



The Math/Stats Colloquium  
Department of Mathematics and Statistics  
San José State University



## Christopher Vogl

Lawrence Livermore National Laboratory

*Leveraging Applied Mathematics to  
Improve Global Climate Simulation*

WED NOV 06, 2024, MH320

**Abstract:** Accurate climate simulation is needed to prepare for increasingly powerful storms, more intense heat waves and polar vortices, and more extreme floods and droughts. This talk will survey ongoing efforts to improve climate simulation using applied mathematics tools. Numerical stability analysis is leveraged to develop custom time integrators that focus on climatologically important features in bulk atmospheric flow. Local truncation error analysis is leveraged to determine optimal ordering of aerosol processes in operator splitting. Dynamical system analysis is leveraged to ensure well-posed formulation of the surface-atmosphere exchange for heat, momentum, and moisture.

*Background:* Basic linear algebra, ordinary and partial differential equations, and time integration methods.

**About the speaker:** Chris Vogl received his Ph.D. from Northwestern University and is a Research Scientist at Lawrence Livermore National Laboratory. His current research focuses on numerical partial differential equations, namely time integration methods and adaptive mesh refinement for multiscale, multiphysics problems.

SNACKS IN MACQUARRIE HALL 331B AT 2:40PM

TALK STARTS AT 3:00PM

For more information, see our full schedule at:

<http://www.timhsu.net/colloq/>