



Relationship between CO₂ and Global Temperature: Simulated vs Observed

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The evolutions of CO₂ and global-mean temperature in GCM forecast simulations are found to be isomorphic. Having identical form, the two properties are related directly. Their one-to-one relationship indicates that, in the simulations, changes in the global energy budget reduce to a highly-simplified balance. Through linear mechanics, anomalous CO₂ then entirely determines anomalous global temperature.

In the observed record, anomalous CO₂ and global-mean temperature are also found to be related – but differently. There, the two properties are related just as strongly, but indirectly. Involving nonlinearity, the observed relationship is consistent with a different physical balance, one that prevails in the real world but not in the model world.