Climate

As we gain awareness of the mechanics of global warming, there has been a great amount of skepticism and denial as to its existence and its causes and effects. This has resulted in an intensely defensive mindset amongst the scientific community. The squabble over proving whether global warming is real or not, proving its many potentials for disaster, proving that it's human caused, or designing ways to stop it, has so distracted us that we've failed to notice that, right under our noses, a fourth northern climate zone is forming over the Arctic Ocean.

If a model of the northern hemisphere is built portraying the Arctic Ocean in absorptive ocean blue instead of reflective snow white, how much solar energy will the Arctic Ocean absorb? How much water will be evaporated? How far south will the water get before it precipitates? In what form, in which seasons, in which storm tracks, will it precipitate? To what extent will the core of the arctic atmospheric vortex invert and establish a fourth northern climate zone as the ocean covering the north pole abruptly changes from white to blue and becomes seasonally warmer than the land surrounding it?

It's becoming increasingly clear how and when the Arctic Ocean will complete its long slow melt since the last ice age. Human-created greenhouse gasses have increased atmospheric temperatures and human-created particulate fallout has increased snow and ice melt, but whether human pollution has substantially accelerated the end game is a moot point. The pertinent point is that the culmination of the end game is an abrupt change in albedo of the Arctic Ocean. As the earth's surface warms, more and more of the earth's surface changes color from reflective white to absorptive blue, green, and brown, causing the Arctic to warm ever faster until the ice pack covering the Arctic Ocean melts and the Arctic Ocean turns blue.

At this point the endothermic phase change of melting ice will no longer absorb heat from the Arctic Ocean. Its temperature will quickly rise, increasing its evaporation rate and decreasing its temperature differential with the rest of the world's oceans. As the last of the old glaciers surrounding the Arctic Ocean disappear, the flow of fresh water that currently forms the northern boundary of the Gulf Stream will soon decrease, but the surface area of water available for the partial desalinization of seasonal sea ice will increase to the size of the Arctic Ocean minus that portion which no longer freezes. The seasonal ice will be centered near the North Pole, and will cause much larger annual pulses of lower density fresh water each spring and higher density salt water each fall, but unlike glacial melt, it won't increase the volume of water, so the fresh water might stay mostly in the Arctic Ocean.

For much of the year the new Arctic Ocean will be warmer than the land that surrounds it, causing the arctic atmosphere to establish a positive vortex. As the Arctic Ocean turns from snow white to ocean blue and absorbs solar energy, most of that energy is transpired to the atmosphere through an evaporation and condensation cycle. Land stores heat for a few days. The oceans store heat for several months. In the fall, as the sun heads south, a blue Arctic Ocean is still evaporating water into a positive atmospheric vortex long after Canada and Siberia are frozen. As the Arctic Ocean clears, this inversion of the northernmost atmospheric vortex is increasing in size and intensity. As the Arctic Ocean becomes blue instead of white, a fourth northern climate zone is establishing above the earth's new blue ocean, driving the arctic zone southward. We can already see this happening**.**

While the rest of the world is warming, winters from Washington to Maine and from the Alps to China are getting periodically longer and wetter. Winters in the northern temperate zone are ranging further south. The winter freeze goes deep into Florida. We are seeing snow in such unlikely places as Baghdad and New Orleans. In the winter of '07-'08, the northern hemisphere had the most snowfall in memory, resulting in a wide band of reflective snow and cloud cover from about thirty to fifty degrees north latitude, but by March, global snow cover was the least on record as the relatively warm snow quickly succumbed to the warmer air and increased particulate fallout created by human industry. The winter of '09-'10 was much the same, but with a more southerly storm track. Half of the Monarch Butterflies didn't make it through the winter in Mexico. Central Oklahoma didn't see the ground for three months. In Oklahoma, in February 2011, after breaking their record low temperature at 31 below zero, in a week temperatures were in the 70's. For most of the northern temperate zone, the winter of 2010-2011 was long and cold and wet. The great northern basin of Siberia is getting colder as cloud cover shades the ground, an early snow turns the land white, and snowfall in the mountains to the south increases. As the new northern climate zone pushes the arctic zone south, the rest of the world is warming and pushing the tropics north. Most of the land surface in the northern temperate zone is becoming wetter and dryer and hotter and colder, but the average is wetter and rapidly moving toward colder. Winter and summer are getting longer and spring and fall have all but disappeared as the temperature gradient between arctic and tropic air gets steeper. Temperature, humidity, and pressure gradients are becoming more extreme, and weather in the northern hemisphere is becoming correspondingly more extreme. The size and number of tornados is rapidly increasing. In the fall of 2010 Hudson Bay had its latest freeze ever recorded, while the land around it had an early winter. The contrast spawned a large cyclonic storm that was essentially a hurricane that came out of Canada and across the Midwest, leaving a path of white in its wake. In the spring of 2011, the Missouri River didn't crest till late in June. In Washington, they were still skiing on a seven foot base on the Fourth of July. All around the world there's often a lot more snow in the mid to upper latitudes of the northern temperate zone.

