

Alan Betts, Green Energy Times, 2022

<http://www.greenenergytimes.org>

Alan K. Betts (<http://alanbetts.com/writings>)

This is a collection of my 2022 articles in the Green Energy Times.

This series started in 2016. Many of these articles have been edited or updated from articles I wrote for the Rutland Herald, sometimes with different titles (as well as pictures). Increasingly many are new.

They blend science and opinion with a systems perspective, and encourage the reader to explore alternative and hopeful paths for their families and society. They are written so that a scientist will perceive them as accurate (although simplified); while the public can relate their tangible experience of weather and climate to the much less tangible issues of climate change, energy policy and strategies for living sustainably with the earth system.

The politically motivated attacks on climate science by the current president have sharpened my political commentary; since climate change denial will bring immense suffering to our children and life on Earth.

I believe that earth scientists have a responsibility to communicate clearly and directly to the public¹ – as we all share responsibility for the future of the Earth. We must deepen our collective understanding, so we can make a collective decision to build a resilient future.

All my articles are available from my web-site, and can be freely reused under a Creative Commons license.

This pdf document contains the 7 articles as pdfs. Web access to editions and articles can be found at <http://www.greenenergytimes.org/back-issues-download/>

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¹ Betts, A. K. (2011), Communicating Climate Science. *EOS Transactions*, 92, No. 24, 14 June 2011. Available at <http://alanbetts.com/research/paper/communicating-climate-science/#abstract>

CLIMATE CHANGE AND LOCAL ACTION



Dr. Alan K. Betts

In December 2021, I reviewed how little progress was made at the Glasgow COP26 talks on reducing carbon emissions that are driving extreme climate change. The

fossil empire kept the discussions well under control, since burning all the fossil fuels is the key to their trillions in profits. So let us review the climate disasters and extremes of 2021, for which the fossil empire and business-as-usual capitalism bears responsibility. U.S. greenhouse gas emissions rose 6.2% last year compared to 2020 (which was affected more by the coronavirus), and oceans' temperatures reached their highest level on record.

Wildfires, hurricanes, tornadoes and a winter storm and cold wave were among 20 weather and climate disasters in the U.S. last year that cost \$1 billion or more, totaling \$145 billion and killing 688 people, according to NOAA. Specific events include extreme temperatures in the Northwest U.S. and Canada, wildfires and drought in the West, Hurricane Ida, three separate tornado outbreaks in the South and central parts of the U.S. In addition, unusually cold temperatures in Texas in February left millions of people without electricity, but successfully destroyed refineries. Hurricane Ida alone did more than \$60 billion in damages as it targeted both the oil wells along the Texas and Louisiana coasts, and the NY-NJ urban infrastructure and financial institutions that are funding the destruction of the Earth by the fossil fuel companies.

Extreme records for temperature are falling globally every year. July 2021 was the world's hottest month: 1.67oF (0.93oC) above the 20th-century average. The event in late June in the northwest U.S. and Canada was described as "most anomalous regional extreme heat event to occur anywhere on Earth since temperature records began" (weather historian Christopher Burt, author of the book *Extreme Weather*). The forest town of Lytton, B.C. on June 29, 2021 burnt down as temperatures rose to 121oF (49.6oC). This set a new high temperature record for Canada, a stunning 8oF above the previous Canadian record. Across Washington State, many other records were also broken by 8oF. The



In February 2021, Texas experienced some of the coldest temperatures in parts of the state in more than 100 years. (eyeopeningtruth.com)

world's highest (and North America's highest) reliable temperature at 129.9oF degrees (54.4oC) was again reached in Death Valley on July 9, 2021. As I write, Onslow, a small coastal town in Western Australia, registered 123.3oF (50.7oC) amid a severe heat wave, setting a new record for the southern hemisphere. In contrast here in Vermont a huge rain, ice and snow storm covers the eastern U.S. and Canada.

The climate of the past is moving into history and the practice of forecasting new climate extremes before they actually occur is extremely difficult. To those with a dark sense of humor, it is almost funny because we refuse to face what humanity is actually doing. One new pretense for example is using artificial intelligence and big computers for forecasting, but the reference information is necessarily historic! The deeper paradox is that the Earth seems now to be selecting strategies to destroy fossil infrastructure to protect its interests. This is obvious to indigenous people, but it is heresy to capitalism, which thinks it is smart to make a lot of money exploiting and destroying the Earth.

The February freeze in Texas is a good example. This originated in the stratospheric oscillation over the North Pole, propagated down into the Arctic troposphere and then southward as a series of freezing blobs that sat over Texas, freezing and destroying infrastructure for two weeks. Texas had never seen anything like it, and its infrastructure was not winterized. Much of the electrical power system shut down (as it is largely iso-


lated from the U.S. grid), and estimates of the total damages were \$195 billion (which I note is larger than the total U.S. damage figure for 2021 above!). But from the Earth's perspective, the real target was the Texas oil refineries, which suffered more damage from this February storm than any major hurricane.

