EASTERN OREGON
CLIMATE CHANGE
COALITION
[EOC3]

EOC3 SPRING 2023 NEWSLETTER—FROM THE EDITOR

Welcome to the fifth issue of the Eastern Oregon Climate Change Coalition newsletter.

This issue includes a special piece written by Riley Williams, a student at Sunridge Middle School in Pendleton who wrote this assignment for his class taught by Athena Nelson. Including graphics and sources, this work shows some of the great work that our local teachers and students are doing as well as a genuine concern for the earth's future climate.

This issue also includes reviews of two different climate change-related works, one a book written by Bill Gates and published in 2021 and the other a popular movie "Elemental" about how to live with wildfire in our new normal in the west. Dave Powell and Dominique Bachelet contributed these two reviews, respectively, and provide us with some well-reasoned insights.

In the vein of thinking globally and acting locally, I want you all to know about a Climate Change Vigil that is being planned in Pendleton this summer. This is one in a series of similar events being held around northeastern Oregon and the brainchild of Peter Fargo of Baker City. There is a faith-based element to these events, demonstrating that people of faith can understand, care about, and have a desire to do something about climate change. The Pendleton event is developing as an opportunity for people to gather for music, short speeches by community members, create participatory artwork, and share in ice cream (!) all while sharing what their faith leads them to believe about our responsibility for this earth.

The Pendleton event will be held on Wednesday July 10 from 6-7:30 p.m. at the Pendleton Center for the Arts, and a flyer is included as part of this newsletter. Please come join us, share in our concerns and hopes around climate change, and enjoy the music and ice cream!

As always, if you have any suggested newsletter topics useful for EOC3 members, please get in touch with me at the email below or any of the EOC3 board members.

Happy reading!

Bill Aney
Aneykblj@yahoo.com

Upcoming EOC3 Climate Change Conversations

July 18	Bryan Endress – Program about CTUIR's vision for upland first foods and their management/sustainability
Aug 15	Ed Townsend/NWS – Program about extreme weather
Sept 19	Kate Ely – Age of groundwater resources in the upper Umatilla River Basin: Do we have a renewable supply?
Oct 17	Christina Hagerty – Climate change and pathogen dynamics in an agricultural context
Nov 21	Bob Carson—Short History of the Earth
Dec 19	Holiday party (no program/presentation)

Global Warming and Us

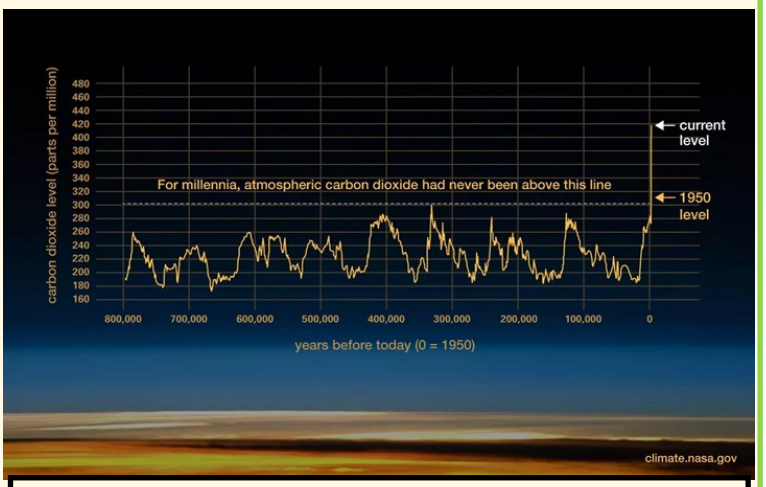
Riley Williams

We live in a world where people don't always agree with each other. One such controversy is about whether or not global warming is real, how it is affecting us, and what we can do about it. The reality is that global warming is real. It is scientifically proven to be happening, and our global population is experiencing its consequences. Global warming has many effects on us. It is slowly wreaking havoc on our world, and we have the power to do something about it.

