

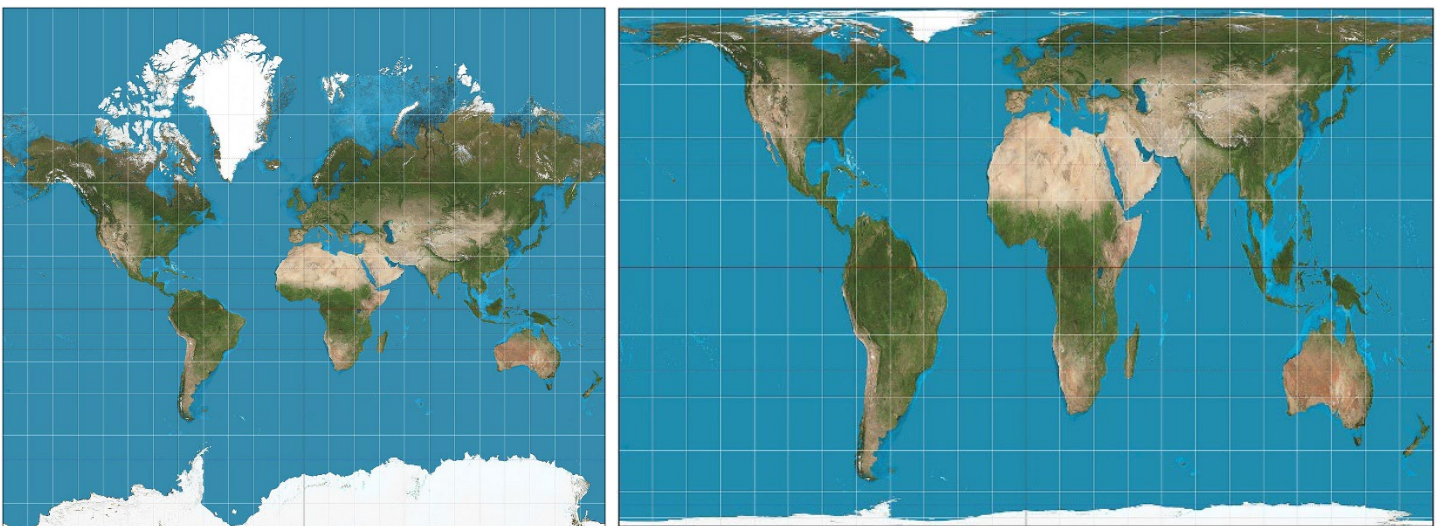
January 9, 2026

## Canada is not a rectangle. It's a triangle.

Andrew G. Smith

In April 2025, the Canadian Institute for Arctic Security published an essay by Lt.-Gen. (Ret'd) Christopher Coates from the Macdonald-Laurier Institute titled "[Location Matters – in Real Estate and Continental Defence.](#)" The main takeaway from that article is that the world looks at the polar regions incorrectly on most maps. Two-dimensional maps of the Earth by mathematical necessity must distort area, distance or direction to flatten the spherical globe.

Some will remember the episode of the West Wing when the map of the world using the ubiquitous Mercator projection (which preserves direction at the expense of distance and area – especially at the poles) was proposed to be replaced with the Gall-Peters projection (which more accurately shows relative land area at the expense of direction and distance). In that fictional example, the argument was that Mercator provides a distorted view of the world that supports a narrative of European-colonial nations as outsized and dominant in the world.



**Figure 1:** Mercator Projection (L) and Gall-Peters Projection (R).

Image courtesy: Daniel R. Strebe, Wikimedia Commons.

There are more accurate ways to look at the world. As Lt.-Gen. Coates rightly argues in his essay, the correct way to view the polar regions is with a polar projection - specifically a polar conical projection. This 2D rendering maintains direction and can have the advantage of two lines of latitude where area and distance are highly accurate, with distortion increasing the further from the centre you look.

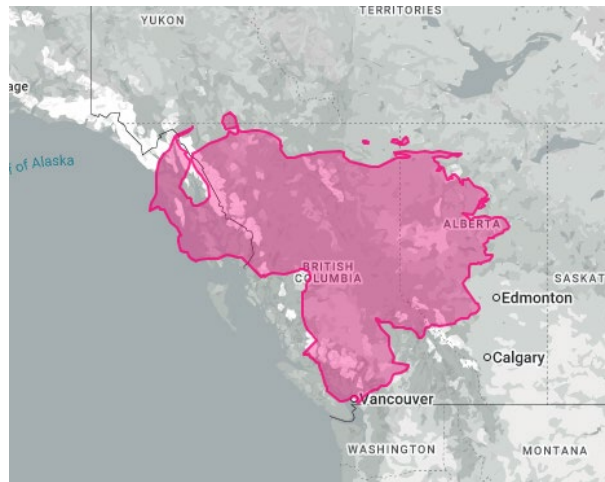


**Figure 2:** Examples of polar projection maps for the Arctic region (L) and Arctic search and rescue zones (R).  
Image courtesy: Public Domain and The Arctic Institute/Malte Humpert.