The extensive fires in North

America are increasing the risks of devastating mudslides across large areas. The Dixie fire in California alone burnt nearly a million acres (400,000 hectares) and studying the landslide impacts on this scale is a huge measurement and forecast issue, as it depends on soil type and vegetation coverage, as well as rainfall intensity. Fires can reduce the permeability of the soil surface so that subsequent intense rain rates form streams that carry soil and rocks downhill generating mudflows. In landscapes which were forested this process can be delayed until the tree root systems decay, which may take a few years. The extreme temperatures in British Columbia in late June and into July led to many fires that burnt and destabilized hillsides. Then a huge storm in mid-November 2021 from an atmospheric river off the Pacific dumped a month of rain on the region in two days. This generated massive mud and debris slides that closed the Trans-Canada Highway and national railway line. To us a 'supply-chain interruption' but useful from the Earth's perspective as British Columbia is mining and liquefying natural gas to speed the destruction of the climate. We are moving into a new era of long-term consequences from

our destruction of the Earth's climate system for profit. Another different example is that a recent detailed global study shows that the anthropogenic intensification of daily rainfall extremes has a 'surprising' negative global economic impact. Our relatively simple economic models do not yet monitor local daily rainfall.

In sharp contrast, I have been exceptionally busy for two months taking over and planning the repair of a local community solar array. This small 150kW array was set up in 2015 by the Clean Energy Collective (CEC) by selling 300W panels to fifty members of the community. I myself own twenty panels (out of 684). We were promised twenty years of renewable electricity credits through the utility Green Mountain Power, who takes the entire production. We the community investors were doing it to support the transition to renewable power, but CEC was doing it for short-term profit, not the long-term interests of the Earth. It stripped all funds it could from panel owners, long-term escrow accounts, stopped maintenance as inverters failed and then filed for bankruptcy for the three arrays it owned in Vermont. I noticed power production was down in the summer of 2021, and initially I thought it was the cloudy summer. As soon as I heard of the bankruptcy filing, I did a deeper analysis comparing with other Vermont sites. I found a sharp 25% drop occurred in May 2021, when in fact two inverters had failed (out of seven). I took over the array on behalf of our West Haven Solar Array Community, and we are developing a long-term strategy that is in the interests of the Earth.

Dr. Alan Betts of Atmospheric Research in Pittsford, VT is a climate scientist. More at alanbetts.com. 



A long-term strategy that is in the interests of the Earth is being developed for the West Haven, Vermont 150kW community solar array. (Alan Betts)

CLIMATE BREAKDOWN IS ACCELERATING RAPIDLY



Dr. Alan K. Betts

A new IPCC report on February 28 on the climate crisis is very bleak. It recognizes climate breakdown is accelerating rapidly. Many of the impacts will be more severe than predicted

and there is only a narrow chance left of avoiding its worst ravages. Even at current levels, human actions in heating the climate are causing dangerous and widespread disruption, threatening devastation to swathes of the natural world and rendering many areas unlivable. Key ecosystems are losing their ability to absorb carbon dioxide, turning them from carbon sinks to carbon sources. The report is a damning indictment of failed climate leadership. We talk about carbon neutrality by 2050 when we need to halve our emissions by 2030. We do not intend to do this because business-as-usual and the fossil fuel empire plan to make trillions from destroying the Earth. So, we continue to head towards high emissions trajectories.

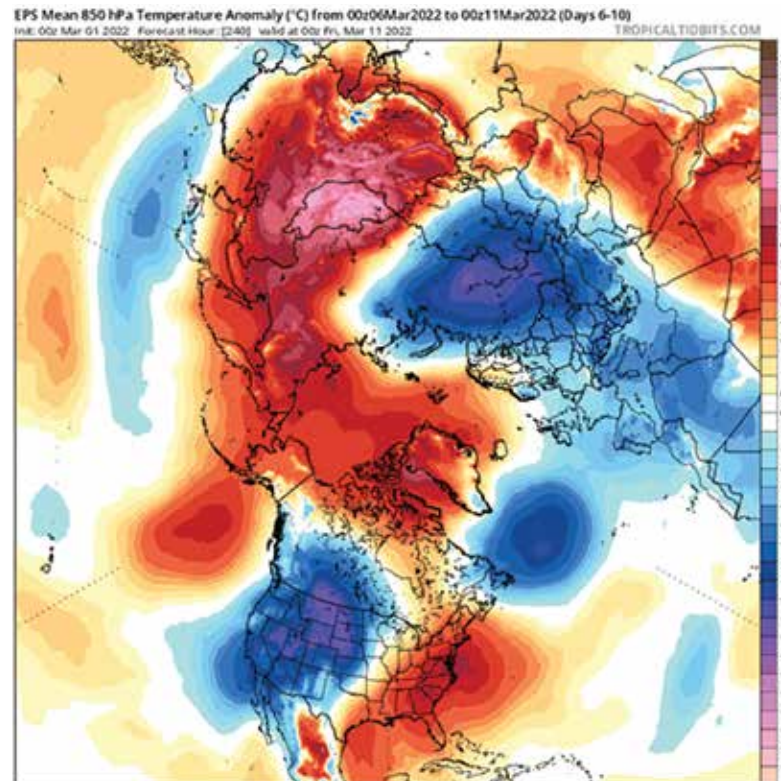
So that readers can prepare, let us discuss some broader aspects of the climate crisis. The latest crop modelling studies from NASA using a range of climate model simulations (called CMIP-6) to drive 12 state-of-the-art global crop models show a large impact as early as 2030 under high greenhouse gas emissions. Maize crop yields are projected to decline 24% as warmer tropical temperatures stress plants. Yields of wheat however may initially increase as northern mid-latitudes get warmer. The localization and diversification of our crops are key strategies, but this is another reminder that the growing global population is not sustainable. It is early March and I just watered my spinach and lettuce that are doing well under sheets of glass. Start growing your own food.

