

Mathematical Science of Understanding and Predicting Regional Climate: A school and workshop

February 28 - March 11, 2011

Greenhouse gases released into the atmosphere by human activities have effected the overall climate of the Earth. Although there is high confidence in climate change at a global scale and for surface temperatures, the change in climate for specific regions, such as Southeast Asia, and for other variables, such as rainfall and sea level, have less certainty. Determining changes in climate at local scales is crucial because of its value for making policy decisions, assessing ecological and economic impacts and planning future infrastructure. This program explores from a mathematical and statistical perspective how to improve prediction of regional climate changes. Mathematics can support improvements in physical models, the combination of models with observations and also characterizing the uncertainty of climate predictions. The goal of this program is to bring together mathematical and geophysical scientists to address this problem from a multidisciplinary and collaborative perspective.

School: A week-long training and lab activity that will blend lectures with hands-on data experience using the R statistical language and student teams working on climate data relevant to Singapore. The level will be comparable to a Masters level applied statistics course but will accommodate interested scientists and graduate students outside of statistics. This will include tutorial lectures on geostatistical and Bayesian methods for spatial data.

Principle Lecturer: Stephen Sain (NCAR)

Workshop: Three themes will be linked through a week long workshop that encourages discussion among scientists from different disciplines:

1. The analysis of climate impacts relevant to Singapore and Southeast Asia through the use of climate model numerical experiments
2. Statistical models for computer experiments
3. Dimension reduction techniques for large spatio-temporal fields

Keynote Lecturer: Linda O. Mearns (Program Director and Senior Scientist, NCAR)

Program Committee:

Vladan Babovic (NUS)

James Done (NCAR)

Greg Holland (NCAR)

Hans Kuensch (ETH Zurich)

Shie-Yui Liong (NUS)

David Nott (NUS)

Douglas Nychka (NCAR), Chair

Pavel Tkalich (NUS)

Venue: Institute for Mathematical Sciences, NUS

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