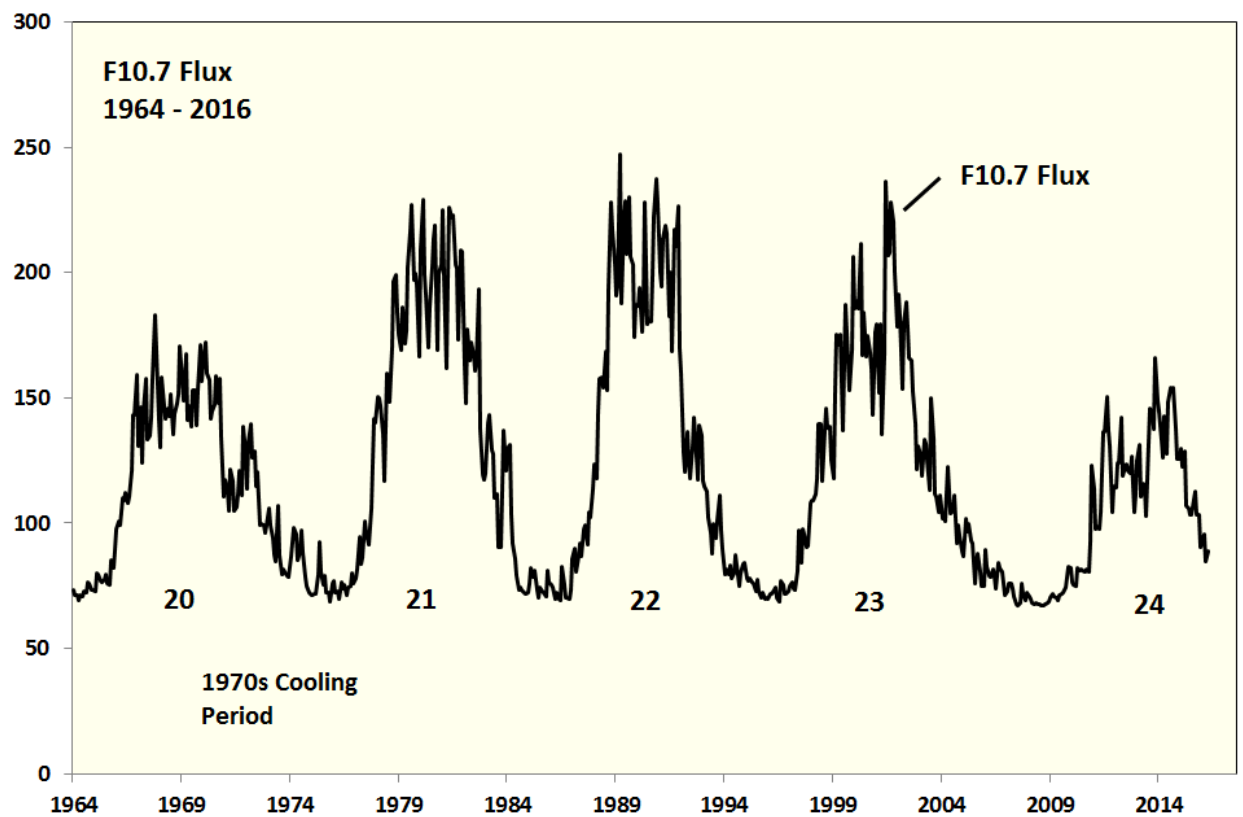
