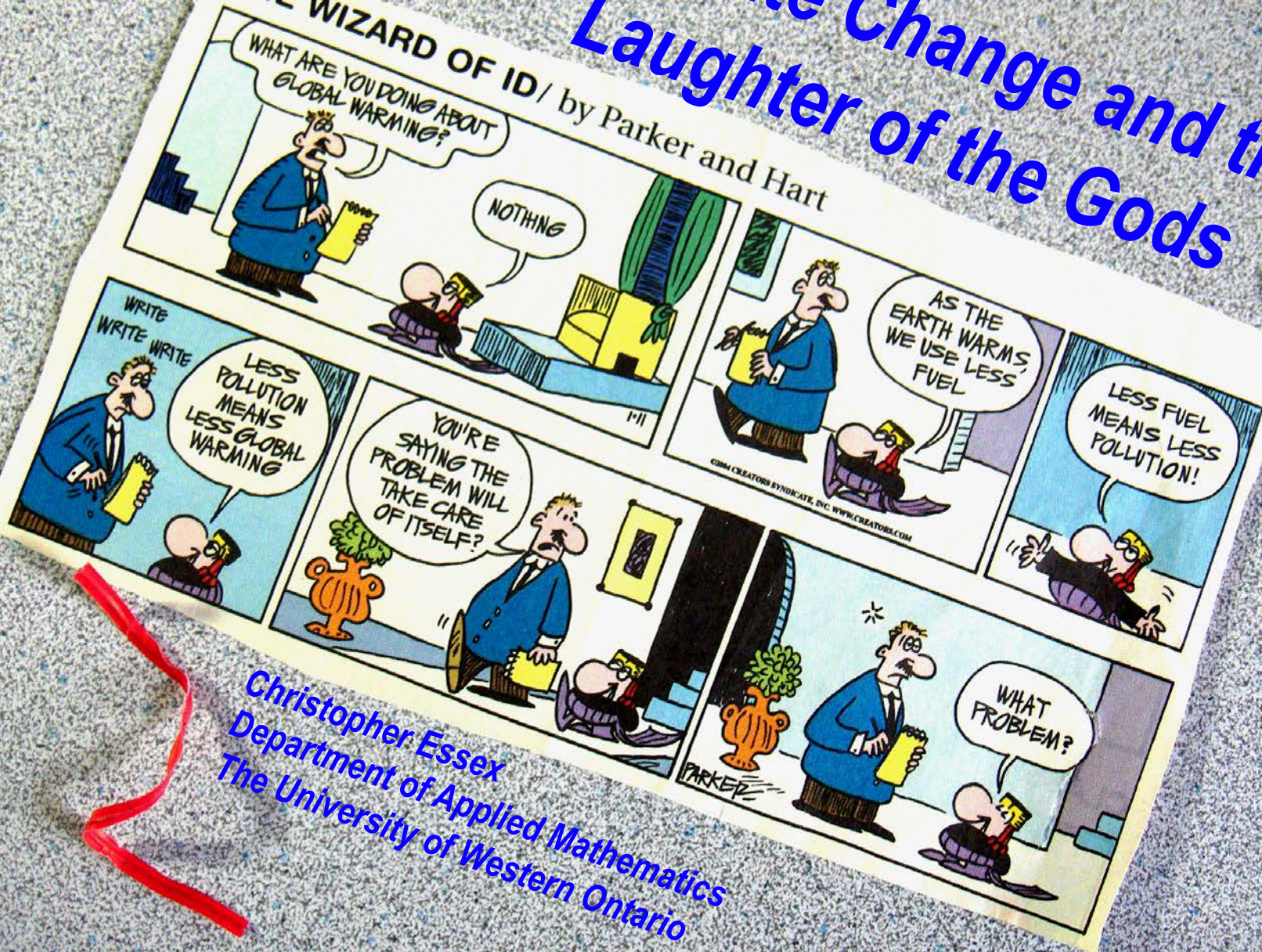


# Climate Change and the Laughter of the Gods

THE WIZARD OF ID/ by Parker and Hart



Christopher Essex  
Department of Applied Mathematics  
The University of Western Ontario

REMEMBER HOW YOU  
CHUCKLED WHEN DAVID  
SUZUKI CALLED FOR JAIL  
TERMS FOR POLITICIANS  
WHO DISAGREED WITH  
HIM?



