

Climate, Energy and Community: Vermont 2019

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This is a compilation of my 2019 columns from the Sunday Rutland Herald and Barre/Montpelier Time Argus. This is the twelfth year of a series that started in January 2008; and a 2012 overview paper is available¹. These columns go through the seasons, dealing with weather, climate, climate change, energy and policy issues. 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 framed so that a scientist will perceive them as technically 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 administration have however sharpened my political commentary; since climate change denial may bring immense suffering to our children and all life on Earth.

I believe that earth scientists have a responsibility to communicate clearly and directly to the public² –as we all share responsibility for the future of the Earth. We must deepen our collective understanding, if we are to we can make a collective decision to build a resilient future.

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¹ **Betts, A.K. and E. Gibson (2012)**, Environmental journalism revisited. *Environmental Leadership: a Reference Handbook*. Deborah R. Gallagher, Editor, SAGE publications Inc., Sept. 2012, ISBN: 9781412981507. Available at <http://alanbetts.com/research/paper/environmental-journalism-revisited/#abstract>

² **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>

a) Time to Face the Future

(January 5, 2019)

https://www.rutlandherald.com/opinion/perspective/weekly-planet-time-to-face-the-future/article_1e63028d-5f25-5e9c-bd82-a2bc9836df83.html

In 2018 it became clear that the Earth has passed a threshold where many extreme weather events are now clearly attributable to climate change. In the US, hurricanes Harvey and Florence broke all records for rainfall amount, as they strengthened over warmer tropical oceans, and then stalled on the coast for days. In Kerala, India this year the monsoon floods were the worst in a century, displacing a million people. Warming seas give more evaporation that are fueling stronger rain events.

A distinct but coupled climate change impact comes from the fact that the Arctic is warming twice as fast as the rest of the globe, and this is producing larger amplitude waves in the mid-latitude jet-stream that move slowly. Blocking patterns in the weather are becoming more frequent, and these slow down the movement of storms. This contributed to the disastrous flooding from Harvey and Florence. More generally, blocking patterns can create extremes in temperature, or more rain in one region and longer droughts elsewhere. In 2018, the eastern US had record temperatures for the six months from May to October, with record rainfall in Pennsylvania and the Virginias. In the west, California remained in an extended drought, and the last two years have set new records for both fire severity and damage. One million California buildings now face wildfire risk.

Millions of coastal homes face flooding from storm surges and accelerating sea-level rise, as the massive ice-sheets on Greenland and western Antarctica move slowly towards instability. Global emissions of CO₂ rose in 2018; while in sharp contrast the latest IPCC Special Report 15 says we must reduce emissions rapidly in the next decade to slow climate change. The fossil fuel industry paid no attention, and hampered progress at the recent climate conference in Poland with the assistance of the US.

The fourth National Climate Assessment (NCA-4), compiled by thirteen federal agencies and released over Thanksgiving, mapped out adaption costs and detailed strategies for the US in the coming decades. Our narcissistic leader, unwilling to read even the executive summary, said in response: "I am so smart that I don't need scientists to tell me what is happening to the climate". This prompted more discussion on how individuals can be so stupid that they are unaware of it.

Take a deep breath, and ask if we can make this Assessment a climate tipping point of a different nature? Scrap those New Year resolutions, and read the NCA-4 (<https://www.globalchange.gov/nca4>). Yes it is long and detailed, so plan community potlucks to hold discussions and to keep warm. Assign each other one chapter, and plan to stir up creative trouble this winter. What does your community need to do, and how can you get it done before the apocalypse?

For ideas and backup, join all those forward-looking groups that are thinking of ways to address the exploitation of the Earth and its people before it is too late. Groups like 350.org; Rights and Democracy (radvt.org), Indivisible (indivisible.org), the Transition Town movement (transitionnetwork.org), and many more.

Long-term, we need representatives on local select boards and regional planning commissions to steer constructive change. Short-term, we need town meeting resolutions to tell those newly-elected

politicians in Montpelier that it is far too late for more promises to act someday. The Earth's climate is not waiting for us.

It is time for speedy action to build a resilient Vermont, where as much as possible of our food supply, water resources, renewable energy supplies and businesses are under responsible local control. It will still be painful to watch if the central government continues to crumble, and threaten those who know its fantasies are foolish and cruel. Nonetheless, we can choose a responsible path and create a shared livable future for our communities and for Vermont.

b) The clash between oil and the future (February 23, 2019)

https://www.rutlandherald.com/opinion/perspective/weekly-planet-the-clash-between-oil-and-the-future/article_8603f2be-83d0-5b52-ade3-9c056c3b61ef.html

In the real world, global ocean temperatures set a new record in 2018, beating the previous record set in 2017. New studies show that both the Antarctic and Greenland ice-sheets are melting faster than ever, so that sea-level rise is accelerating. In the 3rd week of January, the weakening polar vortex gave us bitter cold weather and heavy snow, and as I write more is falling. However, our spinach and lettuce in cold-frames are doing fine, as the snow cover has protected them.

Here in the US, the new surreal world continues. I remarked last month that the President refused to read the 4th National Climate Assessment mapping out how bad climate change will be for the US if we stay on our present fossil fuel energy system. The EPA head also said he was too busy to read this report, which his own agency helped produce. His extraordinary excuse was that much of the science in the report came from the time of the Obama presidency. Am I to suppose by implication that the next NCA report will be filled with Trump science?

The Federal government shutdown affected a lot of government science along with so many other 'non-essential' government branches. Science is considered worse than non-essential, because much is incompatible with right-wing doctrine. The shutdown prevented the weather service from upgrading models and updating codes to receive all 2019 global data. It prevented many scientists from reviewing recent climate data. Slowly but surely, government by ideology and blackmail is pushing the US into third-world status.

Both snow and missing data have meant that I have had time to read and think more deeply. Reading the extraordinary book, "Oil, Power and War" by French author Matthieu Auzanneau, has given me a new global perspective on how our dependence on oil has led to far-reaching conflicts over the past century. I learnt a lot about the central role of oil in warfare – and the millions that have suffered and died for oil. The US military and economic dominance has been closely tied to the control and access to global oil supplies. This still continues in the ongoing turmoil in the Middle East, and the latest struggle to regain control of the large Venezuelan oil reserves.

I thought I was well-informed, but now I realize the immense secret power of the US oil monopolies has ruled government policy for the past century, rather than the reverse. In parallel to the military role of oil, the rapid material growth of the US economy in the decades after World War II was also enabled by

the US global control of cheap oil supplies. Remember the magnificent icon of our growth and prosperity was the gas-hungry 1950s V8 Cadillac with fins.

But because we refuse to make the transition from oil, the crash is coming closer. In a tragic microcosm across the border in Mexico, people risk their lives by tapping pipelines for gasoline. The poor are desperate for fuels, and it is a \$3 billion a year business for organized thieves.

I see much more clearly how accelerating climate change is linked to the power of oil in both our industrial society and our military dominance. The present EPA has been told to roll back efficiency standards for cars once again to keep us trapped in this spiral of demand driving supply that is profitable for the oil industry. Right now the US has record oil production, but we ignore the fact that in a decade or so, when this shale oil extraction peaks and the crash comes, the climate impacts will be irreversible.

Yet plug-in hybrid cars can right now deliver an 80% reduction in gasoline use, with large savings in fuel and maintenance costs to the consumer, large gains for the climate system, and a smooth transition away from oil. However, both society and the automobile industry are reluctant to really market them, because oil consumption and inefficiency control policy.

But shifting back to the renewable world, Vermonters are starting to tap trees for maple syrup as they have done for centuries, and soon we will be eating fresh spinach again.