



Intrinsic and scattering attenuation image of Teide volcanic complex from an active seismic experiment

Janire Prudencio (1), Edoardo Del Pezzo (2), Araceli García-Yeguas (1), and Jesús Ibáñez (1)

(1) Instituto Andaluz de Geofísica - Universidad de Granada (janire@ugr.es), (2) Istituto Nazionale di Geofisica e Vulcanologia - Sezione di Napoli - Osservatorio Vesuviano

Data from an active seismic experiment to study the internal structure of Teide volcano in Tenerife island, Spain, were collected during winter 2007 in a multi-national project involving numerous research Institutions.

6850 air gun shots fired from The Spanish oceanographic R/V Hespérides were recorded on a dense local seismic network consisting of 150 independent seismic stations on land with a sampling frequency of 200 hertz. Data quality is generally

good, and P wave arrivals are identified up to an offset of 30–40 kilometers, and in

some cases up to 60 kilometers. This data set has been utilized in the present work to study the seismic attenuation and scattering properties of the Teide volcanic complex. We first studied the spectral properties of the seismogram envelopes, observing that heterogeneity is sufficiently high in the whole earth volume investigated to approximate the propagation by a diffusion process. Then, the coda envelope for any source-receiver couple has been inverted in terms of scattering parameters for a diffusion model. The retrieved parameters have been associated with a gaussian space probability function, maximum in the middle of the segment connecting source epicenter and station and tending to zero at the borders of the scattering ellipse. Being the shots fired at surface, the 2-D assumption is realistic.

The space distribution of the scattering parameters weighted by the probability already discussed furnishes the 2-D image.

Results show strong space variation of the attenuation and scattering coefficients, associated with the main structural features of the Teide volcanic complex.