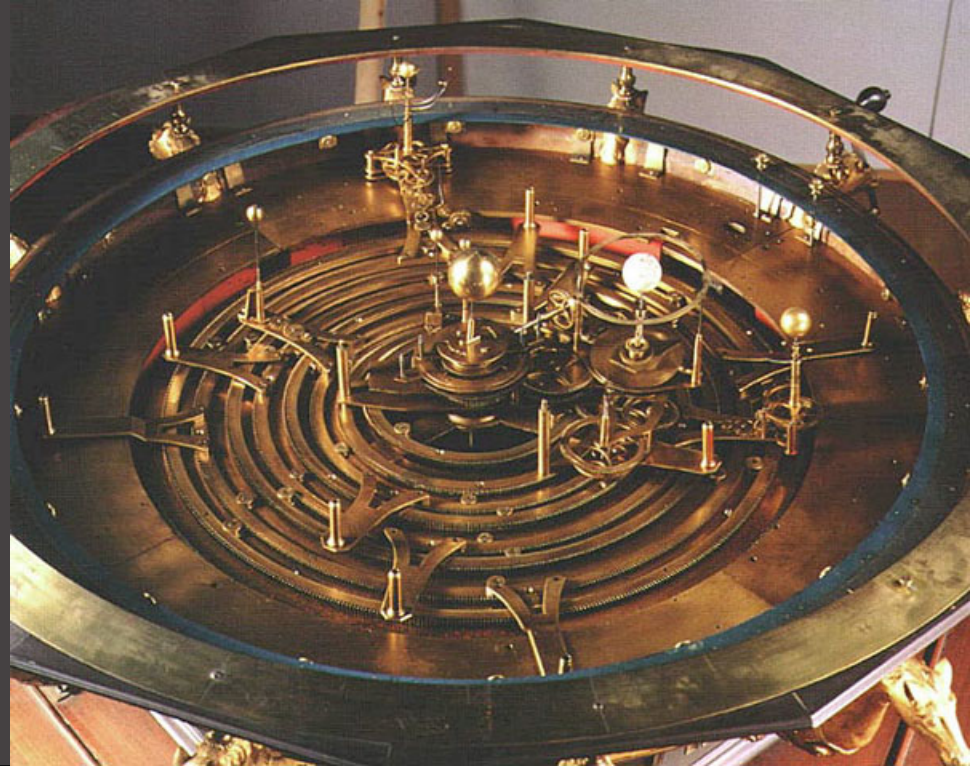
“In climate research and modelling, we should recognize that we are dealing with a coupled non-linear chaotic system, and therefore that long-term prediction of future climate states is not possible.”

*The Intergovernmental Panel on Climate Change (IPCC), Third Assessment Report (2001), Section 14.2.2.2, page 774.*

# The Computer Climate Model Clockwork Fallacy

Model forecasts are  
“based on well-known  
equations of conservation of  
momentum, mass and energy  
and the equation of state.”

“Global climate models are  
based on the laws of physics;  
they make no assumption of  
climate constancy or  
inconstancy.”





# Clay Mathematics Institute

*Dedicated to increasing and disseminating mathematical knowledge*

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## Millennium Problems

In order to celebrate mathematics in the new millennium, The Clay Mathematics Institute of Cambridge, Massachusetts (CMI) has named seven *Prize Problems*. The Scientific Advisory Board of CMI selected these problems, focusing on important classic questions that have resisted solution over the years. The Board of Directors of CMI designated a \$7 million prize fund for the solution to these problems, with \$1 million allocated to each. During the Millennium Meeting held on May 24, 2000 at the Collège de France, Timothy Gowers presented a lecture entitled *The Importance of Mathematics*, aimed for the general public, while John Tate and Michael Atiyah spoke on the problems. The CMI invited specialists to formulate each problem.

