



Is it potentially possible to predict a tipping point in the climate?

Peter Ditlevsen

University of Copenhagen, Niels Bohr Institute, Centre for Ice and Climate, Copenhagen O, Denmark (pditlev@nbi.ku.dk)

We know from the paleoclimate records that the climatic response to perturbations and internal fluctuations can be very abrupt and non-linear.

If such abrupt changes, or tipping points are to be foreseen in the future we need to know if there are early warning signals in the variations prior to a tipping point. This will depend on the dynamical nature of the tipping: In the most simple scenarios we can distinguish between b-tipping, n-tipping and r-tipping, referring to bifurcation induced -, noise induced - and rate induced tipping respectively. These have distinctly different early warning signals. This difference can be used to identify the type of tipping in the Dansgaard-Oeschger events observed in the paleoclimatic record. These are n-tipping events, which could hint to the reason why they are difficult to simulate in climate models.