

Your Shortcut to... El Niño

It has a Spanish name that means “the little boy”...Scientists can spot it forming from space...And it can affect everything from anchovies to Australian bushfire weather...this is your Squiz Kids Shortcut to the climate pattern known as El Niño—the podcast where we dive into the who, what, when, where, why and how of the wonderful world around us. I'm Christie Kijurina.

SILENCE

[Christie Calls Out] Bryce... Bryce... where are you?? That's funny, he's always here on time. Bryce?

[PHONE RINGS]

Oh! Hang on a tic...Hello?

Christie! Hi. Just letting you know I'm going to be a little late to work.

Right... okay...

(SLOSHING / SPLASHING)

Bryce... what is that noise?

What noise?

(SPLASH)

That noise. Are you somewhere... wet?

Technically, yes.

Where are you?

In the bath. I'm doing research.

Having a bath is research?

Of course it is. I'm simulating El Niño conditions so we get the podcast right.

(SLOSHING)

I've got warm water down one end... I'm blowing to create trade winds...Very scientific trade winds.

And I suppose that's why I can hear splashing?

Hold on... My winds have weakened, Christie! The warm water is sloshing back!

Bryce, please get out of your Pacific Ocean bathtub and come to work.

Yep. I'll be in shortly. (PHONE HANGS UP)

Right.

Well, while Bryce dries off...

Today, we'll find out WHAT is actually happening in the Pacific when El Niño begins... HOW one enormous ocean can help move rain around the world... and WHY scientists are watching this El Niño so closely.

And listen carefully—there's a Squiz at the end!"

WHAT

Hey... you're finally here.

Morning, Christie

Bryce, your hair's still wet.

Just residual Pacific Ocean, Christie...And I did learn that sloshing warm water from one end of a bath to the other is surprisingly difficult.

Good. Because before we get to the sloshing, we need to clear something up. What El Nino actually is.

OK

Because El Niño is not a storm.

Right

It's not a cyclone.

Got it.

And it's not one enormous rain cloud with a Spanish name.

I hadn't suggested that.

El Niño is part of a giant natural climate pattern involving the Pacific Ocean and the atmosphere above it.

But if it's so huge, why is it called El Niño or 'Little Boy'

Great question, Bryce! And for that, we need to travel to the west coast of South America and meet some fishers. For centuries, fishers off the coast of Peru and Ecuador noticed that, in some years, the ocean water near them became unusually warm around Christmas time.

Sounds lovely.

But not if you're trying to catch fish.

Ahhh.

We'll come back to the fish later. But for now, because the warm water often appeared around Christmas, it became known as El Niño... Spanish for “the little boy”, referring to the Christ Child...Jesus.

So... baby Jesus has a climate pattern named after him?

That's right, that name stuck. And at first, people thought this was mainly a local change in the ocean near South America. And Bryce, this is where your bath experiment is actually useful. Do you want to tell everyone about it?

I knew it was good science. So, Christie, imagine the Pacific Ocean is your bathtub. The west coast of North and South America is down at the tap end...

Got it.

And Australia and Indonesia are up the other end, where you sit.

Excellent choice.

Normally, winds called trade winds (my bath blowing) blow across the tropical Pacific from the Americas towards us. Those winds push the warm surface water from the tap end (or the Americas) west, towards Australia and Indonesia.

OK

Meanwhile, over at the tap end near South America, colder water rises from deeper in the ocean to replace the warm water that's been pushed away. But during El Niño, something changes. The trade winds weaken. My bath-blowing stops.

Can you please stop calling it that.

No promises. Without those winds pushing as strongly west, warm water starts spreading back across the Pacific towards the Americas.

Sloshing back towards the tap.

Exactly.

Which explains what is physically starting to happen in the Pacific.

But Christie what I still don't get is HOW does water sloshing around in our giant Pacific bathtub change the weather thousands of kilometres away?

HOW

Bryce, I know we don't often think of it this way but actually, the Pacific Ocean doesn't just sit underneath the weather. It actually helps make the weather. Warm ocean water

heats the air above it, and that warm, moist air rises. As it rises and cools, clouds form... and often, rain follows.

Right. So where the warmest ocean water sits, you also tend to get lots of rising air and rain. And normally, much of that warm water is piled up towards the east coast of Australia and Indonesia.

Your end of the bath.

My end of the bath.

Exactly. So lots of warm, wet air rises on our side of the Pacific. High above the ocean, that air moves east towards the tap end, cools and eventually sinks again over the colder water near the Americas. Then, closer to the surface, the trade winds help push air back west again.

So the air is moving in a giant loop across the Pacific. Rising in one place, sinking in another, then travelling back again near the ocean.

That's it. A huge weather conveyor belt. But during El Niño, the warm water sloshes back east... and the main zone of rising air, clouds and rain shifts east with it.

