Short Comment

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Observation of a tidal effect on the Polar Jet Stream by C. H. Best and R. Madrigali
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I write this review because I believe Richard Lindzen with his misinformation on manmade global climate change has set science back and encouraged a dangerous complacency. No further publicity should be given. The review paper is in danger of perpetuating the misinformation to the next generation of scientists. It should not be published.

Lindzen's unverified work on atmospheric lunar tides is the basis of this work. The supposed 'tractional' forces do not exist. Tidal waves are closed ellipses, as we know from the oceans. As with sound waves, there is no net movement of individual particles. The largest to and fro movements are at the air-sea interface. In air, 1000x less dense than water, tiny tidal forces will not move polar jet streams in great loops as observed by Francis and Vavrus (2012) , certainly not the miniscule 18.6-year period ones.

The polar jet stream, AO, and weather changes result of solar radiation cycles not lunar tidal cycles. They respond to the well-known 11-year period solar radiation/sunspot cyle, half the Hale frequency. The greenhouse gas trap at the dry troposphere-stratosphere boundary is opaque at infrared frequencies. It acts like a blanket, not an iris as Lindzen theorises in his sensitivity formulation.

Richard Lindzen is a retired MIT atmospheric physicist with a focus on unverified theories of climate processes, and a reputation as a climate change mis-informer (http://www.skepticalscience.com/skeptic_Richard_Lindzen.htm).

The reviewer focusses on experimental verification of models, theories and statistical assumptions as required by the scientific method. He has a similar background and a Lindzen contemporary. His PhD supervisor, like Lindzen's, was at the now defunct Meteorology and Atmospheric Physics deparment of Imperial College London.

Publications in atmospheric and ocean experimental physics, ocean tides, sea ice, modelling, and climate change are cited today, still relevant 50 years after publication. His contribution to the Gulf of California tidal calendar, published every year since 1967, aid in vital conservation work such as the rare sea cow and fisheries (http://www.cedointercultural.org/).

Experimental ground-truth data makes a compelling case for exponentially doubling greenhouse gas blankets in halving time increments. AGW is much more serious than than models and Lindzen theories suggest.

Lindzen said "If I'm wrong, we'll know it in 50 years and can do something" (http://www.skepticalscience.com/skeptic_Richard_Lindzen.htm **).** We know it now, Richard, only two years after your retirement. Our analysis suggest north Pacific warming is already +3C above long-term means and rising at more than half a degree per year. The 2°C target is in the past based on 100-year SST timesries. No more timewasting please.

This is the reason I emerge from retirement to set the record straight.

AGW is in the Oceans and rising catastrophically

The jet stream and AO and weather changes result from solar radiation cycles. David Douglass, Astronomy and Physics deparment of University of Rochester, published several

papers showing all so-called decadal oscillations including AO and ENSO are in phase with the 11-year solar cycle (eg Douglass, 2013).

Levitus et al., (2012) reported that 93% of manmade heat (anthropogenic global warming AGW) is in the oceans with the greatest part in the Pacific. Roemmich et al. (2012) and others gave experimental evidence that all post-industrial revolution AGW is in the top 200m. The global ocean conveyor is on a 2,000-year timescale. Heat descends at a logarithmic rate of about 1m/year. Therefore, the most recent AGW heat is trapped in the ocean top few metres.

Carmack (2007) stated that, "Climate change and climate-related impacts on essential industries (e.g. fisheries, agriculture, water resources) are not strictly about temperature, but also (perhaps mainly!) about the flux, distribution and phase of freshwater components in the atmosphere and ocean". He showed how heat, freshwater and nutrients are carried polewards from the tropics on wind-driven surface ocean gyres. Salinity and hence density is nor recorded with sea surface temperature timeseries. Ther is no convection in stratified oceans heat overhead. Nor is there back radiation from below the surface skin. Ice is a good 'lid'.

Blair Kinsman (1957) highlighted the dangers of using statistics and incomplete timeseries in geophysics. Experiments can never be repeated at will as in other branches of physics. There is the danger of mis-use of statistics to fill gaps in timeseries. It remains a major problem in atmospheric physics (Aberson, 2009). Much of the data used in Global Circulation Models (GCMs) is computer generated or created by statistical in-filling. Model data override observations (Osborne and Lambert, 2014) in a complete reversal of scientific method.