First off, greenhouse gasses are getting worse and worse. Greenhouse gasses start to layer up in our atmosphere, trapping the sun's heat in. The warming influence of greenhouse gasses in our atmosphere has gone up by 47 percent since 1990. Furthermore, carbon dioxide levels are higher than they ever have been. According to NASA, carbon dioxide levels, measured in PPM (Parts Per Million), are up 300, to 420, since 1950. In the past 800,000 years it has never been higher than 120. In addition to that, carbon dioxide created by humans is happening at 250 times the rate that it did from natural sources since the last ice age. This proves that the warming isn't just natural; our earth's warming is happening at an accelerated rate due to human activities. This comes from our increased use of coal, oil, and gas over time. Another factor contributing to global warming is related to all the trees we are cutting down. On average, there are an estimated 12 million hectares of trees cut down each year. When trees are cut down, carbon dioxide is released. Deforestation accounts for almost a quarter of the world's greenhouse gas emissions. Therefore, increased greenhouse gas emissions and carbon pollution caused by humans has resulted in a gradual, but devastating, warming of the earth.

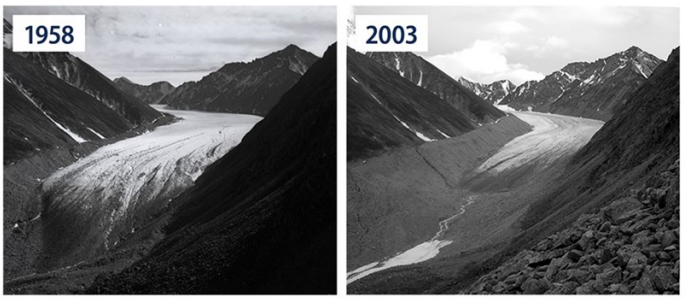
In addition, the earth's surface temperature is looking worse than it has ever before. The temperature of the earth's surface has increased by two degrees since the late 19th century. That doesn't sound like a lot, but the earth is warming at ten times the average rate. Additionally, the number of "unusually cold days" in the United States of America has decreased by 5 to 25 days. This refers to the maximum temperature each day colder than the 5th percentile. This comes from temperature information that was gathered from 1948 - 2020. While these changes in temperature over time don't seem significant, they are indicators of climate change.

Likewise, since 1880, sea levels have raised by an average of nine inches. Along the east coast and Gulf of Mexico, the relative sea level has gone up anywhere from 2-10 inches since



Above: Carbon Dioxide level from the past 800,000 years

- The Earth's warming is happening at about 10 times the average rate
- Carbon Dioxide made by humans is happening 250 times faster than it did from natural sources since the last Ice Age
- Information comes from things such as ice cores, rocks, and tree rings, and satellites and instruments also track information
- Earth's surface temperature has increased by 2 degrees Fahrenheit since the late 19th century

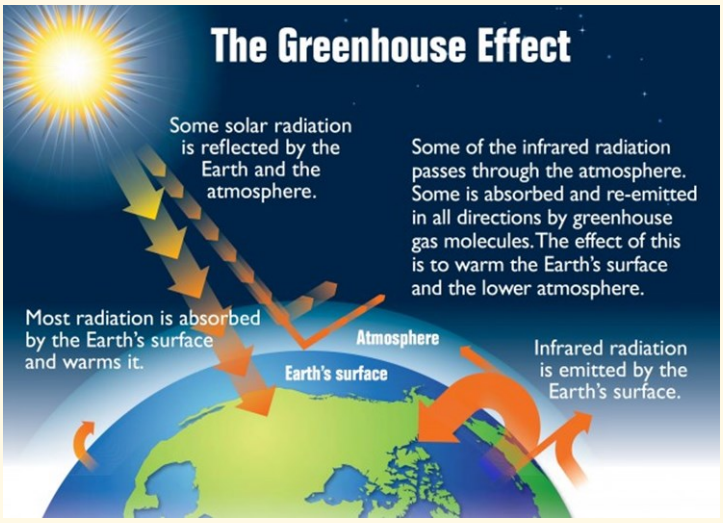


- Carbon dioxide levels are at an all time high with most of our power and energy coming from coal, oil, or gas
- The greenhouse gasses from coal, oil, or gas layer our atmosphere, trapping the sun's heat in
- Manufacturing most items in our world burns fossil fuels, helping climate change get worse
- 12 million hectares of forest are destroyed each year, which is bad because the trees take in carbon dioxide. Without all these trees the carbon dioxide hangs out in the air making climate change worse.
- The warming influence of greenhouse gasses in the atmosphere has increased by 47 percent between 1990 and 2020.
- The number of "unusually cold days" in America has decreased by between 5 and 25 more days than usual. (1948 - 2020)
- Since 1880 the global average sea level has gone up by 8 - 10 inches.

1960 alone. This is due to two main factors: melting glaciers and the expansion of sea water as it gets warmer. Glaciers are slowly melting because of the earth's rising temperature, another devastating effect of global warming.