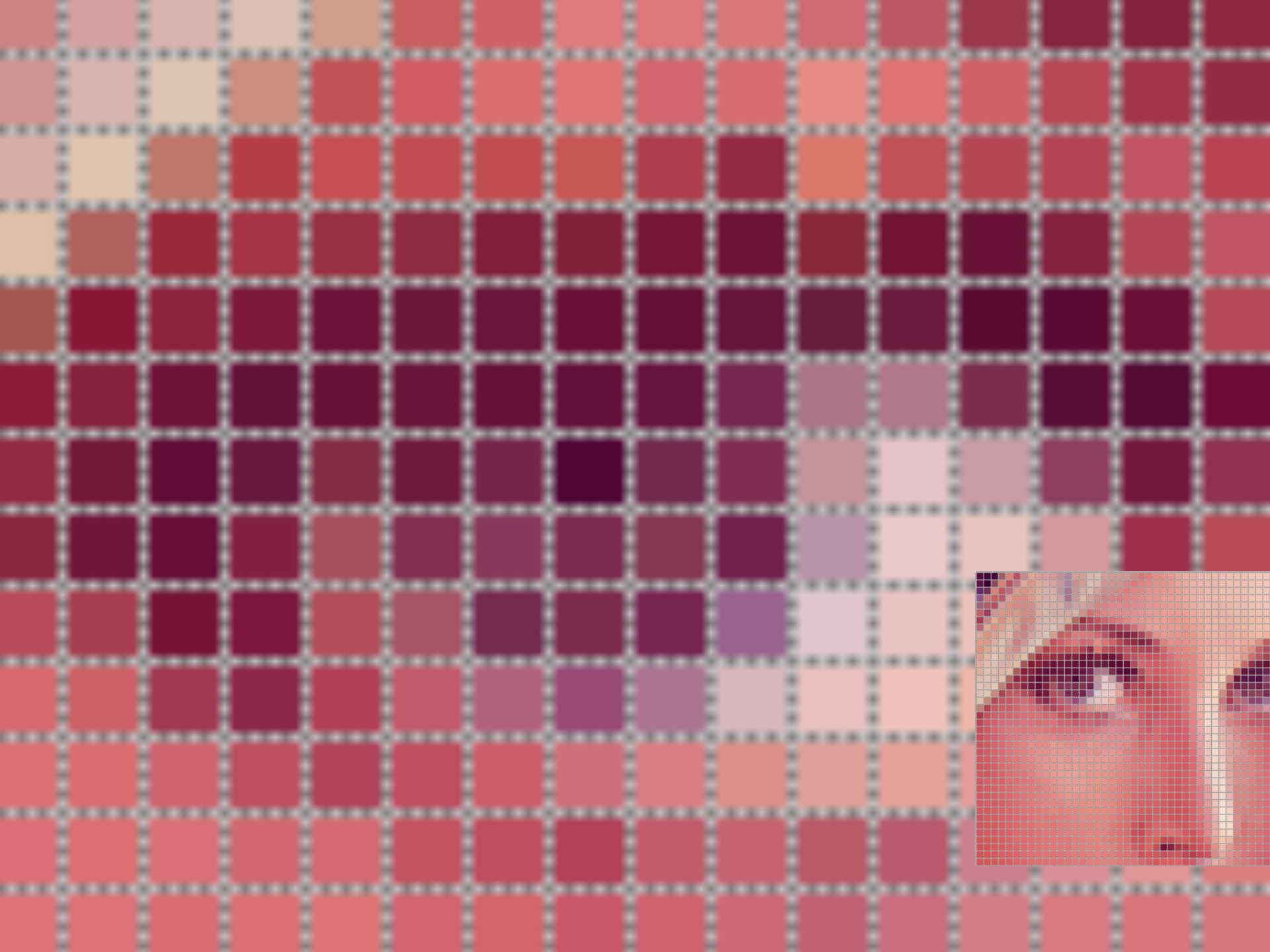
One hundred years earlier, on August 8, 1900, David Hilbert delivered his famous lecture about open mathematical problems at the second International Congress of Mathematicians in Paris. This influenced our decision to announce the millennium problems as the central theme of a Paris meeting.

The rules for the award of the prize have the endorsement of the CMI Scientific Advisory Board and the approval of the Directors. The members of these boards have the responsibility to preserve the nature, the integrity, and the spirit of this prize.

