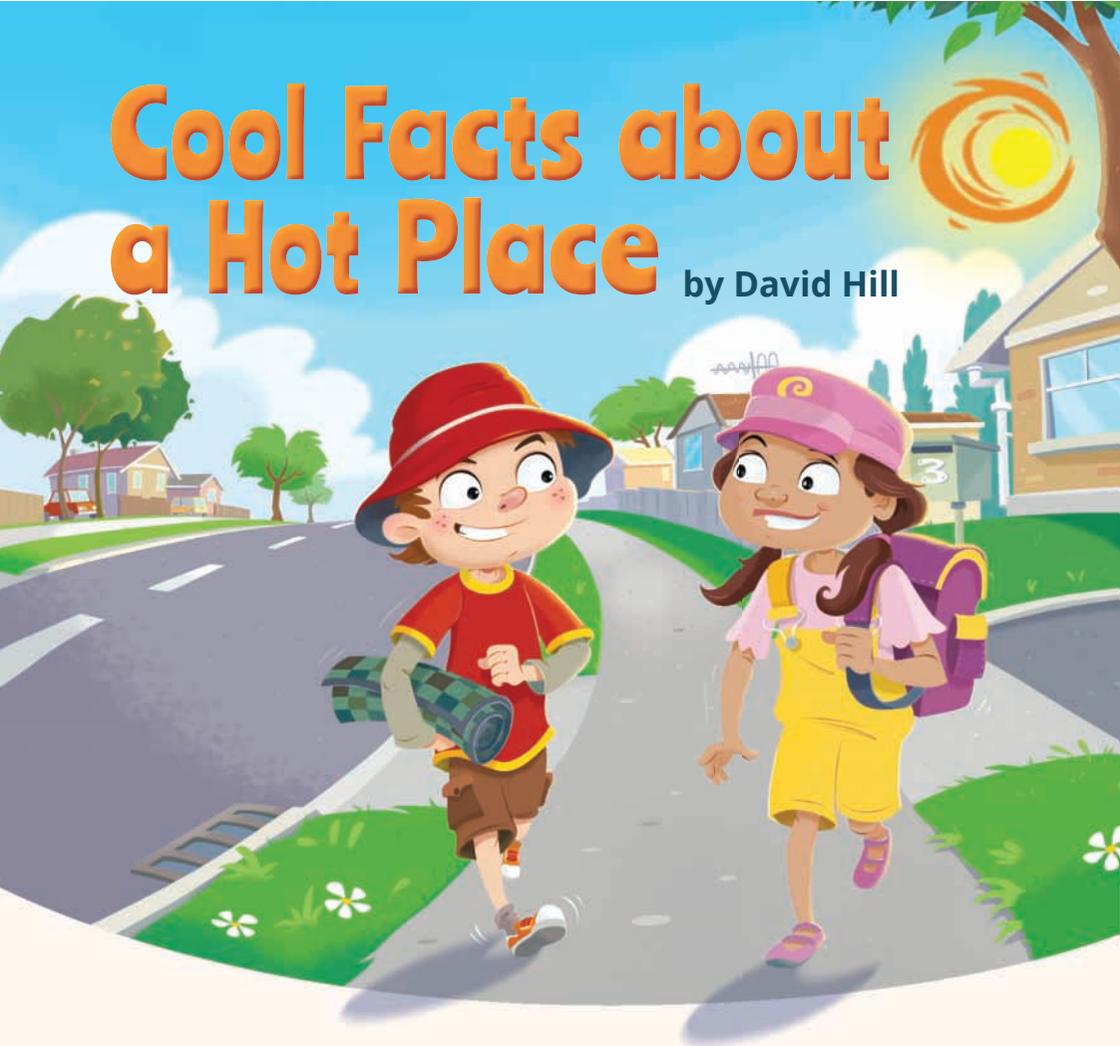


# Cool Facts about a Hot Place

by David Hill



We see the sun every day, except when the sky is cloudy. We're so used to it that it might seem pretty ordinary. But really, the sun's very special. Here's why.

## It's big!

The sun is a **million** times bigger than Earth. If you dropped one Earth into the sun every second, it would take nearly twelve days to fill it.

