

LO: WHAT ARE THE IMPACTS OF CHANGING POLAR ENVIRONMENTS?



What is the polar bear dependent on?

How are climate and soil dependent on each other?

How do humans depend on the Arctic?



*Each part of an ecosystem relies on every other part for its survival...this is called **interdependence**.*

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SUCCESS CRITERIA: I CAN...

- IDENTIFY... (1-2)
- DESCRIBE... (3-4)
- EXPLAIN... (5+)

... THE IMPACTS OF CHANGING POLAR ENVIRONMENTS.

Polar ecosystems are FRAGILE. This means that it can easily be damaged by human activities such as resource exploitation or even by air pollution in other parts of the world.

Perhaps the greatest threat to the polar regions is from climate change due to global warming.

For example, sea ice in the Arctic Ocean is melting. Each summer the minimum area of ice in the ocean shrinks a little further. By the middle of the 21st century, the Arctic Ocean could be like any other ocean in the summer- totally ice free. Does this matter?

<http://www.bbc.co.uk/programmes/p00m54dy>
<http://www.bbc.co.uk/programmes/p00m4zkv>



LO: WHAT ARE THE IMPACTS OF CHANGING POLAR ENVIRONMENTS? **LOCAL IMPACTS**

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- ... THE IMPACTS OF CHANGING POLAR ENVIRONMENTS.

WHAT IMPACT WILL CLIMATE CHANGE HAVE ON BIODIVERSITY?

<http://www.bbc.co.uk/programmes/p00m50d4>

<http://www.bbc.co.uk/programmes/p00m510c>

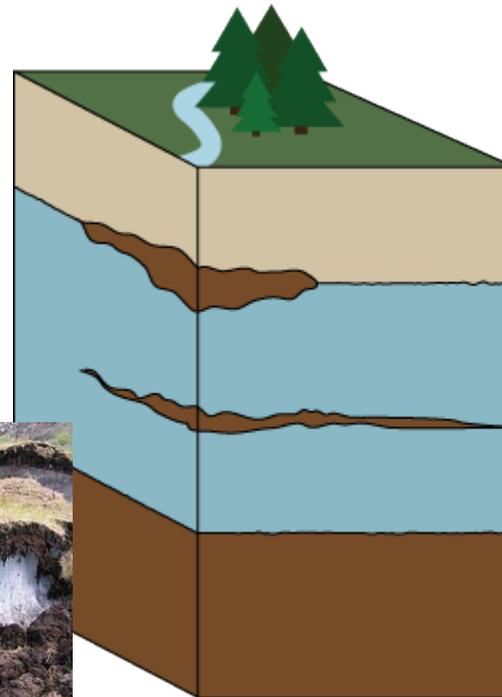
<http://www.bbc.co.uk/education/guides/z8r6fg8>



WHAT IMPACT WILL CLIMATE CHANGE HAVE ON SOIL?

<https://www.youtube.com/watch?v=yN4OdKPy9rM>

(Play to 4 mins10secs)



Active Layer 
Permafrost 
Talik 

In some areas of the Arctic the permafrost is thawing out. The upper 'active' layer of permafrost is sensitive to changes in temperature, and it does melt in summer. However, rising temperatures is resulting in more thawing, which means there is a loss of stability and high risk of flooding. This also changes the soil, making it difficult for plants to grow.

LO: WHAT ARE THE IMPACTS OF CHANGING POLAR ENVIRONMENTS? **GLOBAL IMPACTS**

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WHAT IMPACT WILL MELTING ICE HAVE ON GLOBAL SEA LEVEL?

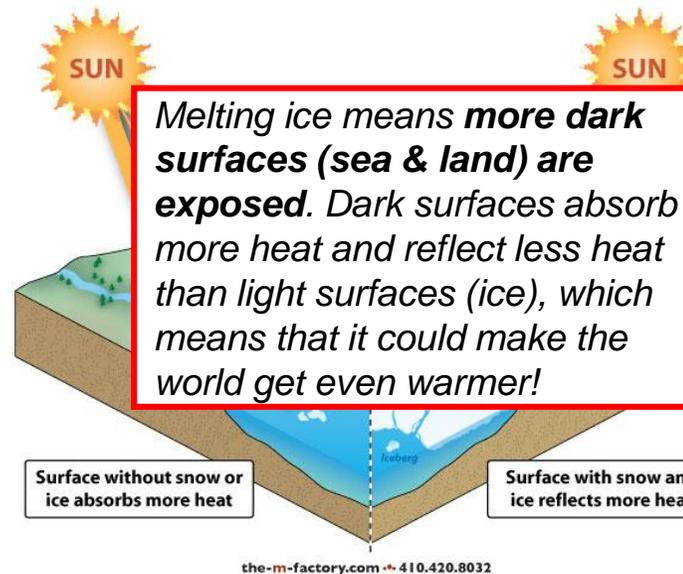
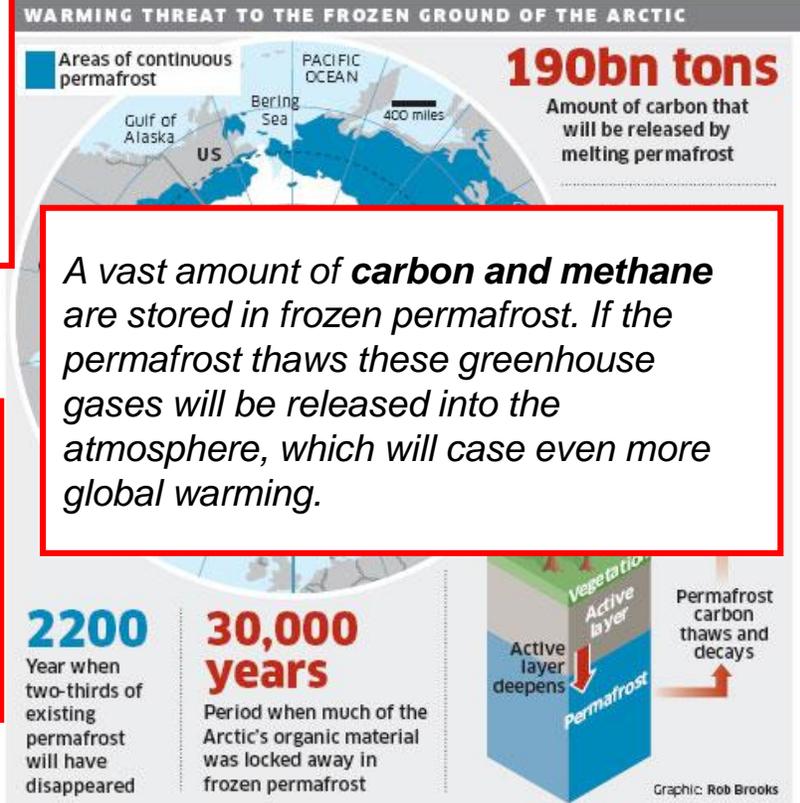
WHAT IMPACT WILL MELTING ICE HAVE ON GLOBAL CLIMATE?