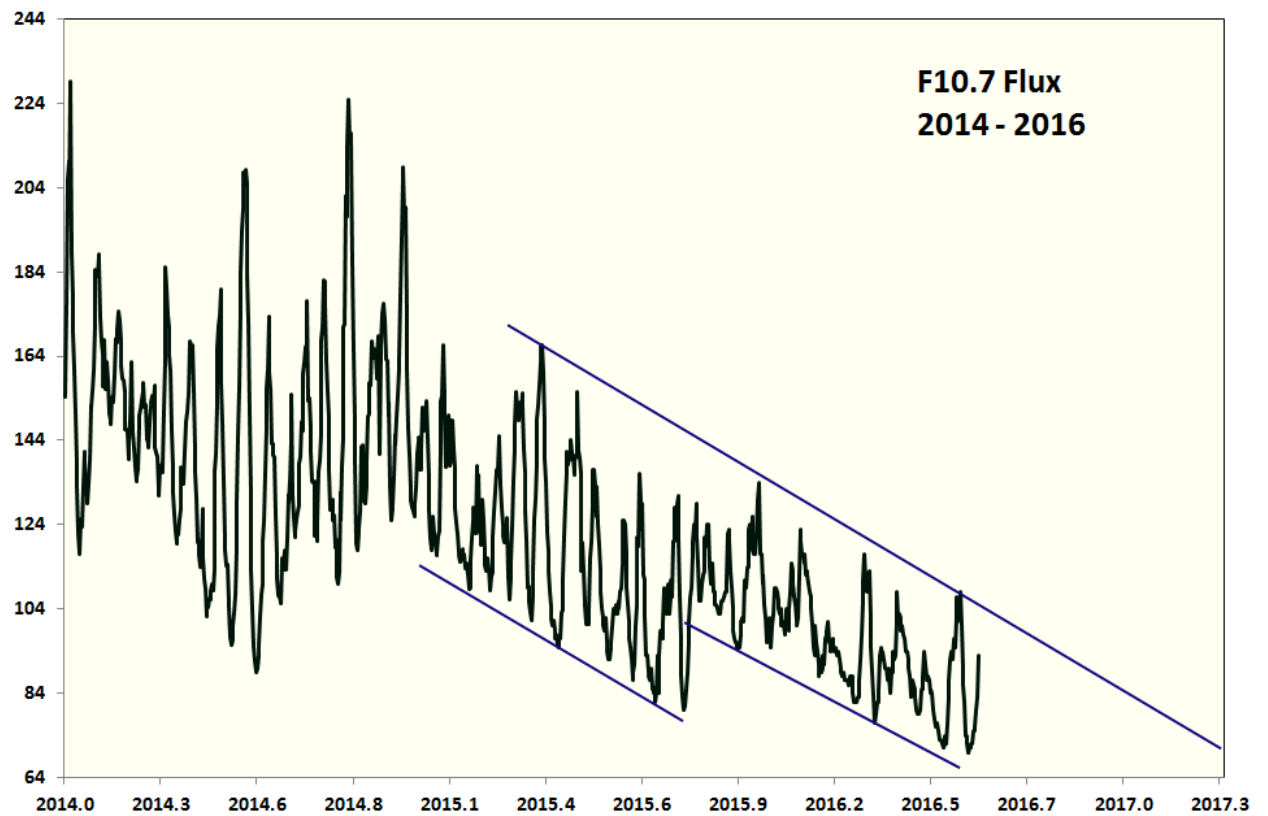