Until recently in the southern hemisphere, the corresponding change in albedo was very small in comparison to the northern hemisphere. The southern hemisphere is a mirror image of the northern hemisphere. The northern hemisphere has a soon to be blue ocean at the pole, surrounded by a large multi-continental landmass covering most of the temperate zone. The southern hemisphere has a white continent at the pole, surrounded by a very large ocean covering most of the temperate zone.

As the oceans warm, the duration of the Antarctic winter sea ice is rapidly decreasing in a self amplifying cycle. The warmer water around Antarctica is resulting in an increase in the strength of the Antarctic katabatic vortex and snowfall on the Antarctic plateau is increasing. Antarctica is currently taking more water out of the ocean in increased snowfall than the melting shelf ice gives back. As the massive ice shelf of Western Antarctica is undermined by warmer water, at some point it will cave in, a large portion of the continent will change from reflective white to absorptive blue, and the warming trend will self amplify. The melting of Western Antarctica, in combination with the decreasing density of warmer water, will cause substantial sea level rise.

As the emerging giants of industry choke on their smog, they're finding newer and better ways to lower their particulate emissions, but not their greenhouse gas emissions. We are steadily increasing the efficiency of our energy consumption, but we are just as steadily increasing the volume of our energy consumption as fast as we can. We're hardcore energy addicts. In the short term, this should warm the land and ocean surfaces, substantially raising ocean and atmospheric temperatures in the tropics and southern hemisphere, and substantially raising summer temperatures over land in the northern hemisphere, but as we run out of oil and gas, forests to burn, and eventually coal, and civilization crumbles or contracts from lack of fossil and glacial water for irrigation and oil to haul the freight, levels of greenhouse gasses in the atmosphere will decrease. This will result in atmospheric cooling, which, in combination with warm ocean temperatures, should increase cloud cover, mostly in the northern temperate zone. In combination with an increase in northern temperate zone snowfall and decreased snow melt, this should result in a substantial increase in northern hemisphere albedo.

The earth and sun are partially liquid spheres spinning in space. The earth has a solid inner core, a liquid outer core, a thick mantle and a thin crust, no thicker than the shell of an egg. Gravity and centripetal forces tend to separate different densities and molecular structures of matter into layers within these spheres which spin at different speeds. It's the opposing inertias of these layers that generate the magnetic fields of the earth and sun. Variations in the rates of spin between these layers cause variations in the strength of the magnetic fields that they generate.

The magnetic field of the earth, along with our atmosphere, and to a much greater degree the magnetic field and heliosphere of the sun, shelter us from the cosmic rays of interstellar space[mostly protons, some helium nuclei, a few electrons, and a little bit of lithium, beryllium, and boron nuclei]. Most of these cosmic particles form aerosols in the atmosphere which seed a more reflective cloud layer in the lower atmosphere.

The earth's magnetic field is in decline, probably because we're about to experience a magnetic pole reversal. The sun's magnetic field has also been in decline. Sunspot activity on the surface of the sun reached an historical low before the maximum in the sun's 11 year cycle in early 2013. With all the newly deployed technology we should soon learn a lot more about the climate of the sun. Gathering scientific data is indicating an up two twofold variation in the flux of the solar winds that produce the sun's heliosphere, on timescales of decades to thousands of years. It's the suns heliosphere that deflects most of the cosmic particles around us as we cruise through space.

The interplay between variations in the concentrations of cosmic particles we encounter, variations in the power of the heliosphere, variations in the earth's magnetic field, and variations in the composition of the earths atmosphere modify the cloud cover and hence the albedo of the lower atmosphere, contributing to variations in the albedo of the earth. The little ice ages show a lot of characteristics that would be explained by a sudden immersion in a cloud of cosmic particles as we cruise through the galaxy.

As the residual glaciers of the last ice age melt, and the new glaciers of the new ice age begin to grow, weights on the tectonic plates are changing, causing stresses on their boundaries. This will likely cause increased volcanic activity, substantially increasing global albedo.

It‘s likely that the combination of all these drivers of climate will eventually self-amplify into the next major ice age beginning in the northern hemisphere, but in the meantime it's gonna be hot.

Unless, of course, something else happens.