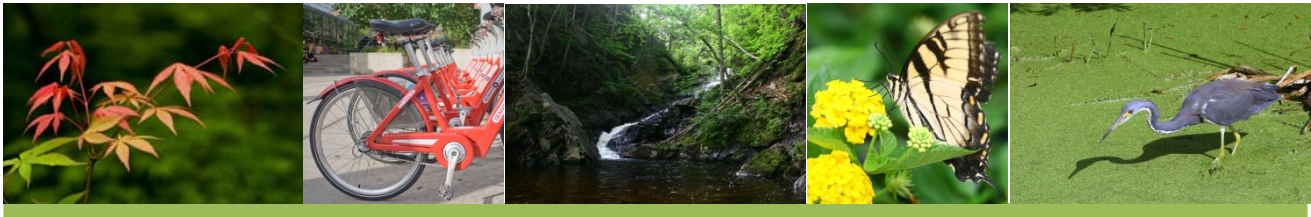


DIMACS Initiatives in Sustainability

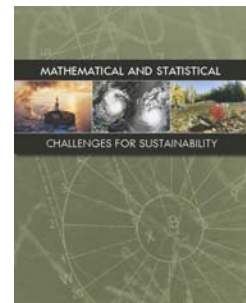


DIMACS has a long record of developing projects and activities that connect mathematical and computational methods with topics in **sustainability**. Past DIMACS activities include a Climate and Health research initiative and the DIMACS-MBI US-African BioMathematics Initiative that addressed concerns in epidemiology, conservation biology, and landscape ecology of critical importance in Africa and around the world. In addition, CCICADA, a DHS Center of Excellence led by DIMACS, is involved in projects that help us prepare for, respond to, and recover from floods, fires, diseases, invasive species and other hazards linked to slowly evolving threats like climate change.

Workshops and Meetings on Sustainability Themes

The 2010 DIMACS Workshop on Mathematical Challenges for Sustainability led to a 140-page report published by AMS that lays out a roadmap to mathematical and statistical challenges in sustainability. This report informs other DIMACS activities that are hosting sustainability-themed workshops:

- **2012-2015 Special Focus on Energy and Algorithms** is organizing and hosting workshops that highlight problems in the design and control of energy systems and identify modeling and algorithmic challenges that must be addressed.
- **Mathematics of Planet Earth (MPE) 2013+** will extend the year-long MPE2013 initiative of mathematical sciences organizations around the world showcasing ways in which the mathematical sciences can help surmount the world's most pressing problems. MPE 2013+ is organizing a sequence of 7 workshops and related research activities to lay the groundwork for long-term interdisciplinary efforts that sustain MPE beyond 2013.



Modules in Sustainability

Integration of research and education has been a DIMACS hallmark since its inception, and it has led to pioneering programs at all educational levels. Several DIMACS projects are developing educational modules that bring sustainability topics into high school and undergraduate classrooms:

- **Mathematical and Computational Methods for Planning a Sustainable Future** is developing week-long interdisciplinary modules for high school classrooms to engage students in sustainability topics of broad personal relevance and to build awareness of educational opportunities and career paths related to sustainable living. Modules under development are on Passive Solar Building Design and Weather Generators.
 - DIMACS projects on **Integrating Mathematics and Biology** are developing modules on topics at the interface of mathematics and biology and compiling them for a textbook that will be the cornerstone of a new high school biomathematics course. Several of these modules relate to sustainability themes in ecology and epidemiology.
 - **MPE Undergraduate Sustainability Modules** are one-day modules for undergraduate mathematics classes to introduce students to a specific “planet earth” topic, challenge them to engage in discussions about the topic, and to present them with a content-specific mathematical application and practice problems.



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