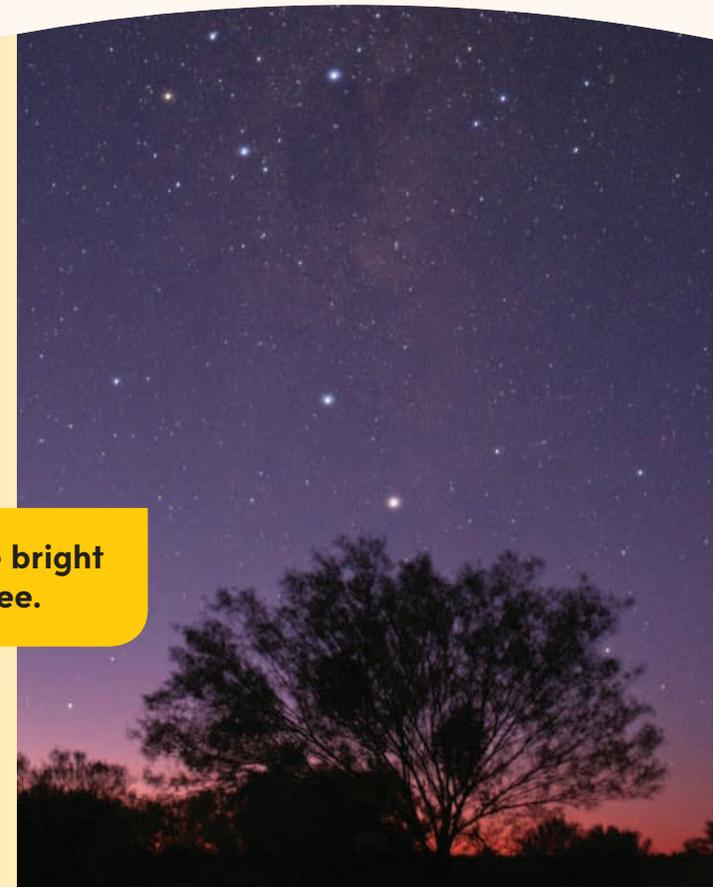
## It's a star!

Not a movie star – a real star. The sun is a huge ball of white-hot gas, just like the other stars you see at night. It looks different from them because it's so much closer.

The nearest star to us after the sun is one of the two Pointers, which are near the **Southern Cross**. This star is called Alpha Centauri\*, and it's more than (are you ready?) 250,000 times further away from us than the sun. If the sun were that far away, it would look like an ordinary star, too. And it wouldn't be hot enough to warm Earth, so there would be no life on our planet.

\* Although Alpha Centauri looks like one star, it's really a system of three stars. We can see these stars by looking through a strong telescope.

**Alpha Centauri is the bright star just above the tree.**





## It keeps us alive!

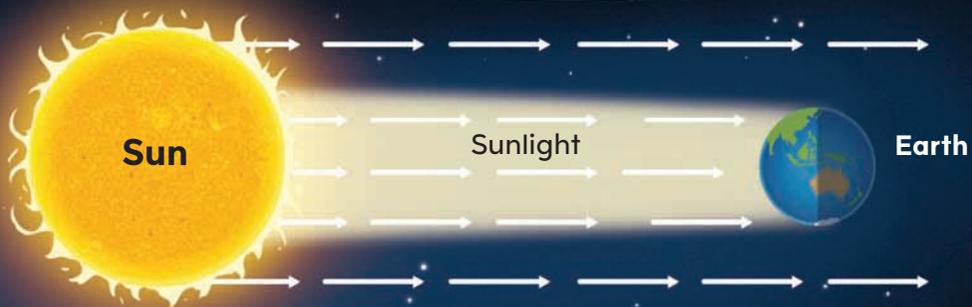
All the plants on Earth grow because they get light and heat from the sun. Light and heat give plants energy to make food and grow. If the Earth had no plants, we'd soon have nothing to eat.

Could we eat meat instead? No. Animals like sheep and cows would have no grass to eat, so they would die. And many fish eat tiny plants that live in the sea. They would also die if those plants didn't get sunlight.