Some would argue that even if global warming is happening, there is nothing we can do about it. That's where they are wrong. We can totally do something about it. For instance, we can plant trees. Trees need carbon dioxide to convert into chemical compounds. These chemical compounds, like sugars, help feed the tree. By planting trees, we can help trap some of the carbon. Another solution could be to increase the use of renewable energy. This could be accomplished through the use of solar panels. Solar panels use the energy from the sun and turn it into electricity. Working to combat global warming can also be as easy as turning off a light when you aren't using it, recycling, or taking public transportation, walking, or biking instead of driving. It's really pretty simple. If you take little steps to help prevent it, we can help change our future in the long run.

Global warming is real, and science proves it. Greenhouse gases caused by humans are at an all time high, just like the global temperature and sea levels. Even though many think we can't do anything about it, there are many ways to fight global warming.



Riley Williams will be a seventh-grader at Sunridge Middle School this fall, and wrote this essay as an assignment for his 6th grade Language Arts class taught by Athena Nelson. Riley is also the grandson of EOC3 Board Member Dave Powell

Policy and Legislative Contacts

We live in a representative democracy, where elected officials appoint judges and make law and policy that affect us all. These officials need to hear from us to know what is important.

The significant renewable energy incentives in the Inflation Reduction Act of 2022 are good examples of how legislators and policy makers can make a difference in our efforts to reduce our impact on the earth's climate.

Whether on this piece of policy and legislation or other climate change concerns, you can make yourself heard. Write a letter, send an email, make a phone call – individual citizen voices do count!

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(Continued on the next page)

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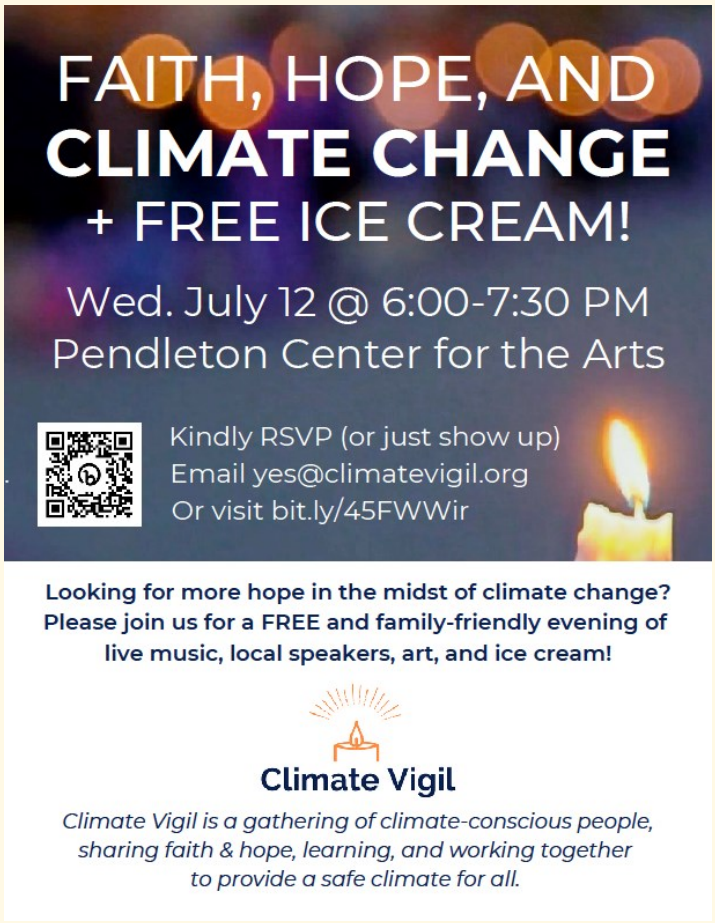
Save the Date – July 18, 7:00pm

Bryan Endress – Program about CTUIR's vision for upland first foods and their management and sustainability

Acting Locally



Acting Locally is intended to be a regular feature of the EOC3 newsletter, with ideas about how we can reduce our carbon footprint in our daily lives. Your ideas are welcome—please let the editor know if you have something to share.

Movie Review— Elemental: Reimagine wildfire

Director: Trip Jennings
Scientific advisor: OSU professor Lisa Ellsworth
Review: Dominique Bachelet, EOC3

From the 1990s to 2017, I was part of a research team projecting the increase in wildfires driven by the various climate change scenarios provided by international climate modeling teams. It makes sense that as our climate warms, the vegetation dries up more quickly becoming more vulnerable to ignitions that are mostly caused by us (cigarettes, firecrackers, BBQ sparks, electrical wiring, logging equipment) rather than lightning.