## Solar Update August 2016



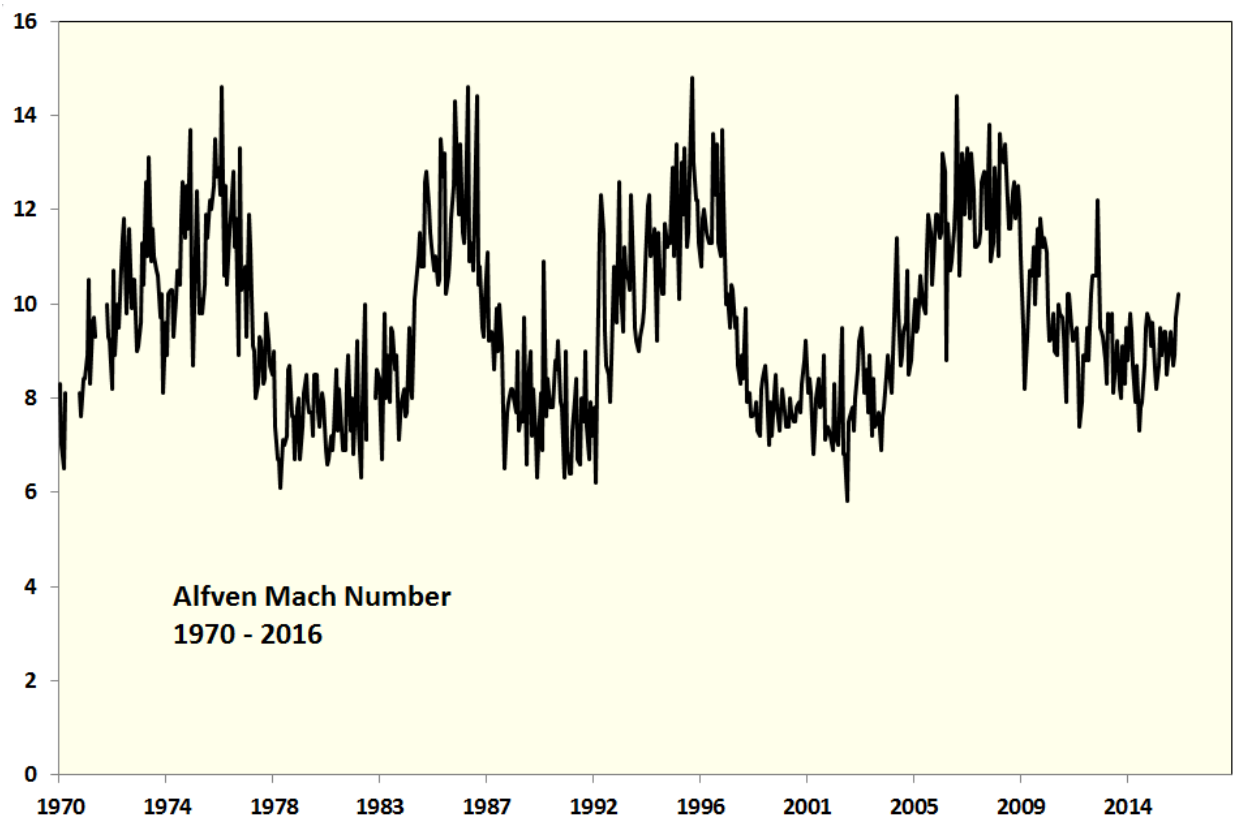
**Figure 1: F10.7 Flux 1964 – 2016**

Weak cycles are generally longer, but not necessarily the current cycle. Solar Cycle 24 has been weak compared to cycles of the second half of the 20<sup>th</sup> century and is now dropping rapidly to the immutable floor of 64.



**Figure 2: F10.7 Flux 2014 - 2016**

That is confirmed by looking more closely at the last 18 months. Activity has been range bound in a steep decline. At this rate we will be in solar minimum conditions in early 2017.

