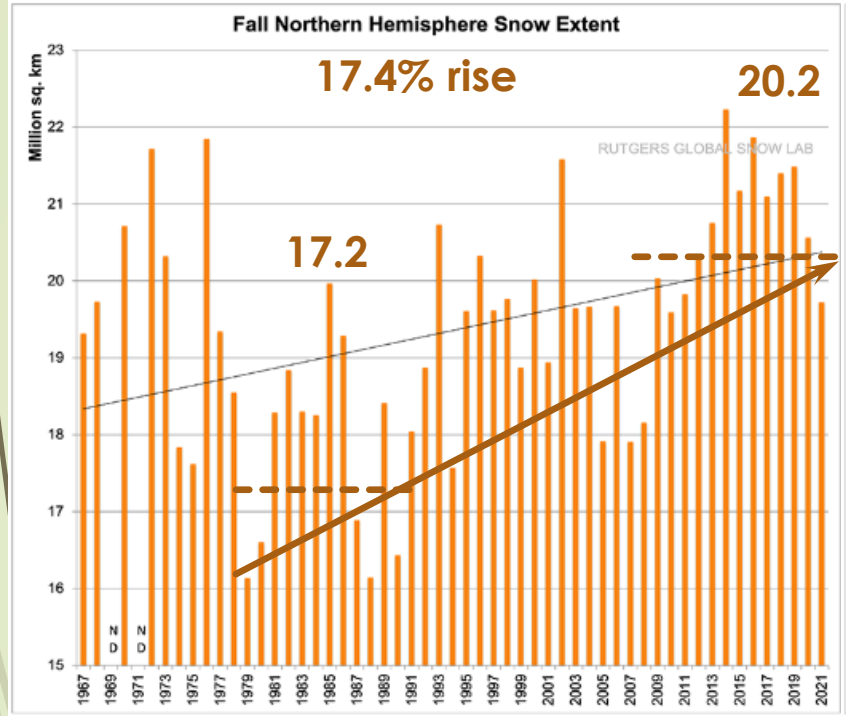
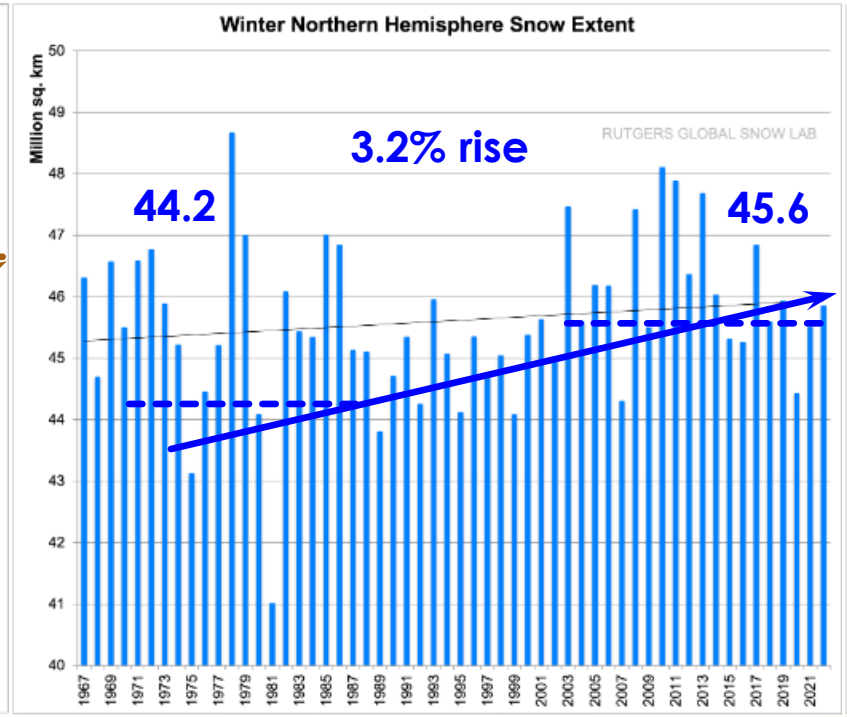
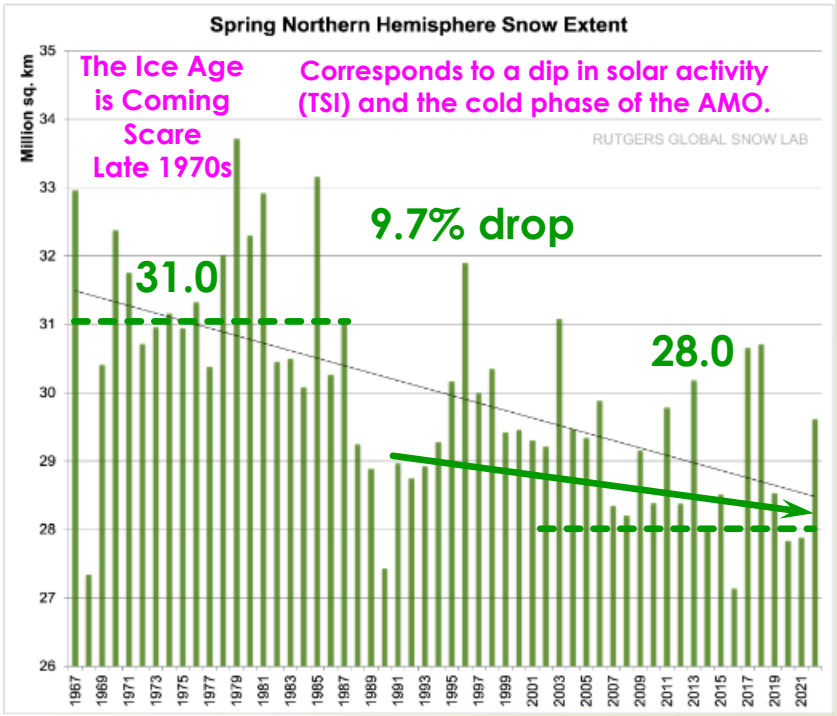
Snow Update – June 2022 – Rutgers Snow Lab

