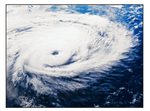
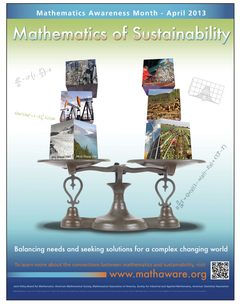
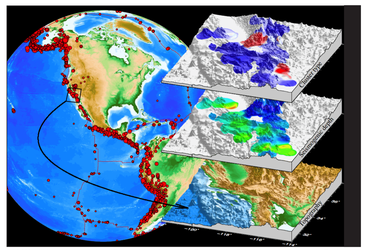
Mathematics of Planet Earth 2013



As climate change leads to higher sea surface temperatures, the environment in which tropical storms develop changes. The regions where tropical storms form expand, and their frequency, intensity, and duration increase.



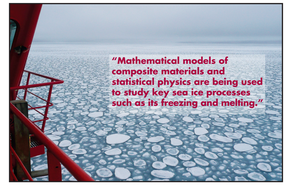
The Moon stabilizes the axis of the Earth. Jacques Laskar showed in 1993 through simulations that, if we remove the Moon from the model of the solar system, then the axis of the Earth undergoes very large chaotic oscillations, similar to the oscillations of the axis of Venus or Mars, thus forbidding the seasons system that we now have. The obliquity of the Earth's axis oscillates between 22.1 and 24.5 degrees, with a period of 41,000 years. The present obliquity is 23.44 degrees, and is decreasing. Decrease in the obliquity favours warmer winters and cooler summers and, globally, a glaciation.



SAMSI will host the workshop "Dynamics of Seismicity, Earthquake Clustering and Patterns in Fault Networks", October 9-11, 2013. The workshop will highlight the key role of the mathematical sciences in studying seismicity dynamics in relation to properties of faults and the crust as an essential component of this interdisciplinary research endeavor.

Workshop
School
Lecture
Long Term Program
Meeting

IMU
ICIAM
United Nations Educational, Scientific and Cultural Organization
ICSU
International Council for Science



Images from http://www.math.utah.edu/~golden/polar.html, quote by Ken Golden

Image provided by Barbara Cozzens, Wyoming Director of the Greater Yellowstone Coalition.

Mathematics of Planet Earth is a world-wide initiative to bring awareness to global issues and the role that mathematics can play in their solution.

A PLANET TO DISCOVER:
oceans; meteorology and climate; mantle processes, natural resources, solar systems

A PLANET SUPPORTING LIFE:
ecology, biodiversity, evolution

A PLANET ORGANIZED BY HUMANS:
political, economic, social and financial systems; organization of transport and communications networks; management of resources; energy

A PLANET AT RISK:
climate change, sustainable development, epidemics; invasive species, natural disasters

Unprecedented in its all-encompassing scope and geographic reach, the MPE2013 year brings to the forefront the universality of mathematics, with the hopes of making the general public aware of the insights it provides into many human endeavors, of its capability of predicting natural phenomena and processes, as well as its power of creating and shaping new discoveries. The year is also aimed at bringing the mathematics community together to work on the challenges facing the planet, at a time when all human activities have global significance and impact. At the same time, we need not only inspire the new generation, but also develop new educational programs for them, that sow the seeds of the needed mathematical insights and cultivate vital quantitative skills, in a multidisciplinary and interconnected world that requires a workforce adaptable to fast changes and simultaneous challenges.

— Bogdan Vernescu, President , National Professional Science Master's Association (NPSMA)