What students of my era and prior were taught the world looked like is a lie. We collectively have an engrained and distorted understanding of the relative size of countries, being influenced by an incorrect version of the planet.

To demonstrate, one of my favorite web resources for geography is <https://thetruesize.com/>. What this app does is allow you to overlay any country on the Mercator projection, while accurately preserving distance and area.

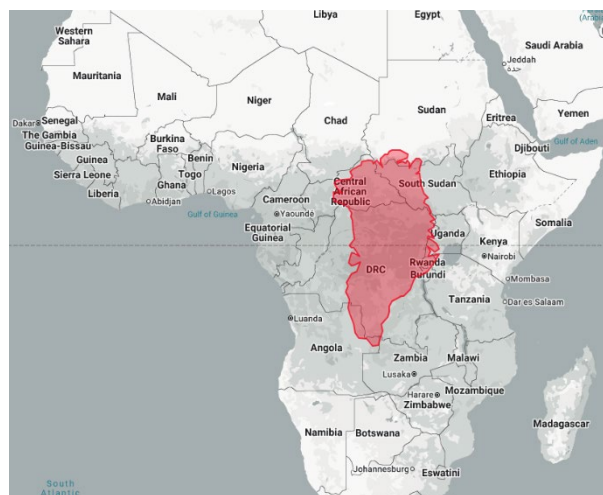
As an example, grab a country near the equator where the projection is most accurate for distance and area, such as Venezuela. Then drag that shape northwards to a familiar location like British Columbia. These jurisdictions cover nearly the same area: Venezuela at 916,445km<sup>2</sup> and BC at 944,735km<sup>2</sup>. Look back at the original projection and see how that relative relationship is simply wrong with Mercator.



**Figure 3:** *Venezuela (pink) overlaid on Western Canada.*

Image courtesy: <https://thetruesize.com/>.

For a more extreme example, grab a country near the pole such as Greenland. Pull that down nearer the equator like Africa. On Mercator, those landmasses are relatively similar, but properly overlaid, it emerges that Greenland is less than 10% the size of Africa. Greenland's distortion is immense. The Mercator projection gives the impression that Greenland is much larger than it actually is when viewed proportionally.



**Figure 4:** *Greenland (red) overlaid on Africa.*

Image courtesy: <https://thetruesize.com/>.

Compare also how the lines of latitude and longitude make different shapes between the polar projection and the Mercator projection. Mercator forms rectangles. This is by design since the projection was built to preserve direction; put your 16<sup>th</sup> century exploration or colonial merchant ship in the water and chart your

course via the compass bearing based on the direction on the map. The polar projection, though, forms triangles with its grid. All the longitudinal lines converge at the pole (at least elementary school correctly taught us that part).

With this crystal-clear understanding, we must recognize that the shape of Canada is more like a triangle than a rectangle. There are three lines of our international borders. Our country is bound in the south by the lower 48 states of the continental U.S., the west by Alaska, and the east by Greenland.

The rhetoric, threats, and fantasy of the current administration in the United States to “have” Greenland for the purpose of “national security” is a sobering risk for Canada whose sovereignty has also been previously and repeatedly threatened. In the impossible scenario of Greenland “becoming” part of the U.S., Canada becomes completely bordered by one country. This is not in the same sense of an enclave since Canada maintains vast coastal access to three oceans, but it does change our position in a world that has shifted the centre of U.S. geography further North.

What then may be sold to Canadians as a hug of protection where we can feel more secure, could turn out to be the beginnings of a squeeze.

Since 2022, Canada has a land border with Greenland in the form of Hans Island. Once a place for dispute fought with alternating flags and bottles of alcohol became diplomatically resolved, serving as a demonstration of peace and cooperation in the Arctic. Even with a mere 1.2km land border, this is not symbolic. Hans Island is an international border with all the legal rights that it accordingly entails. In the increasingly concerning scenario of the U.S. annexing Greenland, Canada would begin to share a new eastern land and sea border with the U.S.

Greenland and the Kingdom of Denmark are forced to think about these not as hypotheticals. The threats to their lands are currently real, repeated, and repulsive. Canada is not standing idly by. The positions Ottawa must take are those of complete rejection, resistance, and resilience. Doing so maintains the rule of law and continues to project the imperative for the Arctic to be governed as a place for peaceful cooperation, rather than a place of conflict.

It is maybe not unreasonable to wonder if the real-life West Wing’s only paper map is a Mercator projection, and that continent-sized Greenland appears much larger and appetizing than accurate measurements would prove. While the world’s geopolitics are shifting quickly, Canadian perspectives on the globe should be changing too - not to distort the world to meet our needs, but to recognize how it actually is based in both fact and reality.

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*Please note that Mr. Smith has submitted this article as an individual, not in his professional capacity. The views herein are not necessarily those of the Canadian Institute for Arctic Security or its funders.*