AMOC

When the theory became prevalent that the freshwater melt from Greenland would blow out the Gulf Stream, I didn't buy it. It ain't that simple and it ain't what's happening. The dilution has weakened the thermohaline subduction and significantly slowed the AMOC, but the real power of the AMOC is generated in the southern oceans and the Atlantic is steadily warming and becoming more saline as increased water temperature and slower currents increase evaporation. 100 degree water around Florida, and two hurricanes have maintained their strength over warm enough water far enough north to travel from the northern US to Europe as hurricanes. The freshwater melt from Greenland is increasing almost exponentially, yet the water around Greenland is still warming. The ocean currents around Greenland are melting the calving glaciers ever faster. For all the theories about the stall of the AMOC, what's happening is warmer water melting the faces of the glaciers of western Greenland, and the Norwegian current is speeding up as it carries heat to the Barents Sea. The thermal stratification of the water of the southern oceans is a powerful force. Comparing today's conditions to the Younger Dryas ignores the fact that the southern oceans were substantially colder then, and the Arctic Ocean is much warmer.

There's another factor entering the equation. As the Arctic ice cap disappears, the annual freeze and thaw of the sea ice is disappearing. This is decreasing the thermohaline currents. As the duration of the Antarctic sea ice declines, the interplay between the strength and timing of the Arctic and Antarctic thermohaline pulses is changing. I've yet to see anyone factor this in.

As the Arctic Ocean becomes an open ocean that evaporates a moisture plume in the summer, fall, and early winter, it's beginning to start an occasional early, but quickly melting snow over the tundra and pigmented glaciers. As the Arctic Ocean turns blue, it's becoming warmer than the surrounding continents in the late fall and winter, the polar vortex is beginning to seasonally invert, and the Arctic Ocean is beginning to increase snowfall on the surrounding continents and on the remaining ice cap, where it insulates it, increasing the melt rate, but causing the air above it to become even colder. We're just beginning to see this. The Jet Stream has not only weakened and become more erratic, but is beginning to momentarily flow backwards. A few good snows on Greenland and the tundra could turn them from brown and black to white and slow the melt. After decades of data and consideration, I'm confident that the next ice age will come from the north from a blue Arctic Ocean. It's not if, but when. Could be decades, could be centuries. A lot of the timing will be about how soon we get a handle on our greenhouse gas emissions, and whether a blue Arctic Ocean can generate enough snow to turn the tundra and the glaciers of Greenland white.