1046-86-2111 **Rafail V. Abramov*** (abramov@math.uic.edu), MSCS, University of Illinois at Chicago, 851 S. Morgan st., Chicago, IL 60607, and **Andrew J. Majda**, Courant Institute of Mathematical Sciences, New York University, 251 Mercer st., New York, NY 10012. *Climate response through fluctuation-dissipation: A new algorithm for low-frequency dynamics.*

Recently, we developed and tested a novel computational algorithm for predicting the mean response of a chaotic dynamical system to small changes in external forcing via the fluctuation-dissipation theorem (FDT). Unlike the earlier work in developing FDT-based computational strategies for chaotic nonlinear systems with forcing and dissipation, the new method is based on the theory of SRB probability measures, which commonly describe equilibrium states of such dynamical systems. The new response algorithm is tested on a model of the barotropic climate with realistic Earth orography and forcing mimicking the dynamics of the atmosphere at 300 and 500 hPa geopotential height. The new method yields greater accuracy than the classical FDT method for the response of both mean state and variance for large scale EOFs. These results point the way toward the potential use of the new response algorithm in operational long-term climate change prediction. (Received September 17, 2008)