More detail? climatechangeandmusic.com







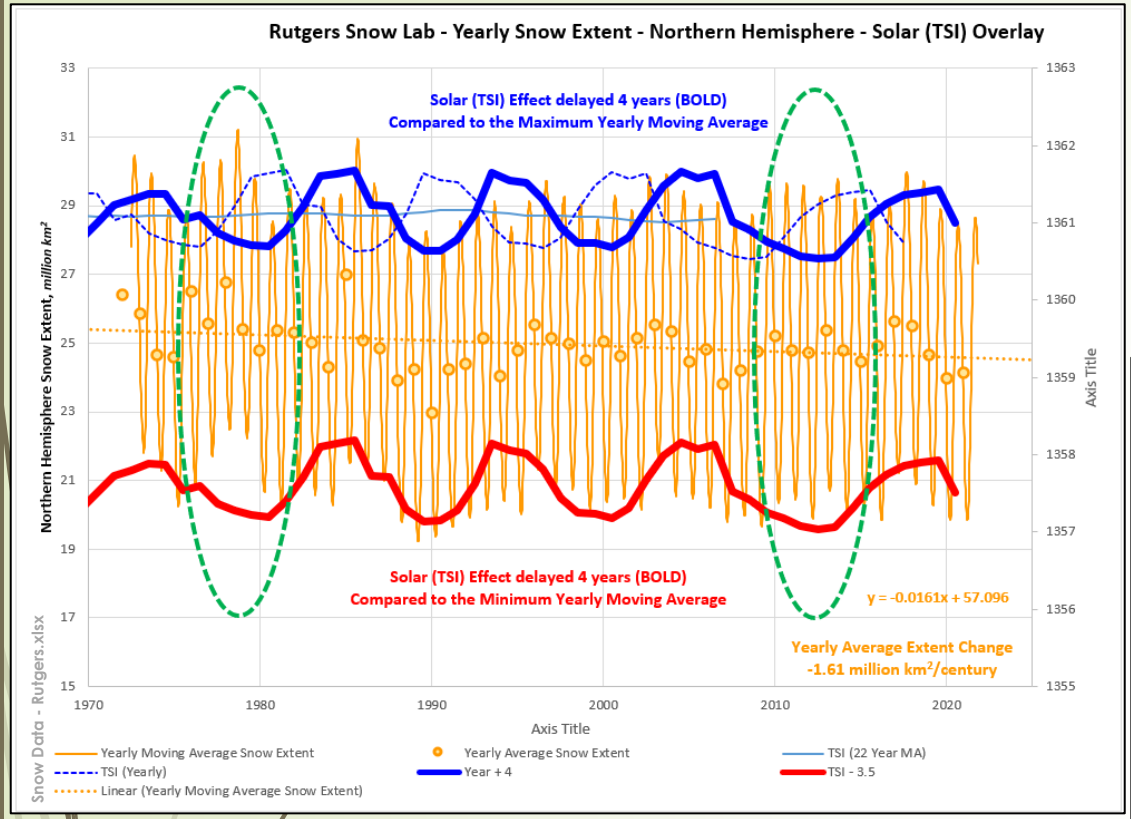
Rutgers NH Snow Extent

These are the latest graphs from Rutgers Global Snow Lab. The chart you might have seen is "Spring Northern Hemisphere Snow Extent" (on the right). The Mainstream Media and the Catastrophic Anthropogenic Global Warming (CAGW) alarmist crowd still like to get this chart out to the general public since the snow decline still fits with the Narrative. The decline has been less since the early 1980s, but the decline is still there (although we have had a few good spring snows (2017, 2018 and this year)).

