



Natural Science is ruled by observational facts, not ephemeral model out-puts

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ABSTRACT

We are high-lightening two main questions in the focus of present day debates in science and society: viz. (1) is present climate change a CO₂-driven process or a natural process, and (2) is sea level rapidly rising or stable to only vaguely rising? In both cases it is a matter of models versus observational facts. In this situation, both science and geoethics call for a full respect to facts and physical laws.

KEYWORDS : Models, science, geoethics, observational facts, solar variability

Climate change has always been a natural part in Earth's evolution. This simple fact, so obvious to all persons studying Earth's history, has in recent years been challenged by models claiming that the post-industrialization and rise in atmospheric CO₂ content is the factor to blame for the general warming of about 0.5 ± 0.1 °C over the last 50-60 years. This is the core-idea of the IPCC project (e.g. 2007, 2013) and the reason for all the debate on the necessity of reducing the emission of CO₂ (the target of the Paris COP21 meeting in Paris, December, 2015). Another core-issue in this project is the threat of a rapidly rising sea level to low-lying coastal areas. We will challenge both these claims, and demonstrate that they both refer to model out-puts in total contrast to available observational facts and guiding physical laws.

1. Climate change

Since 1950, global temperature has risen at a mean rate of $+0.5 \pm 0.1$ °C, at the same time as the atmospheric CO₂ content has risen by about 80 ppm (Humlum, 2015). The relationship between CO₂ content and warming is logarithmic, not linear. In view of this physical law, each new 80 ppm step in the atmospheric CO₂ content can only generate half the rise in temperature as the previous step; i.e., in this case $+0.25$ °C, and the third 88 ppm step only half of that, i.e. 0.125 °C – in total this can only give a rise of $+0.875$ °C in about 150 years or at about year 2100 (Mörner, 2015a). This is far less than the $+2.7$ °C, which IPCC and COP21 claim will be the case by 2100.

A further fact is that the initial rise of $+0.5$ °C by no means can be ascribed entirely to be a product of the CO₂ rise; at the most this effect could be 50%, or even less. Therefore, the true CO₂-driven rise in temperature must be much less; rather in the order of 0.4 - 0.2 °C (Mörner, 2015).

This is what the bounding physical law demand. The IPCC project over the years made as much as 102 different models in order to predict the evolution of global temperature up to year 2100. All of those models are based on a linear relation between CO₂ and temperature, implying that they all ignore the physical law calling for a logarithmic relationship (as given above).

Therefore, it is not surprising that the measured changes in temperature do not agree with the model predictions (e.g. Jones, 2005). This is illustrated in Figure 1, where the observed values lie about 0.6 °C below the mean of the 102 AGW models (cf. Mörner, 2015b).

Figure 1. Comparison between the mean of 102 AGW models (Jones, 2015) and the measured temperature on Earth's surface (red) and in the troposphere (blue) according to Humlum (2015). By year 2100, the model mean would give a rise in temperature of $+2.7$ °C, whilst the measured values would give a value well below $+1$ °C.

Figure 1 demonstrates with full clarity that what CO₂-driven models (AGW) may suggest, is totally contradicted by observational facts. To chose the mean model value and claim that the rise in temperature will be $+2.7$ °C by 2100 (as claimed by the COP21) violate the respect to scientific facts and the principles of geoethics (Mörner, 2015b).

2. Sea Level Changes

Sea level is always changing (e.g. Mörner, 2013). The idea that the present should represent something new and threatening comes from the IPCC project (2007, 2013).

Even here there are physical laws that cannot be ignored and which set the frames of the amounts and rates of possible sea level changes (Mörner, 2011), such as the time required for ice melting, the ultimate rate of sea level rise, and the relation between ocean heating and water column expansion. Therefore, it is out of scientific possibility to have sea level changes by year 2100 amounting to 1 metre or more.

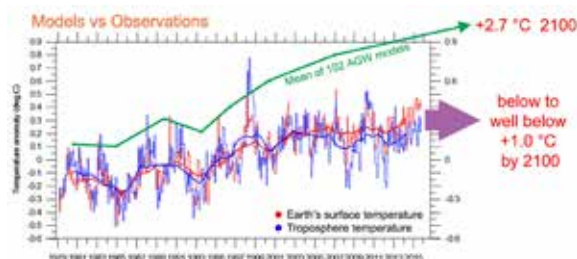
Within the IPCC community efforts have been exercised to try to establish sea level records of considerable rates of sea level rise. This proposed rise has been used as a central argument that the world's low-lying coasts are threatened to become flooded in the near future.

Nothing of this is based on firm facts observed in nature itself, however.

Tide gauge records must be carefully analysed with respect to site-specific effects of sediment compaction and regional crustal movements. A few places can be used as firm test-sites of true sea level changes; e.g. Northwest Europe, Venice, French Guayana –Surinam and parts of the Indian Ocean (see for example; Mörner, 2014a, 2014b, 2015c).

The satellite altimetry records (NOAA, 2014; UC, 2015) have been subjectively modellized in order to show a rising trend. When converted back to observational trend they only provide a rise in the order of 0.5 ± 0.1 mm/yr (Mörner, 2015c).