The global rise in wildfires that we have seen last year in the U.S. and Canada, Siberia and Australia is going to continue and wreak havoc on the environment,

wildlife, human health and infrastructure. In the U.S., nearly 7.7m acres (3m hectares) burned last year, and these blazes are getting increasingly hard to fight. We spend a lot of money fighting fires, but very little on planning, preparation and recovery. This is a familiar pattern as our society spends rather little on reducing climate change, since it tacitly accepts the strategy of the Fossil Empire and many business sectors to maximize their profits by burning all the fossil fuels.

The current 22-year megadrought in the southwestern U.S. continues, and water supplies are becoming critical. It has overtaken a major drought in the 1500s, and based on tree rings that go back to 800 AD it is now the most severe in 1200 years. 2021 continued a pattern of reduced rainfall in the west and increased rainfall and many storms in the east, coming from the Atlantic or the Gulf.

We are not grasping the entire picture of the economic damage to society. NOAA estimated climate disasters in the U.S. in 2021 that cost \$1 billion or more, totaled \$145 billion and killed 688 people. However, the increasing severity of storms and more frequent severe tornadoes, even into December, damaged over half a million homes with an estimated cost of \$124 billion. After striking the Gulf coast, Hurricane Ida merged with a frontal system, intensified and damaged 1.2 million homes in the north-east with estimated record reconstruction costs of \$395 billion. Yet society still refuses to bill



Here are the warm and cold temperature anomalies for the 850 hPa temperature forecast by the ECMWF model on March 1 for March 6-11. Notice the large shifts of $\pm 6^{\circ}\text{C}$ ($\pm 11^{\circ}\text{F}$) across the U.S., between cold in the west and warm in the east.

the Fossil Empire for these damages, even though the oil industry knew forty years ago that it would be responsible and has lied about this ever since. This is absurd: they should be forced to pay for the damages now.


Our weather this winter in the North-east has shown rapid shifts in weather extremes that are referred to as weather whiplash, with changes in temperature of $\pm 50^{\circ}\text{F}$ in 24-48 hours. Recently, the daily high temperature of 55°F was at 3 a.m. with heavy rain, and temperature fell all afternoon reaching a low of 15°F the following midnight. It is hard to grasp maximum temperatures after midnight, driven by strong southerly advection all the way from the Gulf; followed by north

winds from Canada. In the big picture the polar vortex has split in two.

A critical issue for the G.E.T. community is the scale of the workforce to make the needed transformation of society in the coming decade. The workforce needed to rebuild will not appear overnight, even if Congress really passes bills to fund dealing with climate change. You all know the opposition that exists to change and the webs of lies denying that climate change is real. The struggle between the truth that sets you free to act on behalf of the living Earth, and all these lying forces determined to profit from the destruction of the Earth has to be confronted. I suggest we advertise with enthusiasm all our triumphs. Change is hard for old people (and especially old politicians). Every time I see my car salesman at the dealership, I joke that my plug-in Prius is averaging only 160 mpg on the first 50,000 miles; and that its highway range is still over 600

miles. He will mutter, "How much do you spend on electricity?" I say perhaps a few dollars a week, but my solar panels pay for that. I am wearing him down, as now he says, "When I buy my next car, I will check out a plug-in, but not now!"

This is the last decade to soften the impact of climate change. We have to choose between backing the living Earth or the criminal, lying fossil fuel empire. The choice is obvious to the sane, but not to those trapped in webs of lies and the misuse of human power. Take a breath and remember our children and all of life on Earth.

Dr. Alan Betts of Atmospheric Research in Pittsford, VT is a climate scientist. See alanbetts.com. 