Dry vegetation and houses dispersed in fire-prone systems (forests, chaparral) are fuel to the fires that start when the air is dry, temperatures hot and the wind is blowing. In 2020 western Oregon saw a peak in area burnt as east winds, extremely dry air and heat made for the "perfect storm" conditions to start a fire no matter where the ignition was coming from.

For years, many colleagues and I have written papers to warn everyone that we needed to prepare for more frequent and more intense fires but in 2020 we heard the extensive fires were a "surprise" to many including our elected officials.

I had the privilege to meet Tim Inglesbee, ex-fire fighter, co-founder and executive director of Firefighters United for Safety, Ethics, and Ecology (FUSEE), at a conference on fire in Eugene. Since he founded FUSEE, Tim gave many talks and published many oped and general articles warning that current fire management practices were inadequate and the risk of fire greatly underestimated given climate change projections. Bring back a tame fire in the forest was his call to arms, before a wildfire transforms all forests to smoke clouds.

In my talks, I have often cited Tania Schoenagel, professor at UC Boulder, who published extensively and some of the most cited articles on the vulnerability of the ever-expanding Wildland Urban Interface providing the bulk of the sources of wildfire ignitions. My colleague Chris Dunn, research professor from Oregon State University documented the vulnerability of industrial forests where single species single age canopies become easy prey for a fast moving fire.

Elemental includes their testimony and with it that of the many scientists who have spent their career studying fires. We have known for a long time that fire suppression was a bad idea as our climate was warming. Native Americans are also bearing witness in the movie, their voices only starting to be heard and their age-old practices of prescribed fires brought back as one of the management tools to maintain resilient forests. Seeing my work and that of my colleagues on the screen made me realize sadly, once again, how little the voice of scientists and Traditional Ecological Knowledge holders are being heard and their warning heeded.

A note of hope comes from Jack Cohen who describes how to fireproof one's house using effective video footage from an insurance company showing both good and bad choices around a house that will be subject to ember showers. Several speakers in the movie remind their public that the wind will carry embers for miles. Just remember how embers crossed the mile-wide Columbia in 2017 starting fires on the Washington side from the Eagle Creek Fire.

My ex-colleague Alex Syphard who lives in San Diego and worked for an insurance company for a few years, talks about "defensible space' and the various approaches CalFire is implementing to reduce losses. But the message that was closest to my heart was that of my OSU colleague Bev Law from the college of Forestry, now retired, who saw her research site destroyed by a salvage logging operation. We all (should) know that fire is a natural event in the life of a forest, it kills the insects and burns the pathogens that would eventually kill the trees, it provides habitat for new suites of wildlife a closed canopy would not, it creates long term storage as black carbon in the standing dead trunks and the partially burnt logs on the ground. As humans living only a maximum of 100 years, we consider a burnt forest a "destroyed" forest but trees are much longer lived than humans and forests are dynamic at their time scale. Wildfires are patchy, opening gaps and naturally thinning dense forests, killing only a fraction of the vegetation and leaving survivors to shed the seeds of the future renewed forest, the big "reset button" mentioned by Maya Khosla in the movie. "What can we do?" is Bev's final statement after seeing the burnt forest razed by logging. Climate change is exacerbated by CO_2 emissions but trees, shrubs and grasses photosynthesize and capture carbon, and a burned forest will become dense with young tree and shrub seedlings, growing ferns and various grasses, where life continues and mitigates our own emissions. Dead burnt trees decompose slowly and embody slow-release carbon stores as well as new habitat for wildlife. Unless dead trees constitute a danger for hikers, they should remain in place to fulfill their role in the new forest that slowly regenerates. Bev's despair that her 30+ years of research showing the importance of those trees clearly again epitomizes the lack of attention paid to scientific knowledge.

So go see the movie, listen to the experts who have spent years studying fires, or inherited valuable traditional knowledge of the fire from their elders, or who risk their lives to save houses built in areas we know will burn some day. Go see the movie and learn what you can do to fire proof your house or give sound advice to your friends. Go see the movie and understand that we all need to learn to live with fires. Fire was here before we came to this land and it will be there when we will all be gone. We all need to learn and change our attitude with regard to fire, and more importantly with regard to change.

"It is not the strongest or the most intelligent who will survive but those who can best manage change." Charles Darwin

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Book Review: How to Avoid a Climate Disaster: The Solutions We Have and the Breakthroughs We Need.

