2004 Fall Meeting

Cite abstracts as **Author(s) (2004), Title, *Eos Trans. AGU, 85*(47), Fall Meet. Suppl., Abstract xxxxx-xx**

09:30h

S41D-07

A Creep Event on the Shallow Interface of the Nicoya Peninsula, Costa Rica Seismogenic Zone

*** Protti, M**

jprotti@una.ac.cr

Observatorio Vulcanol¢gico y Sismol¢gico de Costa Rica (OVSICORI-UNA), Universidad Nacional, Apartado 2346-3000, Heredia, 2346-3000 Costa Rica

Gonz lez, V

vgonzale@una.ac.cr

Observatorio Vulcanol¢gico y Sismol¢gico de Costa Rica (OVSICORI-UNA), Universidad Nacional, Apartado 2346-3000, Heredia, 2346-3000 Costa Rica

Kato, T

teru@eri.u-tokyo.ac.jp

Earthquake Research Institute (ERI), University of Tokyo, 1-1, Yayoi 1, Bunkyo-ku, Tokyo, 113-0032 Japan

Iinuma, T

iinuma@eri.u-tokyo.ac.jp

Earthquake Research Institute (ERI), University of Tokyo, 1-1, Yayoi 1, Bunkyo-ku, Tokyo, 113-0032 Japan

Miyazaki, S

miyagsi@pangea.stanford.edu

Earthquake Research Institute (ERI), University of Tokyo, 1-1, Yayoi 1, Bunkyo-ku, Tokyo, 113-0032 Japan

Obana, K

obanak@jamstec.go.jp

Institute for Frontier Research on Earth Evolution Japan Marine Science and Technology Center (JAMSTEC), 2-15, Natsushima-cho, Yokosuka, 237 Japan

Kaneda, Y

kaneday@jamstec.go.jp

Institute for Frontier Research on Earth Evolution Japan Marine Science and Technology Center (JAMSTEC), 2-15, Natsushima-cho, Yokosuka, 237 Japan

La Femina, P

plafemina@rsmas.miami.edu

Division of Marine Geology and Geophysics, Rosenstiel School of Marine and Atmospheric Science, University of Miami, 4600 Rickenbacker Causeway, Miami, FL 33149-1098 United States

Dixon, T

tdixon@rsmas.miami.edu

Division of Marine Geology and Geophysics, Rosenstiel School of Marine and Atmospheric Science, University of Miami, 4600 Rickenbacker Causeway, Miami, FL 33149-1098 United States

Schwartrz, S

susan@emerald.ucsc.edu

Earth Science Board, University of California, Santa Cruz, CA 95064 United States

A continuously recording, three-station GPS network on the Nicoya Peninsula, Costa Rica, recorded what we believe is the first slow slip event observed along the plate interface of the Costa Rica subduction zone. The Nicoya segment of the Middle America Trench has been recognized as a mature seismic gap with potential to generate an Mw$>$7.5 earthquake in the near future (it ruptured with large earthquakes in 1853, 1900 and 1950). The transient displacement is well resolved and nearly opposite to the direction of plate

convergence and strain accumulation. Slow slip began in mid-September 2003 and lasted about 4 weeks. The motion is observed earliest, with the largest amplitude at the stations closest to the trench; it arrives with diminished amplitude, some 10-14 days later at the inland-most station. Simple dislocation modeling suggests this is consistent with several cm of slip initiating at shallow depth on the plate interface (~10-20 km) and propagating down-dip. Slip in this event is focused in the region we previously identified as partly or fully slipping, between two locked patches on the plate interface using campaign GPS data. Moreover, this region is characterized by frequent microseismcity, as observed in the 1999-2001 Costa Rica Seismogenic Zone (CRSEIZE) dense deployment of land and ocean bottom seismometers. Silent earthquakes or creep events have been recorded at other subduction zones instrumented with continuous GPS stations. At most of these, including the Cascadia margin which experiences periodic creep events, slip occurs far from the trench (>150 km), below the seismogenic zone in a transition regime between stick-slip and stable sliding frictional behavior. The slip event in Costa Rica clearly occurs within the seismogenic zone making it unique. Collaborative efforts between Costa Rica, Japan and the US are focused on expanding this GPS network to provide improved resolution of future creep events and enhanced understanding of the mechanical behavior of the Nicoya subduction segment of the Middle American Trench.

8123 Dynamics, seismotectonics
7205 Continental crust (1242)
7209 Earthquake dynamics and mechanics
1206 Crustal movements--interplate (8155)
Seismology [S]
2004 AGU Fall Meeting