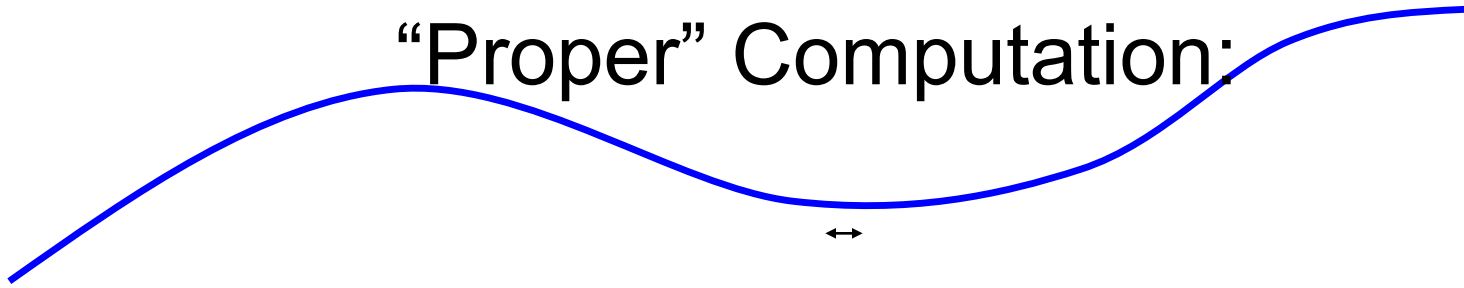
*Paris, May 24, 2000*

Please send inquiries regarding the Millennium Prize Problems to [prize.problems@claymath.org](mailto:prize.problems@claymath.org).

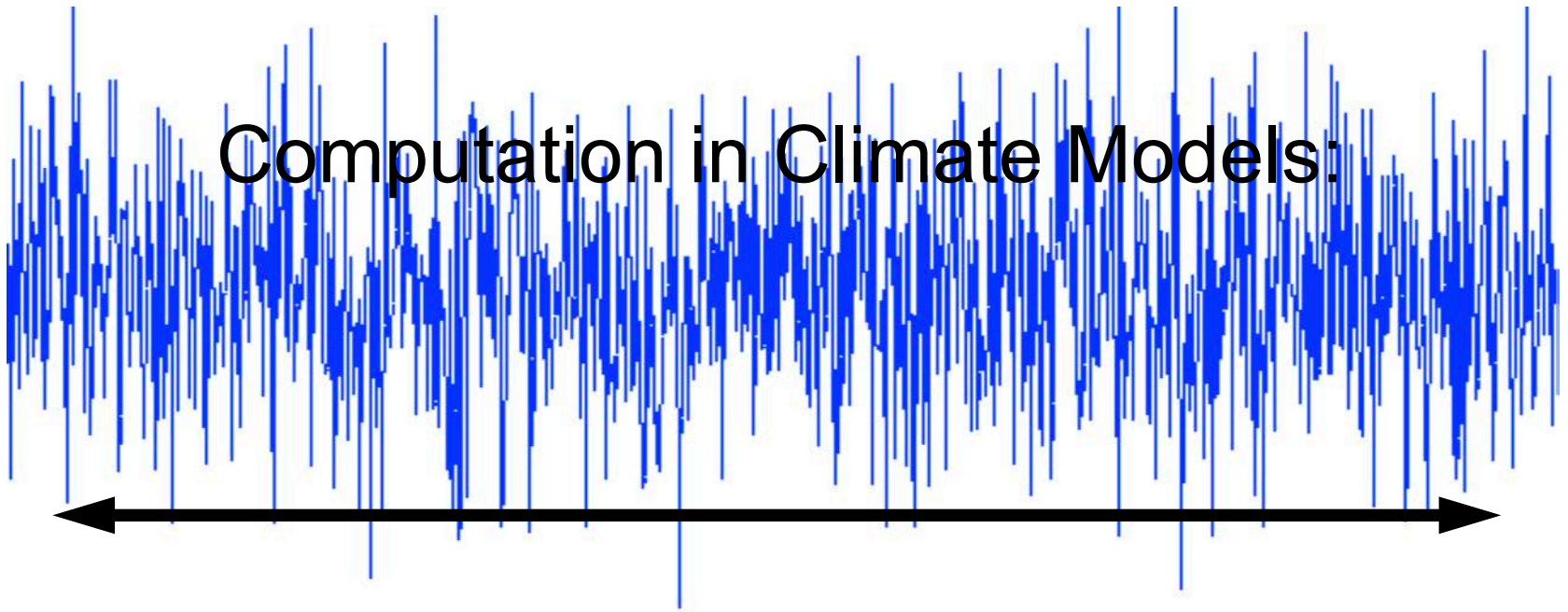
- ▶ [Birch and Swinnerton-Dyer Conjecture](#)
- ▶ [Hodge Conjecture](#)
- ▶ [Navier-Stokes Equations](#)
- ▶ [P vs NP](#)
- ▶ [Poincaré Conjecture](#)
- ▶ [Riemann Hypothesis](#)
- ▶ [Yang-Mills Theory](#)
- ▶ [Rules](#)
- ▶ [Millennium Meeting Videos](#)

