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and the German Centre for Research and Innovation (DWIH) - New Delhi
together with
International Centre for Theoretical Sciences - ICTS Bangalore

cordially invite you to the



Tipping elements approach for predicting onset and withdrawal of Indian Summer Monsoon

By Prof. Dr. Elena Surovyatkina

Leader, Monsoon Research Group at the Potsdam Institute for Climate Impact Research, Germany.
Leading Researcher at Space Research Institute of Russian Academy of Sciences, Moscow, Russia

Thursday, 24th January 2019, 3:00 - 4:00 pm

Emmy Noether Seminar Room, International Centre for Theoretical Sciences (ICTS)
Tata Institute of Fundamental Research

Survey No. 151, Shivakote Village, Hesaraghatta Hobli, Bengaluru (North) – 560089

To attend, please RSVP:

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Prof. Dr. Elena Surovyatkina



Prof. Dr. Elena Surovyatkina is a leader of Monsoon Research Group at the Potsdam Institute for Climate Impact Research, Germany, and a leading researcher at Space Research Institute of Russian Academy of Sciences, Moscow, Russia.

Prof. Surovyatkina has her expertise in theoretical physics in the field of critical phenomenology. Currently, her research is devoted to the spatially organized critical transitions in climate and her most significant contribution in climate dynamics is a novel methodology of the long-term forecasting of the Indian summer monsoon. This long-term forecast means prediction of the onset date (40 days in advance) and withdrawal date (70 days in advance), thus offering the earliest prediction of monsoon timing and the only available withdrawal date in India. Successfully predicting the onset and withdrawal of the Indian summer monsoon in central part of India for three years in a row, Prof. Elena Surovyatkina has offered crucial information for appropriate decision making at various levels such as for farmers at the field (e.g. plowing and sowing day) to the Central Government (e.g. managing food procurement policies).

Tipping elements approach for predicting onset and withdrawal of Indian Summer Monsoon

Why the monsoon onset is so difficult to predict? There are three aspects of the problem: the monsoon does not begin at fixed dates, it begins at different dates in different parts of the country, and the time of monsoon onset varies within a month from year to year. The variability of withdrawal dates is even higher.

A new methodology allows forecasting monsoon onset and withdrawal over central India. The main idea is to consider the onset of monsoon as a critical transition (e.g., in near-surface air temperature). The analysis of critical fluctuations revealed a new feature of Indian summer monsoon wherein two regions in the areas of the Eastern Ghats and North Pakistan act as tipping elements, which play a crucial role in the spatial organization of Monsoon. Observations in these areas allow forecasting of the monsoon onset and withdrawal dates for 40 and 70 days in advance respectively.