

Slow slip and slide dynamics

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Kim Psencik, a Ph.D. student in the division of marine geology and geophysics at the University of Miami (UM) Rosenstiel School of Marine and Atmospheric Science, was recently awarded the prestigious MARGINS Student Prize for best paper/presentation at the American Geophysical Union (AGU) Fall 2007 Meeting.

The prize was in recognition of her presentation entitled "Current Status and Future Directives of the Nicoya Peninsula Continuous GPS Network, Costa Rica, In Regard to Slip Style and Distribution." Her research is in collaboration with advisor Dr. Tim Dixon (UM Rosenstiel School), Susan Schwartz (University of California - Santa Cruz), and Marino Protti and Victor Gonzales (National University of Costa Rica), on processes occurring in the Cocos-Caribbean Subduction zone on the west coast of Costa Rica.

Using high precision GPS (Global Positioning System) equipment, as well as seismometers, Psencik and the team were able to study and assess Earth dynamics occurring in the Nicoya Peninsula on Costa Rica's Pacific Coast. The scientists initially intended to assess changes in the locking patterns of the fault and better understand the physics of earthquakes and energy release.

But while they were there, they captured what is referred to as a "Slow Slip Event", in which the same amount of energy is released as in a standard earthquake, but is distributed over a several weeks rather than several seconds. The slow release of energy spares damage to the surface environment, and the lack of significant seismic waves causes the quakes

to go unnoticed by humans.

“This is a prime location for the use of GPS to study plate boundary processes like earthquakes, tsunamis, locking zone dynamics and episodic tremors because the peninsula is so close to the subduction zone trench,” said Psencik. “Using our state of the art network of GPS and seismic systems and 10 seismic stations we were able to compile a good record that will help us to better understand the earthquake process.”

The team plans to create computer models of both the transient motion on the fault plane, as well as the locking patterns before and after the events in an effort to determine if the occurrence of a slow slip event has any impact on the nature and distribution of future earthquakes.

Born and raised in Rochester N.Y., she attended Honeoye Falls-Lima High School. Psencik received her bachelor’s in marine science and geology from the University of Miami in May 2005. She is currently entering her fourth year as a Ph.D. student at the Rosenstiel School.

Source: University of Miami

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