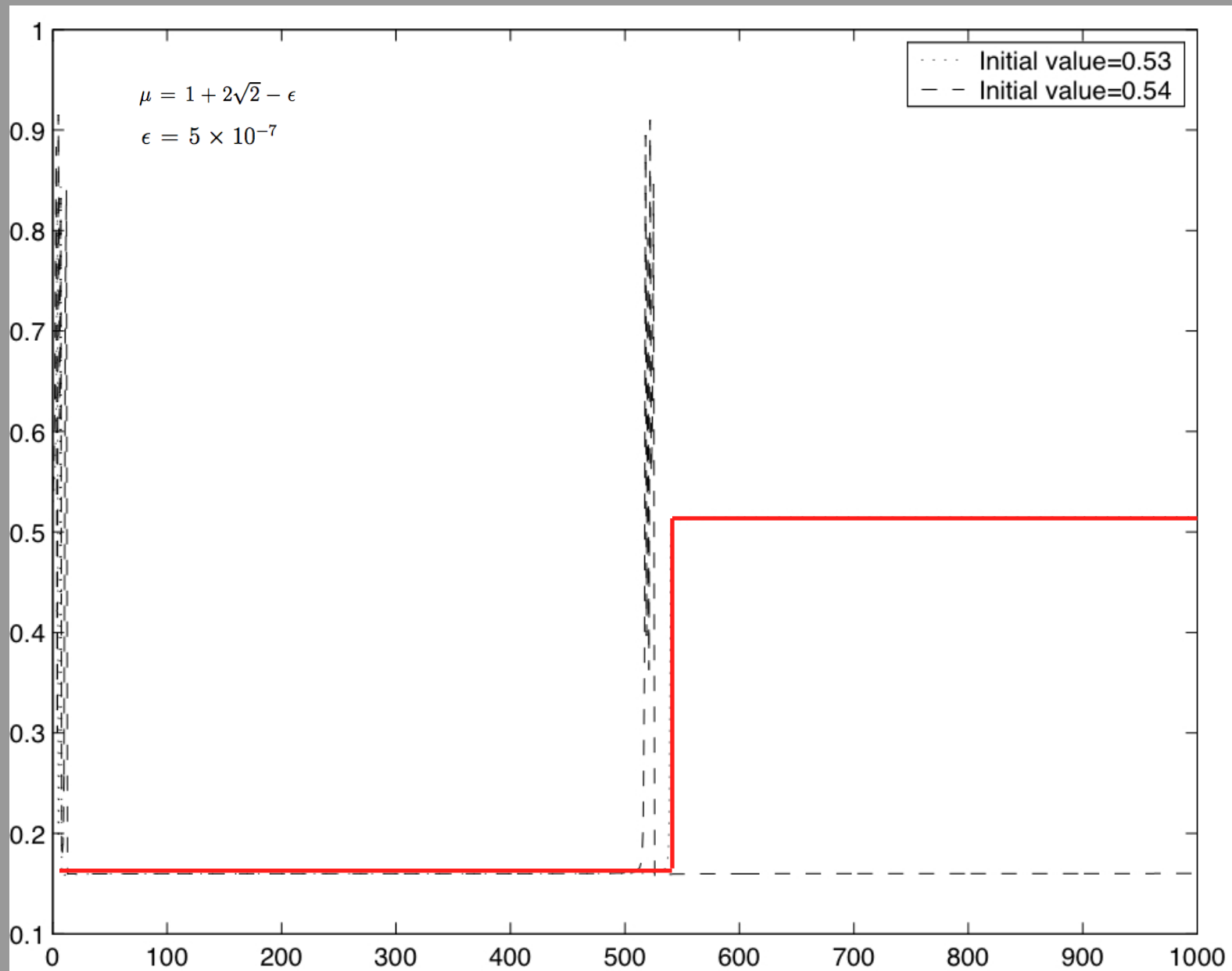


“Proper” Computation:



Computation in Climate Models:





*Larry Long-Wave*



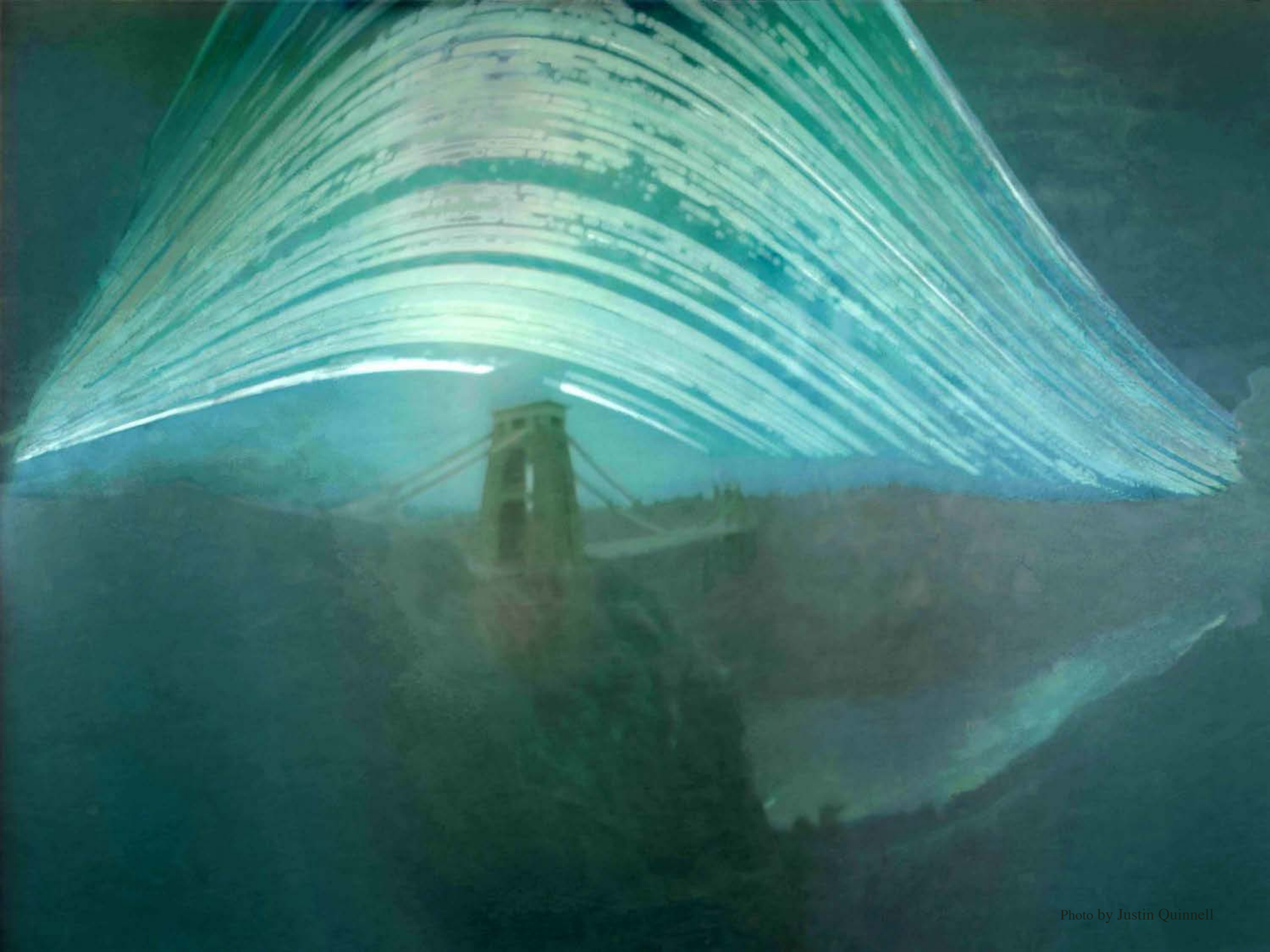
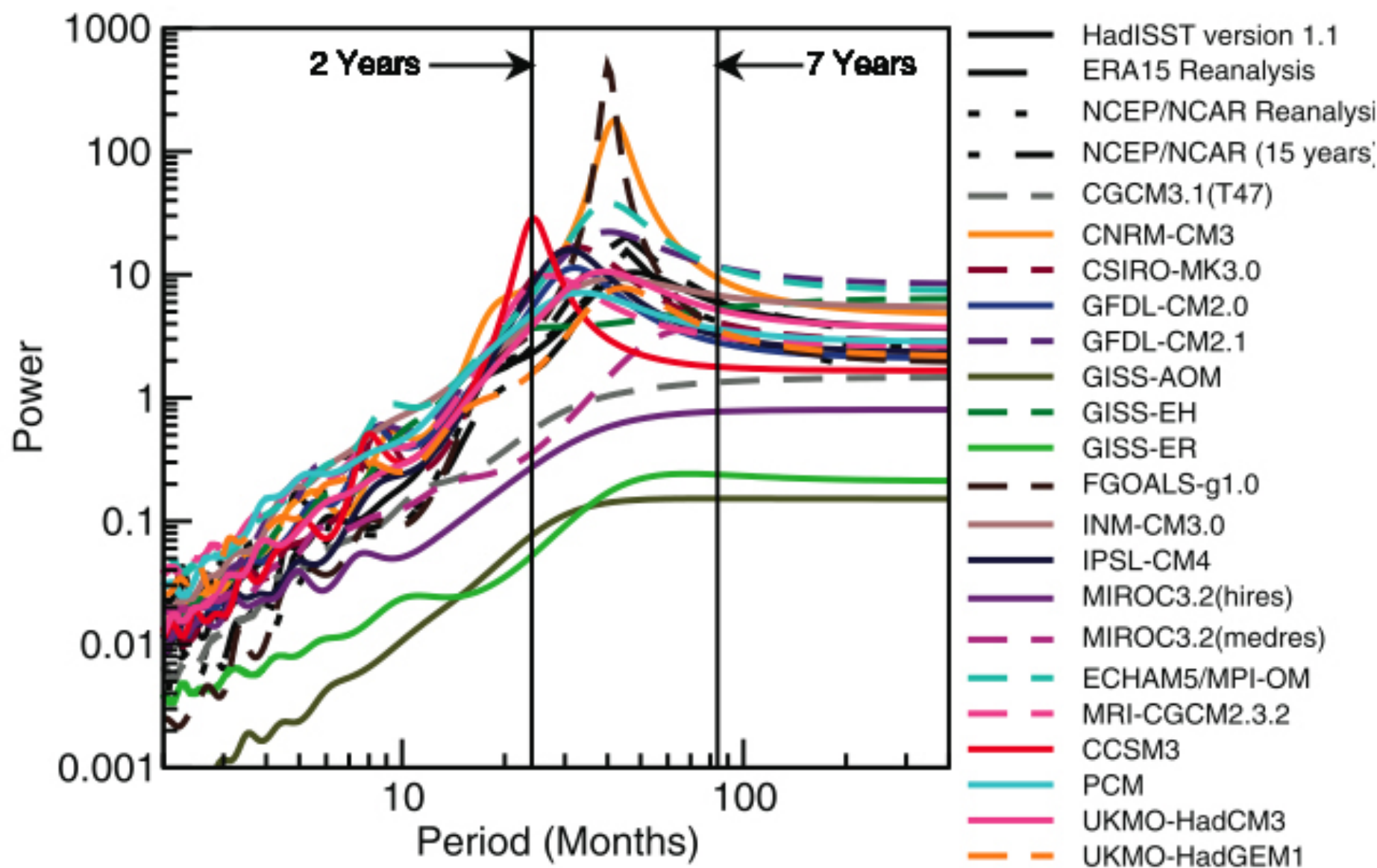