Global Climate Challenges

Alan Betts

Much is happening on a global scale as climate breakdown accelerates and new climate extremes are reached everywhere. Record temperatures in South Asia, reaching up to 120oF, have made life desperate for millions in India, where few can hide inside with air conditioning. Spreading droughts are increasing wildfires. In the U.S., a large fire near Las Vegas has blackened 170,000 acres. It was a prescribed burn lit by the Forest Service that got out of control in a region of extreme drought! The NOAA drought map from May 3, 2022 showed large regions of severe to exceptional drought in the western U.S.

Very little is now under our control in both the natural and human worlds. Let us step back and start with the truth that sets us free, since the living Earth system, after waiting for decades for humanity to stop destroying the Earth for profit, is taking over the climate system. The creation and the living Earth system are inseparable from the truth that sets us free, even though this is heresy to human power, trapped in webs of lies. Everywhere we look, human society is lost in these webs of lies. These come from politicians, the fossil fuel empire, business-as-usual capitalism with its consumer growth model that is destroying the Earth, all the way to Putin's war based on lies that is destroying Ukraine.

In the Vermont world, I have spent five months rescuing the West Haven Community Solar Array from bankruptcy, neglect and theft by the Clean Energy Collective a corrupt business that stopped maintenance and stole all the assets of the array.

Readers of *G.E.T.* will understand that truth and integrity are central to business, but few can see the many levels of deceit in our society. But in the climate world, the direct intervention of the living Earth system gives us no choice. We have to wake up fast, take a deep breath, dump the social webs of lies and cooperate with both the truth and the difficult reality ahead.

The extreme stunning event in late March was in Eastern Antarctica. Our COP26-politicized world has believed that the melt of the vast thick cold ice-sheets of Eastern Antarctica was far into the future – maybe centuries. We can just go on making money for now! The Earth however is exploring how to deal with the human menace. On March 19, 2022, a new temperature record was set at the Concordia weather station on the East Antarctica plateau that was 70oF (40oC) above the 30-year climatology, just by sending warm air down from the deserts of Australia (see graph).

This was a shock to scientists who said: "If you had told me 3 days ago this would happen, we would never, never have believed you." For the first time a small ice sheet broke off from E. Antarctica. Overnight, we glimpse a new world, where a 20-to-30-foot global sea-level rise from the combined melt of the Greenland and Antarctic ice-sheets becomes a possibility in the next few decades. There is nothing we can do about it, except connect more deeply with the living Earth system, and reverse course at once. Note that the Antarctic is warming more than four times as fast as the Northern Hemisphere.

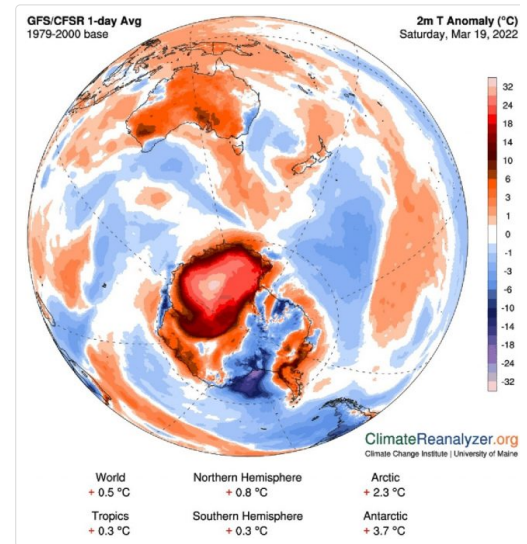
In Vermont in mid-May, temperatures went into the 80's. The speed of the transition has been stunning, as I was still watching out for frosts in early May! My spinach and lettuce wintered over under glass and a wide range of cool weather crops (peas, chard, kale, broccoli and brussels) are growing well. I have replanted potatoes, and yesterday I planted our summer and winter squash, since minimum temperatures in the next 10 days range from 40 to 60oF! Growing our own food is valuable, as the global commercial agricultural system is a many-sided disaster impacting forests, soil quality and generating methane to drive climate change. As commercial food exports from the Ukraine have been cut off, some have realized it would be wise for the peoples in Africa to shift back to the rich variety of indigenous foods they can grow themselves.

Everything is interconnected, including the latest lying political maneuvers to force women to have children they cannot support to keep our population of capitalist consumers growing to make more money and destroy the earth even faster.

It is better that we step into the sunshine and connect to the living Earth instead.

Dr. Alan Betts of Atmospheric Research in Pittsford, VT is a climate scientist. See alanbetts.com.

June 13th, 2022 | Tags: [climate news](#), [June 2022](#) | Category: [Climate news](#), [June 2022](#)



Accelerating Climate Change And The Living Earth

Dr. Alan Betts

As climate change accelerates, we are seeing many extreme events which have never occurred before. I am going to discuss a set of these and put them in the context of the Earth. Fifty years ago, I realized we were heading for a climate catastrophe, because no one accepted responsibility for the Earth. So, I asked, "How do we merge science with wisdom?". My forty-year journey was published as "The Earth's View of Climate Change" in March 2022 (alanbetts.com/research)

Our scientific perspective used to be that the 10,000-foot-thick E. Antarctica ice sheet would be stable for centuries. However on March 19, 2022, a new temperature record was set at the Concordia weather station on the E. Antarctica plateau that was 70oF above the 30-year climatology, as the desert air over Australia was advected to sit over this ice-sheet. One stunned scientist said, "If you had told me three days ago this would happen, we would never, never have believed you." Overnight, they glimpsed a new world, where a 20-foot global sea-level rise from the combined melt of the Greenland, Arctic and Antarctic ice sheets becomes a possibility within decades.

