

Mathematics and Climate

Mathematics 5750-002 and 6880-002, SPRING 2023
Mondays, Wednesdays, 11:50 AM – 1:10 PM, LCB 225

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Math 5750/6880 is an introduction to the mathematical study of Earth's climate system. Topics include planetary energy budgets, oceans and climate, box models, dynamical systems and tipping points, the Lorenz model, advection diffusion processes, the Milankovitch theory of glacial cycles, and the cryosphere, including sea ice and the great land ice sheets covering Antarctica and Greenland.

Students are expected to be familiar with calculus (Math 2210 or equivalent), linear algebra, and differential equations, and to be comfortable with mathematical descriptions of physical phenomena.

There will be a short paper (3-5 pages) due at the end of the semester on a topic chosen by the student. The paper should focus on some aspect of the climate system that is interesting mathematically as well.

TEXT: *Mathematics and Climate* by Hans Kaper and Hans Engler (SIAM, 2013)