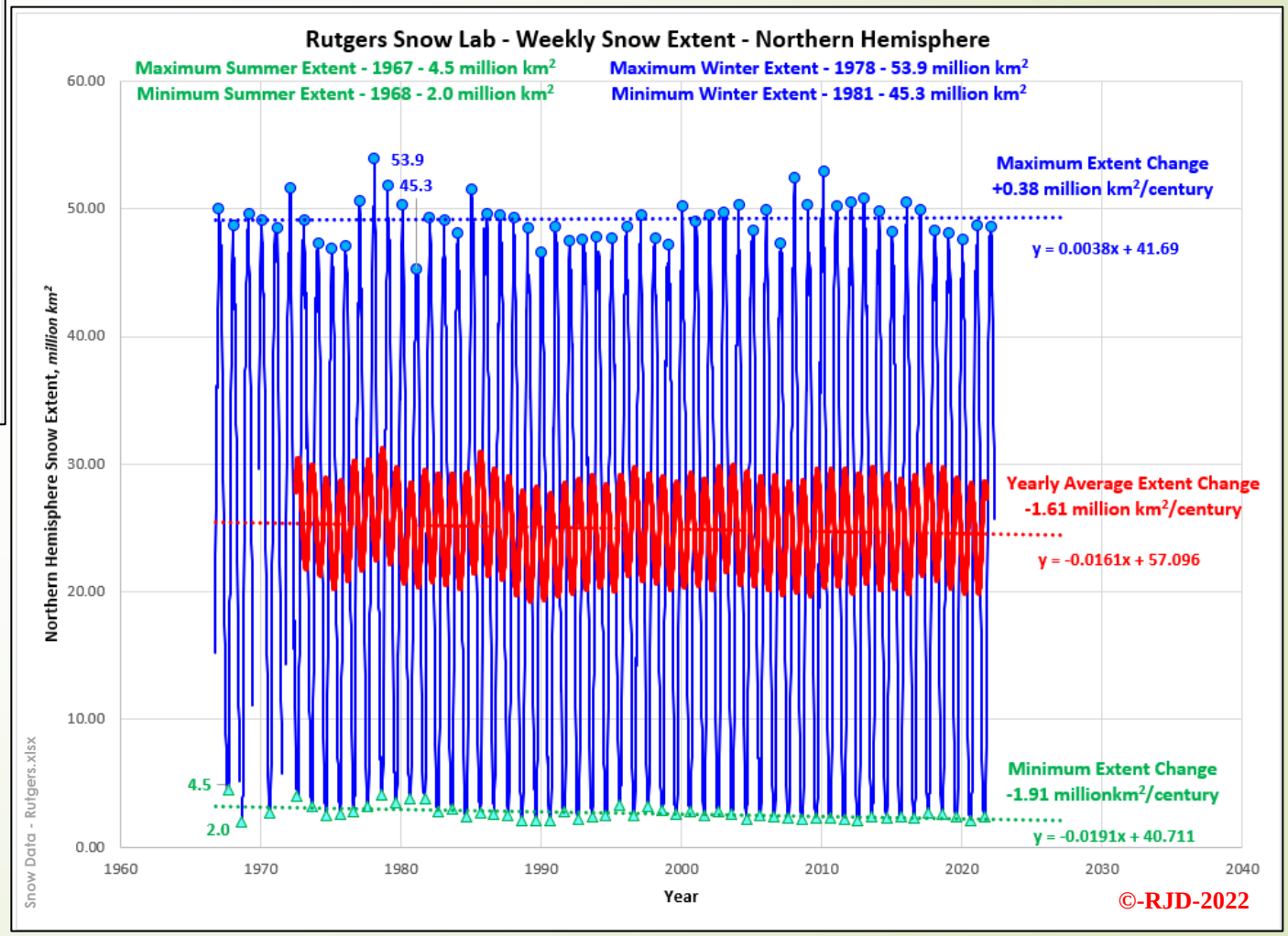
There is a roughly 10% drop from the 1970s to the current levels. The other two graphs do not fit the "Narrative". So, you are not likely to see the NH fall and winter snow extents anywhere in the Mainstream Media. The "Fall Northern Hemisphere Snow Extent" was up by 17.4% and the "Winter Northern Hemisphere Snow Extent" was up by 3.2%. Are the dire predictions that snow will "soon" be a thing of the past realistic? Of course, they are not. Just like every other catastrophic climate prediction that has been made over the last several decades. The ski resorts are still open, my grandkids still get to have snowball fights, polar bears are thriving and somehow there is still ice in the Arctic Ocean (examples of a few predictions that were supposed to have already happened but have not happened in will not happen in the foreseeable future). In the real world we are more likely to see the cooler/snowier conditions of the 1970s (the Ice Age is Coming Scare) as the Atlantic Multidecadal Oscillation (AMO) moves back into its 30-year cold phase. The additional cooling associated with the Grand Solar Minimum (GSM) we are just entering, will very likely have us wishing we had only reverted to the 1970s climate. The solar activity forecasts are pointing to a GSM that will be like the Maunder Minimum (1645 to 1715). A period of brutal cold, cold weather crop losses, mass starvation and civil strife. The current GSM will likely be shorter ("just" two or three decades). But the damage will be just as devastating. A few years ago, I would have said we (North America) were in a decent position to ride out the worst of the GSM problems (even though they would be recognized too late by our political establishment). But the last few years have dampened my hope for that considerably. The debt, we have piled on in response to the COVID-19 fiasco and the ongoing damage to our business infrastructure, has significantly weakened our already precarious fiscal position. What is done is done, and we cannot change history. But going forward, we might still have a chance to prepare our society to meet the challenges that the GSM will present. Food and Energy Security issues are already front and center. Piling on the continued, unnecessary financial and environmental burdens of the "Green" Movement (Green New Deal, Paris, Net Zero, etc.) will lead to economic suicide, massive population reduction and environmental disaster.

GSM – Grand Solar Minimum. The real "Climate Change" existential threat is right around the corner. Do the Research!

Snow Update – June 2022 – Rutgers Snow Lab - Detail



The graphs on the previous page are screenshots prepared by Rutgers Global Snow Lab. I have added the trends and comments. As per my general approach, I like to get the data and evaluate the detailed information myself. The chart below plots the Northern Hemisphere snow extent on a continuous basis (ranging from maximum winter coverage to the summer coverage (mostly restricted to higher mountain elevations)). The winter peak in snow cover has been increasing at a rate of 0.38 million km^2/century over the recorded period. That is not consistent with the CAGW "Narrative". The summer minimum has been declining at a rate of 1.91 million km^2/century over the same period. However, the summer minimum has been essentially flat since the late 1980s. That result is not surprising since temperatures increased significantly from 1975 to early 1996,



