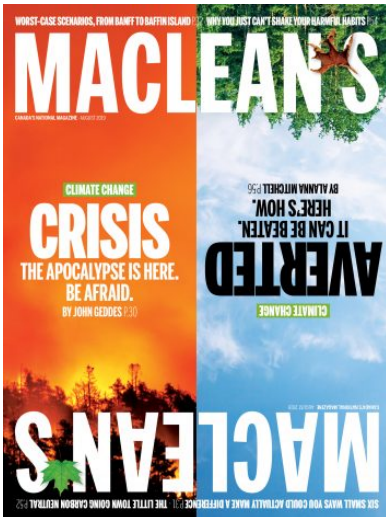


CLIMATE CRISIS

What climate change would mean for Canada's famous landmarks

Here are the possible effects of a warming planet, from Peggy's Cove to Banff National Park and all the way to the Okanagan Valley

by Rosemary Counter Jul 11, 2019



This article is part of a special climate change issue in advance of the federal election. This collection comprehensive look at where Canada currently stands, what could be done to address the issue and w consequences might be if this country continues with half measures. Learn more about why we're doi

When it comes to educating our country about climate change, scientists face a distinctly Canadian problem of scope: While most of general understanding that the climate is changing, it's all too easy for a Yukoner to dismiss rising sea levels as someone else's probl Torontonionian to be completely apathetic to Arctic permafrost. "Many of the changes don't have a direct, tangible connection to most p —they've probably never even seen permafrost—so it can be hard to appreciate its impact," says Greg Flato, senior research scientist a and Climate Change Canada (ECCC).

READ: Yes, climate change can be beaten by 2050. Here's how.

To conquer apathy in action, *Canada's Changing Climate Report*, released by the government this spring, zoomed in on the specific effe change in all corners of Canada. In each, they predicted two futures: One if we dramatically slash carbon emissions starting right now we do nothing. Scientists predict temperatures will rise 1.8 degrees in a low-emission scenario and 6.3 degrees in a high one. "Our cho what our lives will look like at the end of the century," Flato says. If we choose poorly, what might Canada look like in 2100? We imagi Canadian landmarks in a much hotter future.

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Peggy's Cove (Photo illustration by Lauren Cattermole and Drew Maynard)

Peggy's Cove, Nova Scotia

The first thing a tourist might notice in 2100 at Nova Scotia's Peggy's Cove is—not surprising in the least—an ever higher sea level sloping the picturesque lighthouse. Sea levels of southern Atlantic Canada will experience the largest local sea-level rise in the country; at the region itself is slowly shrinking about a millimetre per year. “Over the course of a century, that's 10 centimetres, and under a high emission scenario, sea level could rise upwards of a meter,” calculates Blair Greenan, research scientist with Fisheries and Oceans Canada. The lighthouse sits about 5 metres above sea level, he notes, so visitors in 2100 might not reach it without getting wet.

Hopefully the lighthouse still functions, as rising sea levels will likely bring more intense precipitation events. “Whether those events are accompanied with stronger winds, we don't know,” says Greenan, adding a very concerning thought coming from a scientist: “Nobody likes storms.” More certain are floods: “In general, for every 10 centimetres of sea level rise, you have a doubling or tripling of flooding events. A flood that would have occurred once every 50 years on the East Coast could be expected annually in 2100.

But it's not all bad for the East Coast—especially if you've got a taste for seafood. More carbon dioxide from human emissions in the atmosphere will warm the ocean, where a chemical reaction makes the water more acidic. Ocean dwellers in a shell, including oysters, crabs, scallops and lobster, will find warmer waters more hospitable. At the same time, a lower-calcium diet will make it harder for them to build a strong and protective shell. There will be more lobsters and easier to catch, which could lead to a more lucrative fishery. Maybe eat that roll on the wharf, however, as lobster bait likely means more—and bigger—predators. “There are some species that will benefit from higher temperatures and others that will be detrimental to,” says Greenan. “It's a complex ecosystem and we just don't know.”



Baffin Island (Photo illustration by Lauren Cattermole and Drew Maynard)

Baffin Island

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Perhaps there's no corner of Canada that will feel climate change harder than the Arctic, which is warming about three times faster than the global rate. That's due to "arctic amplification," which sounds a lot more complicated than it is: "It's not rocket science and it's very simple," says ECCC's arctic research scientist Chris Derksen. "When it comes to snow and ice, the temperature increase means less snow, as all Canadian glaciers melt. This might be good news to urbanites shovelling their driveways, but in 2100, the lack of sea ice—that's frozen ocean water, not icebergs melting off glaciers—will be the biggest change and challenge for Canadians who live in the North.