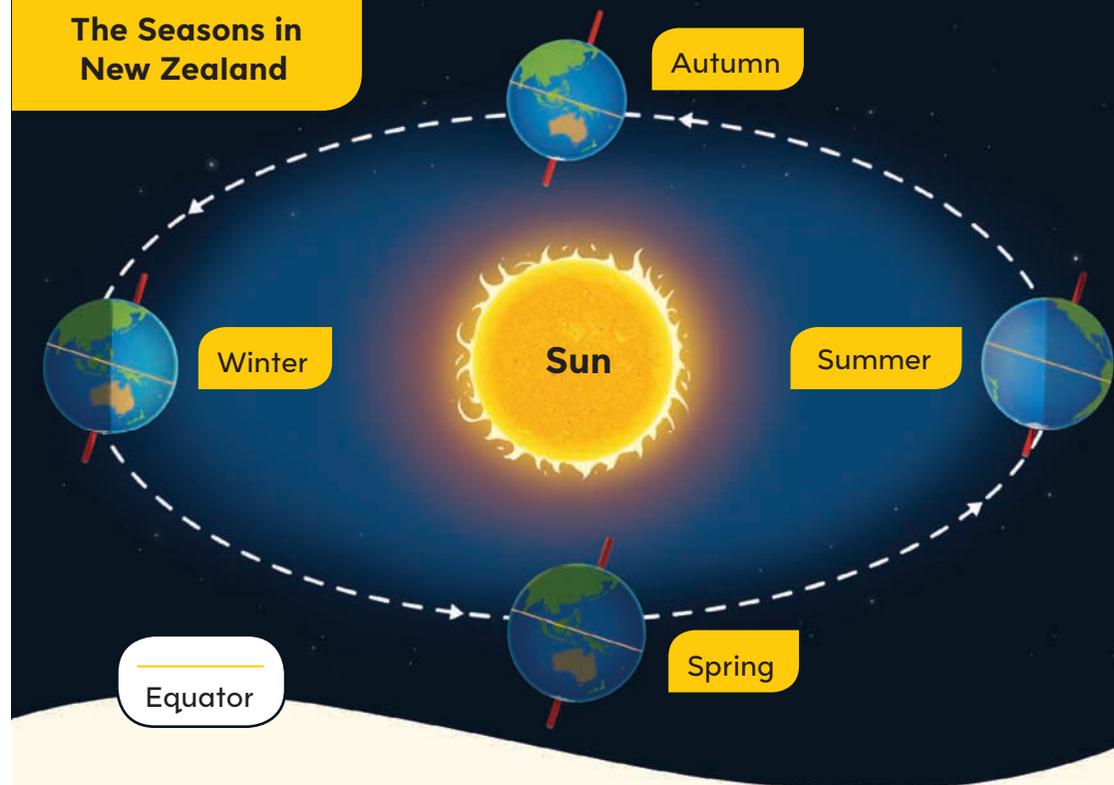
## It brings day and night!

The sun seems to rise in the east, cross the sky, and set in the west. But it's not the sun that's moving. It's Earth that's turning. Like a huge, spinning ball, Earth turns around once every twenty-four hours. That's one day.

When the sun is on the other side of Earth from us, there's no light, so it's night where we live. Meanwhile, it's daytime on the far side of our planet, for places such as Europe and Africa.



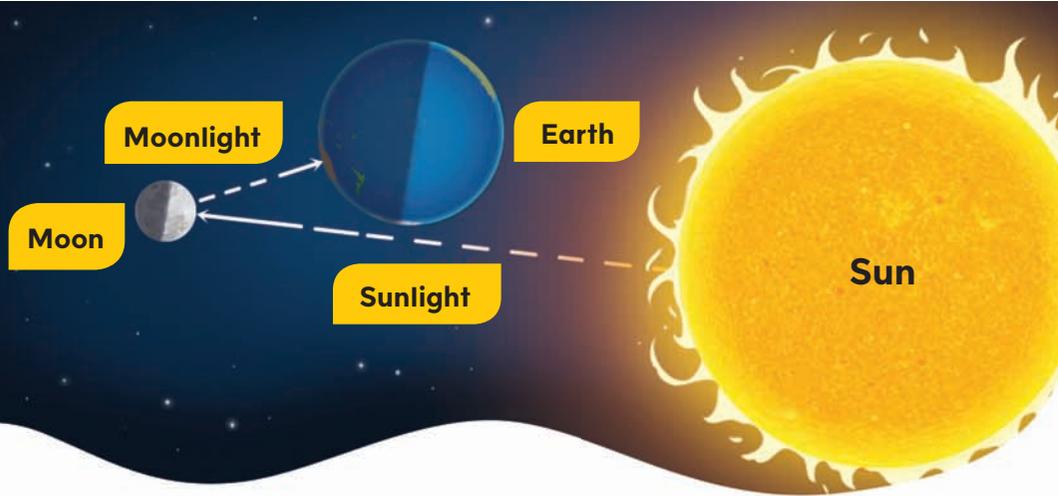
## The Seasons in New Zealand



## It brings summer and winter!

As well as turning, Earth also travels around the sun. This journey takes 365 days (365 days, 6 hours, and 14 minutes, if you want to be *really* fussy). That's one year.

