Earth Day

Greg Yost
Psalm 104:1-24a
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Earth Day, 2012. It sounds ominous, doesn't it? *EARTH DAY... In a world… running out of options… and running out of time…*

Aren't doomsday predictions fun? Here's a little- known fact: The best ones often fall on the 21st day of the month.

Do you remember Christian radio broadcaster Harold Camping? He was in the news twice last year. His first prediction was that Jesus would return and the world would be judged on May 21st, 2011. When that didn't happen, he recalculated and announced a new date, October 21st, which didn't pan out, either.

But give the man credit: Rather than simply picking a new month in which to embarrass himself, he's gone on record to say that his previous attempts to set a date for the end of world were "sinful" and that he had been wrong, while his critics had been right. He says he still searches the Bible, though "not to find dates, but to be more faithful in understanding." *Chapeau*, Mr. Camping.

Meanwhile, a brand new date with destiny looms on the horizon. Have you heard about December 21st, 2012? That's when an ancient Mayan calendar runs out. Millions of people, many of them with robust internet connections, are convinced that the world will also end on that day, and presumably not well. Personally, I don't plan to let this affect my Christmas shopping.

But here we are, and I know what you're thinking: It's Earth Day. Greg Yost is in the pulpit. He's already talking about the end of the world. God help us all.

To which I respond, "O ye of little faith." It would be a piss- poor Earth Day if all we could do is sit around and feel bad about things. That's why I've brought my own calendar date with me tonight, also featuring the number 21. And unlike Harold Camping or latter-day Mayan astrologers, I can guarantee the accuracy of this prediction.

Raise your hand if you already know what's going to happen on Monday, August 21st, 2017…On that date at around 6 o'clock in the evening you are in for possibly a once-in-a-lifetime treat. A total solar eclipse is going to track over a significant portion of the United States, and it's going to just clip western North Carolina.

Total solar eclipses on land that can be viewed are exceedingly rare. Partial and annular solar eclipses are rare, too, but frequent enough that many of us older folks may remember one. However, the last *total* solar eclipse potentially visible to much of the mainland United States happened way back in 1918.

Here's what's going to happen on that day, weather permitting. The first thing you're going to notice, oddly enough, is the people. That's because to experience the eclipse's full effect, you'll have to be somewhere inside a narrow 50-mile strip of land stretching from Washington State all the way across the country to near Charleston, SC. So not only will practically everyone from hundreds of miles or more north or south of that line be making that drive, but people will have traveled here from all over the world.

Chances are that wherever you find yourself that day will be quite crowded long before the eclipse begins.

When it does begin, you'll see the moon take the first small bite out of the sun as it begins to pass in front of it. At this point, of course, you'll be wearing special eclipse-viewing glasses for safety.

For a while, nothing more dramatic seems to happen. It will take a little more than an hour for the moon's motion to bring it directly in front of the sun. Then about 15 minutes before totality, things do begin change quickly. The sky will become noticeably dark and the air will start to feel strange. Shadows will become extra sharp. Above you (hopefully!), the sky will be crystal-clear. But that's only the beginning.

Two or three minutes before totality, the sky will become quite dark. The temperature will drop substantially, and a wind may begin to blow. Animals will think the sun is setting; birds will roost, and insects will chirp as though night is falling. At the very last moment before totality, if you quickly look to the west you will see a huge patch of darkness rushing toward you. What you are seeing is the moon's actual shadow bearing down on you at supersonic speed.

And then as the last sliver of the sun vanishes behind the moon, you'll see something like a great diamond-studded necklace sparkling in the sky. These points of light are known as Baily's Beads, named for Francis Baily, who in 1836 recognized that the effect is caused by light from the blocked sun reaching us on earth through the valleys and around the mountains on the moon. If you're lucky, you may also see solar prominences—huge tongues of fire leaping out from the sun's surface.

Then finally comes the culminating event, which you and millions of other awed human beings have breathlessly waited for. Now completely in shadow, you'll safely take off your glasses and stare up at the black disk of the moon, a seeming hole cut directly out of the sky, and itself surrounded by the wispy, streaming light of the sun's corona. Veteran eclipse chasers unanimously report that no picture or video can do this sight justice.

For two and a half minutes, the stars and the planets themselves will be visible as a celestial frame to this otherworldly display. You'll have those two and a half minutes not just to freeze the vision in your memory for the rest of your life, but also perhaps to experience a gestaltic reappreciation of your own place in the universe. The utter strangeness of this precise alignment of earth, moon, and sun will briefly shatter the dullness with which we normally apprehend their familiar grandeur.