Available observational facts now give a congruent picture of global sea level rise in the order of ± 0.0 to $+1.0$ mm/yr; viz. $<+1.14$ mm/yr for mean of 184 global tide gauge stations, $+1.0 \pm 0.1$ mm/yr for the Northwest European test area, $+0.1$ mm/yr for the Venice test site, ± 0.0 mm/yr for Pacific key-sites like Tuvalu, Vanuatu and Kiribati, and ± 0.0 mm/yr for the Maldives, Goa (India) and Bangladesh.



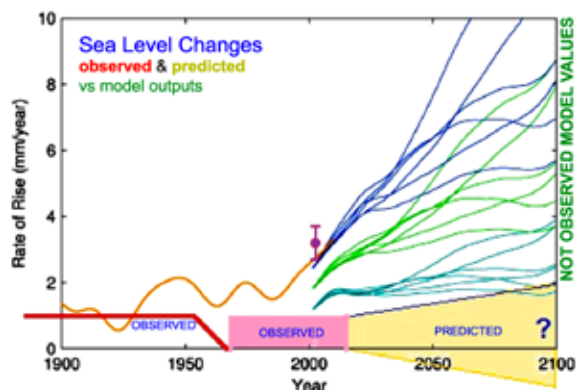


Figure 2. Comparison between 18 sea level prediction models and the observed sea level records and its estimated prediction up to 2100 at a value of $+5 \pm 15$ cm (Mörner, 2013). Once again, we see no relation between model out-puts and observational facts.

Figure 2 demonstrates with full clarity that sea level models produce trends that are in totally disagreement with observational facts. To chose model values and claim that they predict a disastrous sea level rise that will flood low-lying coastal areas by 2100 (as claimed by the IPCC and the COP21) violate the respect to scientific facts and the principles of geoethics (Mörner, 2015b).

3. Geoethical Principles

An Independent Committee on Geoethics has just been founded (<http://geoethic.com>; Mörner, 2015b). In its bylaws it is stated: *We will speak up and "use the sword of truth" when scientific facts, observational evidence and physical laws are being set aside, and when geoethical principles are violated.*

In the above two examples, model out-puts have come to be widely used instead of available observational facts. This implies that scientific facts, observational evidence and physical laws were set aside, which, in its turn, violates our geoethical principles.

This is the reason for the publication of this paper: a plead – in the name of science and geoethics – for a return to observational facts and physical laws.

4. Conclusions

By year 2100, temperature will not rise by $+2.7$ °C. This represents the mean of 102 CO₂-driven models. Instead, we must follow and respect the measured changes in temperature, and the logarithmic relations between CO₂-content and temperature rise, which by year 2100 would predict a rise in temperature well below 1 °C. Such a rise would pose no problems what so ever to life on Planet Earth.

Sea level is not at all in a rapidly rising mode. On the contrary, available observational facts indicate changes with a zone of ± 0.0 to $+1.0$ mm/yr, which poses no problems what so ever to coastal zones.

REFERENCES

- Humlum, O. (2015). Climate4you update September 2015. http://www.climate4you.com/Text/Climate4you_September_2015.pdf IPCC, 2007. Fourth Assessment Report. The Intergovernmental Panel of Climate Change. IPCC, 2013. Fifth Assessment Report. The Intergovernmental Panel of Climate Change. Jones, M. (2015). How reliable are the climate models? <http://wattsupwiththat.com/2015/09/17/how-reliable-are-the-climate-models/> Mörner, N.-A. (2011). Setting the Frames of Expected Future Sea Level Changes by Exploring Past Geological Sea Level Records. In: Evidence-Based Climate Science, Easterbrook, D.J., Ed., Chapter 6, p. 185-196. Elsevier, Amsterdam. Mörner, N.-A. (2013). Sea Level Changes: Past Records and Future Expectations: Energy & Environment, 24, 509-536. Mörner, N.-A. (2014a). Deriving the Eustatic Sea Level Component in the Kattegatt Sea: Global Perspectives on Geography, 2, 16-21. Mörner, N.-A. (2014b). Sea Level Changes in the 19-20th and 21st Centuries: Coordinates, X:10, 15-21 Mörner, N.-A. (2015a). Climate Fundamen-talism. In: Planetary Influence on the Sun and the Earth, and a Modern Book-Burning, N.-A. Mörner, Ed., Chapter 15, p. 167-174, Nova Sci. Publ. Mörner, N.-A. (2015b). Geoethics: the principles of ethics in Natural Sciences. https://www.researchgate.net/publication/283641399_Geoethics_the_principles_of_ethics_in_Natural_Sciences Mörner, N.-A. (2015c). Glacial isostasy: regional – not global: International Journal of Geosciences, 6, 577-592. NOAA (2014) Laboratory for Satellite Altimetry/Sea Level Rise. <http://www.star.nesdis.noaa.gov/sod/lsa/SeaLevelRise/> UC, University of Colorado (2015) Sea Level Research Group of University of Colorado. <http://sealevel.colorado.edu/>