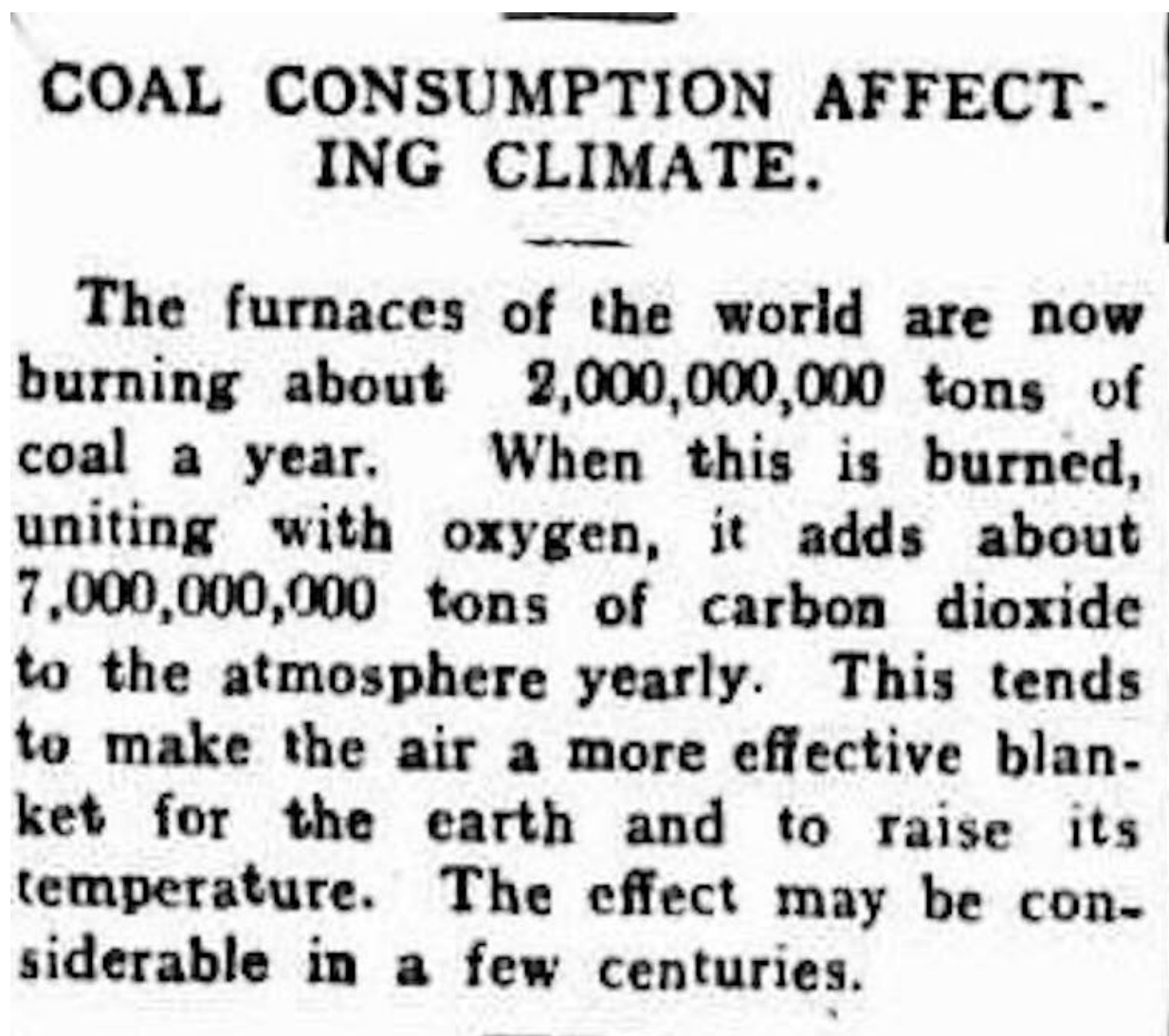


For 110 years, climate change has been in the news. Are we finally ready to listen?

August 15 2022, by Linden Ashcroft



This short 1912 article made the direct link between burning coal and global temperature changes. Credit: The Braidwood Dispatch and Mining Journal,

National Library of Australia

On August 14 1912, a small New Zealand newspaper published a short article announcing global coal usage was affecting our planet's temperature.