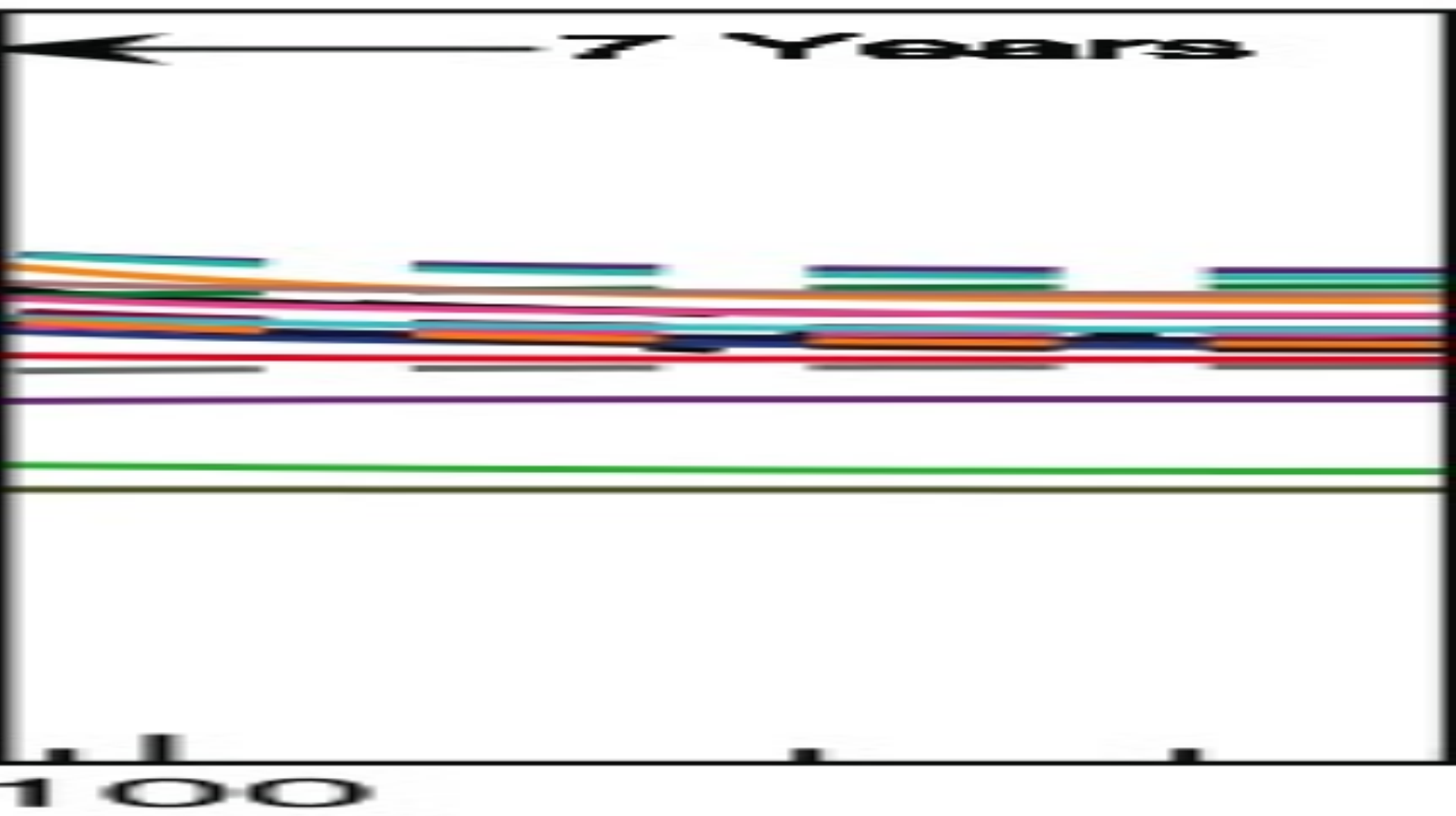




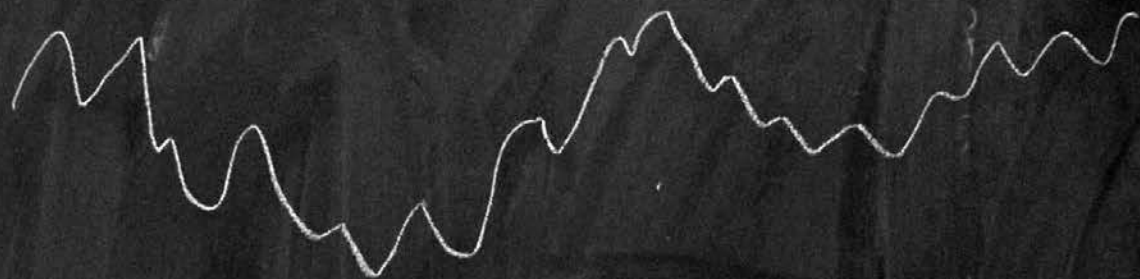
Photo by Tarja Trygg







Observed  
variable



Model variable



Observed  
variable



Model  
variable



# Climate Change and the Laughter of the Gods

