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Commentary

Reply to "Comment on "Sea-level trend analysis for coastal management" by A. Parker, M. Saad Saleem, M. Lawson"

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The comment by Mr. Hunter to the recently published paper "Sea-Level Trend Analysis for Coastal Management" demonstrates that Mr. Hunter has probably attempted to read the paper, however limiting his interest mostly to the introduction, and trying his best to misrepresent the introductory section to discredit the rest of the paper.

In 1979 Charney claimed in a study commissioned by the Climate Research Board, assembly of mathematical sciences, National Research Council (www.atmos.ucla.edu/~brianpm/download/charney_report.pdf) that because of the carbon dioxide emissions the heat uptake was strongly increased. This increased heat uptake has never been proved by any measurement, but nevertheless it has never been questioned by the "forced consensus" climate science.

It is claimed that sea levels are rising faster mostly because of the increased heat content of the ocean layers. The first decade that measurements have been properly collected through the ARGO project, with more than 3 000 buoys sampling the oceans up to 2 000 m of deep, the ocean temperature has been measured flat within the instrumental accuracy, with an initial temperature decrease transformed by an upward correction to a present rate of rise of one over one thousands K per year (Parker, 2013b).

Having a look at the individual tide gauge records of enough length and quality, all of them show regular oscillations over the last decade about same linear trend of 6 decades ago (Parker, 2013a,c,d,e,h; Watson and Parker, 2013). Proper estimations of the acceleration returns numbers of the order of the nanometre per year squared, or one over one million metres per year squared. In addition to be well below any reasonable measurement accuracy, these accelerations also have sometimes positive and sometimes negative sign (Parker, 2013a,c,d,e,h; Watson and Parker, 2013).

Mr. Hunter does not seem interested in the past but only in the future. According to Mr. Hunter the sea level forecast for the 21st century will follow the temperature increases predicted by the Global Climate Models used by the Intergovernmental Panel on Climate Change. These models predict a warming of 2–6 K and the sea level may rise considerably if the temperatures will increase of 3–4 K on average. These sea level rise predictions are clearly wrong if the GCM are demonstrated to be wrong. Even if not explicitly claimed in the paper, it has been implicitly demonstrated in other works that so far the GCM have failed any validation over the last few decades, where the temperatures of the oceans have not increase (Parker, 2013b), the sea levels have not accelerate (Parker, 2013a,c,d,e,h; Watson and Parker, 2013) and even the ground temperatures have experienced too much of a rise (Parker, 2013f). No model failing validation up to the present should be trusted for the future prediction.

In case it could be of interest, explicit evidence that the GCM may be wrong may be found by Mr. Hunter in the recent works by Dr. Scafetta (2013a,b, 2012). It is demonstrated there that the IPCC models do not reproduce the natural harmonics as the quasi-60 years cycle and overestimate the effect of the anthropic forcings. The IPCC models are shown compatible with the 1999 Mann hockey stick but unfortunately for the IPCC also incompatible with the recent temperature reconstructions. The global warming and sea level predictions for the 21st century may be consequently equally wrong. The increased heat uptake or the rising temperatures of the oceans or the accelerating seas all have similar lack of sound scientific bases.

According to the recent International Energy Outlook 2013 of the US Energy Information Administration (EIA) (www.eia.gov), the world energy consumption is increasing and it will grow by 56% between 2010 and 2040, with much of this growth expected to occur in countries outside the Organization for Economic Cooperation and Development (OECD), where demand is driven by strong, long-term economic growth, and fossil fuels will continue to supply almost 80% of world energy use through 2040.

The anthropogenic carbon dioxide emissions are growing exponentially, and if the carbon dioxide concentration has any effect on the heat uptake, this latter should increase accordingly. The increasing heat uptake would then translate in an increasing temperature of the oceans and in an increasing positive acceleration of sea levels due to the thermal expansion and other effects as melting glaciers and ice sheets.

Then, a technique is not good or bad depending on the result it returns. Not surprisingly Mr. Hunter has nothing to object with the practice of linear fittings of short time windows of data in selected locations to derive high rates of rise of sea levels if these rates are then compared to much smaller rates of rise of sea levels computed by same approach but with other time windows in other locations.

Mr. Hunter is perfectly fine with the sharply accelerating seas claimed in the Australian Baseline Sea Level Monitoring Project and

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The Australian Federal Government's Climate Commission report "The critical decade" (www.bom.gov.au/oceanography/projects/abslmp/abslmp.shtml; climatecommission.gov.au/wp-content/uploads/4108-CC-Science-WEB_3-June.pdf). The ABSLMP started early 1990s. Start of measurements was about a valley of the peak and valley multi-decadal oscillations. The first sea level trends were produced in January 1999, with on average less than 10 years of recorded data in 14 locations. The latest data were about 20 years long. For Mr. Hunter, the comparison of these short term high rates in selected locations with other longer term rates from other locations is "good advice" to the policy makers.

We disagree with Mr. Hunter. We do see nothing wrong in suggesting the examination of long records of good quality as proposed in our paper to assess the absence of acceleration in the tide gauge signals.