WHAT IMPACT WILL THAWING PERMAFROST HAVE ON GLOBAL CLIMATE?

<https://www.youtube.com/watch?v=yN4OdKPy9rM>

(Play remainder)

If the **ice sheets*** in the Arctic and Antarctic were to melt, there would be a catastrophic rise in sea level which would threaten some of the world's low lying areas, including major cities.



Melting ice means **more dark surfaces (sea & land) are exposed**. Dark surfaces absorb more heat and reflect less heat than light surfaces (ice), which means that it could make the world get even warmer!

A vast amount of **carbon and methane** are stored in frozen permafrost. If the permafrost thaws these greenhouse gases will be released into the atmosphere, which will cause even more global warming.

*Remember that melting sea ice (ice shelves) does not cause sea level rise (think of an ice cube in a glass of water) – it is melting land ice that causes variation in sea volume.

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LOCAL IMPACTS	GLOBAL IMPACTS	
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<p>A vast amount of carbon and methane are stored in permafrost. If the permafrost thaws, these greenhouse gases are released into the atmosphere, which will cause more global warming.</p>	<p>Sea ice sheets in the Arctic and Antarctic were to melt, there would be a catastrophic rise in sea level which would threaten some of the worlds low lying areas, including major cities.</p>	<p>Longer summers, with no ice is one of the main reasons why polar bear numbers are dropping. This is because polar bears hunt for seals on the frozen oceans. A lack of ice, means a lack of food.</p>

HIGHLIGHT ME

LO: WHAT ARE THE IMPACTS OF CHANGING POLAR ENVIRONMENTS?

LOCAL IMPACTS

GLOBAL IMPACTS

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LO: Why do polar regions need protecting?

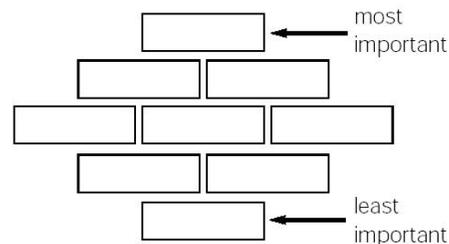
Why do polar regions need protecting?

- Work in pairs - you will need a set of mystery cards.
- Find a way to sort/group the cards to answer the question:

Why do polar regions need protecting?

- It may help to refer back to the food web.
- You can cut out and re-sort, colour-code, devise a key to help you categorise.
- You will need to make connections between pieces of information on different cards.
- You then need to write an answer to the question: **Why do polar regions need protecting?**

- Be ready to share your answers!



EASIER (Grade 1-4):

Draw a diamond 9 to illustrate evidence to answer the question 'Why do polar regions need protecting?'

Most important reason for your answer at the top and least important at the bottom.

You should try and link evidence from the cards together.

HARDER (Grade 5+):

Write a paragraph to answer the question 'Why do polar regions need protecting?'

You need to link and elaborate your ideas using connectives.

SUCCESS CRITERIA: I CAN...

IDENTIFY... (1-2) DESCRIBE... (3-4) EXPLAIN... (5+)

... how polar ecosystems are changing and WHY they need protecting .

LO: Why do polar regions need protecting?

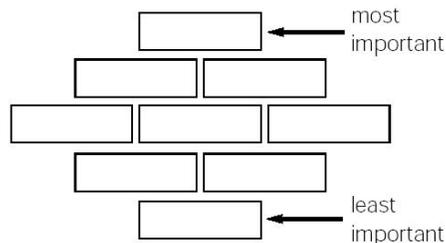
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REVIEW: SHARE YOUR IDEAS



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Most important evidence to answer at the top of the diamond. Least important evidence at the bottom.

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