Strange, too, yet unremarked amidst the hubbub, will be an inchoate mysticism that momentarily unites the eclipse's human observers for all of approximately 150 seconds. Watch for *that* not up in the sky, but inside your heart: an aching joy.

Sadly, the intensity of the moment will soon pass, just as will the eclipse itself. Glasses will go back on, the rim of the moon will faintly glow and then sparkle once more, and then the sun will reappear with its comforting warmth and light.

I brought this future story with me today on Earth Day for a number of reasons. Number one, I think eclipses are just plain cool. But number two, I think contemplating such an event has the edifying effect of figuratively moving our vantage point to a place from which we can look back on this beautiful blue marble in space and see, just like the psalmist in our reading today, how marvelous God's great creation is.

I love Psalm 104. Its writer fulfills that part of the greatest commandment articulated in Jesus' quotation of the *Shema* in Mark: that we are to love the Lord our God not just with all of our heart, soul,

and strength, but with all of our mind, as well. I don't know of any other place in Scripture which displays such a tremendous appreciation for the complexity, the utility, or the beauty of the world.

The writer just gets it. This world we live in is simply teeming with miracles, from the grand transformation of destructive, chaos waters into the springs which nurture life, to the birds nesting and singing in the branches of the trees, to the plants that grow and feed the people and the animals. Everything has its place and its reason.

Speaking of reason, the gift of scientific understanding is another of God's gifts, albeit one that has taken millennia to flower. But as we take up the psalmist's song on this Earth Day, reason affords us the opportunity not just to affirm it, but also to add to it. Our creation story has only been deepened and enriched by the passing of the years.

Did you know that our life-giving star, the sun, is but a successor to another star, primal and forever nameless, to which we owe our very lives? Every atom other than hydrogen and perhaps helium which makes up this planet—its rocks, its oceans, its winds and trees, and indeed our very bodies and bones—was birthed at the energetic, gravity-crushed core of a star now long dead. As the dandelion flowers briefly and then erupts, scattering its seeds to the wind, this star in its death seeded the cosmos with the stuff of life.

How I wish it were possible to share this knowledge back across time with our text's writer! Imagine the praises which could be sung for the Heavenly Gardener sowing and harvesting the stars, and then sowing them again so that we, her children, could one day look out into the night sky and know from whence we came. Or imagine our writer turning from the unknowable vastness of space to the smallness of a living cell, its DNA strands twisted like yarn in endlessly beautiful and various combinations spun by the divine hands.

Or even imagine if the psalmist had on hand not only the harp and lyre and spoken word, but mathematics, too, that common language spoken by God into every plant, animal, and mineral, and into their every intersection and relationship. Psalm 104 might have been longer (it might have been quite a bit longer!), but its writer's conclusion would not need to change: "How many are your works, Lord! In wisdom you made them all."

And yet there's another part of me that is glad that the chasm of time and culture that separates us from the world of the psalmist is unbridgeable. I would not want those ancient people to see some of the irresponsible ways we have used God's good gift of reason and knowledge. We need to speak frankly and openly now in our church about what has happened to our planet's healthy natural order and what this means now and for the future.

You know that it's not going to be very easy to listen to. I'll try to emulate Sergeant Joe Friday of "Dragnet" fame and stick to a "Just the facts, ma'am" approach; I promise that I won't be unnecessarily morbid or apocalyptic. Paralyzing dread is wholly counterproductive anyway. I hope you'll listen here to some hard words, but then listen also for the good word of the Gospel on the other side.

Our species' ancestors evolved through thousands of millennia, a time long enough that the physical characteristics of earth's biosphere have changed many times, from wet to dry and from cold to warm, and then back again. Earth's climate systems are complex, governed by positive and negative feedback loops which are even now only partially understood.

Our species, *Homo sapiens*, though, differentiated itself anatomically and genetically in just the relatively recent past, about 200,000 years ago on the continent of Africa. Anthropologists tell us behavioral modernity occurred even more recently still, about 50,000 years ago. The early humans had to

survive in some challenging environments, including the most recent glacial period, which peaked some 20,000 years ago.

However, beyond looks, genetics, and language, most everything that makes us who we are has occurred in the last 11,000 years of the Holocene Interglacial Period. Neither too hot nor too cold, the Holocene has been for us like that third bowl of porridge that Goldilocks found: just right. The earth's average temperature during this time has been stable.

It's no coincidence that human beings developed or perfected agriculture, animal husbandry, pottery, written language, cities, medicine, law, and so much more during the Holocene and not before. Cultural innovations, like fragile seedlings, need care and protection in order to thrive and take root. Extremes of temperature and weather are disruptive and are incompatible with the conservation of civilization's accomplishments.