Rutgers Snow Lab - Detail

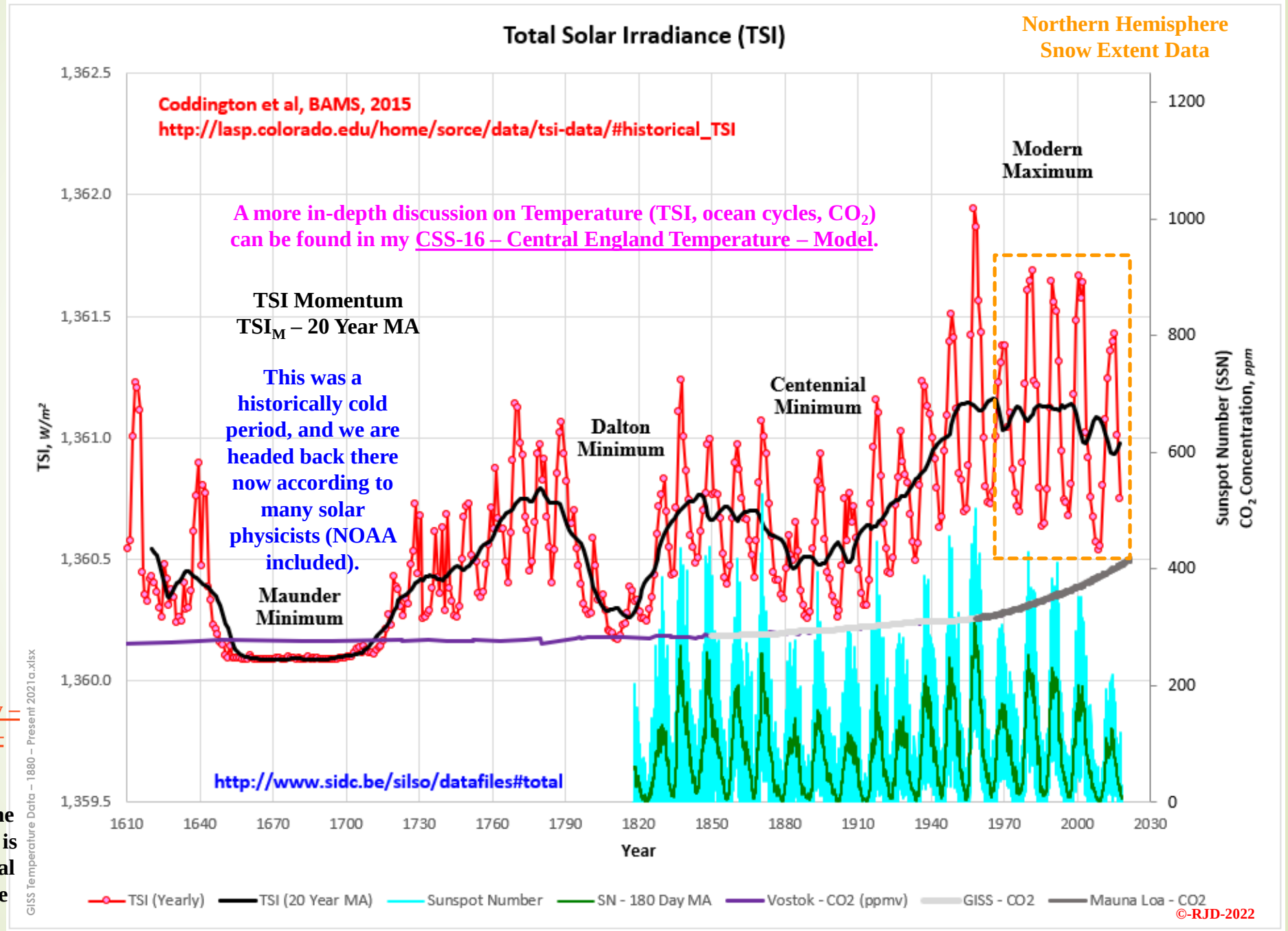
then remained flat (with significant warm and cold fluctuations) for 18+ years. A strong positive El Nino Southern Oscillation drove temperatures up quickly in late 2015. Since then, temperatures have dropped back down to turn of the century levels. The red curve (to the right) is the Yearly moving average (which just dampens the fluctuations). That data was replotted above (the gold curve) and compared to the solar activity (TSI, the dashed blue curve). The solar activity was then plotted with a 4-year delay (the solid blue line) which corresponds (admittedly loosely) with the snow cover extent maximums. Adjusting the TSI down to the snow cover extent minimums (the solid red line) results in a closer correlation. Is that proof that the Northern Hemisphere snow cover extent is responding to the 11-year solar cycle? No, but I can guarantee that NH snow extent is not responding to the slow, steady, increase in CO_2 concentration. The ocean cycles are also in play.

Snow Update – June 2022 – Solar Activity Perspective

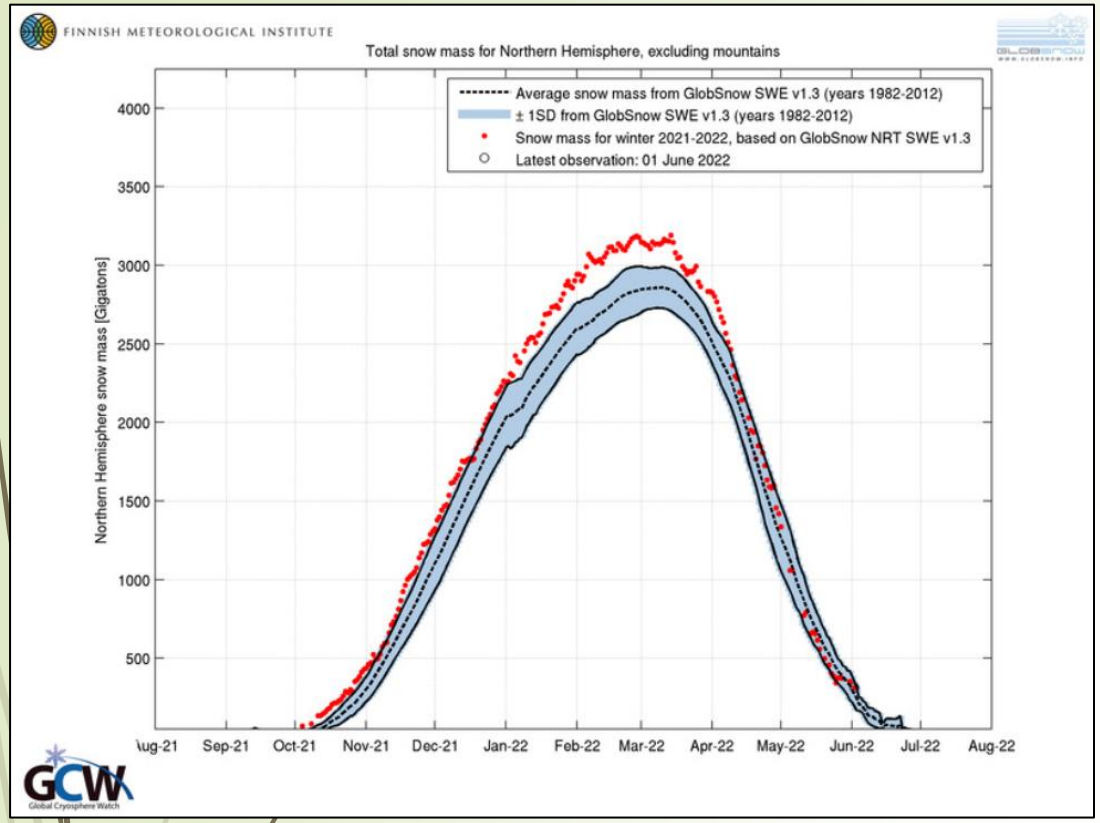
GSM – Grand Solar Minimum. The real "Climate Change" existential threat is right around the corner. Do the Research!