This piece from 110 years ago is now famous, shared across the internet this time every year as one of the first pieces of [climate science](#) in the media (even though it was [actually a reprint](#) of a [piece published](#) in a New South Wales mining journal a month earlier).

So how did it come about? And why has it taken so long for the warnings in the article to be heard—and acted on?

The fundamental science has been understood for a long time

American scientist and women's rights campaigner Eunice Foote is now widely credited as being the first person to demonstrate the [greenhouse effect](#) back in 1856, several years before United Kingdom researcher John Tyndall [published similar results](#).

Her rudimentary experiments showed carbon dioxide and water vapor can absorb heat, which, scaled up, can affect the temperature of the earth. We've therefore known about the relationship between greenhouse gases and Earth's temperature for at least 150 years.

Four decades later, Swedish scientist Svante Arrhenius did some basic calculations to estimate how much the Earth's temperature would change if we doubled the amount of CO₂ in the atmosphere. At the time, the

CO₂ levels were around 295 parts per million molecules of air. This year, [we've hit](#) 421 parts per million—more than 50% higher than pre-industrial times.

Arrhenius estimated doubling CO₂ would produce a world 5°C hotter. This, thankfully, is higher than [modern calculations](#) but not too far off, considering he wasn't using a sophisticated computer model! At the time, the Swede was more worried about moving into a new ice age than [global warming](#), but by the 1900s he was [startling his classes](#) with news the world was slowly warming due to the burning of coal.

Climate science began on the fringe

The 1912 New Zealand snippet was likely based on a four-page spread from [Popular Mechanics](#) magazine, which drew from the work of Arrhenius and others.

When climate advocates point to articles like this and say we knew about [climate change](#), this overlooks the fact Arrhenius' ideas were [generally considered fringe](#), meaning not many people took them seriously. In fact, there was backlash about how efficient carbon dioxide actually was as a greenhouse gas.

When the first world war began, the topic lost momentum. Oil began its rise, pushing aside promising technologies such as [electric cars](#)—which in 1900 [had a third](#) of the fledgling U.S. car market—in favor of fossil-fuel technological developments and military goals. The idea humans could affect the whole planet remained on the fringe.

The Callendar effect

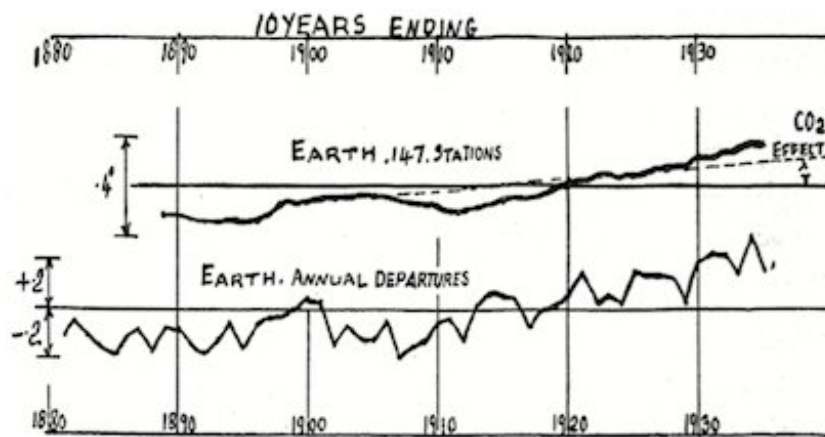
It wasn't until the 1930s that human-induced climate change resurfaced.

U.K. engineer Guy Callendar put together weather observations from around the world and found temperatures had already increased.

