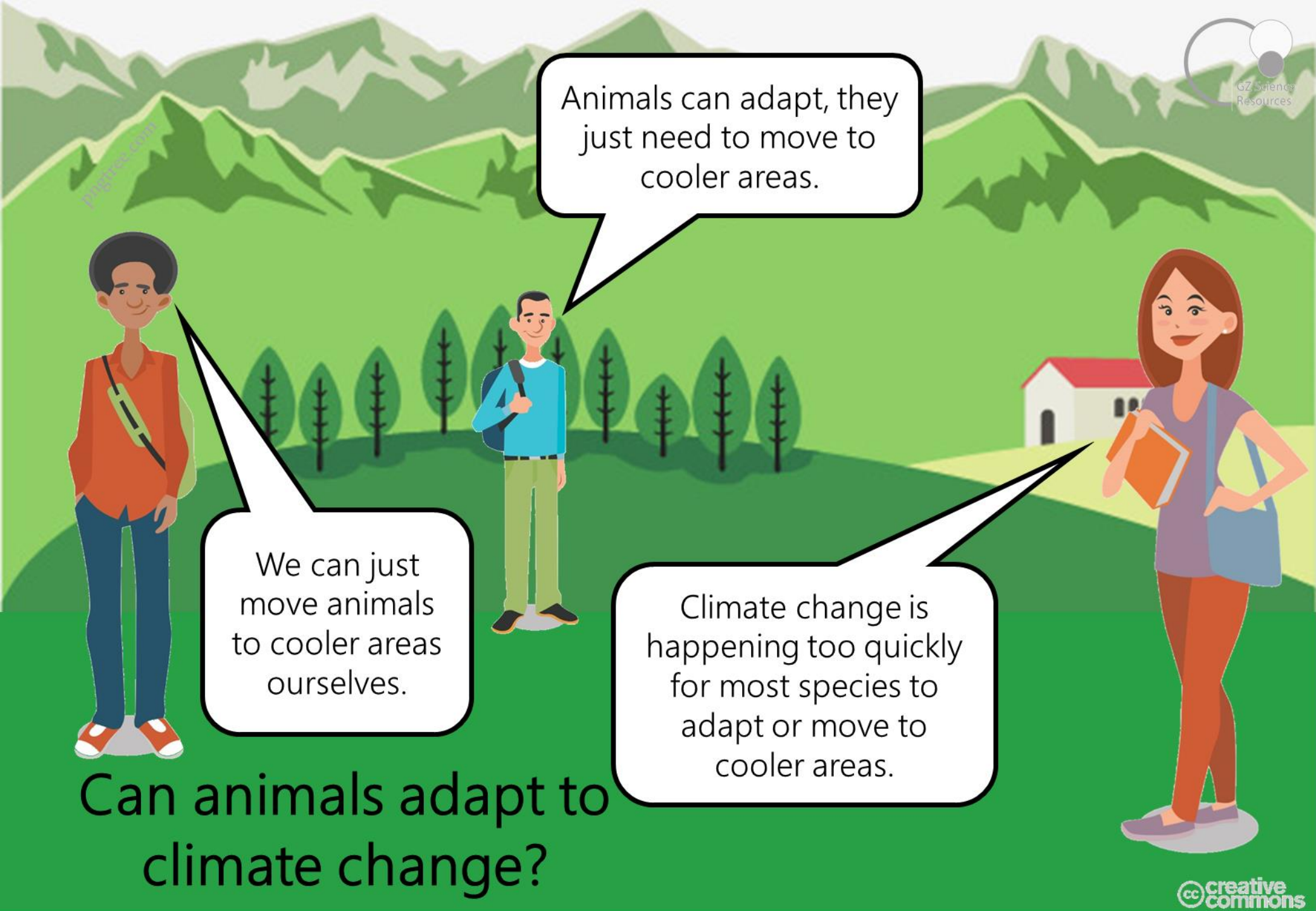
Does the hole in the ozone layer contribute to global warming?

Does melting sea ice from the Arctic sea cause the sea level to rise?

What the scientists say:

Sea level rise is a consequence of climate change. Warming temperatures are causing the melting of the cryosphere (ice and snow on Earth), and much of this is travelling into the oceans as water, causing the sea-level to rise. However, sea ice, such as that floating in the Arctic, is already in the water, and will not change the volume of water added to the ocean.
Climate change also causing the oceans to get warmer, as the water absorbs heat. This causes heat expansion of the water and also adds to sea level rise. (NASA)

Does melting sea ice from the Arctic sea cause the sea level to rise?


