



The Inside Story-Our Changing Climate Transcript

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The Inside Story: Our Changing Climate (Episode 05 – September 16, 2021)

Voice of VOA Correspondent CAROLYN PRESUTTI:

Protecting the world we share. Global leaders take a stand on climate change.

U.S. President Joe Biden:

The extreme weather cost America last year, 99 billion dollars.

CAROLYN PRESUTTI:

New weather patterns, rising water, and rising temperatures are damaging the smallest of the ecosystem's food chain.

Deborah Steinberg, Virginia Institute of Marine Science:

If we don't have the biological pump, the atmosphere carbon dioxide, we be 50 % higher than it is now.

CAROLYN PRESUTTI:

The search for strategies and solutions to this growing crisis, now on "The Inside Story: Our Changing Climate."

Hi. I'm VOA Correspondent Carolyn Presutti, reporting from the National Arboretum located in Washington, D.C. This 450-acre site is where the US Department of Agriculture conducts its

botanical research. We're here because the earth's environment is in danger due to climate change. Oh yes, I know there are shifts in the world's climate that occur naturally.

But as the world industrialized, climate change has grown dramatically.

America's space agency, NASA, charts how much the world's surface temperatures have increased --- and how fast it took place. 19 of the last 21 years were the hottest years

“this planet has ever experienced” or simply “on record.”

The impact can be measured in the frequency and increased intensity of hurricanes and wildfires --- not just here in the U.S., but around the world. Our Henry Ridgwell begins

our coverage from London:

HENRY RIDGWELL, VOA Correspondent:

On the Greek island of Evia, residents flee their homes beneath a sky of burning red, as fires consume pristine forests turned to tinder by searing summer heat. This is just one of hundreds of intense fires burning across Greece, Turkey and Italy – as summer temperatures have topped 45 degrees Celsius. The message from scientists: climate change is here.

Levent Kurnaz, Climate Scientist, Bogazici University:

The Mediterranean will be having these forest fires all the time. Therefore, I mean, this is just the beginning. It's going to get much worse.

HENRY RIDGWELL:

Intense heat and drought have triggered fires from the Mediterranean, to Siberia, to California.

The report, compiled by 200 scientists from the Intergovernmental Panel on Climate Change or IPCC, says temperatures have already risen by 1.1 degrees Celsius above pre-industrial levels. The United Nations Secretary General described the findings as ‘code red for humanity’.

Ko Barrett, IPCC Vice Chair

Each of the past four decades has been the warmest on record since pre-industrial times. Further, it is indisputable that human activities are causing climate change. Human influences are making extreme climate events, including heat waves, heavy rainfall and droughts, more frequent and severe.

HENRY RIDGWELL:

The report warns that global average temperatures will hit 1.5 degrees Celsius above pre-industrial levels by 2030 on current trajectories, the limit agreed at the Paris climate summit in 2015 – and seen as a tipping point by many scientists. That’s ten years earlier than previous forecasts. The report adds that sea level rises of up to two meters by the end of the century can’t be ruled out – threatening millions of people living in coastal areas. And the Arctic is likely to see at least one ice-free summer by 2050. But scientists emphasise there is a way out. The worst scenarios can be prevented – and global warming reversed – with drastic cuts to global emissions.

Bill Collins, IPCC Report Co-Author:

These aren’t just small changes we can make; these aren’t just sort of tinkering at the edges, these really mean wholesale changes of the way we use and consume energy. Carbon dioxide is the main one which we need to get to zero emissions by the middle of the century. But we’ve also shown that methane is an important gas to reduce, it’s caused maybe as much as half a degree (Celsius) of the warming we’ve already seen.

HENRY RIDGWELL:

With the United States re-joining the Paris climate agreement under President Joe Biden, scientists hope there will be added momentum as world leaders gather in November for the COP26 global climate summit in Britain. Biden’s envoy for climate John Kerry said Monday that “all major economies must commit to aggressive climate action during this critical decade.”

Bill Collins, IPCC Report Co-Author:

It’s actually commissioned by the world’s governments, this report. So we’re providing that they want, that they say they need to make political decisions.

