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Model falsifiability and climate slow modes

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**Highlights**

1. Climate models do not and cannot employ known physics fully. Thus, they are falsified, a priori.
2. Incomplete physics and the finite representation of computers can induce false instabilities.
3. Eliminating instability can lead to computational overstabilization or false stability.
4. Models on ultra-long timescales are dubiously stable. This is referred to as the “climate state.” Is it real?
5. Decadal variability is understandable in terms of a specific class of nonlinear dynamical systems.

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