Solar Activity

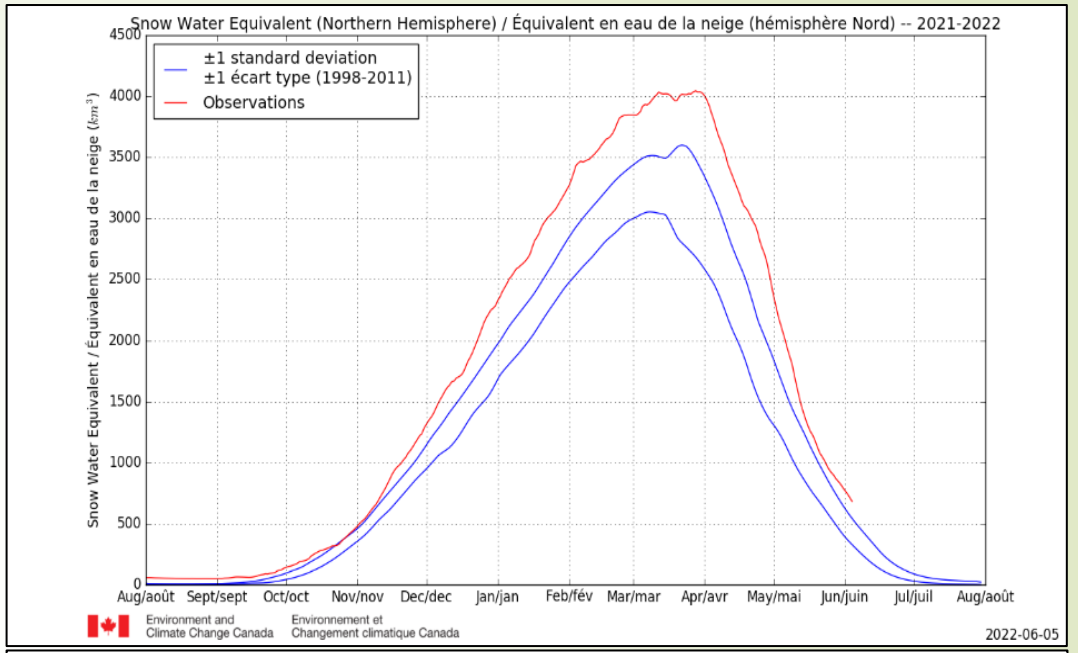
The gold dashed bar to the right is the TSI data (red curve) plotted on the previous slide. The black curve is the 20-year moving average. The averaging smooths out the data and provides a better picture of the solar forcing momentum (TSI_M) built up over time. I added this plot to give some perspective to the previous discussion. As shown on the previous plot, the 11-year solar cycle appears to have some influence on the Northern Hemisphere Snow Cover Extent. The TSI_M over the Rutger Global Snow Cover Extent period is significantly higher than the Dalton, Maunder and even the Centennial Minimum. Temperatures dropped significantly in each of those Minimums with devasting effects in the Maunder and Dalton periods. The colder weather led to crop failures, mass starvation and civil strife. The modern Grand Solar Minimum (GSM) will produce similar results. Additional data is available in my OPS-52 – Solar Activity – NOAA Forecast and OPS-21 – Solar Cycles – Coming GSM posts. Arguing that the cold temperatures are restricted to the Northern Hemisphere (not true) are irrelevant. When the next GSM hits (NOAA is forecasting NO (that is ZERO) sunspots for the next cycle (26)). Global temperatures have dropped significantly since 2016 and will continue to do so (CSS-16).



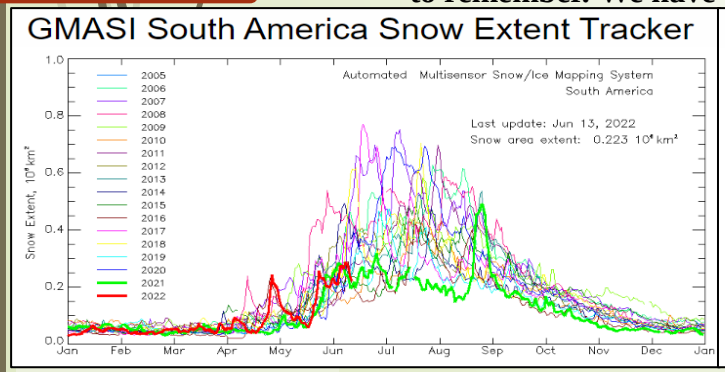
Snow Update – June 2022 – 2021/22 Winter Snow