HENRY RIDGWELL:

Those decisions will decide whether humanity can avert catastrophic climate change.

Its impact is already being felt in many parts of the world. Henry Ridgwell, for VOA News, London.

CAROLYN PRESUTTI:

President Biden has already committed the United States to cutting its carbon emissions by at least 50-percent by the year 2030. While touring areas damaged by recent hurricanes and wildfires, Biden says the disasters are “a blinking Code Red” for the environment.

VOA White House Correspondent Anita Powell explains.

ANITA POWELL, VOA White House Correspondent:

Raging fires...

Howling hurricanes...

Rising floodwaters....

You're not imagining it, says U.S. President Joe Biden: The weather is changing in scary and unpredictable ways, with hurricanes, floods and wildfires all ravaging swaths of the continental U.S. This week, he is touring wildfire-affected areas, and making his plea to the American people.

U.S. President Joe Biden:

The extreme weather cost America last year, 99 billion dollars. Billion. Let me say it again. Extreme weather in the United States costs the United States of America a total of 99 billion dollars. And this year, unfortunately, we're going to break that record. It's a devastating loss to our economy and for so many communities.

ANITA POWELL:

His solution: a juggernaut \$3.5 trillion spending plan that will, among other things, invest in clean energy and green vehicles and reduce the country's dependence on polluting industries.

That bill has passed the House, but now it's up to the 100 Americans in the Senate. Environmental advocates are watching closely, and they say one concern is that these bills are full of other contentious items that could slow their passage.

Will Thomas, American Institute of Physics:

The reconciliation package is not just climate change, it's also a series of social programs. And we don't know where that will come down. And so it could be clean energy advocates who are disappointed, it could be social program advocates who are disappointed, or some combination of the two.

ANITA POWELL:

But, advocates argue, this is urgent. Parts of the country are literally on fire.

Danielle Arostegui, Environmental Defense Fund:

As we've been seeing over the last summer, and really the last couple of years, with natural disasters across the country getting worse — wildfires in the west, hurricanes in the Gulf — and the information that has been coming out of our top science bodies that climate change is here and it is continuing to get worse. And we have a vanishingly small window to act and reverse those impacts.

ANITA POWELL:

The bill's opponents raise a number of objections: that there are cheaper ways to spur green energy; that traditional industries like coal will see job losses; and that the bill's price tag is just too high.

Chris Edwards, Cato Institute:

It's not hard to see that another three or four trillion dollars of government debt is really not good for the federal government. I think it would get us closer to a financial crisis. We have to remember that 10 years ago, numerous countries like Greece and Italy got into serious government, financial and economic crises because the government borrowed too much money. I fear the United States is going in that direction.

ANITA POWELL:

So now what? Biden says he's determined to pass this legislation despite hurdles in Congress. Republicans are united in opposition, and even some Democratic lawmakers have misgivings. In coming weeks, the Senate will decide. Anita Powell, VOA News, Washington.

CAROLYN PRESUTTI:

Earth's rising temperatures are causing the polar ice caps to melt faster. NASA tracks that rate of change in both the Greenland and Antarctic ice sheets. We're losing more than a

billion tons of ice every day. Consider what happens: Melting ice causes sea levels to rise.

That water has to go somewhere. So, we asked NASA to help us understand where the water is going and what it could do to the earth.

Paul Lundgren, NASA:

My name is Paul Lundgren and I'm a research scientist at the Jet Propulsion Laboratory. In the last, say five years or something like that, we've been increasingly looking into the effects of mostly manmade effects although they could be climate change or other effects that are kind of indirectly caused by people, whether it's melting of glaciers or extraction of groundwater or even more or less what we call surface water or near surface water due to rainfall. All of that - the effect is that it's changing the load on the Earth. So, the amount of mass, the weight of the water, that's a change in stress that can affect the stresses and faults that can therefore affect seismicity. And then then another effect that's, that's, less well known, is to what extent can water follow large cracks, which really ultimately means potentially faults, you know, to sufficient depth that it somehow affects earthquakes as well.

