



## Abstract Details

[AOGS 1st Annual Meeting](#) > [Non-linear Geophysics](#) > **An integrated approach for earth system modeling (NL3) >**

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**Title:** An integrated approach for earth system modeling (NL3)

**Abstract:**

Modeling parameters using deterministic chaos have been discussed for earth system through atmospheric pressure, maximum and minimum temperature, monsoon rainfall, cyclonic storm tracks, long term climate, ozone, radio refractive index, magnetosphere ionosphere system, volcanoes, earthquakes and fluid flows in core and mantle using the method of Grassberger and Procaccia and Lyapunov exponents. It was found that the atmospheric phenomena generally showed a fractal dimension of 6 to 7 implying at least 7 to 8 parameters for modeling the system. On the other hand, the magnetosphere- ionosphere system had a low dimension. Most interesting results were found for earthquakes whose strange attractor dimension provides a methodology for differences between intraplate and interplate Indian region. It also provides a dynamical justification for delineation of seismicity patterns based on epicenters of earthquakes on different closely located fault systems upto 500 km. radius from the impending earthquake. Another interesting result pertains to the Koyna region where a low strange attractor dimension of 4.5 provides justification for earthquake predictability programme in this region. Accordingly a multidisciplinary programme for earthquake prediction research has been initiated through the Department of Science and Technology.

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