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Modeling and simulation permeate our program. In the two year core sequence taken by virtually all cadets we emphasize data analysis and modeling using discrete models, continuous models, and probabilistic models. We also use immersive simulations as an area of application for sound and image processing, linear algebra and three-dimensional geometry. In the past three years our capstone course has focused on modeling of energy issues and climate change and on modeling related to space exploration.

See [http://www.dean.usma.edu/math/people/Heidenberg/JOMA\\_GPS/index.html](http://www.dean.usma.edu/math/people/Heidenberg/JOMA_GPS/index.html) for a growing collection of data collected using GPS and digital imagery. We are also developing a collection of modeling and simulation materials centered around space exploration that will enable students to express models using the usual language of mathematics and then see immersive simulations that are driven by their models. We hope this latter project will become the basis of a vast effort in the spirit of the Open Source movement to create resources for math, science, and engineering education that will use simulations and will involve students in building rich complex models. This talk is, in part, an invitation to join that effort.

Most of this talk will look at examples. (Received September 13, 2007)