But in the case of Iceland, you have ice that's covering a kind of a broad mountain. But as that ice melts and thins and, and, it releases the weight of the ice on the subsurface and that is causing changes in forces deep underground, in the upper crust and the upper 15 kilometers depth. And there has been suggestion that some recent increases in seismicity there are just due to the release of this weight from ice melting.

By understanding these changes that are occurring due to climate or due to water, we can, we can use them to kind of interrogate the physics of what's happening, so you can then better fine tune the models in general potentially to understand these processes.

CAROLYN PRESUTTI:

Here in Washington, climate change is one of the major issues facing Congress, as lawmakers struggle to pass new policies. But drive three hours south, and

residents along Virginia's eastern shore are not waiting for Washington to act.

Local wildlife experts are trying to slow and perhaps reverse the damage already done to shorelines. Reporter Veronica Balderas Iglesias takes us inside the work of marine coastal conservation. Here are the first of her two reports, from Gloucester Point, Virginia

VERONICA BALDERAS IGLESIAS, VOA Correspondent:

Inside a mesh bag on Virginia's Eastern shore is a gurgling answer to climate change.

Scientists submerged these oysters in a bed of sea grass – an experiment to see if underwater plants, which naturally absorb carbon dioxide, can protect them. Oceans are turning warmer and more acidic... thanks to humans burning fossil fuels. And this is hurting not just oysters, but the bountiful ecosystems around them.

Michael Oppenheimer/Intergovernmental Panel on Climate Change:

Acidification occurs because the carbon dioxide we are putting into the atmosphere dissolves partly in the ocean and forms a weak acid. ((Courtesy: Nina Bednarsek)) Any shell forming creature has a more difficult job forming its shell in an ocean that's more acidic.

VERONICA BALDERAS IGLESIAS:

At stake is the destructive impact on marine life and the delicate food chains that sustain the world's fisheries. Take creatures called pteropods. These tiny sea snails populate all the world's oceans – and are a precious food for salmon and many important fish. But in acidic ocean waters, their shells dissolve. Scientists are studying ocean acidification, often called climate change's "evil twin." At the Virginia Institute of Marine Science, Professor Emily Rivest runs experiments on oysters.

Emily Rivest/Virginia Institute of Marine Science:

When we have that combination of warming and acidification, we see the most dramatic effects on the larvae. So they don't form their shell properly. //And they don't eat as well.

VERONICA BALDERAS IGLESIAS:

The experiments help aquaculture in the Chesapeake Bay. The massive estuary suffers from "coastal acidification" caused in part by heavy rains and fertilizer runoff. Michael Congrove owns a commercial oyster hatchery.

Michael Congrove/ "Oyster Seed Holdings" Owner:

Where it becomes really tricky is when we have periods of poor water quality, that we're not able to solve with our filtration solutions and that can really put a dent in our production.

VERONICA BALDERAS IGLESIAS:

If these steps fail, oyster farmers like Brandon Eanes are at risk. He buys seed from hatcheries to sell for wholesale distribution.

Brandon Eanes, Farmer at "Three Hands Oyster Company":

Vero: You put them in these tanks, and they grow. Yes, they put them in these tanks until they grow, until they are half an inch, something big enough that we can put in these bags.

VERONICA BALDERAS IGLESIAS:

Eanes is skeptical of human-made climate change. But he concedes that something in the past 10 years has shifted.

Brandon Eanes, Farmer at “Three Hands Oyster Company”:

We have oysters that grow in December, that’s kind of not normal. They are not growing much but as it gets warmer, I think if anything the calendar has shifted. If climate change is manmade, I would hope that man would be smart enough to stop doing what he’s doing to have adverse effects.

VERONICA BALDERAS IGLESIAS:

At the end of June, a record heat wave had catastrophic effects for shellfish in the Pacific Northwest. At least a billion mussels died, says Alyssa Gehman, a marine ecologist at the Hakai Institute. Get used to it, scientists say. And the impacts will go beyond shellfish to marine life critical for tourism.

Michael Oppenheimer/Intergovernmental Panel on Climate Change:

I’ve been to places where the health of the corals is clearly diminished, starting with South Florida, parts of the Mexican Yucatan and much of the Caribbean and certainly parts of the Pacific also.

