

Why the Weather Forecasts of the Future Forecast will Not Forecast the Future

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Lorentz Highlights This Week's Discoveries, 14 November 2017

Abstract

Poincaré noted that "some hypotheses are dangerous" and went on to say that mathematical physics can render us the service of identifying dangerous assumptions we make without knowing we made them. Different notions of our aims in forecasting physical systems like the weather are discussed in this light. I argue that the insights of nonlinear dynamics, in particular structural model error and the loss of topological conjugacy in nonlinear systems, prevents our making accountable probability forecasts, in much the same way that "chaos" prevents our making accurate point forecasts. An alternative future for the weather forecasting enterprise is suggested.