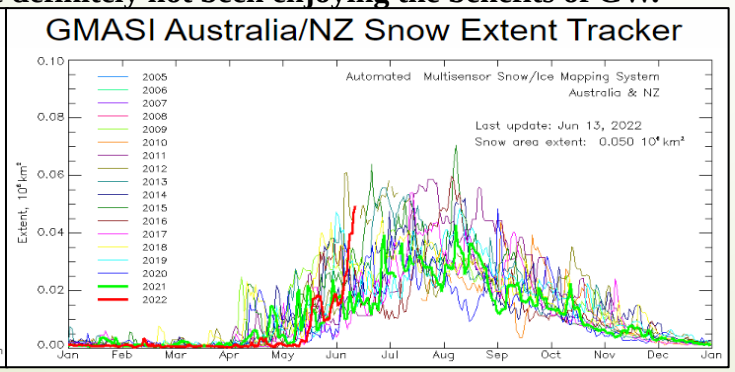


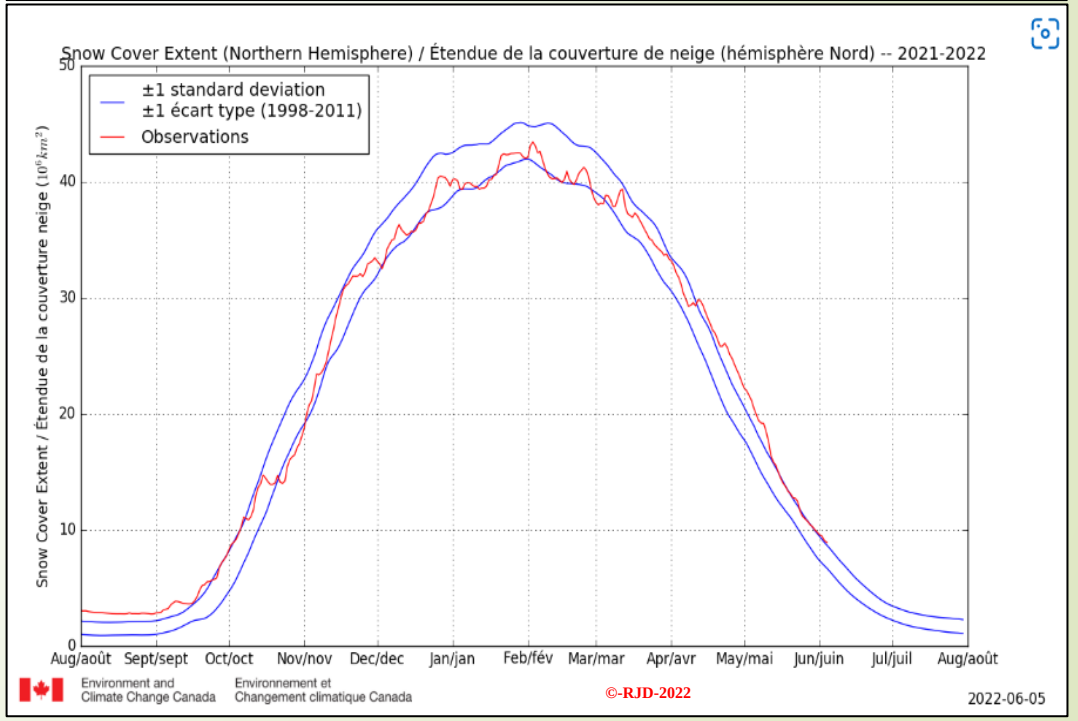
These plots focus in on the snow mass, extent and water equivalent. Northern Hemisphere Snow Extent has been at the high end of normal last fall and this spring. That is not unusual unless you believe that snow will be a relic of the past (as depicted in the virtual reality world programmed into the IPCC computers). Snow Water Equivalent (SWE) and snow mass on the other hand are well above the normal range. The Southern Hemisphere winter is just getting started. South America had an early bout of snow (not overly unusual) but has generally been colder than normal during 2022. Australia had a later start to its snowfall, but the cold and snow have settled in with a vengeance. Time will tell whether this SH winter becomes one to remember. We have definitely not been enjoying the benefits of GW.



