Ice

Wednesday 27th January 2021

What is ice?

Last week you learnt about solids, liquids and gases.

Ice is a solid as it:

- has a fixed shape
- is not compressible
- cannot flow

Changes with ice

Ice can change state easily.

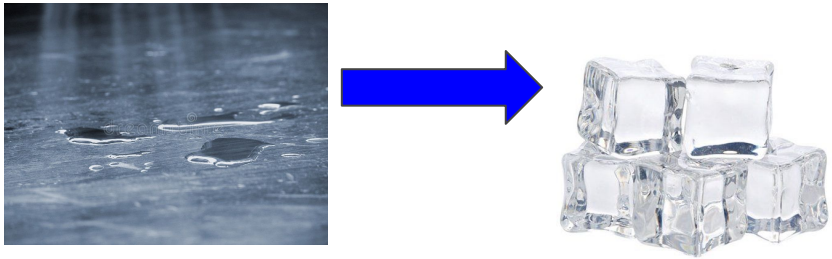
When ice is in contact with **heat**, it **melts**. It **changes to a liquid** (water) as it can flow and fill the bottom of a container.

The red arrow shows **heat** has caused the change from a **solid to a liquid.**

Changes with ice continued

Following on from the last slide, we can then **freeze** the water which will then form ice.

The liquid water will change to solid ice as it has a fixed shape.



The blue arrow shows **cooling or freezing** has caused the change from a **liquid to a solid**.

Reversible changes

Ice and water is an example of a **reversible change.**

This means that we can cause something to change state but we can also get it back to its original state.

We can melt ice to form water but we can freeze the water to form ice again.

Our climate is changing

All around the world, the climate is different. Some places are cool and wet. Some are boiling hot and dry. But wherever we are, we know the kind of weather to expect. Or at least, we used to.

Today, we know that everywhere, the climate is changing. The problem is, we don't know exactly how much, or when. We don't even know for sure *what* will happen *where*.

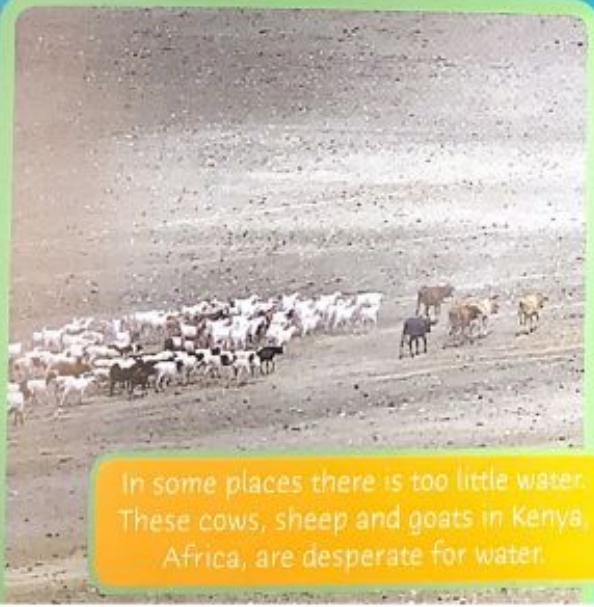
Weather facts

Climate is the kind of weather you can expect throughout the year. At the **North Pole** it's freezing, but at the **equator** it's much hotter.

Weather is what happens from day to day: rain, sun, wind or snow.

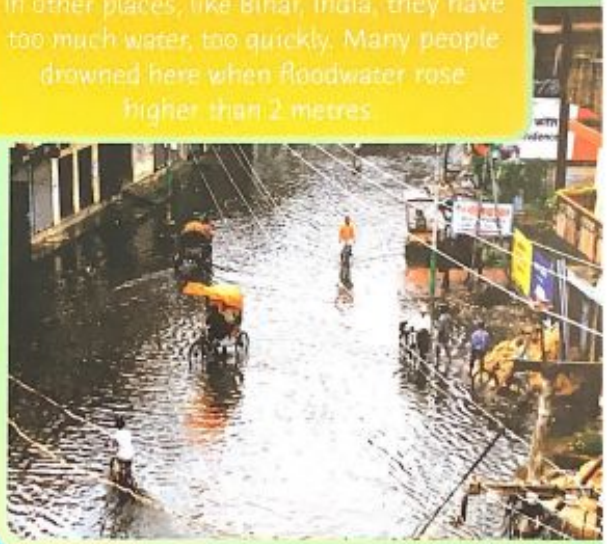
Global warming

Today, the world is warmer than it's been for a thousand years. But **global** warming doesn't only mean that our weather is getting hotter. It means that it's getting harder to **predict**. Some places are dry, when they should be wet, some places have huge storms and a year's rainfall in a few days.



In some places there is too little water. These cows, sheep and goats in Kenya, Africa, are desperate for water.

In other places, like Bihar, India, they have too much water, too quickly. Many people drowned here when floodwater rose higher than 2 metres



The greenhouse effect

The world is warming up a little more every year and the warmer it gets, the more **unpredictable** the weather will be. So, why's this happening?

Scientists think they know why. When we burn fuel – like oil or coal or wood – we make a gas called **carbon dioxide** (**CO_2**). Today, there is more CO_2 in the air than there has been for more than half a million years. Together with other gases, carbon dioxide acts like a greenhouse, trapping the heat from the Sun's rays. Think of what would happen if you sat outside on a sunny day in a plastic mac. You'd get hotter and hotter.

Carbon dioxide in the air acts like a greenhouse.

Melting ice

The seas are warming up too and the massive **ice sheets** at the North Pole and **South Pole** have started to melt. If the ice sheets melt, this will unlock a huge amount of water. **Sea levels** all around the world will rise and this means that there will be more floods.

Huge ice sheets are melting at the North and South Poles.

How can we help?

We can try to help control greenhouse gases and global warming by:

- Recycling materials you use at home
- Using less plastics and using reusable shopping bags
- Have a compost heap
- Not wasting paper
- Turning off electrical appliances at the plug socket when they’re not being used
- Turning off lights when you leave the room
- Turning the tap off when you brush your teeth
- Having a quick shower rather than a bath every night
- Cycle, walk or run instead of using the car all of the time

Maybe you can think of more!

Ice experiment 1

1. **Find a small container or an ice cube tray**
2. **Put some water in the container/ice cube tray and place it in the freezer**
3. **How long does it take for the water to turn to ice? (liquid to solid)**

You might want to take some photographs to send us and/or write about this in a google docs to send to us.

Ice experiment 2

1. **Take your ice out of the freezer**
2. **Place it on/in something (eg. plate or bowl) and put it somewhere in your house**
3. **How long does it take for the ice to turn to water?(solid to liquid)**

You may want to experiment with using different places in your house (hot/cold) and compare the melting times.

You might want to take some photographs to send us and/or write about this in a google docs to send to us.

Extra experiment *Adult supervision needed*

If you want to, you could do this with adult help.

What happens when you boil the kettle?

What happens to the water?

What is released?

Think about the changes of state from last week's science lessons.

‘Turn in’ your assignment on google classroom

Tell us about your science experiments.

You can send us the photographs and/or write about your science experiments and the timings on a google doc.

Think about your learning last week to do with the properties of solids, liquids and gases and use this with your experiments.

Ice experiment