Seminario de Geofísica y Ciencias de la Tierra

Seismology with ambient noise:
New methods for imaging and monitoring

Dr. Christoph Sens-Schönfelder
Institute of Geophysics
Leipzig University

Abstract:

The technique to retrieve Green's functions by cross-correlation of seismic noise is now often referred to as seismic interferometry. It provides new way to image the subsurface but it also opened the way to a completely new type of seismological observation -- the continuous monitoring of changes in the subsurface medium. I show different ways to use seismic interferometry but I focus on Passive Image Interferometry (PII) as the technique that makes use of the possibility to repeatedly retrieve Green's functions in order to precisely infer changes in a medium by comparing Green's functions that are retrieved at different times. PII is capable of identifying velocity changes below 0.1~\% and was applied successfully in different tectonic situations. I review three investigations of PII that demonstrate the wide range of possible applications. The first application that introduced the concept of PII in 2006 revealed hydrology related changes of subsurface velocity at Merapi volcano.
The second application I present was the first noise based observation of co-seismic changes. And we finally review a recent investigation that documented velocity variations in the shallow subsurface of the moon.

Viernes 01 de julio, 11:00 horas

Sala 109 – Departamento Ciencias de la Tierra (Geología)
Universidad de Concepción

Contacto:
Yanett Díaz - Encargada de Comunicaciones Departamento de Geofísica
Mail: ydiaz@dgeo.udec.cl – Tel. (56 41) 2207277 - 2204136