"By the end of the century, it won't be surprising to see periods of time with no sea ice. None," says Derksen. Sea ice, ice caps and ice sheets are something of legend in the minds of visitors, but their loss will have real and immediate consequences for locals. "People in the North often travel over ice to get to other communities, so they won't be doing that," says Derksen. They'll have to instead arrive by boat. There will be those in 2100, since ships can travel freely through open water from Europe and Russia and beyond. While perhaps good for the economy, Derksen, an Arctic passage presents all kinds of unknown risks to our sovereignty and environment. More ships and unwieldy ice collisions, oil leaks and spills, and expect Canada's search and rescue bill to skyrocket.

Walrus, seals and polar bears who used sea ice as their main habitat will miss the frozen water even more than humans. "Polar bears will be on land all summer for that sea ice, because they hunt on land, and they'll be licking their chops and waiting," says Derksen. Since there is no sea ice, they will have to look elsewhere. "That's when they move into town and start foraging through garbage bins and getting into homes." But what about your bear-safe haven: It's built atop permafrost, which was sturdy frozen soil a century ago, but in 2100 has thawed and weakened. "This will impact roads, runways and houses, and have serious implications for the stability of the land," says Derksen. And in case that's not enough, when the walls of your house fall down, there's a hungry polar bear ready and waiting.



Ottawa (Photo illustration by Liz Sullivan and Drew Maynard)

Ottawa

Before we look forward, let's instead look back: After the War of 1812, British military forces in Ottawa felt vulnerable to American invasion. The waterway from Montreal to Kingston needed to be both protected and controlled. The solution was to build the Rideau Canal with its now-famous locks, still in operation in Canada's capital.

To live in a city plagued with alternating droughts and floods, Ottawa residents will need that same resourcefulness in 2100, notes Fran Seglenieks, a water resources engineer with Climate Change Canada. Count on seasonal sea ice cover in Hudson and James Bays to decline as the climate warms, but the best prediction for the future state of the Great Lakes is that they'll be entirely unpredictable. "It's not intuitive," says Seglenieks. "People want to hear they'll be [either] more or less rain, but the truth is these weather systems will bring increased flooding and droughts forth." Seglenieks has seen this happening already in the region: Lake Huron's water level was the lowest in recorded history in 2013, and Lake Ontario reached its highest level just four years later.

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Ottawa will have to do better than just survive floods—it'll have to become a city that both moves and floats to accommodate changing patterns. "This is going to take a whole lot of planning, and we should be thinking about it already," he says. For example, say you're building a house on the shore. "Instead of building it solidly along the shore, you're going to build a floating dock that moves up and down." The same could be true for a house which should be carefully constructed to treat floods not as a fluke but as the new norm. If Seglenieks were building his dream house it would stay far from the unpredictable river. "I'd look for the highest that the river has ever been in recorded history. Then I'd build even higher."



Banff (Photo illustration by Lauren Cattermole and Drew Maynard)

Banff National Park, Alberta

Canada's first national park, established in 1885 in the Rockies, will be celebrating its 143rd birthday—and showing its age accordingly. In the 5 "hot" (that is, thirty degrees plus) days we had in 2019, prairie dwellers will sweat through 34 of them in 2100. Skiers and snowboarders probably consider a new hobby altogether, since snow will be a rare and unpredictable event in a shorter winter season. Rivers will be overflowing with snowmelt much earlier in the spring—starting the growing season more than a month before it starts now—but by summer and everyone else will face a bigger and much more dangerous problem: droughts and wildfires.

"Wildfire season is already starting earlier in the spring and lasting later into the fall," says Megan Kirchmeier-Young, a research scientist. For this wildfire expert, the inevitability of wildfires is first and foremost a numbers game. "The earlier the snow melts, the longer the wildfire season. There are just more days that fire is a possibility." In 2100, Banff's previously lush green vegetation will have been slowly cooked into what is best described as kindling. "Warming temperatures will contribute to the drying out of fuel, by which we mean anything on the ground that can burn, and the drier the fuel is, the more susceptible it is to fire and the more the fire is likely to spread," says Kirchmeier-Young.

