The Math Colloquium
Department of Mathematics
San José State University

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UC Santa Cruz

The mystery of the oceanic staircases

October 19, 2011, MH320

Abstract: One of the strangest features of our oceans and seas are their natural tendency to form so-called "thermo-haline" staircases. These staircases have step-wise constant temperature and salinity profiles, instead of more naturally-expected continuous and smooth profiles. The reason why such staircases form had remained a mystery for the past 50 years. However, thanks to the help of applied mathematics and high-performance computing, the problem has recently been solved. I will explain why the problem is important for climate prediction, review the recent work by our group on the topic, and discuss how our results can also be applied in astrophysics.

Background: No particular background required. Some multivariable calculus and differential equations would be helpful.

About the speaker: Pascale Garaud is an Associate Professor in Applied Mathematics at UC Santa Cruz. She completed her PhD in Astrophysics at the University of Cambridge, UK, in 2001, and joined the UCSC faculty in 2004. Her research is in Geophysical and Astrophysical Fluid Dynamics, and uses a combination of analytical and computational methods.

Snacks in MH331B at 2:30 pm
Talk starts at 3 pm

For more information, see our full schedule at:

`http://www.math.sjsu.edu/~hsu/colloq/`