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KlimaCampus Kolloquium

Prof. Alan Plumb

Dynamical Climate Perturbations and the Fluctuation-Dissipation Theorem

Models indicate that much of the dynamical response of the atmosphere to imposed perturbations displays the same spatial patterns as those that dominate temporal fluctuations of the unperturbed climate. E.g., model responses to both increased GHGs and Antarctic ozone depletion show a poleward shift of the midlatitude jet in the southern hemisphere, with an anomaly pattern very much like that of the southern annular mode, the leading pattern of variability in southern hemisphere winds.

Such responses are reminiscent of the predictions of the fluctuation-dissipation theorem (FDT), which (amongst other things) relates the perturbed response of a dynamical system to its unperturbed variability. Applications of the FDT to climate problems have met with some success. I will describe some of these successes, as well as some failures and the possible limitations of the FDT.

Prof. Plumb from MIT is invited by the Max Planck Institute for Meteorology

Bundesstraße 53, Room 22/23 (ground floor)