An increased wildfire risk means Albertans in 2100 could live under constant fire watch and will have to practice regular safety and evacuation. No news on what strange futuristic tech might deliver it, but residents will likely subscribe to something like today's Alberta Emergency Alert System. Banff residents diligently practiced in May to prepare for a catastrophic wildfire that Banff fire chief Silvio Adamo called "a very likely event" and now, homes should be stocked with emergency supplies, a first aid kit, respirator masks to protect the lungs against particulate matter, and an inevitable decline of air quality, plus a detailed escape plan to evacuate.



Okanagan Valley (Photo illustration by Stephen Gregory and Drew Maynard)

The Okanagan Valley, British Columbia

In some places in the world, notes UBC Agriculture prof Sean Smukler, climate change could be actually be good. “British Columbia is places,” he says, and, especially if you happen to be a farmer, the 5 degree temperature jump predicted for the West Coast might not be seems. “By 2100, a lot of forest here could be grassland,” he says. Provided we develop the technology and stockpile the resources we’ll interior of BC could be a lush green garden with long growing seasons and warmer temperatures that accommodate the exotic fruits ; we can’t grow now.

“These days, much of our vegetables are shipped up from California,” says Smukler. “In the future, if we’re reliant on California’s ability climate change, we’ll sort of be at their mercy.” Recent years have proved that weather in the American south immediately affects Can—a cool period in California is the reason a bunch of celery now costs upwards of \$5.99—but all that could be avoided in 2100. “If we’re productive, we’ll take advantage of longer growing seasons, learn how to best manage our water, and take control of the pests that will invading our crops.”

Yup, our tropical agricultural paradise of B.C.-grown oranges, avocados, pistachios or olives will bring with it some less appetizing reas alongside the usual offenders like rats and roaches, expect a new cohort of “organisms that impact our crops that we’ve seen before,” s Whether weeds, insects or diseases, warmer weather is great news for many pests who would otherwise be controlled by a regular win

And what about wine? There likely will be vino to take the edge off. “Of all the producers out there, grape growers have a very high cap explains Smukler. “Both because of the chemical constituency of the grapes themselves and because of the capital that growers have t



Montreal (Photo illustration by Lauren Cattermole and Drew Maynard)

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With too many buildings crammed atop too much heat-absorbing pavement, dense cities like Montreal with too hot temperatures have an unfortunate fate of getting even hotter. An “urban heat island” is just as it sounds: Too many humans and human activity, not enough green space. Officially, Montreal currently counts just one “hot” (30 degree plus) day per year; but in the worst case scenario for 2100, fifteen of them. A 6 degree temperature climb in an already hot city won't just be unbearable, it will be dangerous and even deadly. Last year, 100 people died during a Montreal heat wave; 80 per cent of them were not outside in the scorching sun, but in their own homes.

Because Environment Canada senior research scientist Xuebin Zhang comes from China, where summer temperatures regularly hit 30 degrees Celsius, he can imagine what Montrealers might do to get by. “People will carry umbrellas for shade or portable fans,” he predicts, though he concedes that won't be enough. “We're all going to need some way to protect ourselves, which is likely air conditioning,” he says. Those who can't afford it face a huge health challenge, meaning air conditioning might move from a luxury to a human right—paid for and provided by the government.

Zhang also warns of a shift in energy use in 2100. “Now we use more energy in the winter for heat. In the future, we'll need more energy in the summer,” he says. But since heat and cool from different energy sources—gas and electricity, respectively—experts predict a major shift in human energy consumption patterns. Naturally, expect the cost of electricity to rise too. City planners in Montreal and other big, hot cities are wise to keep energy costs and heat management in mind when designing infrastructure. “New buildings should be built with materials that absorb less heat,” he says, “and we need to consider green space everywhere we can.” But be warned: a city makeover might take a while—if it works outside by day, Montreal will have a very long, slow and sweaty task in its future.

ENVIRONMENT

Naomi Klein: ‘We are seeing the beginnings of the era of climate barbarism’

The No Logo author talks about solutions to the climate crisis, Greta Thunberg, birth strikes and how she finds hope

by Natalie Hanman Sep 17, 2019



UNION SQUARE, NEW YORK, UNITED STATES - 2018/09/20: Author, social activist, and filmmaker Naomi Klein - On the one year anniversary of Hurricane Maria, she held a protest in Union Square demanding justice for Puerto Rico. Many Puerto Ricans are still struggling for survival and fighting to remain, reclaim, and rebuild. (Photo by Erik McGre Press/LightRocket via Getty Images)

This story originally appeared in The Guardian. It is republished here as part of Maclean's partnership with Covering Climate Now, a global effort to mobilize more than 250 news outlets to strengthen coverage of the climate story.