This is one way the Earth can deal with us. Our attitude is that we are in charge, and we can make money even if the earth is destroyed. So, take a deep breath. I have the advantage that my perspective is based on what the living Earth has shown me directly.

Hurricane after hurricane has damaged oil wells off the Texas and Louisiana coasts, and we rebuild them. But the Texas freeze in February 2021 was a radically new event. This originated in the stratospheric oscillation over the North Pole, propagated down into the Arctic troposphere and then southward as a series of freezing blobs that sat over Texas, freezing and destroying infrastructure for two weeks. The Texas infrastructure was not winterized, and much of the electrical power system shut down. From the Earth's perspective, the real target was the Texas oil refineries, which suffered more damage from this February freeze than any major hurricane.

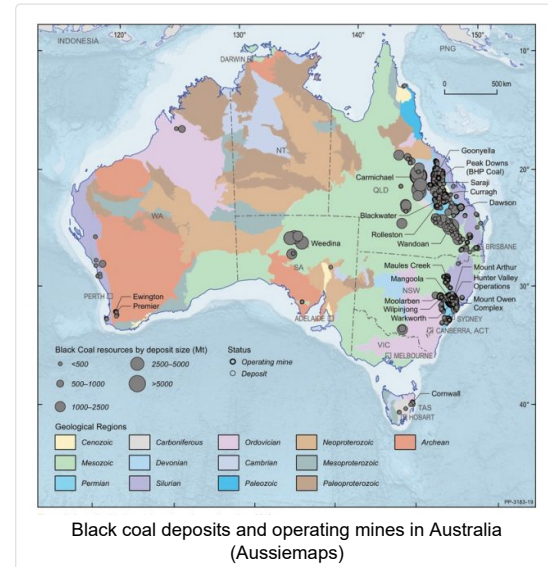
In late June and into July, 2021, the most extreme heatwave ever recorded in the northwest U.S. and into British Columbia (BC) had widespread temperatures over 100oF. The small town of Lytton in southwest Canada was warmer three days in a row until it reached 121oF. Imagine Death Valley temperatures in a Canadian forest. On the fourth day Lytton simply caught fire and burnt down. This extreme broke the all-Canadian temperature record, set during a drought in southern Saskatchewan 80 years ago, by an unimaginable 8oF. Canada was stunned. The extreme temperatures led to widespread fires that burnt and destabilized hillsides. The Earth was still planning ahead. In mid-November 2021 an atmospheric river off the Pacific dumped a month of rain on the region in two days. This generated massive mud and debris slides that closed the Trans-Canada Highway and national railway line. To us a 'supply-chain interruption' but useful from the Earth's perspective, as BC is mining and liquefying natural gas and exporting products from the tar sands of Alberta, all to speed the destruction of life on Earth.

Eastern Australia is experiencing new record floods in Queensland and New South Wales after devastating wildfires in the region. The latest catastrophic flood around Sydney was July 2-4, 2022. A huge storm cell brought a year's worth of rain in three days to some areas and led to the evacuation of 85,000 people, as their homes were flooded. The Earth's reason is apparent in the maps of the many coal mines around Sydney (and in Queensland). Companies were enjoying cash profit margins of about 45%, and mining more than ten billion tons of coal per year. No-one is discussing the connection. Instead, the claim has been made that Australia is not responsible for the climate consequences as the coal is burnt elsewhere!

On one level society understands the accelerating climate crisis is out of our control unless we rapidly cut the burning of the fossil fuels, which we have refused to do for decades, because it is so profitable. So the living Earth, which is responsible for life on earth, is taking over and targeting our fossil infrastructure, as well as planning to flood our coasts. So far we refuse to discuss the implications of this, since we pretend we are the smart species in charge. The reality is we have to surrender to the Earth's perspective, but this is so hard for most to grasp when centuries of militarism has trained us to fight, fight and never surrender. Nonetheless the Earth can read our minds and patiently wait for us to glimpse reality!

Dr. Alan Betts of Atmospheric Research in Pittsford, VT is a climate scientist. See alanbetts.com.

