Search for Harmonic tremor in the Galapagos
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Harmonic volcano tremor can provide details of conduit physics during magma flow and volcano explosions on numerous volcanoes worldwide. In many cases the dominant, fundamental period is between 0.7-1.2 Hz. Harmonic tremor has not been reported on Galapagos volcanoes, possibly because seismic and acoustic instrumentation installed previously were not oriented to record these signals.

Active volcanoes, such as Sierra Negra and Cerro Azul may have tremor associated with trap door activity. The more silicic Alcedo shows evidence of deep seismicity that may exhibit tremor as yet unobserved.

Fumarolic activity at Alcedo indicates shallow fluid activity and the connection between the deeper seismicity and shallow emission is intriguing.

Infrasound at Tungurahua Volcano, 2010

Tremor commenced at Tungurahua in May/June 2010 for 5-6 days. Gliding, the apparently continuous variation of frequency with time is apparent at the end of the chugging sequence when energy levels are low.

New NSF-CDI Initiative: VolcanoSRI

We have just been funded establish a high resolution volcano monitoring system based on wireless nodes and computations done in the field. This will be ideal for implementation in environmentally sensitive locations like the Galapagos, where infrastructure is limited. We proposed 500 station on Tungurahua, although application to Galapagos might be more limited in scope.

Collaboration between UNC, Georgia State, and Michigan State U.: Co-Pis: Wenzhan Song & Guoliang Xing

New Paradigm: Analyze data In-Situ

Data from the Signet Project: Cindy Ebinger

Galapagos Tremor & Gliding?

The tremor shown here is neither a teleseism nor an ocean microseism. We expect that the long period and gliding indicate fluid oscillations in the magma or hydrothermal activity in the shallow conduit system.

The frequency glides up at 0.001 Hz/s, from 3.7 to 6.6 s periods.

Karymsky Volcano, 1999

Reventador Volcano, 2005

Mt. St. Helens: OASIS 1

Proposed 500 station array