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Why are you publishing this book now?

I still feel that the way that we talk about climate change is too compartmentalised, too siloed from the other crises we face. A really strong running through the book is the links between it and the crisis of rising white supremacy, the various forms of nationalism and the fact that people are being forced from their homelands, and the war that is waged on our attention spans. These are intersecting and interconnected and so the solutions have to be as well.

The book collects essays from the last decade, have you changed your mind about anything?

When I look back, I don't think I placed enough emphasis on the challenge climate change poses to the left. It's more obvious the way the crisis challenges a rightwing dominant worldview, and the cult of serious centrism that never wants to do anything big, that's always been the difference. But this is also a challenge to a left worldview that is essentially only interested in redistributing the spoils of extractive [of extracting natural resources from the earth] and not reckoning with the limits of endless consumption.

What's stopping the left doing this?

In a North American context, it's the greatest taboo of all to actually admit that there are going to be limits. You see that in the way we've gone after the Green New Deal – they are coming after your hamburgers! It cuts to the heart of the American dream – every generation better than the last, there is always a new frontier to expand to, the whole idea of settler colonial nations like ours. When somebody comes and says actually, there are limits, we've got some tough decisions, we need to figure out how to manage what's left, we've got to share equitably. It's a psychic attack. And so the response [on the left] has been to avoid, and say no, no, we're not coming to take away your stuff, there are still kinds of benefits. And there *are* going to be benefits: we'll have more livable cities, we'll have less polluted air, we'll spend less time stuck in traffic. We can design happier, richer lives in so many ways. But we are going to have to contract on the endless, disposable consumption side.

Do you feel encouraged by talk of the Green New Deal?

I feel a tremendous excitement and a sense of relief, that we are finally talking about solutions on the scale of the crisis we face. That's not about a little carbon tax or a cap and trade scheme as a silver bullet. We're talking about transforming our economy. This system is failing a lot of people anyway, which is why we're in this period of such profound political destabilisation – that is giving us the Trumps and the Boudinbos. These strongman leaders – so why don't we figure out how to change everything from bottom to top, and do it in a way that addresses all the other crises at the same time? There is every chance we will miss the mark, but every fraction of a degree warming that we are able to avoid is a victory and every policy that we are able to win that makes our societies more humane, the more we will weather the inevitable shock that will come without slipping into barbarism. Because what really terrifies me is what we are seeing at our borders in Europe and North America and Australia – I don't think it's coincidental that the settler colonial states and the countries that are the engines of that colonialism are all doing this. We are seeing the beginnings of the era of climate barbarism. We saw it in Christchurch, we saw it in El Paso, where you have had white supremacist violence with vicious anti-immigrant racism.

That is one of the most chilling sections of your book: I think that's a link a lot of people haven't made.

This pattern has been clear for a while. White supremacy emerged not just because people felt like thinking up ideas that were going to be profitable but because it was useful to protect barbaric but highly profitable actions. The age of scientific racism begins alongside the slave trade, it is a rationale for that brutality. If we are going to respond to climate change by fortressing our borders, then of course that would justify that, that create these hierarchies of humanity, will come surging back. There have been signs of that for years, but it is getting more and more deny because you have killers who are screaming it from the rooftops.

One criticism you hear about the environment movement is that it is dominated by white people. How do you address that?

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When you have a movement that is overwhelmingly representative of the most privileged sector of society then the approach is going more fearful of change, because people who have a lot to lose tend to be more fearful of change, whereas people who have a lot to gain fight harder for it. That's the big benefit of having an approach to climate change that links it to those so called bread and butter issue going to get better paid jobs, affordable housing, a way for people to take care of their families? I have had many conversations with er over the years where they seem really to believe that by linking fighting climate change with fighting poverty, or fighting for racial jus make the fight harder. We have to get out of this "my crisis is bigger than your crisis: first we save the planet and then we fight povert and violence against women". That doesn't work. That alienates the people who would fight hardest for change. This debate has shift amount in the US because of the leadership of the climate justice movement and because it is congresswomen of colour who are chan Green New Deal. Alexandria Ocasio-Cortez, Ilhan Omar, Ayanna Pressley and Rashida [Tlaib come](#) from communities that have gotte deal under the years of neoliberalism and longer, and are determined to represent, truly represent, the interests of those communities afraid of deep change because their communities desperately need it.