August 12th, 2022 | Tags: [August 2022](#), [climate news](#) | Category: [August 2022](#), [Climate news](#)



« [Disasters Hit 90% of USA in 2022](#)[Hershey Signs Up for More Solar](#)

A Climate Scientist's Review of COP27

Alan Betts

The COP27 meeting in Egypt continued the annual discussion of key climate change issues and whether we are on target to keep the warming of the planet below 1.5°C. Teams of people brought their enthusiasm from around the world, including many young groups to encourage decisive action to reduce climate change, but their access was limited. In contrast, there were 636 fossil fuel lobbyists to ensure their companies' profits were protected.

At COP26 in Glasgow, 153 countries made net-zero commitments, many for 2050, and put forward new or updated emissions targets, known as Nationally Determined Contributions (NDCs) that would probably limit the global rise of temperature to 2°C. The global climate disasters in the past year make it obvious that we are already past critical thresholds, with 2020 the warmest year at 1°C above the 1880-1900 reference average. At COP26, nations agreed to phase out coal and fossil-fuel subsidies, and all agreed to make more ambitious emissions targets by the end of 2022.

However, since then, only 24 countries have revised and updated their emission-reduction targets. Australia is the standout where the new Labor government has pledged to cut emissions by 43% by 2030, and has laid out plans to increase investment in solar, electric vehicles and renewables to decarbonize. However, Australia is also making huge profits as the number one exporter of coal, and it claims it is not responsible for those emissions! Likewise some Middle Eastern countries are developing 'green' economies, which frees up more oil for export.

Following COP26, the UN appointed a high level Expert Group: "Integrity Matters" on the Net-zero Commitments of Businesses, Financial Institutions, Cities and Regions. The main conclusion that Secretary General António Guterres presented at COP27 is that "greenwashing" is prevalent. Essentially, climate change denial has been replaced with greenwashing, which is dishonest advertising by the fossil fuel and financial industries that pretend they are doing something to deal with climate change, when in reality this is tiny compared with their huge profits. A fine example is the Exxon-Mobil "Advancing Climate Solutions" July 2022 Progress Report. They plan a 20% reduction in emissions by 2030 by reducing the emissions from the leakage of methane and its flaring: they should have done this decades ago. They plan for net-zero emissions from its 'operated assets' by 2050, and they hope to develop a business strategy that is resilient to net-zero emissions by 2050, whatever that means. This is the company that knew disaster lay ahead in 1978 when their own chief scientist did the global warming analysis. Yet for 45 years, they have bribed politicians, funded fraudulent advertising and continued to extract and sell oil globally.

There was no consensus at COP27 on the key issue of phasing out all the fossil fuels: the fossil fuel lobbyists made sure of this. The observers who were there as citizen lobbyists were not allowed in the negotiation rooms. The global warming threshold of 1.5°C was nominally kept, but it is slipping away (as may 2°C).

The second big issue at COP27 was loss and damage payments from the rich countries (responsible for most of the emissions) to the poor and middle-income countries that historically emitted very little but are suffering the current climate extremes without the resources to deal with them. An agreement to set up a 'loss and damage' funding facility was reached; and this was regarded as the rare victory at COP27. It is a promise to begin a process to establish a fund of voluntary contributions, but who will contribute and how it will be managed will be left to COP28. This agreement in principle was only reached because Pakistan, the Chair of the G-77 coalition of 170 developing countries (plus China), kept pushing for agreement into Sunday morning, long after the meeting's nominal closure on Friday. The climate disaster in Pakistan this year killed 1700 people, flooded one third of the country, destroying homes and causing massive destruction of crops. Pakistan cannot afford the reconstruction. Also pushing were the Pacific island nations who sent a delegation led by Vanuatu asking for a 'loss and damage' climate fund. As the climate warms, Category 5 hurricanes are becoming more frequent. Damages have reached \$600 million in a single year, a major fraction of the annual economy. Their reefs are dying, and they are critical to their life and food supply, and rising sea level is an existential threat. They have asked for payment for these losses as their way of life is destroyed.

China does not want to contribute as it was given 'developing country' status in 1992 and contributed far less historically to emissions, even though now it is now a major producer as the second largest global economy.

In a just world, the fossil fuel companies would be major contributors to this climate fund as they are making trillions in profits every year, but their strategy has been to bribe politicians to 'deny climate change' and protect their business from any responsibility for damages. The EU would like the fossil fuel industry to contribute. The U.S. has the largest economy and is the biggest historic contributor of emissions. However in the present 117th U.S. Congress, 139 climate science deniers have accepted more than \$61 million in lifetime direct contributions from the oil, gas, and coal industries. I would assume the fossil fuel lobbyists at COP27 had millions in bribes available to ensure their companies do not have to pay.

This agreement to establish loss and damage funding represents progress, but the U.S. claims it does not include liability or compensation provisions. Generally speaking, a stable climate is incompatible with U.S. business-as-usual capitalism, since its key objective is to maximize profits by exploiting people and the Earth's resources, which include the fossil fuels. The U.S. avoids discussing these key issues in global forums, which constrains progress at these COP meetings.