As final remark about equation (1) of the paper, it seems that Mr. Hunter has some issues also with mathematics in addition to sea levels. Mr. Rahmstorf (www.nature.com/scitable/knowledge/library/modeling-sea-level-rise-25857988), obviously a reference contributor to the IPCC AR4 (www.ipcc.ch/publications_and_data/ar4/syr/en/main.html), claims $dH/dt = a\cdot(T(t) - T_0)$ where H is the sea level, t the time, T the temperature and a is a coefficient. T_0 is a reference value of the temperature, selected as the temperature when the time t is equal to zero. The sea level rate of rise SLR is the sea level velocity dH/dt. Therefore, the sea level acceleration $SLA = dSLR/dt = a\cdot dT/dt$. Considering the other authors of the IPCC AR4 claim that there is a perfect correlation between the atmospheric CO_2 concentration and the surface temperature (www.ipcc.ch/publications_and_data/ar4/syr/en/main.html), then it is correct to write that according to Rahmstorf and the other authors of the IPCC AR4 is $SLA = dSLR/dt = a\cdot dT/dt \equiv dCO_2/dt$.

The equation above is very important in the discussion of the mismatch in between the anthropogenic carbon dioxide emissions and the reconstructions of temperatures and sea levels. As better discussed in (Parker, 2013g), the GISS reconstructed land and sea temperatures (data.giss.nasa.gov/gistemp/) show a very clear sinusoidal oscillation of periodicity quasi-60 years (63 years) about a longer term warming and/or oscillating trend. Since 1910 there is a nearly constant warming trend of 0.0077 °C/year to be attributed to changes in the chemical composition of the atmosphere (global warming), longer term natural oscillations and biases by other anthropogenic factors not related to the chemical composition of the atmosphere. This warming is the product of two almost identical upwards phases of the quasi-60 years oscillation, from 1910 to 1945 and from 1975 to 2000, separated by a downwards phase 1945 to 1975, that seems to be reproduced since 2000 and will very likely last till 2030. The extended reconstructed sea surface temperature (www.ncdc.noaa.gov/ersst/) has similar oscillations. Therefore, about same average positive temperature gradients over the periods 1910 to 1945 and 1975 to 2000, and zero temperature gradients over the periods 1880 to 1910, 1945 to 1975, and 2000 to present. However, the reconstructed global mean sea level by the group of Mr. Hunter (www.cmar.csiro.au/sealevel/GMSL_SG_2011.html) is characterized by always increasing sea level accelerations up to the present maximum values despite the lack of any warming since the end of the 1990s not reproducing any oscillatory behaviour. As it is shown in Fig. 1 (from Parker (2013g)), the reconstructed GMSL are possibly well correlated to the CDIAC carbon dioxide emission (cdiac.ornl.gov/ftp/ndp030/global.1751_2009.ems), but they are clearly mismatching the temperature gradients (Parker, 2013g) in addition to be incompatible with the individual long term tide gauges showing sea level accelerations negligibly different from zero since the year 1900 as previously shown in (Parker, 2013a,c,d,e,h, in press; Watson and Parker, 2013).

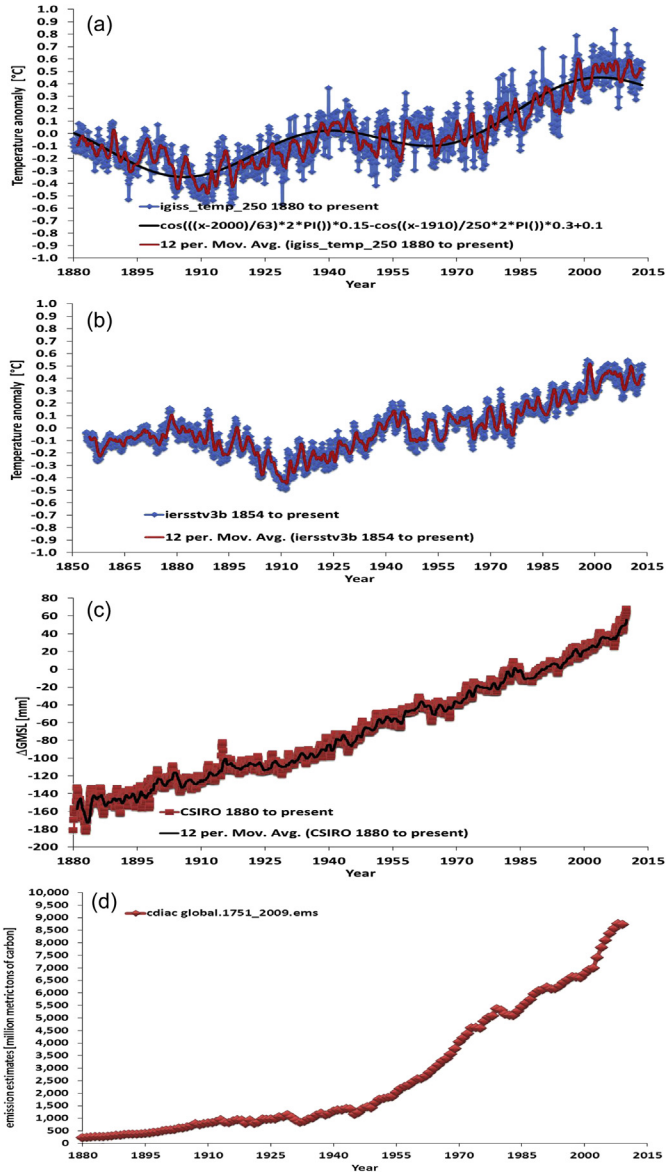

Fig. 1. Comparison of Land and Sea temperatures (data from (data.giss.nasa.gov/gistemp/), figure from Parker (2013g)), Sea Surface Temperatures (data from (www.ncdc.noaa.gov/ersst/), figure from Parker (2013g)), Global Mean Sea Levels (data from (www.cmar.csiro.au/sealevel/GMSL_SG_2011.html), figure from Parker (2013g)) and carbon dioxide emissions (data from (cdiac.ornl.gov/ftp/ndp030/global.1751_2009.ems), figure from Parker (2013g)).

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