In the book, you write: "The hard truth is that the answer to the question 'What can I, as an individual, do to stop climate c nothing.'" Do you still believe that?

In terms of the carbon, the individual decisions that we make are not going to add up to anything like the kind of scale of change that do believe that the fact that for so many people it's so much more comfortable to talk about our own personal consumption, than to t systemic change, is a product of neoliberalism, that we have been trained to see ourselves as consumers first. To me that's the benefit these historical analogies, like the New Deal or the Marshall Plan – it brings our minds back to a time when we were able to think of c scale. Because we've been trained to think very small. It is incredibly significant that Greta Thunberg has turned her life into a living e

Yes, she set sail for the UN climate summit in New York on a zero carbon yacht...

Exactly. But this isn't about what Greta is doing as an individual. It's about what Greta is broadcasting in the choices that she makes as I absolutely respect that. I think it's magnificent. She is using the power that she has to broadcast that this is an emergency, and trying politicians to treat it as an emergency. I don't think anybody is exempt from scrutinising their own decisions and behaviours but I thin to overemphasise the individual choices. I have made a choice – and this has been true since I wrote *No Logo*, and I started getting the I buy, where should I shop, what are the ethical clothes?" questions. My answer continues to be that I am not a lifestyle adviser, I am n shopping guru, and I make these decisions in my own life but I'm under no illusion that these decisions are going to make the differer

Some people are choosing to go on birth strikes. What do you think about that?

I'm happy these discussions are coming into the public domain as opposed to being furtive issues we're afraid to talk about. It's been v people. It certainly was for me. One of the reasons I waited as long as I did to try and get pregnant, and I would say this to my partner what, you want to have a Mad Max water warrior fighting with their friends for food and water? It wasn't until I was part of the clima movement and I could see a path forward that I could even imagine having a kid. But I would never tell anybody how to answer this n questions. As a feminist who knows the brutal history of forced sterilisation and the ways in which women's bodies become battle zor policymakers decide that they are going to try and control population, I think that the idea that there are regulatory solutions when it whether or not to have kids is catastrophically ahistorical. We need to be struggling with our climate grief together and our climate fe through whatever decision we decide to make, but the discussion we need to have is how do we build a world so that those kids can h zero-carbon lives?

Over the summer, you encouraged people to read Richard Powers's novel, *The Overstory*. Why?

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It's been incredibly important to me and I'm happy that so many people have written to me since. What Powers is writing about trees: in communities and are in communication, and plan and react together, and we've been completely wrong in the way we conceptualize the same conversation we're having about whether we are going to solve this as individuals or whether we are going to save the collective. It's also rare, in good fiction, to valorise activism, to treat it with real respect, failures and all, to acknowledge the heroism of the people who are on the line. I thought Powers did that in a really extraordinary way.

What are your views on what Extinction Rebellion has achieved?

One thing they have done so well is break us out of this classic campaign model we have been in for a long time, where you tell someone something scary, you ask them to click on something to do something about it, you skip out the whole phase where we need to grieve together and process what it is that we just saw. Because what I hear a lot from people is, ok, maybe those people back in the 1930s or 40s could do it by neighbourhood by neighbourhood or workplace by workplace but we can't. We believe we've been so downgraded as a species that we can't do that. The only thing that is going to change that belief is getting face to face, in community, having experiences, off our screens, with people on the streets and in nature, and winning some things and feeling that power.

You talk about stamina in the book. How do you keep going? Do you feel hopeful?

I have complicated feelings about the hope question. Not a day goes by that I don't have a moment of sheer panic, raw terror, complete despair that we are doomed, and then I do pull myself out of it. I'm renewed by this new generation that is so determined, so forceful. I'm inspired by their willingness to engage in electoral politics, because my generation, when we were in our 20s and 30s, there was so much suspicion around electoral politics that we lost a lot of opportunities. What gives me the most hope right now is that we've finally got our hands dirty with electoral politics that we lost a lot of opportunities. What gives me the most hope right now is that we've finally got what we want instead, or at least the first rough draft of it. This is the first time this has happened in my lifetime. And also, I did decide to have a seven year old who is so completely obsessed and in love with the natural world. When I think about him, after we've spent an hour talking about the role of salmon in feeding the forests where he was born in British Columbia, and how they are linked to the health of the soil and the bears and the orcas and this entire magnificent ecosystem, and I think about what it would be like to have to tell him that there's no more salmon, it kills me. So that motivates me. And slays me.