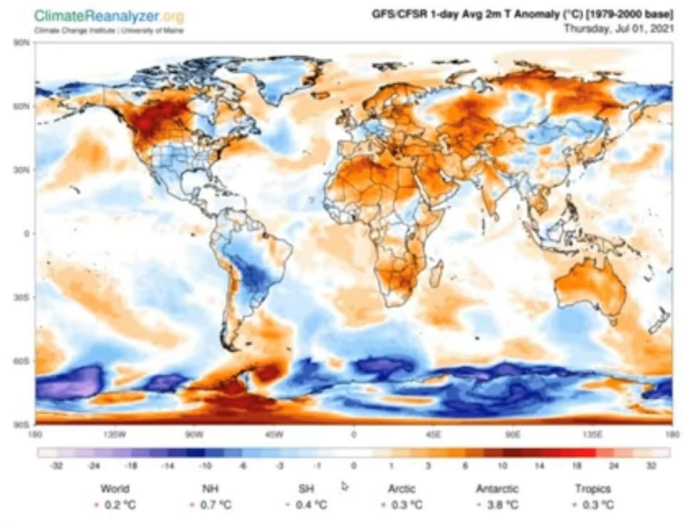
2021/22 Winter Snow







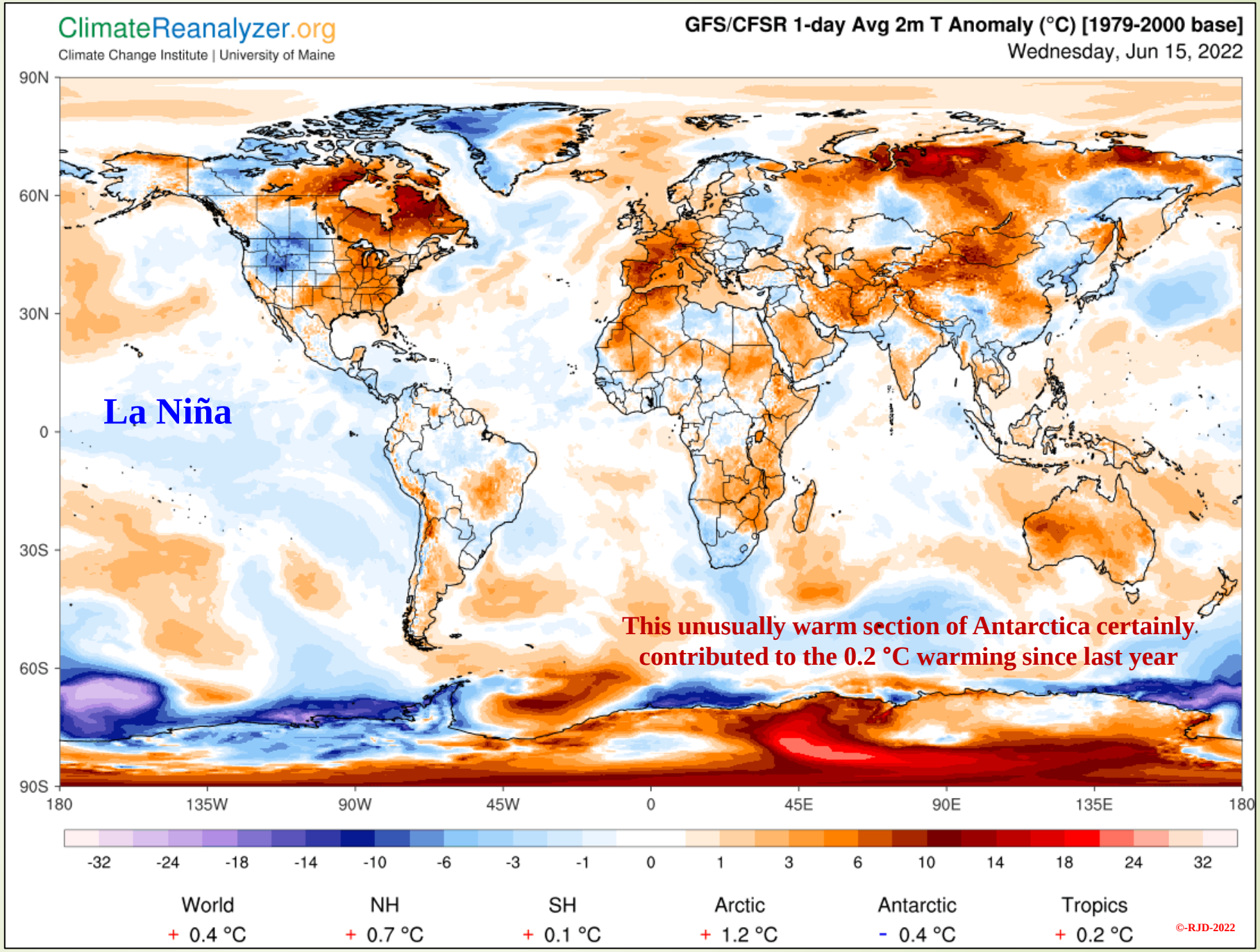
Snow Update – June 2022 – Temperature Anomaly



The plot (to the right) is the temperature anomaly as of June 14th, 2022. Here in Southern Alberta, the temperature has been colder than normal for far too long. As a result, our summer will be much shorter than normal, and the crop yields are likely going to reflect that short growing season. The current cold spot over the Pacific Northwest this year is not an indication of climate change. Nor is the hot spot shown in the smaller TA map from July 1st, 2021.

Global Temperature Anomaly

Localized events are not indicative of climate change. The Global TA on July 1st was only 0.2 °C above the 1979-2000 base average. Today's Global TA is still only 0.4 °C above that 1979-2000 average. The 0.2 °C increase over the last year has virtually nothing to do with the 2 or 3 ppm CO_2 increase over that period. Look at the oceans (generally colder than normal). They control the atmospheric temperatures on these time scales.



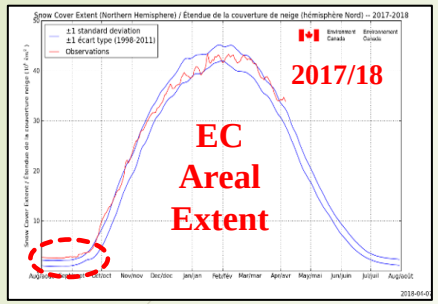
GSM – Grand Solar Minimum. The real "Climate Change" existential threat is right around the corner. Do the Research!

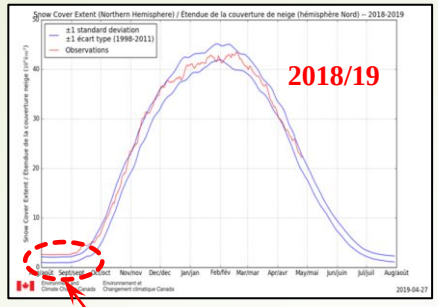
Snow Update – June 2022 – Northern Hemisphere History

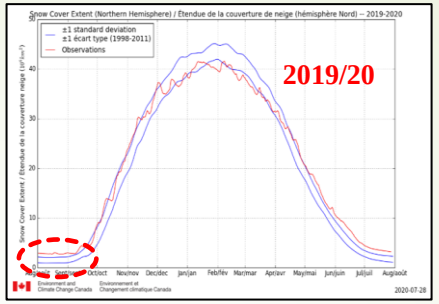
More detail? climatechangeandmusic.com

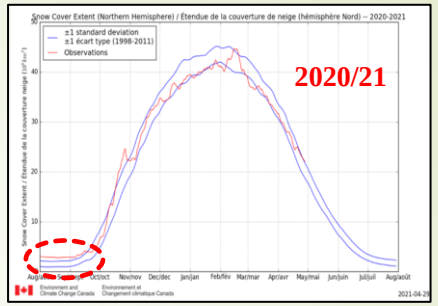
As with all climate discussions, you cannot focus on what happens in any one given year (unless you subscribe to the CAGW alarmist mantra). Then every major hurricane, fire, drought, flood, etc. is "undisputable" proof of "Climate Change". Record hot temperature – "Climate Change". Record cold temperature – weather. The Northern Hemisphere