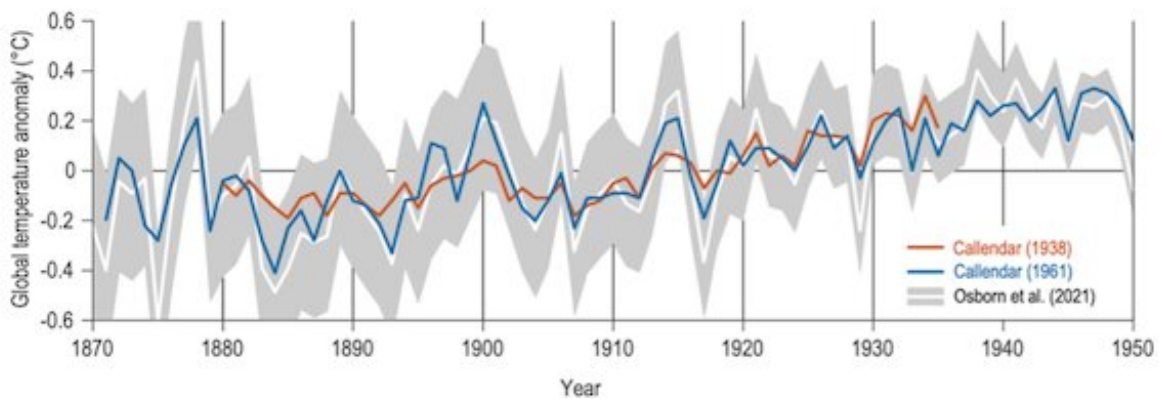
Not only was Callendar the first to clearly identify a warming trend and connect it to changes in atmospheric [carbon dioxide](#), he also teased apart the importance of CO₂ compared to water vapor, another potent greenhouse gas.

Changes in global land temperature (60°S-60°N) relative to a 1901–1930 baseline (°C)

(a) Callendar (1938)



(b) Comparing Callendar (1938, 1961) with CRUTEM5 (Osborn et al. 2021)



Guy Callendar's 1938 results compared to recent global temperature trend

calculations, as published in the latest IPCC assessment report. Credit: IPCC AR6 WG1

Just like the 1912 article, Callendar also underestimated the rate of warming we would see in the 80 years after his first results. He predicted the world would be only 0.39°C hotter by the year 2000, rather than the 1°C we observed. However it did get the attention of researchers, sparking intense scientific debate.

But at the end of the 1930s, the world went to war once more. Callendar's discoveries swiftly took a backseat to battles, and rebuilding.

Fresh hope scuttled by merchants of doubt

In 1957, scientists began the [International Geophysical Year](#)—an intense investigation of the Earth and its poles and atmosphere. This saw the creation of the atmospheric monitoring stations tracking our steady increase in [human-caused greenhouse gases](#). At the same time, oil companies were becoming aware of the impact their business was having on the Earth.

During these post-war decades, there was little political polarization over climate. [Margaret Thatcher](#)—hardly a raging leftie—saw global warming as a clear threat during her time as U.K. Prime Minister. In 1988, NASA scientist James Hansen gave his [now famous](#) address to the U.S. Congress claiming global warming had already arrived.

Momentum was growing. Many conservationists were encouraged by the Montreal Protocol, which more or less halted the use of ozone-depleting substances to tackle the growing hole in the ozone layer. Surely we could do the same to stop climate change?

As we now know, we didn't. Phasing out a class of chemicals was one thing. But to wean ourselves off the [fossil fuels](#) on which the modern world was built? Much harder.

Climate change became politicized, with conservative pro-business parties around the world adopting climate skepticism. Global media coverage often included a skeptic in the interests of "balance." This, in turn, made many people believe the [jury was still out](#)—when the science was becoming ever more certain and alarming.

With this skepticism came delays. The 1992 Kyoto Protocol aimed at reducing greenhouse gases took until 2005 to be ratified. Science—and [scientists themselves](#)—came under attack. Soon a [vicious tussle](#) was underway, with loud voices—often funded by fossil fuel interests—questioning overwhelming scientific evidence.

Sadly for us, these noisy efforts worked to slow action. People refusing to accept the science bought the fossil fuel industry at [least another decade](#), even as climate change continued to increase, with supercharged natural disasters and intensifying heatwaves.

The best time to act was 1912. The next best time is now

After decades of setbacks, climate science and social movements are now louder than ever in calling for strong and meaningful action.

The science is beyond doubt. While the first Intergovernmental Panel on Climate Change report in 1990 stated global warming "could be largely due to natural variability," the [latest from 2021](#) states humans have "unequivocally [...] warmed the atmosphere, ocean and land."

We've even seen a welcome change in previously skeptical media outlets. And as we saw at May's federal election, public opinion is on the side of [the planet](#).

National and international [climate](#) policies are stronger than ever, and although there is still much more to be done, it finally seems that government, business and public sentiment are moving in the same direction.

Let's use the 110th anniversary of this short snippet as a reminder to keep speaking up and pushing, finally, for the change we must have.

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