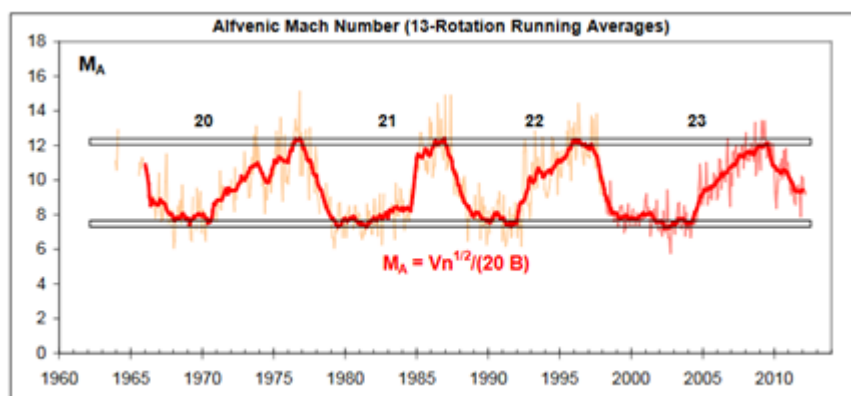


**Figure 3: Alfven Mach Number 1970 – 2016**

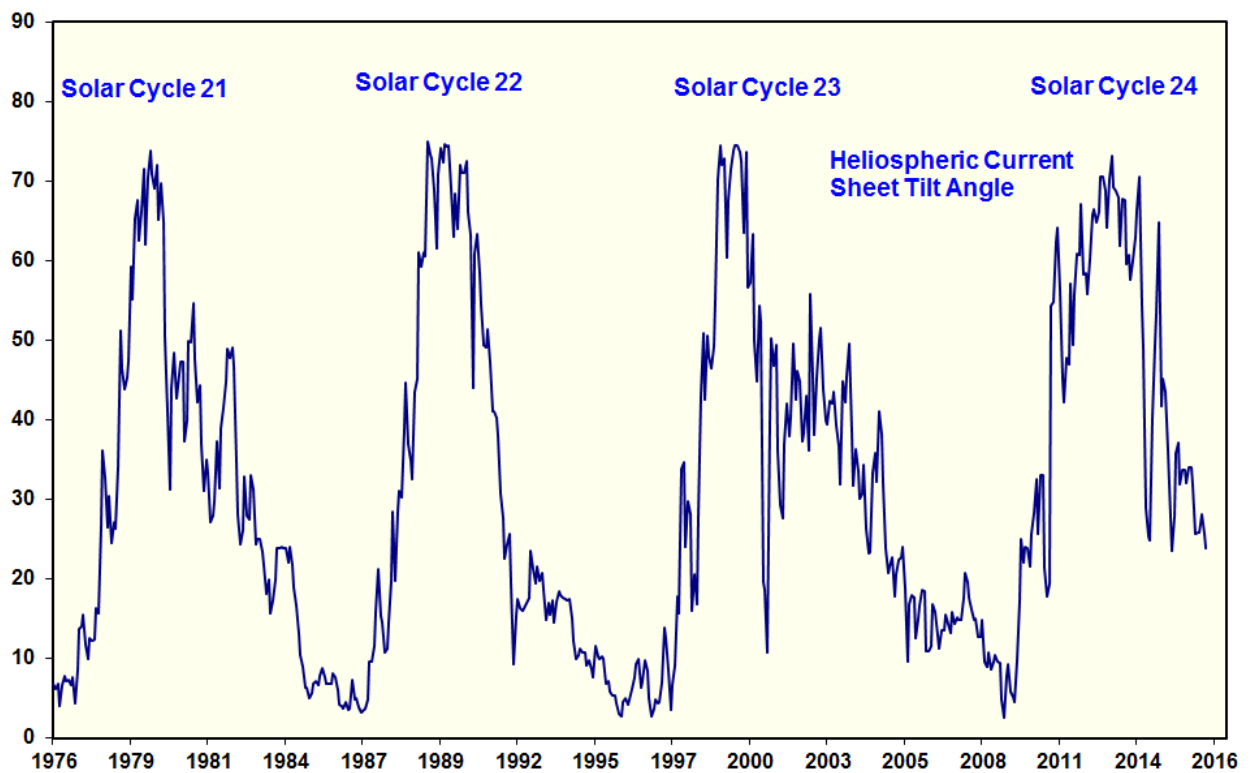
Alfven mach number is a solar parameter that too few people care about. But it too is defying predictions. This [document](#) contains the statement:

There is a clear solar cycle variation of the Mach number, but it is remarkable that the amplitude of the variation is the same in every cycle, independent of the amplitude of the sunspot number cycle. It is also clear that at the time of writing [end of June 2012] we are not yet at solar maximum, where the Mach number reaches its minimum value.

With this supporting diagram:

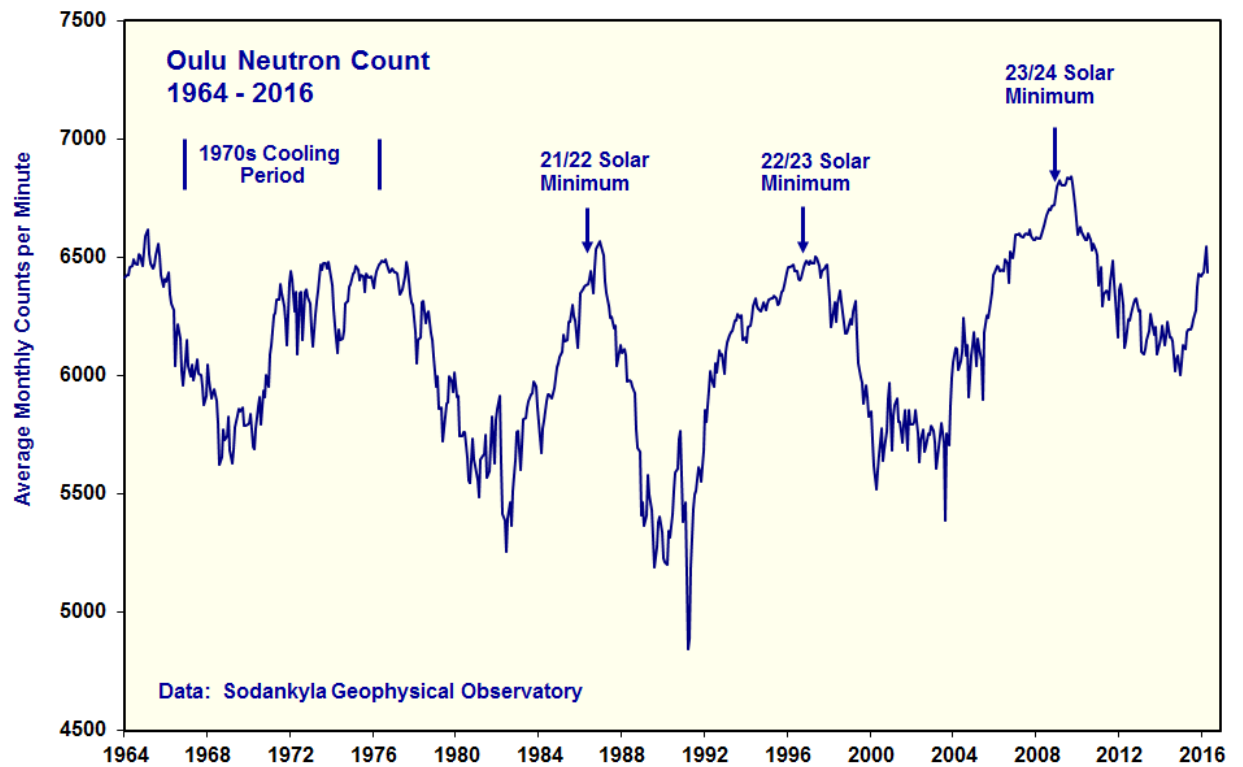


It just didn't work out like that and the Alfven mach number is now heading back to levels at solar minima.



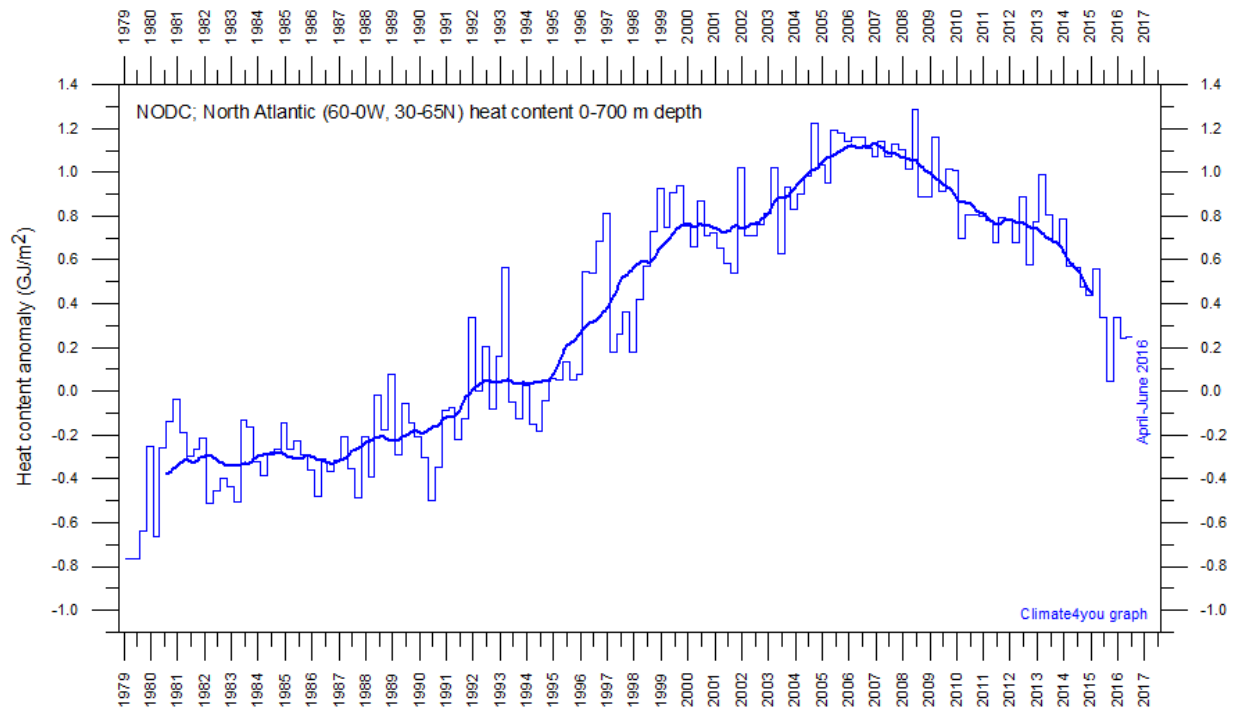
**Figure 4: Heliospheric Current Sheet 1976 – 2016**

The parameter that reliably tells us that we are at solar minimum is the heliospheric current sheet tilt angle. We are there when it reaches 3°. It seems that not too much else can be read into this parameter.