But, unfortunately, the stability of the Holocene, which we have so long taken for granted, is now being threatened by a rapid warming of the planet resulting from humanity's century-long, massive release of carbon into the atmosphere. Geologists began to recognize at the end of the 19th century that an accumulation of carbon dioxide in the atmosphere would inevitably lead to some degree of planetary warming. What they didn't understand then was how this human-caused warming would interact with other feedback loops within the climate.

Using ice core samples from the polar ice sheets, scientists have learned that CO_2 levels and global mean temperatures have always approximately tracked one another up and down across the ages. At the dawn of the Industrial Age, the density of CO_2 in the atmosphere stood at about 250 parts per million. When Charles David Keeling began recording CO_2 levels from the observatory atop Mauna Loa in 1958, the density had risen to 315 parts per million. The famous Keeling Curve charts the growth in CO_2 levels since then, all the way up to 392 parts per million today, and steadily growing at about 2 ppm/year.

Each step upward results in an increase in trapped heat. With vigorous effort and international cooperation, there may still be time to stop the rise at around 450 ppm and then begin to slowly bring carbon levels back down. Scientists such as James Hansen have said that in the long term we have to reach 350 ppm or lower if we want to stabilize global temperatures.

So what does this mean, and where are we today? So far, the mean global temperature over land and ocean has risen by about ¾ of one degree Celsius in the last century, not quite a degree and a half Fahrenheit, with more than half of that warming occurring since 1979. That doesn't sound so bad—if the temperature were to rise that much in this room right now probably few of us would even notice. The problem, though, is twofold.

The first thing to understand is that even a small mean temperature increase like this turns out to have some very not-small effects on the climate. For example, compared to the 1950s, the extra heat in Earth's climate system has increased evaporation from the oceans and has put about 4 percent more moisture into the atmosphere than what was there previously. When this water falls again to earth, it produces much stronger storms and catastrophic flooding.

"Five-hundred-year floods" now happen with some regularity around the globe, while what used to regarded as "100-year floods" occur almost predictably. Just in the past few years, we have seen devastating flooding on a scale that's nearly surreal in Pakistan, Colombia, Thailand, and Australia. Here at home two years ago, central Tennessee experienced a "1000-year flood" that caused extensive damage to Nashville and the surrounding area.

But while some areas get too much rain, others don't get enough. More heat means increased evaporation from the land, too, and this loads the dice in favor of deadly droughts and wildfires in those places prone to dryness. In 2010 a record-breaking heat wave began in midsummer in Russia and lasted until the fall. An estimated 56,000 people died, many from smoke inhalation from forests burning out of control.

Here in the United States, a multi-year drought—the worst in their history—continues to plague Texas and Oklahoma. Climatologists tell us that we can expect extreme drought to become commonplace over much of the American West in coming decades. By the 2060s, perpetual dustbowl conditions there are likely to render many areas uninhabitable.

But weather extremes are only one facet of the changes that we are already experiencing. Others include the melting of mountain glaciers, which constitute critical freshwater supplies for millions of people, the loss of glaciers and ice cover at the poles, reduced crop yields and grain harvests, extinctions and loss of biodiversity, sea level rise and coastal flooding, expanded range of tropical diseases. The list is long and obviously disturbing.

I also need to mention the very serious matter of ocean acidification. While it's not a direct result of the warming, it does arise from the absorption of increased carbon in the atmosphere. This is killing coral reefs around the world and decimating the bottom of the oceans' food chains, with disastrous implications for the animals at the top, including the millions of people who depend on the sea for food.

It wasn't too long ago that the effects of climate change, if they were discussed at all, were touted as problems that our grandchildren would have to face if we didn't soon recognize our errors and mend our ways. But the fact that these things are all happening now has led climate activist Bill McKibben to title his most recent book *Eaarth*—spelled with two "a"s instead of one. It's his way of drawing attention to the fact that the world we live on is different now. It has changed. It's a harsher place.

And it's going to become harsher still. I mentioned earlier that the problem with this warming is twofold and that seemingly small temperature increases can have outsized effects. The other side of the problem is that these temperature gains, indeed even the carbon gains themselves, tend to feed back upon and reinforce the changes. In other words, it doesn't take so much to start a boulder rolling down a hill, but it can be very difficult to stop one.

Of the extra warming we anticipate in the short- and medium-term future, maybe only a third of it will be directly attributable to the CO_2 we've released. The rest of it will come from other mechanisms that have now been set in motion—for example, the increased presence of water vapor in the atmosphere, which itself constitutes a serious greenhouse gas, or the increased absorption of the sun's radiation into a darkened Arctic Ocean no longer covered by a reflective ice cap.

