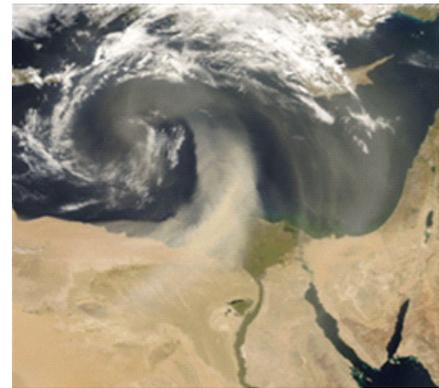


Scales and patterns in the Earth system

The circulations of the Earth's atmosphere and ocean as well as biogeochemical processes are driven by sunlight, from the molecular level of solar radiation absorption to large scale tele-connections. The different scales in the Earth system are associated with characteristic spatial arrangements, including weather, clouds and ecological patterns. The complex non-linear physical, chemical, and biological interactions among the components of the Earth System are becoming an increasingly important focus in global change research (R.A. Pielke Sr, H.J. Schellnhuber and D. Sahagian).

In non-linear systems a small perturbation in one location can lead to a large response in another location, illustrated by the formulation of Edward N. Lorenz: "a butterfly flapping its wings in Beijing could affect the weather thousands of miles away some days later". There are many components (or sub-systems) of the Earth system that could display non-linear behavior and transitions under anthropogenic climate forcing. Such non-linear transitions may constitute "tipping points" (T.M. Lenton).

The autumn school "Scales and patterns in the Earth system" at the Max Planck Institute for the Physics of Complex Systems in Dresden, from 5 - 9 November 2012, will address complex Earth interactions across disciplines, relevant to global change research. The school is offered jointly by the Max Planck Institutes for Biogeochemistry (Jena), Chemistry (Mainz) and Meteorology (Hamburg), which form the Earth System Research Partnership within the Max Planck Society, in collaboration with the Scripps Institution of Oceanography (UC San Diego).



Format

The school will encompass four lectures per day plus discussion sessions during which selected (review) articles will be debated.

Participants

40 PhD students of the participating institutions

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