As it travels, Earth tilts slightly. This means that for half the year, the sun appears higher in the sky and the sun's rays are stronger in the Southern Hemisphere (the "bottom" half of our planet). This is when New Zealand has its longer, warmer days. For the other half of the year, the Northern Hemisphere has longer, warmer days and we have shorter, cooler ones.



## It makes the moon shine!

The moon doesn't shine by itself. The moon's surface reflects light from the sun. That's what makes it seem to shine.

We can't always see all of the moon's surface that is reflecting the sun's light. Sometimes we only see part of it. As a result, every month the moon seems to change shape from a new moon to a full moon and back again.

## It's small!

OK, the sun is huge compared with Earth. But some stars are much bigger than our sun. Some are more than 1,000 times bigger. If you put one of those stars where our sun is, its surface would reach all the way to Earth. We'd be toast!



## It's far away!

The sun is 150 million kilometres away, four hundred times further than the moon. If you rode a skateboard towards the sun at 100 kilometres an hour (that's a seriously fast skateboard), it would take you 170 years to get there.



## It's old!

The sun has been shining for about 4.5 **billion** years. That's longer than Earth has existed. Scientists say it will probably keep shining for another 4.5 billion years. Then it will get much bigger for a few million years before slowly fading away.

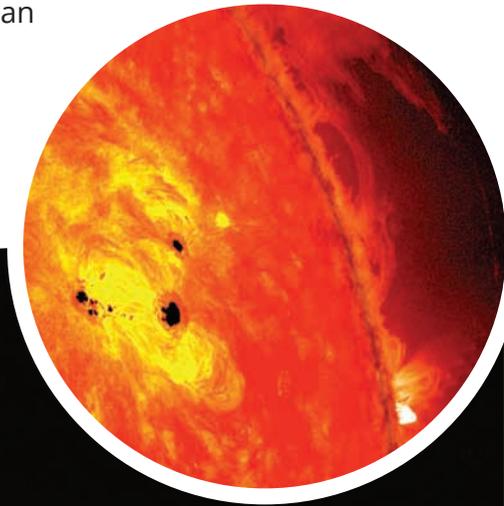
## It's light!

An average handful of the Earth weighs three times as much as an average handful of the sun. That's because the sun is mostly blazing **hydrogen gas**. (WARNING: Do *not* pick up handfuls of the sun without very thick gloves!)

## It's hot!

On the sun's surface, the temperature is almost 6,000 degrees Celsius. That's hot enough to melt steel. In the middle of the sun (called the core), the temperature is 15 *million* degrees. That's hot enough to turn steel into a puff of smoke.

Sunspots – the dark patches you can see in some photos of the sun – are only 4,500 degrees. They're caused by huge magnetic storms on the surface of the sun.



## It's very special!

We have life on Earth because we have just the right sort of star at just the right distance. Some stars are too hot to have life on their planets. Some are too cool. Some stars have no planets at all.

So next time you see the sun, maybe you should say "thank you".



illustrations by Scott Pearson

## Glossary

**billion:** one thousand times one million (or 1,000,000,000)

**hydrogen gas:** a gas that burns very hot and very easily

**million:** one thousand times one thousand (or 1,000,000)

**Southern Cross:** a group of bright stars shaped like a cross (The stars of the Southern Cross are part of the current New Zealand flag.)

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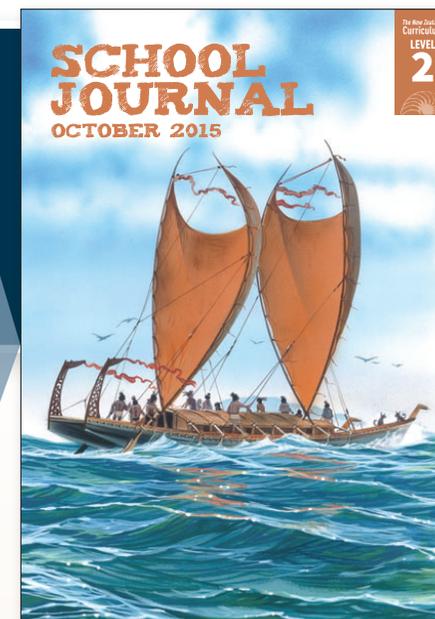
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