

The real science of climate change

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The Jan 14th edition of the Sunday Rutland Herald and Times Argus published a thoughtful editorial and two articles on the challenge presented by global climate change; expressing hope that the Legislature would have the vision, courage and will to move forward. On Jan 28th, an ‘opposing view’ was published denouncing “Warming hysteria”, written by John McLaughry. He is entitled to his political opinions, but his ‘information’ is deliberately deceptive, and lacks any scientific credibility. The burning of fossil fuels is driving global climate change; and it is a threat to our economic future and the earth’s ecosystem. It is therefore not surprising, given that we have such a large investment in the fossil fuel economy, that considerable efforts and money are being spent on disinformation. I will address three points he makes.

1) McLaughry quotes “evidence” that the lower tropospheric satellite microwave data do not show an ‘alarming global warming trend’. This is a dishonest fudge of the real scientific evidence. The data in question from Spencer and Christie (Science, 1990, and other papers that followed) were for many years inconsistent with the surface warming record, and this was widely repeated as “evidence” that warming was not occurring. A US Climate Change Science Program panel was specifically set up and funded by the (skeptical) US government to resolve the issue. They found the errors in the Spencer and Christie analyses, and now the data agree; and all show the warming that has occurred in the last 30 years (during which we have had satellite as well as surface data). Read their 2006 report at <http://www.climate-science.gov/Library/sap/sap1-1/finalreport/sap1-1-final-execsum.pdf> Sadly, this definitive report is deliberately ignored by McLaughry, because of course the scientific evidence inconveniently disagrees with his political agenda. The repetition of false information is a well-known tool of propaganda, not science.

2) The argument that only a few percent of the greenhouse gases are from our industrial society is totally misleading. Water vapor is the biggest contributor to the greenhouse effect, contributing 60%, with carbon dioxide 26% and the other greenhouse gases the remaining 14%. Together these greenhouse gases warm the earth an average of about 60 degF, which means the oceans don’t freeze and life as we know it on this planet is possible. This is the earth we know and love. It is what we are doing to this balance that matters! Although CO₂ contributes a smaller amount than water vapor to the greenhouse warming, CO₂ in the atmosphere is rising very rapidly (about 100ppm over the last century; and now rising at about 2ppm per year) driven by fossil fuel burning. The growth of other industrial gases in the atmosphere is also contributing to the greenhouse effect. The presence of water vapor, coupled to the earth’s temperature, amplifies the effects of these additional greenhouse gases. McLaughry is implying that a few more degrees of warming isn’t much to worry about (because he does not want CO₂ emissions to be regulated). But it is a big change if Vermont’s climate shifts towards that of Connecticut over the next few decades, and continues to go ‘south’ to Virginia by the end of this century. This will happen if we continue on the business-as-usual path of getting most of our energy from the burning of fossil fuels. Of course this is not just an issue for Vermont; it will affect the whole globe, its people, agriculture and ecosystems. We are heading towards the doubling of CO₂ in the atmosphere from its pre-industrial value [and

a tripling or quadrupling if we simply shift to burning coal for the next century or two, as oil supplies get scarcer]. We know the sensitivity of the climate system to changes of CO₂, not just from our climate models, but from the past ice-age cycles, so we know that the path we are on now will lead to a global mean rise of temperature of roughly 5 degF for the first doubling of CO₂. We know that the poles will warm more. Furthermore we know from the geological record that somewhere around a tripling of pre-industrial CO₂ the earth at equilibrium will again lose its icecaps (they may take a century or two to melt, but it will mean a 200 ft rise of sea-level). Sure we can't tell, even to the nearest decade, exactly what will happen when, as the climate system is fundamentally unstable, and we are pushing it rapidly (in geological time) outside the range of CO₂ it has seen for several million years. However it is quite clear from the huge body of scientific evidence that the earth is warming now, the poles are warming faster, so that ice is melting. Humanity would be very foolish to listen to those who are dragging their feet on starting the transformation of our energy infrastructure. Fortunately we have the technology to do this within the next decade, and so we can slow the warming of the climate, and give the earth and human society a fighting chance to adapt; even though we have already committed the earth to substantial warming.

3) McLaughry points out that in 1997 thousands of scientists signed an anti-Kyoto petition [starting "We urge the United States government to reject the global warming agreement that was written in Kyoto"], as part of a successful campaign by business-funded interests to stop the US from agreeing to reduce its greenhouse gas emissions. Ten years have past and it is now clear that we need reductions in greenhouse gases far greater than those of the Kyoto agreement, if we are to avoid huge economic costs, as recently outlined in the Stern Review by the British government: see <http://www.cambridge.org/catalogue/catalogue.asp?isbn=9780521700801>

For the past six years, hundreds of the world's top climate scientists have been distilling a new synthesis: the Fourth Assessment Report of the International Panel on Climate Change. This week, it is being reviewed in Paris, and the Summary for Policy Makers was released on February 2. The individual scientific chapters, which have been thoroughly and widely reviewed and approved, will be published in the next few months. I will try to distill these for the Vermont public as they are published, so that Vermonters can get a grasp of the science. The extraordinary efforts of these dedicated scientists to provide the governments of the world with a thorough and truthful analysis of the greatest challenge facing our society carries more weight than all the bogus science of all those devoted to sowing confusion. We are responsible now for the destiny of our earth, and the earth our grandchildren will inherit, and we have choices to make. We need the best information possible to weigh our options and move forward. Vermont has a chance this year to take important steps to secure a better future, as all sides of state government have a grasp of the urgency of the climate change issue. Let us move forward with a clear vision.