Floods in Pakistan destroyed food systems and left 4000 homeless. (factly.in)

In a different context the Russian attack on Ukraine has impacted fuel supplies and costs in Europe as well as globally. It has indirectly nudged renewable energy development, but also the development of more natural gas transport to replace the loss of Russian supplies. However, the massive secret destruction of the Nord Stream 1 and Nord Stream 2 pipelines (presumably by Russia) is worrying to Norway and the UK, as they have networks of natural gas pipelines under the North Sea. Since NATO support is preventing Russia from capturing Ukraine, Putin may resort to the semi-clandestine destruction of critical underwater NATO facilities.

As always COP27 deferred many critical issues to the future, so watch for follow-up! Mounting challenges make agreement very difficult, but climate catastrophes will nudge us.

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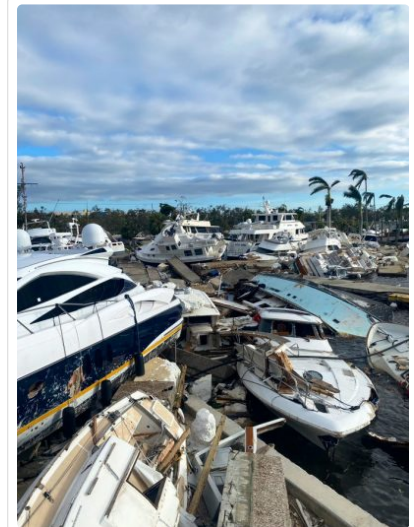
December 14th, 2022 | Tags: [Climate Change](#), [December 2022](#), [Front page](#) | Category: [Climate Change](#), [December 2022](#), [Front Cover](#)

New Climate Extremes

Dr. Alan Betts

Extraordinary climate extremes around the globe that appear to reflect the Earth's perspective on climate have continued since my last update in August. After talking to people here in Vermont, I am now using "Mother Nature's perspective" on climate, as most grasp its meaning at once. It has also two profound benefits: the first is the shift to the indigenous world view. The second is it quietly removes the male chauvinist bias that has dominated western thought and politics for almost two thousand years. This bias was created within Christianity at the Council of Nicea in 325 A.D., when the Emperor Constantine destroyed the indigenous Aramaic teachings of Yeshua (to us Jesus) which were based on the living Creation, in order to create a Roman Catholic Church that met his needs for male human power and authority.

In the climate world, post-tropical storm Fiona with wind gusts still up to 100 mph struck Nova Scotia and Prince Edward Island on September 24, 2022, leaving them without power. It was the most extreme storm ever to hit eastern Canada with expected damages that may approach a billion dollars. You may recall that back in late-June and early July last year an extreme heat wave set massive fires in British Columbia (BC) when temperatures in the forest town of Lytton BC reached a record 121°F. Then in mid-November 2021, an atmospheric river brought extreme flooding to BC that caused massive mud and debris slides that closed the Trans-Canada Highway and national railway line. This shut off exports of liquid natural gas from the BC mines and exports from the Alberta tar sands. Canada has no intention of closing these profitable industries, but from Mother Nature's perspective these fossil fuel industries and exports are contributing to the destruction of life on Earth, so storms targeting Canada will continue.



Hurricane Ian's catastrophic storm surge was so powerful that it piled up boats on land in downtown Ft. Myers, Florida marina. (Dylan Federico)

On September 28, 2022 Hurricane Ian after damaging Cuba, maneuvered to target Florida. It slowed down and amplified to nearly a category 5 storm. It struck the west coast near Fort Myers after passing over Sanibel Island, causing catastrophic damage from winds, storm surge and flooding, and substantial loss of life. Torrential rain led to still more flooding, which is likely to continue on the slow-moving St. John's River into November. Hurricane Ian then crossed Florida, redeveloped over the Gulf, and moved north to hit South Carolina. Florida governor DeSantis could be one of the Earth's targets as he is a 'climate change denier' who doesn't support renewable power and has a largely neo-fascist political agenda that has no respect for life on Earth. Unfortunately for politicians and other important people, Mother Nature can read all our minds.

On the other side of the world the flooding of the coal mines in eastern Australian continues. Back in the first week of July 2022, Sydney had a catastrophic flood when a huge storm cell brought a year's worth of rain (about 4feet) in three days to some areas. Recently from October 13 through 23, 2022 there were more huge floods across Victoria, New South Wales and up into Queensland. Some areas received four times the mean October rainfall in 24 hours. These flooding extremes are making parts of eastern Australia unlivable, but the political system refuses to discuss how their coal mines are destroying life on Earth. Australia is the second largest exporter of coal globally. Companies which are mining more than ten billion tons of coal per year are enjoying cash profit margins of about 45%. Rather than discuss the link between climate change and coal mining, the extraordinary claim has been made that Australia is not responsible for the climate consequences, since their coal is burnt elsewhere! Mother Nature disagrees. An exceptionally long La Nina in the Pacific which contributes to these floods is continuing.

