

Estimating tipping points in climate

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In recent years there has been an increasing awareness of the risks of collapse or tipping points in a wide variety of complex systems, ranging from human medical conditions, pandemics, ecosystems to climate, finance and society. Even in systems where governing equations are known, such as the atmospheric flow, predictability is limited by the chaotic nature of the system and by the limited resolution in observations and computer simulations. These phenomena are naturally modelled by strongly nonlinear stochastic processes, which permit a statistical description. In this talk I will present methods to analyze data from such complex systems, with application to an important tipping element in the climate, the Atlantic Meridional Overturning Circulation.