VERONICA BALDERAS IGLESIAS:

Back to our patch of seagrass.

Libby Jewett, NOAA Ocean Acidification Program Director:

If you can promote the growth of seagrasses, they might actually benefit and have

been shown to benefit for instance corals that are growing around them. The real solution is to reduce emissions around the globe.

VERONICA BALDERAS IGLESIAS:

An enormous problem for global leaders but it’s not stopping Todd Janeski from taking small steps. Janeski, with the Virginia Commonwealth University, is part of a multilateral effort to restore oyster habitat by recycling their own shells.

Todd Janeski, VA Oyster Shell Recycling Program Director:

Those larval oysters grow on that shell, and we put it on to restoration projects. We are seeing improvements in water clarity; we are seeing aquatic grasses nearby. By creating this habitat for oysters, what we have is habitat for other animals as well.

VERONICA BALDERAS IGLESIAS:

Janeski has demonstrated the process to experts from Europe, Australia, and Asia.

He says they are coming to recognize the value of oysters in the global fight against climate change. The lowly oyster may not be so lowly after all.

Tyler Messerschmidt, Virginia Institute of Marine Science:

This is Goodwin Island in Virginia. You can see here down the coastline is slowly eroding, and then if you look up this way, there is the salt marsh is solely replacing the forest once there.

VERONICA BALDERAS IGLESIAS:

Scientist Tyler Messerschmidt explains that trees cannot live in the wet, salty ground from sea-level rise and storm surges in the York River. Because of climate change caused by humans, the water is getting warmer and expanding. Where thriving trees once stood guard, he says we have “ghost forests.” And they make climate change even worse.

Tyler Messerschmidt, Virginia Institute of Marine Science:

Forests are great stores of carbon, and as they slowly die, that carbon is returned, some of it, to the natural system including the atmosphere, which also leads to possibly more global warming through climate change.

VERONICA BALDERAS IGLESIAS:

Marshes like these help keep the bays clean. They protect against the wrath of hurricanes. But they too are drowning. They have the capacity to migrate inland to protect themselves, but development along the coastlines is leaving them nowhere to go.

Michael Oppenheimer, Intergovernmental Panel on Climate Change:

Bangladesh, parts of India, Thailand, a lot of Thailand, Myanmar, Vietnam. These have large stretches of marshland which in the tropics, the mangroves are a dominant species. And we're eroding away the base of those systems.

VERONICA BALDERAS IGLESIAS:

Scientist Deborah Steinberg tows nets to collect samples of other organisms that are relocating because of climate change.

VERONICA BALDERAS IGLESIAS:

Oh, you can see them!

Deborah Steinberg, Virginia Institute of Marine Science:

Yeah, so those are copepods - rice grain-sized crustaceans, and they are sort of a central part of the food web. In what's called the "biological pump," they help sink carbon dioxide – the main global warming gas – to the depths of the ocean.

If we didn't have the biological pump, then the atmospheric carbon dioxide would be 50 percent higher than it is now. And if we have higher carbon dioxide in the atmosphere, that causes more of a greenhouse effect, and that's more warming.

VERONICA BALDERAS IGLESIAS:

The warming has changed where these marine drifters operate.

Deborah Steinberg, Virginia Institute of Marine Science:

We have tropical and subtropical plankton that are expanding their range away from the equator. And then sub polar and polar species their ranges are contracting. A lot of the tropical and subtropical animals are smaller and so they're not as efficient at transporting carbon.

VERONICA BALDERAS IGLESIAS:

Scientists around the world are monitoring these negative effects of climate change. They are also working hard to help nature heal itself.

VERONICA BALDERAS IGLESIAS:

As part of the efforts to restore foundation habitats, scientists collect seeds from seagrasses to use in restoration projects. The species known as eelgrass also absorbs carbon. It once was abundant in the Chesapeake Bay but it's dying back from high temperatures. Biologist Christopher Patrick and his team are hunting for answers.