Exxon-Mobil's chief scientist told management in 1978 they had to act swiftly to save the Earth's climate and he was told to keep quiet. After waiting forty-plus years for humanity to act, Mother Nature is taking over the climate system to protect life on Earth. This is incomprehensible to our political and financial leaders as it is a threat to capitalism, whose purpose is to make money exploiting people and life on Earth. The ongoing takeover by Mother Nature is incompatible with the unspoken concept of capitalism that "Humanity is in charge, because we are the only intelligent species on Earth." The Fossil Empire will have to spread more webs of lies and bribe more politicians to try to avoid facing change. When you are making trillions destroying Mother Nature and the lives of our children, these are trivial costs, but they will be a total failure as the destruction of the Fossil Empire is now inevitable.

The takeover by Mother Nature seems fearful to some at first, and it is if you live on the coast as sea-level rises and storms increase. However, when you realize that your actions on her behalf are transparent to Mother Nature since she can read your mind and support you, your perspective changes to one of gratitude as new worlds of possibilities open to you and your colleagues.

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Are Plug-In Hybrids an Important Transition Option?



The author in his Prius Prime plug-in hybrid in Pittsford, Vermont in the winter. (Courtesy photo)

Alan Betts

An article in the August issue of *Green Energy Times* debunked the webs of lies about electric vehicles (EVs) that have reduced their sale in the US, where only 5% of new cars sold in 2021 were EVs. Globally the U.S. is second to the bottom in this EV transition. Contrast northern Europe where in Norway, the global leader, 86% of new cars were EVs last year.

One of the strange aspects of the discussion of the transition from gasoline to electric cars is that I have never seen an accurate analysis of the huge impact that efficient plug-in hybrids can make in reducing gasoline use. So here is my analysis based on owning a Toyota Prius Prime plug-in for five years. We have driven a total of 48000 miles through all conditions, summer and winter, and to-date averaged 164 mpg. These figures are on the dashboard when I turn the car on!

How is this possible, when the car has an all-electric range of only 30 mi (less in winter), and the dealer claims that running on gasoline as a hybrid it only gets 54 mpg? I was stunned our first year, so let me explain. First, the plug-in Prime is probably the most efficient vehicle of its type, and it is way beyond a simple hybrid. With computer control on the two coupled engines and electromagnetic braking, its battery is large enough to always recover substantial energy from slowing down, coming down hills or even large mountains (see below).

Many of my trips in Vermont of about 30 miles total between Pittsford and Rutland run all electric. However, consider a 60-mile trip to Burlington, which is twice my electric range. Running on gasoline on rural roads at 50 mph the Prime will average 65 mpg. This means my average with half-trip electric is 130 mpg. If I can plug in a level two charger, which recharges in two hours, this will be my average for the return trip also. If I cannot recharge in Burlington, my 120 mi round trip with only 30 miles on electric will average just under 87mpg. So, for reference a 95-mile trip starting charged uses just one gallon of gas for a 95mpg mean.

These give a realistic sense of the capabilities of an efficient plug-in hybrid. A related perspective is that whether running on electricity or gasoline the Prime is the most efficient car available. At 164 mpg, I have reduced my gas consumption by 85% compared to perhaps 25 mpg for a summer-winter mean for some less efficient hybrids. Practically I have to add about five gallons of gas to my 10-gallon tank every month to drive 10,000 miles per year. A 6-kWh electricity recharge costs about \$1, and we have solar panels in an array to pay this.

Now running on the highway at 65 mph, the Prime will still average 60 mpg, so its highway range on its 10-gallon gasoline tank approaches 600 miles – more than any other car. At 75mph and a heavy foot, this drops about 10% to the 54 mpg reported by test drivers!

Consider this 2100 mi long-distance trip lasting 14 days that my wife and I made through mountainous terrain from Vermont through the Canadian Atlantic provinces to the Nova Scotia coast. This illustrates the remarkable overall efficiency. We were able to plug-in a regular 110V socket on all nights except one for the 6 kWh recharge to give us our nominal 30 mile electric range. Our trip average was 82 mpg, which means that going up and down long mountains we still averaged 65 mpg, because energy recovery going downhill typically slips

the car back into all-electric mode.

Don't forget that maintenance is much less than for gasoline cars – we are advised to change sparkplugs every ten years, and soon we will have to change the rear brake pads at 50,000 mi. In addition, the Toyota Prius Prime only costs about \$27K after credits.

I have been amazed that the technical press and even the Toyota dealer do not provide realistic data and analysis. I think because usage will vary widely, the dealer does not want to be held responsible for misleading the public. Enough smart drivers understand that the waiting list for these cars is months long.

But the energy-aware community can grasp reality: a 120-mile local commute in a Prius Prime starting with a 30-mile electric charge averages 87mpg and reduces daily gasoline consumption by about 70%. It is satisfying buying so much less gasoline for a quiet, comfortable efficient car. The U.S. and the planet badly need this for the transition away from fossil fuel.

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