Observed Global Warming

Emeritus solar scientist Cornelius De Jager et al., (2010) first reported abruptly *rising* north European air temperature trends coincided with the abrupt *falling* trends in solar irradiance/sunspot numbers after the 1957 solar maximum. It confirms the solar cycle AGW connection. By fortunate coincidence, accurate daily timeseries of atmospheric carbon dioxide started at this time (Keeling, 1998). Rapid increases in the greenhouse gas trap is the only mechanism capable of increasing warming while total incoming radiation decreases. The trends are clear in Figure 1 (see Matthews and Matthews, 2014)

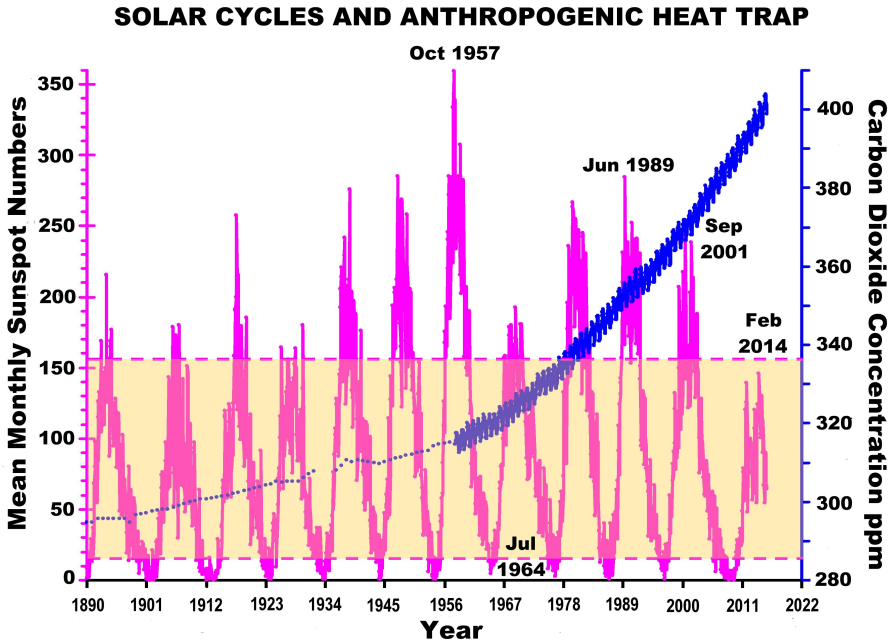

Fig. 1 Solar forcing, monthly sunspot numbers and CO_2 heat trap in ppm 1890- August 2015.

The extreme UK summer heat to cold cycle 1959-Feb 1963 is related to the solar cycle interacting with tropical and polar surface gyres. The 2005/6 UK winter weather is similarly related, but with the CO2 heat trap much more dominant over further reduced solar input.

Recommendation

Do not publish in ACP. It would be better to point out Lindzen errors than perpetuate theories unproven by in situ experiment that lull the world into further dangerous complacency.

References

Aberson, S. D. , 2009, Regimes and cycles in tropical cyclone activity in the north Atlantic, Bull. Amer. Meteor. Soc., 90(1), 39-43, doi:10.1175/2008BAMS2549.1.

De Jager, C., et al., 2010, Quantifying and specifying the solar influence on terrestrial surface temperature, J. Atmos. Sol-Terr. Phy. 72. 926–937, doi: 10.1016/j.jastp.2010.04.011.

Carmack, E. C. , 2007, The alpha/beta ocean distinction: A perspective on freshwater fluxes, convection, nutrients and productivity in high-latitude seas, Deep-Sea Res. Pt. II; Effects of Climate Variability on Sub-Arctic Marine Ecosystems - A GLOBEC Symposium, 54, 2578-2598, doi:10.1016/j.dsr2.2007.08.018.

Douglass, D. H., 2013, Phase-locked states and abrupt shifts in Pacific climate indices, Physics Lett A377, 1749-1755, doi: 10.1016/j.physleta.2013.04.053.

Keeling, C. D., 1998, Rewards and Penalties of Monitoring the Earth, Ann Rev Energy Env, 23(1), 25-82, doi: 10.1146/annurev.energy.23.1.25.

Kinsman, B. 1957, Proper and improper use of statistics in geophysics, Tellus, 9(3), 408-418, doi: 10.1111/j.2153-3490.1957.tb01897.x.

Levitus, S., et al., 2012, World ocean heat content and thermosteric sea level change (0-2000 m), 1955-2010, Geophys. Res. Lett., 39, L10603, doi:10.1029/2012GL051106.

Matthews, J Brian, and Matthews, J. B. Robin, 2014, Physics of Climate Change: Harmonic and exponential processes from in situ ocean timeseries observations show rapid asymmetric warming, Journal of Advances in Physics, 6(2), 1135-1171, DOI: 10.13140/RG.2.1.1415.1843, http://cirworld.org/journals/index.php/jap/article/view/139jap/pdf_95 .

Munk, W., 1950, On the wind-driven ocean circulation, *J. Meteorology* 7: 79–93.

Osborne, J., and Lambert, H.: The missing aerosol response in twentieth century mid-latitude precipitation observations, Nature Climate Change, doi:10.1038/nclimate2173, 2014.

Roemmich, D., etal., 2012, 135 years of global ocean warming between the Challenger expedition and the Argo Programme, Nature Climate Change, 2, 425–428, doi: 10.1038/nclimate1461.