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Michael Ghil obtained his Ph.D. from New York University's Courant Institute of Mathematical Science with Peter D. Lax in 1975. He is a Distinguished Professor of Geosciences (emeritus) at the Ecole Normale Supérieure, Paris, past Head of its Geosciences Department (2003–2009) and founder of its Environmental Research and Teaching Institute. He is also a Distinguished Research Professor at the University of California, Los Angeles, where he was Chair of the Department of Atmospheric Sciences (1988–1992) and Director of the Institute of Geophysics and Planetary Physics (1992–2003). Ghil is a founder of theoretical climate dynamics, as presented in his Springer-Verlag (1987) book with Steve Childress, as well as of advanced data assimilation methodology, as presented in the Springer-Verlag (1981) book co-edited with Lennart Bengtsson and Erland Källén. He has applied systematically ideas and methods from dynamical systems theory to planetary-scale flows, atmospheric and oceanic. Ghil has used these methods to proceed from simple flows with high temporal regularity and spatial symmetry to the observed flows, with their complex behavior in space and time. His studies of climate variability on many time scales have used a full hierarchy of models, from the simplest "toy" models all the way to atmospheric, oceanic and coupled general circulation models. Ghil has worked on Climate Dynamics, Dynamical and Complex Systems, Extreme Events, Numerical and Statistical Methods, and (most recently) Mathematical Economics. He is the author or editor of a dozen books and author or co-author of over 300 research and review articles. Many of the latter can be found on the web site of his research group at UCLA, http://www.atmos.ucla.edu/tcd/. His honors and awards include the L.F. Richardson Medal of the European Geosciences Union (EGU, 2004), the E.N. Lorenz Lecture of the American Geophysical Union (2005), a Plenary Lecture at the 7th International Congress on Industrial and Applied Mathematics (ICIAM 2011), the Alfred Wegener Medal of the EGU (2012), and Membership in the Academia Europaea (1998).

A Mathematical Theory of Climate Sensitivity or, A Tale of Deterministic and Stochastic Dynamical Systems

Abstract
The climate system is nonlinear, complex and variable on many scales of time and space. It is typically studied across a hierarchy of models from low-dimensional systems of ordinary differential equations (ODEs) to infinite-dimensional systems of partial and functional differential equations (PDEs and FDEs). The theory of differentiable dynamical systems (DDS) has provided a road map for climbing this hierarchy and for comparing theoretical results with observations. The climate system is also subject to time-dependent forcing, both natural and anthropogenic, e.g. volcanic eruptions and changing greenhouse gas concentrations. Hence increased attention has been paid recently to applications of the theory of non-autonomous and random dynamical systems (NDS and RDS). This talk will review the road from the classical DDS applications to low-dimensional ODE climate models to current efforts at applying NDS and RDS theory to non-autonomous FDE and stochastic PDE models. The debt of the lecturer and of his co-authors over the years to Peter D. Lax is immense, and a modest tribute will be paid to Peter's contributions to pure and applied mathematics.