Which means less warm, moist air rising near Australia... and a greater chance of drier weather here., right?

Exactly. And I said greater chance for a reason. El Niño doesn't control every single cloud or every rainy day. It changes the chance of certain weather patterns.

So if it rains tomorrow, El Niño hasn't been cancelled.

Correct.

Meanwhile, if that whole rain-making zone shifts east, parts of the central and eastern Pacific can get more rain instead.

Same ocean. Very different weather. And scientists can actually watch some of these changes happening. Using satellites they can measure tiny changes in the height of the sea, because warm water expands.

Wow! The bulging ocean! I did read about this one. Scientists spotted huge pulses of warm water, kilometres wide, crossing the Pacific before this El Niño really got going.

They did. And they're also watching air pressure. During El Niño, the usual pressure pattern across the Pacific shifts too. The ocean changes and the atmosphere changes along with it.

Which is why El Niño isn't just an ocean thing or just a weather thing. It's both working together. And there are changes below the surface too. Near South America, cold water rising from the deep normally carries nutrients towards the surface. Tiny plants use

those nutrients, tiny animals eat the plants, fish eat those animals... and we've got a whole food chain.

But during El Niño, the warm surface layer can make it harder for that cold, nutrient-rich water to rise. So there may be less food near the surface, and fish like anchovies can move away or become harder to find. Which affects the fishers and so that's why it was them that first noticed El Niño in the first place.

So one shift in warm water can change the air above the ocean, the rain, and even the food chain below it. But, Christie, if this is a normal climate pattern that's been going on for yonks, I'm wondering WHY it is that scientists watching this El Niño so closely?

WHY

Bryce, scientists are watching this El Niño closely because it's already underway... and it could become a strong one later this year.

Right. So, giant Pacific bathtub has sloshed back the other way. Warm water has moved east. Rain-making air has shifted with it. The big question for Australians is... does this mean we're in for a scorching, bone-dry summer?

Well, not necessarily, Bryce. El Niño isn't a weather fortune teller. But it does increase the chance of drier conditions across parts of eastern and northern Australia... particularly during late winter and spring.

And we've seen before what a long dry spell can do here. Dams and water tanks drop, farmers start watching the sky very closely... and grass, bush and forests can dry out.

Which is why El Niño years can bring an increased risk of dangerous bushfire weather. In fact, nine of the ten driest winter-to-spring periods recorded in eastern Australia happened during El Niño years.

Okay. Now the giant bathtub starts feeling a little less funny.

True. But here's a surprising twist. El Niño doesn't make every type of wild weather worse. Australia actually tends to have fewer tropical cyclones during El Niño years.

Hang on. More chance of dry weather and bushfires... but fewer cyclones?

Welcome to climate science.

Thank you. It's very confusing here

And even the strength of El Niño doesn't tell us exactly what Australia will get. The super-strong El Niño of 1997 and 1998 actually had less impact on Australian rainfall than some weaker El Niños.

So the biggest “little boy” doesn't always make the biggest mess. And, other oceans and weather patterns get a say too. That's why scientists talk about chances and risks... not guarantees.

But Australia is only one side of our giant bath. Over near South America, the problem can be almost the opposite. More warm water can mean much heavier rain and flooding. And remember your anchovies. When cold, nutrient-rich water stops rising as strongly, fish can move or disappear from usual fishing grounds. That can mean less food to catch... and less money for the people who depend on selling it.

And in other parts of the world, El Niño-related droughts or floods can damage crops. So suddenly this giant ocean pattern can affect rice, wheat, fish... and how much food is available. Which is why scientists don't just watch El Niño because the weather is interesting. Their forecasts can give people a head start.

That's right. Australian farmers can make decisions about crops and water. Fire agencies can prepare for a potentially tougher season. And communities in flood-prone parts of the world can get ready before the rain arrives.

We can't switch El Niño off. In fact, scientists are still working out exactly what gives each El Niño its very first shove, but what we CAN do is watch it. Satellites, ocean buoys, weather stations and computer models are giving scientists a better picture of what's happening across the Pacific, which is quite a leap from a few South American fishers noticing the water felt warm at Christmas.

THE S'QUIZ

This is the part of the podcast where you get to test how well you've been listening...

1. What do the words 'El Niño' actually mean?

[Little Boy]

2 Which Ocean does El Niño form over? Is it:

- a) The Pacific
- b) The Atlantic
- c) The Indian

[a) The Pacific Ocean]

3 True or False - an El Niño also brings with it an increased risk of cyclones happening.

[False]

That's all we have time for today. Thanks for joining us as we explored the who, what, how, where, when, and why of El Nino.

Now get out there...and have a most excellent day!

Over and out.