By: Bill Gates. Borzoi Book published by Alfred A. Knopf, New York. 2021. 257 pages. Isbn:9780385546133

This book review may give some the sense that I'm 'cheer-leading' for Bill Gates. That is not my intent. I didn't fact-check every assertion Bill makes in this book. I often took them at face value, although I think Bill does a good job of backing up what he states. If you read the book and want to check on something, this book has an extensive Notes section, sorted by chapter. I used the Notes section when the book raised questions I wanted to follow up on.

This book has a nice blend – it discusses both climate change policy and useful actions for addressing climate change (CC) and reducing greenhouse gas emissions. It presents facts and figures in an easily accessible format (including nice graphs and charts), and it touches on important questions like: what does CC mean for us, in this place and time? What kind of future should we expect? And what will life be like for our children and grand-children?

Bill has written (or cooperated on) many books through the years, covering a wide range of topics. I've read some of them and wasn't always impressed with how well they communicate technical information for a lay person. Bill is well known as a self professed 'geek' – for some of his previous works, I felt like he missed the mark by going too far 'into the weeds' on complex subject matter.

To me, this book does not fall into that category. Bill Gates covers a wide landscape of CC topics, and he takes obvious care to present them clearly and with an appropriate amount of detail.

The book opens by noting that we need to pay attention to two numbers: 51 billion and zero. 51 billion is the number of tons of greenhouse gas the world adds to the atmosphere every year. And as most of us realize, zero is what our society must aim for to curb warming and limit the worst effects of climate change. Transitioning from where we are now, 51 billion tons, to zero tons in the near future, is obviously a difficult task. This book is chock full of ideas about how we can reach our goal of zero tons, and hopefully do it quickly enough to save our civilization.

Throughout this book, I found Bill's humility to be engaging. He often mentions his background in software (as co-founder of Microsoft, the source of his prodigious wealth), and how he never expected to be a climate change evangelist at this point in his life. He seems to try hard to not oversell his CC expertise.

Due to his amazing wealth, his foundations are investing a lot of money in clean energy solutions. His Breakthrough Energy Coalition (along with Climeworks and similar groups) are mentioned in the book, and they fund cutting-edge research to develop what could be important CC solutions for tomorrow. Much of this work seems to be in a 'prototype' mode. Many venture capitalists are unwilling to fund risky proposals where success is far from certain, but Bill's foundations often fund that type of work (such as direct carbon capture from the atmosphere). His wealth allows him that freedom, and I suspect his background in software and computing provides him with a willingness to support risk-taking ventures.

One aspect I particularly appreciate is the book's emphasis on climate justice and equality. Bill and Melinda Gates do much work in Africa involving health and development, especially for the under-served and economically disadvantaged segments of those societies. Some of their goals include eradication of malaria in this lifetime, along with dramatic reductions in mortality rates for children less than 5 years of age. Bill's focus on improving the human condition is evidenced in his CC work as well.

Another enjoyable aspect of this book is its pragmatism. Bill Gates takes a lot of flak for his fancy homes and private jet, both of which are 'energy hogs.' But the attitude of this book is not that we should quit using energy – quite the contrary, he often suggests we should be using more energy in the future than now (so more of the world's population has access to air conditioning, for example). His point is this – energy is not bad. What is needed is more clean energy and less fossil fuel energy. But Bill does acknowledge that heavy emitters, including him, should use less total energy too.

What's included in this book? Here are it's 12 chapters: Why Zero?; This Will Be Hard; Five Questions to Ask in Every Climate Conversation; How We Plug In; How We Make Things; How We Grow Things; How We Get Around; How We Keep Cool and Stay Warm; Adapting to a Warmer World; Why Government Policies Matter; A Plan for Getting to Zero; What Each of Us Can Do.

As you can see from the chapter titles, this book has a strong emphasis on avoiding technical jargon. Everything is explained as clearly and directly as possible.

It is easily and quickly read, a nice by-product of its simple and direct language. I learned a lot, and it gave me a lot to think about. For example, Bill Gates is a proponent of North America moving toward more use of nuclear fuel to generate energy, but in a much different form than how we used it back in the '60s and '70s. It was interesting to read his thoughts on this topic about how nuclear could be safely used at a much smaller and more widely dispersed scale than we've used it in the past.

I heartily recommend this book. And I pull it out occasionally to check on something, so it now functions as a useful reference.

By: Dave Powell, EOC3 board member