

New Evidence for a Planetary Temperature Regulator

Reference

Kleypas, J.A., Danabasoglu, G. and Lough, J.M. 2008. Potential role of the ocean thermostat in determining regional differences in coral reef bleaching events. *Geophysical Research Letters* **35**: 10.1029/2007GL032257.

What was done

The authors looked for evidence of an "ocean thermostat" by analyzing patterns of *sea surface temperature* (SST) increases in the tropics over the past five decades, focusing their attention on the *western Pacific warm pool* (WPWP), because, in their words, "this is a region where maximum SSTs are thought to be limited by negative feedbacks," as described in the writings of Reginald Newell (1979) -- who they cite -- and who in collaboration with Thomas Dopplick employed what he had learned of the subject to demonstrate -- *nearly three decades ago* -- that the degree of CO₂-induced global warming predicted by the climate models of that day was far greater (and is greater still today) than what is allowed by the real world (Newell and Dopplick, 1979), as is further described in the historical narrative of Idso (1982).

What was learned

Kleypas *et al.* say their analysis indicates that "the warmest parts of the WPWP have warmed less than elsewhere in the tropical oceans," which fact "supports the existence of thermostat mechanisms that act to depress warming beyond certain temperature thresholds." In addition, they report that "coral reefs within or near the WPWP have had fewer reported bleaching events relative to reefs in other regions," which is also indicative of the existence of an upper-limiting temperature above which SSTs typically do not rise, presumably because of the "kicking-in" of the oceanic thermostat when they approach 30°C in the region the three researchers describe as "the center of coral reef biodiversity," which likely merits that description because of the effectiveness of the hypothesized thermostat.

What it means

These recent findings tend to support the thesis put forward years ago by both Newell and Dopplick (1979) and Idso (1980, 1982, 1989), i.e., that rather than the earth possessing some thermal "tipping point" above which global warming dramatically accelerates, the planet's climatic system is organized so as to do just the *opposite* and greatly *attenuate* warming above a certain level.

References

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Newell, R.E. and Dopplick, T.G. 1979. Questions concerning the possible influence of anthropogenic CO₂ on atmospheric temperature. *Journal of Applied Meteorology* **18**: 822-825.

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