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Wacky weather and arctic amplification

By Skid Crease

At the end of our very cold February here in King, Sig Langhammer asked me to go outdoors and dig up a good explanation for our new breaking news weather records.

Yes, indeed, the Toronto area tied a record in February of 2015 with February of 1875 for the lowest average February temperatures in recorded weather history at -12.6ºC. But the coldest day was actually January 4, 1981 when the temperature got down to a bitter -31.3ºC.

Well, I spend most of my time outdoors as an outdoor and environmental educator, and I dig deeply. And no, last year was not the coldest winter on record for the Toronto area. Or Canada.

It is also important to note that the area of the GTA is only 7,125 square kilometres, compared to the planet's surface area of 510,000,000 square kilometres. That means our backyard, as Sig puts it, accounts for a very tiny portion of the Earth's record system (a ratio of 1:72,000). So, when climatologists average out the global temperature, our cold winters are a drop in the bucket of warm global water. Our very narrow temperate zones are separated by a very wide equatorial band of tropical and sub-tropical climates.

And the two areas of polar climate that bookend us on the planet are apparently warming faster than any other climate zone on Earth.

Well, at least according to my sources at NASA, NOAA, the Japanese Meteorological Agency, and the UK MET Office. I'm sure that there is equally good data out there in our backyards. I just dig out my information on a larger scale.

Deep enough to find out that the primary suspect in our nasty winters and cool springs is a phenomenon called ?Arctic Acceleration.? As I suspected, that is the reason for our wacky winter weather ? rapidly warming Arctic, less sea ice, more albedo, rising heat from the darker ocean surface bumps the oscillations of the jet stream from a gentle wave to an extreme roller-coaster, et voila. Cold polar air is pulled down over the temperate zones of eastern North America.

However, it is warmer than usual in Alaska; so warm that they are trucking in snow to cover the bare trails for this year's Iditarod dog sled race.

What is happening in our little corner of the world these past few winters is affected by a warming Arctic which in turn affects the jet stream creating a northward bulge over the North Pacific and a southward trough over eastern continental North America. Et voila!

Meteorologists have been predicting since 1988 that the normal weather patterns would become erratic and the smooth waves of transition from one season to another would become choppy as climate change accelerated. They also predicted that the polar regions would bear the brunt of this acceleration.

They had long discussed the albedo effect, where a darker ocean surface absorbs more solar energy than a reflective white ice surface, and that this would affect both oceanic and atmospheric circulation patterns.

Not only that, but thawing permafrost in the Arctic releases copious amounts of methane, a greenhouse gas 20 times more potent than carbon dioxide. This create a feedback loop that is obvious even to our backyard scientists ? more warming, more methane, more warming, and so on.

For the northern temperate zone, this means an increasingly deep oscillating jet stream pulling down Arctic cold air to intersect with warm winds driving north up the Ohio Valley. So a climatologist would predict not only cold snap winters, but a frequency in the increase of ice storms as warm, moist air from the Gulf meets the Polar Vortex.

Davis Phillips, a senior climatologist for Environment Canada, calls the sensational reporting of these events ?weather porn,?. We just need to get much better educated about what is happening and why, both in our backyards and our Home Planet.

Langhammer is confused, as many are, about the difference between local weather and global climate. Without debate, 2014 was the warmest year ever recorded in global weather records. The backyards in King may have had a cold winter and chilly spring, but the rest of the planet balanced things out.

For example, 2013 and 2014 broke records as the warmest years ever recorded for Australia. While we were shivering in the backyards of King in January of 2014, Eugenie Bouchard and Genie's Army were sweltering under an extreme heat wave at the Australian Open.

I am absolutely certain anyone living in the Maritimes this winter will want to scoff at the idea of accelerating climate change and a warming planet, but it is, inexorably. I also wondered when the warmth was going to kick in as I ran out of space to shovel my snow this year. But then I remembered how small my little backyard is in the big scheme of things. Shovel locally, think globally, dig deeply, speak wisely.

Skid Crease is an award-winning outdoor and environmental educator, a keynote speaker, a storyteller, an author, and a community

volunteer. He taught with the North York and Toronto District School boards for 35 years, and officially ?retired? from the Faculty of Education, York University, where he was a Course Director and Environmental Science Advisor. Skid has worked with scientists from Environment Canada (pre-2005), NASA, and the Hadley Centre for Climate Prediction and Research in a quest to put an understandable story behind the wealth of their scientific data.