

# Mathematics of Planet Earth 2013

Mathematics of Planet Earth (MPE) is a worldwide project to be held in 2013. Since its conception in 2010, MPE2013 has become a true world initiative, attracting partners from all over the globe and from all continents, including, in the United States: the AMS, the American Statistical Association, the Mathematical Association of America, and the Society for Industrial and Applied Mathematics. The project has been endorsed by the International Mathematical Union, the International Council of Applied and Industrial Mathematics, and the International Commission of Mathematical Instruction.

The mission of MPE2013 is to increase the engagement of mathematicians, researchers, teachers, students, and the public with the role of mathematics in issues affecting Planet Earth and its future. The strategies are to:

- Encourage research to identify and address fundamental questions about our planet to which mathematics can contribute to a solution, including understanding Earth's climate and environment and addressing its sustainability.
- Encourage mathematics teachers at all levels to communicate issues related to Planet Earth through their instruction and curriculum development.
- Encourage mathematics students and beginning researchers to pursue research areas related to Planet Earth.
- Inform the public about roles that mathematics can play in addressing questions related to Planet Earth.

The MPE theme is interpreted in a very broad sense, which leaves room for many institutes and societies around the world to organize related activities. Earth is a planet with dynamic processes in the mantle, oceans, and atmosphere that create climate, cause natural disasters, and influence fundamental aspects of life and life-supporting systems. In addition to these natural processes, humans have developed systems of great complexity, including economic and financial systems; the World Wide Web; frameworks for resource management, transportation, and health care delivery; and sophisticated social organizations. Human activity has increased to the point where it influences the global climate, impacts the ability of the planet to feed itself, and threatens the stability of these systems. Mathematics is poised to play an essential role in the study of planetary issues, both as a fundamental discipline and as an essential component of multidisciplinary research.

Mathematics of Planet Earth 2013 aims to develop this role for mathematics by providing a platform to showcase the essential relevance of mathematics to planetary problems, to coalesce activities currently dispersed among institutions, and to create a context for mathematical and

interdisciplinary developments that will be necessary in order to address a myriad of issues and meet future global challenges. The MPE activities will take place everywhere on the planet. The scientific activities will include thematic terms or semesters on subthemes related to the main theme, workshops, collaborative research groups, summer schools, and special issues of scientific journals. Several learned societies will hold meetings on the theme or will publish related articles in their newsletters. Collaboration and joint activities are much encouraged.

In parallel with the scientific side, outreach activities developing awareness of the role of mathematics in the study of the planet and in planetary issues will be organized worldwide, targeting the public, the media, and the schools. These could include public lectures, panel discussions, radio or television programs, exhibitions, articles in newspapers, etc. School activities will include posters, special issues of magazines, websites, exhibitions, outreach to teachers' organizations, lectures in the schools, classroom projects, etc. International collaboration is encouraged to maximize the visibility of the initiative.

The MPE Workshop Committee is concentrating on identifying the most important themes and ensuring that these are covered in workshops or in thematic programs at mathematics institutes. The committee will also assist proposers in finding funding and venues for the workshops that seem to best fit the MPE ideals. A call for input to the Workshop Committee is posted on the MPE website.

The MPE Museum Committee has launched a competition of virtual modules that could be reproduced and utilized by many users around the world, from science museums to schools. Further information about this competition may be found in an announcement in the "Mathematics Opportunities" section of this issue of the *Notices*.

In North America, the Canadian Mathematical Society (CMS) will launch MPE2013 activities at its winter meeting in Montreal in December 2012; other societies, such as the Canadian Applied and Industrial Mathematical Society, have been invited to participate. MPE2013 activities will also take place at the Joint Mathematics Meetings in January 2013, including at the open house of the mathematics institutes. The first Mathematical Congress of the Americas, which will take place in Guanajuato, Mexico, August 5–9, 2013, will also have an MPE2013 component.

The themes of Mathematics of Planet Earth are so rich and varied that the project allows members of the mathematical community and various organizations to contribute to the initiative in creative ways. We hope to enlist the participation of many mathematicians and organizations as well as their help in promoting the event.

—Christiane Rousseau, Chair  
MPE2013 Steering Committee  
University of Montreal  
rousseau@dms.umontreal.ca  
<http://www.mpe2013.org>