Christopher Patrick, Virginia Institute of Marine Science:

Rather than just plant eelgrass we're also planting another species, and that species is another native seagrass that's in the Chesapeake Bay called widgeongrass. /It's a light living species, and it can really handle high temperatures.

VERONICA BALDERAS IGLESIAS:

The ultimate hope is that the two species will help each other survive – and protect other creatures at the same time.

Christopher Patrick, Virginia Institute of Marine Science:

Juvenile fish and crabs, they have higher abundance. They have faster growth rates, and they survive better in grass beds /and so is performing this really important service for the fisheries.

VERONICA BALDERAS IGLESIAS:

During the fall of 2021, widgeon grass seeds will be planted for the first time on a large-scale restoration project near Virginia Beach. It's a project that could be a model for ailing shorelines around the world. Veronica Balderas Iglesias, for VOA News, Gloucester Point, Virginia.

CAROLYN PRESUTTI:

Planting eel grass may be one answer. But it works only if many other solutions are discovered and applied. Take for example the foundation of our industrialized society – right over here at my feet --- concrete. The problem is concrete creates one of the largest causes of greenhouse gas emissions – ever. Oh, but we need concrete, not only to build and rebuild houses, sidewalks, and bridges. Everything needs concrete. VOA's Steve Baragona shows us a possible solution to lessen concrete's load.

STEVE BARAGONA, VOA Correspondent:

These are no ordinary concrete blocks. They are made by a company called CarbonBuilt with a special recipe and baked in a special oven. Gaurav Sant is CarbonBuilt's founder.

Gaurav Sant, Founder, CarbonBuilt:

What makes them different from the convection oven that you have at home is that we put in carbon dioxide in the form of flue gas. Think about the emissions from the smokestack of a power plant. That's what we put into our convection oven. And they come out at the end infused with carbon dioxide.

STEVE BARAGONA:

That carbon dioxide is locked away forever inside those blocks. That is important, because making concrete generates a lot of CO₂.

Concrete is a mix of stone and sand, held together with cement. Making cement involves burning limestone at 1500 degrees Celsius. The flame creates CO₂, but the hot limestone itself releases even more.

Every ton of concrete generates a ton of CO₂.

And demand for it is soaring with the growing population, says University of Michigan Global CO₂ Initiative Director Volker Sick.

Volker Sick, University of Michigan:

If we then do not find ways to make concrete in a more benign way, we do have a problem.

STEVE BARAGONA:

One more benign way: CarbonBuilt is one of several companies that have modified their recipes so that the cement takes up carbon dioxide. That does more than just keep the CO₂ out of the atmosphere, says CarbonCure President Jennifer Wagner.

Jennifer Wagner, President, CarbonCure:

The CO₂ also acts as a strengthener of the concrete. So by adding the CO₂, they can achieve the desired strength with less cement, and cement happens to be the most carbon intensive component of the concrete.

STEVE BARAGONA:

Less cement means less CO₂ -- but also saves money. That can help win customers, Wagner says.

Jennifer Wagner, CarbonCure President:

Everybody wants to build green. But they don't necessarily want to pay more.

STEVE BARAGONA:

The process can cut carbon emissions in half in some cases. CarbonBuilt and CarbonCure recently won the Carbon XPRIZE for turning CO2 emissions into market-ready products. It is a good start, says Volker Sick.

Volker Sick, Engineering Professor at the University of Michigan:

I think it showcases the potential. Is that ready to be implemented everywhere now? We have a ways to go.

Jennifer Wagner, CarbonCure President:

Right now we have about 300 concrete plants around the world who are using the technology every day. There are about 100,000 plants out there, so we really are just scratching the surface.

STEVE BARAGONA:

The technology is starting to make inroads. Another company, Solidia, is selling concrete pavers that use a similar process. But concrete is the most abundant human-made material on earth, so there is a long way to go to lighten its heavy climate impact. Steve Baragona, VOA News.

CAROLYN PRESUTTI:

And that's all the time we have today. Make sure you follow the climate change issue on VOANews.com and connect @VOANews on Instagram and Facebook. I'm Carolyn Presutti in Washington. Come back next week for The Inside Story.

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