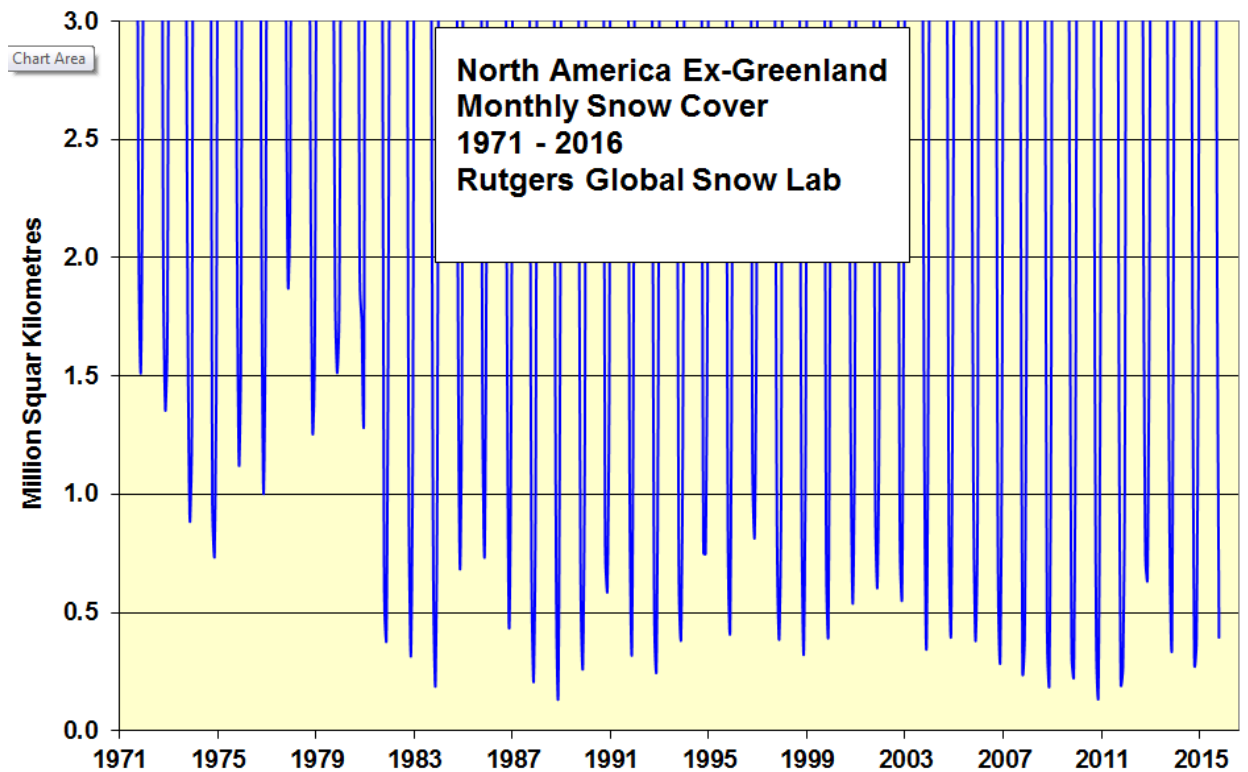
**Figure 5: Oulu Neutron Count 1964 – 2016**

The number of neutrons in the air has been much higher through Solar Cycle 24 than the previous cycles in the record, continuing a trend that started 30 years ago. According to Svensmark's theory that should have resulted in more cloud formation. The neutron flux is now at levels of previous solar minima.



**Figure 6: North Atlantic Heat Content 1979 – 2016**

The Sun has been less active over Solar Cycle 24 relative to previous cycles for the last hundred years. That should have had the effect of cooling the climate. Where is the empirical evidence for that? It is in the North Atlantic water column amongst other places. Figure 6 above from Professor Humlum's [site](#) was updated on 7<sup>th</sup> August, so it's fresh. It shows that the steep downtrend in contained heat continues, now down to levels last seen 30 years ago. Peak heat content was in 2006 which was the time of the discontinuity in some solar parameters such as the Ap index.



**Figure 7: North America Ex-Greenland Monthly Snow Cover 1971 – 2015**

What this graph shows is the melting of snow cover over North America each summer. Note the much higher numbers for minimum area of snow cover on the left hand side of the graph during the 1970s cooling period. That was followed by 30 years of much lower areas covered by snow as the effects of higher solar activity warmed the planet. The trend for the last five years has been positive.

David Archibald is the author of [\*Twilight of Abundance\*](#)