A tremendously worrisome issue whose immediate magnitude is hard to gauge is the release of ice-locked methane trapped both in the ocean floor and in permafrost on land. Methane doesn't persist as long in the atmosphere as carbon dioxide, but as a greenhouse gas, it is twenty times more potent. This and the uncontrollable burning of warmed and dried tundra could produce a greenhouse effect that runs far past our ability to affect it at all.

Right now we have one degree Celsius of average temperature change, which will certainly become two or even three degrees relatively soon. Unless we change course and immediately stop what we are doing to raise the Earth's temperature, this increase could easily rise beyond four degrees to truly catastrophic, civilization-threatening levels.

But enough of this. I could go on, but we get the picture. Climate change is now locked in and things could get very bad. But is there any good news anywhere amidst the bad? Is there still time? The answer, brothers and sisters, is yes. *Yes, there is still time.*

There is time to stop using the atmosphere as a dumping ground. There is time to build an insistent and powerful mass movement for climate justice. There is time to nonviolently force aside dying fossil-fuel industries and to nurture cleaner energy alternatives. There is time to begin creating resilient, self-reliant communities. As long as we understand that we will not so much avoid our problems as learn to live with them, and that we will not need to tweak our economic and political structure so much as overthrow it, then there is still time.

The challenge of climate change can seem overwhelming, but as Christians we stand in a long tradition of folks who have faced long odds.

"*Oh, is that all*?!" Yeah, that's all. It's overwhelming, I know, but as Christians we stand in a long tradition of folks who have faced long odds. Brad Johnson wrote a nice piece recently for Holy Week (www.tinyurl.com/7hzpbyb) entitled "What Can The Prophets Teach About Climate Change?" Johnson writes:

…The civil rights movement in 1963 faced a similar crisis of faith in trying to figure out how to fight entrenched, institutionalized racism and segregation in what seemed at the time to be impossible odds and repeated failure.

At the January 1963 Chicago Conference on Religion and Race, one thousand delegates of assembled clergy from the various branches of the Judeo-Christian faith grappled with the question, which sent them careening from Pollyannish optimism to biting despair… [Martin Luther] King found a fellow voice in Rabbi Abraham Heschel, the Hasidic scholar who escaped the Nazis and then fought the wave of atheistic nihilism that followed the Holocaust. King and Heschel found guidance in the "ideal of the Hebrew prophets" who faced destruction not merely with virtue but also the "remorseless unveiling of injustice and oppression".

Johnson continues:

Blandness, sarcasm, and nihilism are tempting responses [to global warming]. But there is another path — that recognizes that suffering is inevitably found on the way to justice, that knows sacrifice can lead to redemption. "God still has a way of wringing good out of evil," King said at the funeral for the four girls killed in a Birmingham church bombing in 1963. "And history has proven over and over again that unmerited suffering is redemptive."

[King's words] speak directly to the challenge we now face: "…Life is hard, at times as hard as crucible steel. It has its bleak and difficult moments. Like the ever-flowing waters of the river, life has its moments of drought and its moments of flood. Like the ever-changing cycle of the seasons, life has the soothing warmth of its summers and the piercing chill of its winters. And if [you] will hold on, [you] will discover that God walks with [you], and that God is able to lift you from the fatigue of despair to the buoyancy of hope, and transform dark and desolate valleys into sunlit paths of inner peace."

Johnson then concludes:

We have poisoned the very seasons, and people from New Orleans to Karachi have paid for that profligacy. The path to hope and redemption will not be easy or painless, but it can be found.

I would only add to this that we already know something of this path and where it lies. We will find it in the same place that we go to find peace between neighbors or warring nations. We can find it where we find justice for workers, or for women, or for refugees. We find it where we find the poor satisfied and the hungry fed. This path, friends, is one that the church already knows and, now and again, has even walked, for it's none other than the Way of the Cross.

We have, of course, as usual, much to learn about the Way and about the One whose steps we retrace when we take it. In this tragically changing and warming world, the Way may seem somehow even more narrow and daunting than usual. But there is hope. We disciples of Jesus may finally learn to recognize, help, and be helped by, other pilgrims on the path. Yes, much is going to change, but not all of it for the bad.

"Be not afraid." That message often comes in scripture when things are dark and hope seems far away. We need to think of those words now. Jesus understood weariness, helplessness, tragedy, and despair, but he also experienced resurrection. He spoke to his disciples and speaks to us still (Matthew 11:28-30): "Come to me, all you who are weary and burdened, and I will give you rest. Take my yoke upon you and learn from me, for I am gentle and humble in heart, and you will find rest for your souls. For my yoke is easy and my burden is light."

Happy Earth Day, everyone.

More information on the 2017 solar eclipse can be found at http://www.eclipse2017.org/ECLIPSE2017_main.HTM