Animals can adapt, they just need to move to cooler areas.
We can just move animals to cooler areas ourselves.
Climate change is happening too quickly for most species to adapt or move to cooler areas.
Can animals adapt to climate change?
GZ Science Resources
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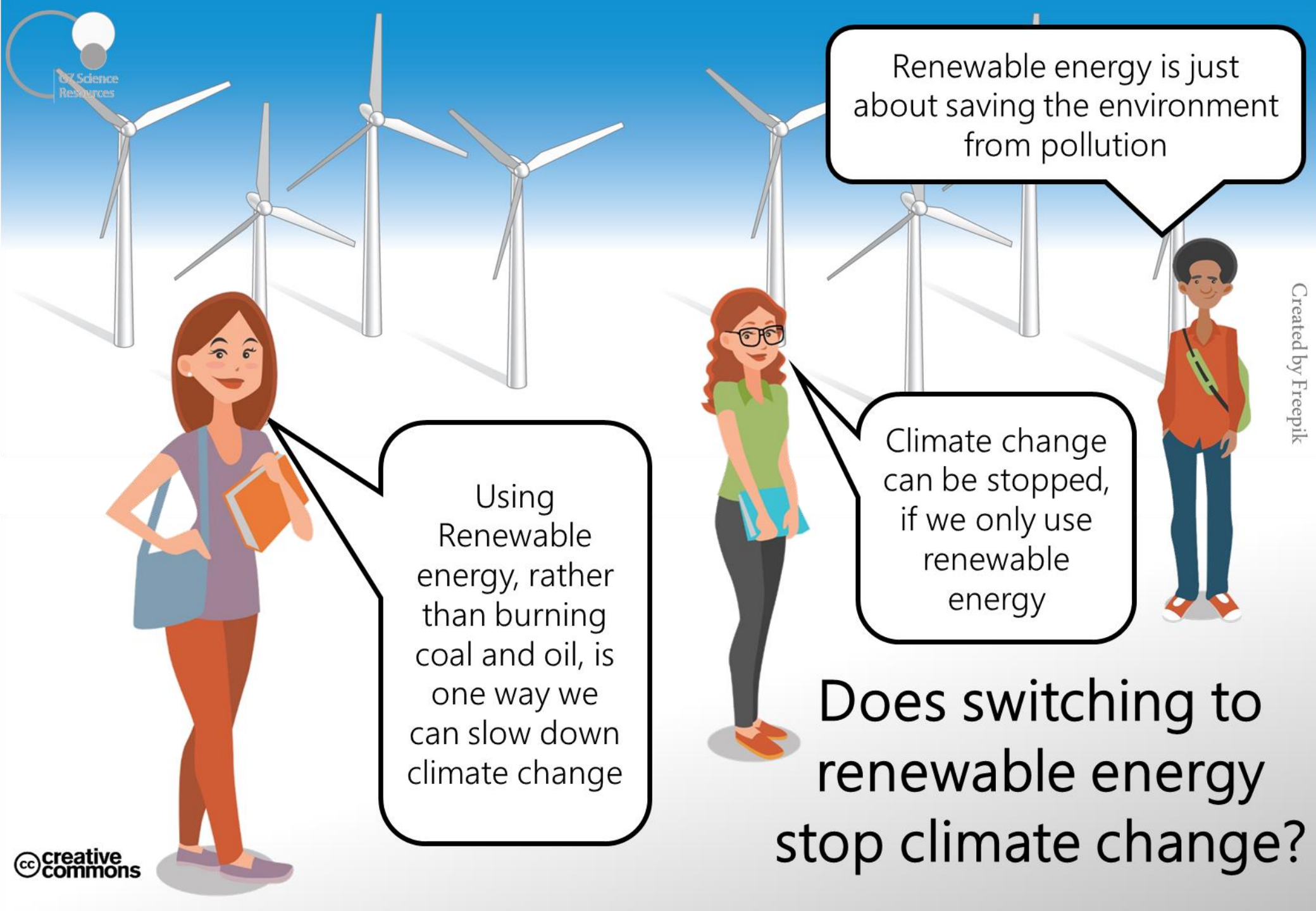
What the scientists say:

Some animals can move higher up, or closer to the poles, to escape warming temperatures, but different food and competition may mean it is difficult for them to survive. Some animals are at the farthest extent of their range, and there is nowhere left to go. Man-made structures may also prevent movement to cooler areas. Human-created climate change is occurring quicker than natural climate change, and may be too quick for most species to adapt to. (Earth Institute)

Can animals adapt to climate change?


OZ Science Resources
Using Renewable energy, rather than burning coal and oil, is one way we can slow down climate change
Renewable energy is just about saving the environment from pollution
Climate change can be stopped, if we only use renewable energy
Does switching to renewable energy stop climate change?
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What the scientists say:

Mitigation solutions reduce or remove greenhouse gas emissions of CO2, to slow further climate change. Most CO_2 comes from humans' burning fossil fuels for energy to generate electricity, transport, and industry. Renewable energy does not use fossil fuels. Energy generation produces over two thirds of global greenhouse emissions. Mitigation occurs when we produce electricity using renewable resources, such as hydro, wind or solar energy, instead of burning fossil fuels, and is an important way we can reduce the impact of global warming.

Does switching to renewable energy stop climate change?