

Department of Applied and Computational Mathematics and Statistics Colloquium

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will give a lecture entitled:

The GeoClaw Software for Tsunamis and Other Hazardous Flows

Abstract

Many geophysical flows over topography can be modeled by two-dimensional depth-averaged fluid dynamics equations. The shallow water equations are the simplest example of this type, and are often sufficiently accurate for simulating tsunamis and other large-scale flows. These partial differential equations are hyperbolic and can be modeled using high-resolution finite volume methods. However, several features of these flows lead to new algorithmic challenges, such as the fact that the depth goes to zero at the edge of the flow and that vastly differing spatial scales must often be modeled, making adaptive mesh refinement essential. I will discuss some of these algorithms and the GeoClaw software, a specialized version of Clawpack that is aimed at solving real-world geophysical flow problems over topography. Results of some recent benchmarking studies and from efforts to compare proposed earthquake mechanisms for the March 11, 2011, Great Tohoku Tsunami will be shown.



**Monday, October 31st, 2011
4:00 p.m. to 5:00 p.m.
127 Hayes-Healy Center**