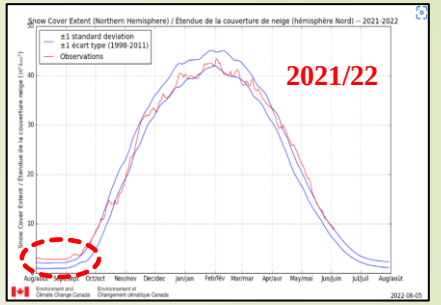
5 Year Snow Extent

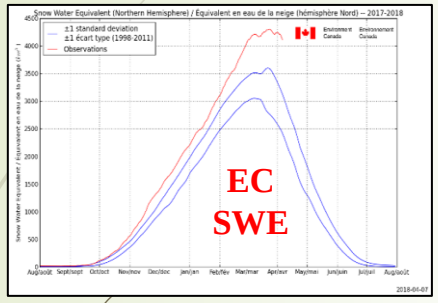






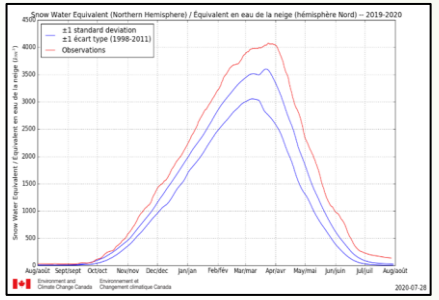


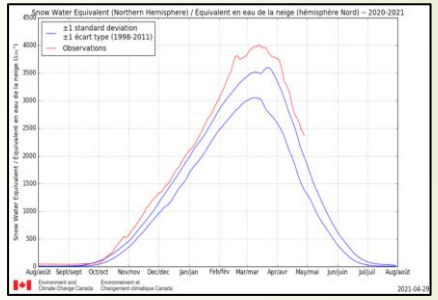


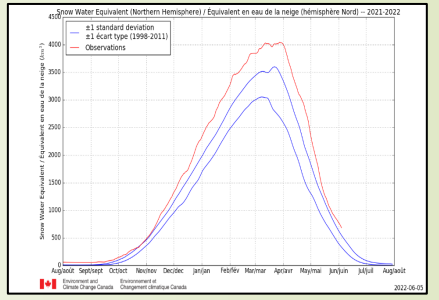


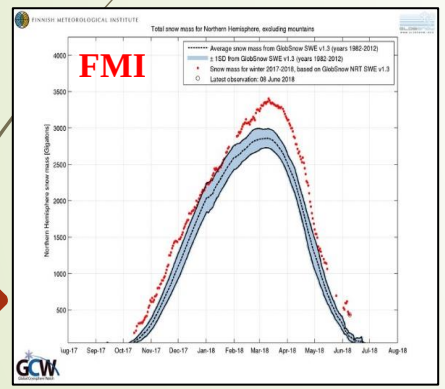
Snow Extent seems to be increasing even over the summer.

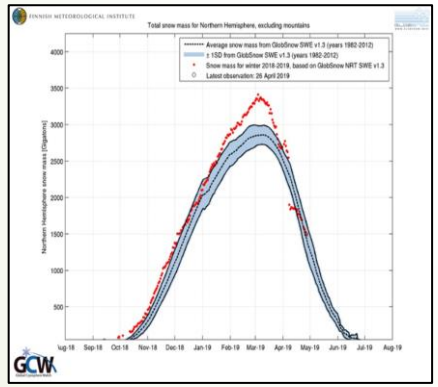
The trend is not moving to less snow!

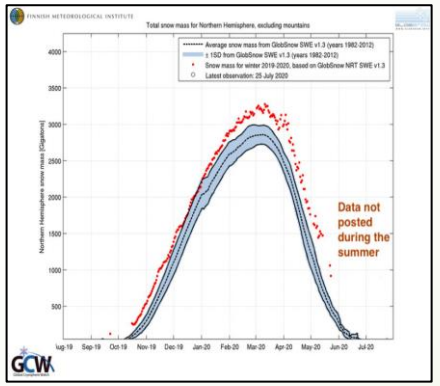


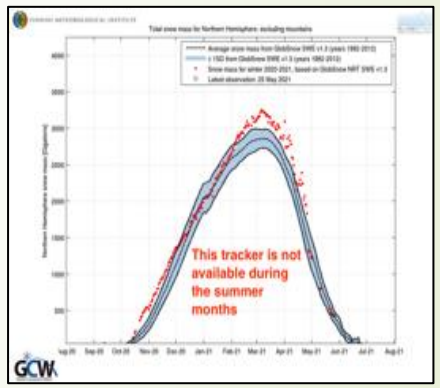


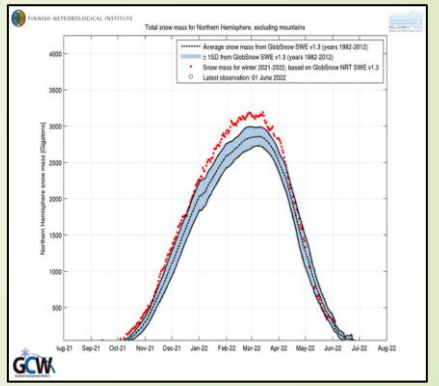












snow extent has been increasing overall since 1967 (as shown on the first slide). But the snow extent is not the only snow parameter to look at. The Snow Water Equivalent (SWE) and snow mass has been well above normal every winter for the last five years. Strange, that we are getting more snow over a larger area given that we seem to be living through the "HOTTEST YEAR EVER" every year. The Snow Cover Extent is like every other climate event. When all the data is presented and the trends are looked at on time scales that reflect climate not weather, the concept of a "Climate Emergency" is non-sensical. Hurricane activity (OPS-57 – Hurricane Update – 2021 Season) has been declining since the 1980s. Forest Fire burn acreage (CSS-17 – Forest Fires – March 2022) is an order of magnitude lower than pre-industrial era (and only 20% of the acreage burned during the Dirty Thirties). Sea Levels rise is accelerating but no where in the world do the tide gauges show any acceleration (OPS-23 – Sea Levels). Arctic Sea Ice will be gone by 2008 (no 2012, wait no 2014, etc., etc.) but in the real world, Arctic Sea Ice minimum has been flat for the last 14 years and the maximum Arctic Sea Ice has been increasing for the last four years (CSS-11 – Snow and Ice – July 2021 Update). Antarctic Sea Ice has been almost flat. Not surprising since Antarctic temperatures have been declining for 40 years, culminating in the coldest six-month period EVER (using CAGW terminology). Temperature data musings (CSS-8, CSS-13, CSS-16, CSS-19, OPS-31, OPS-49, OPS-58) as a starting point.