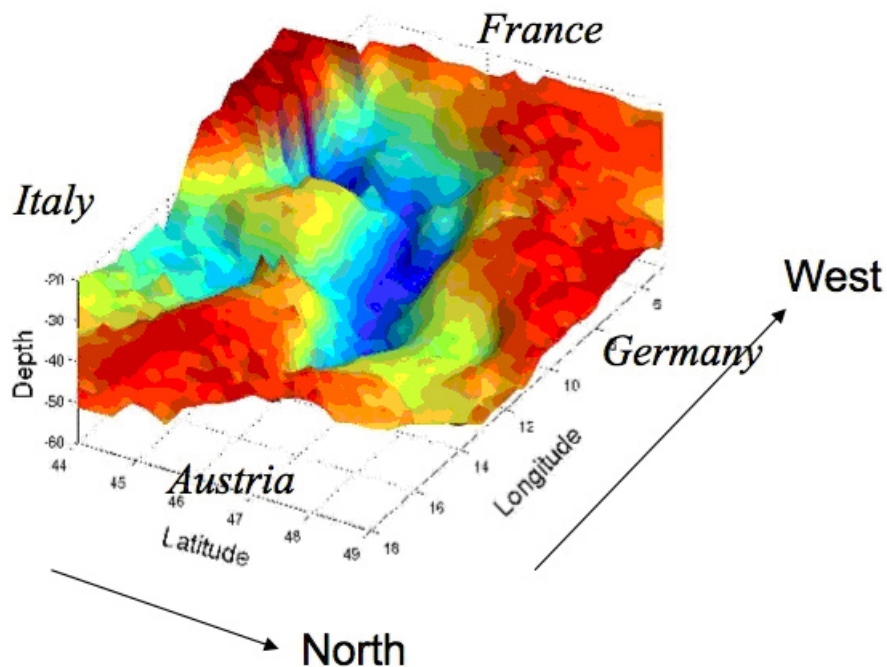


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Modern seismic network provide huge amount of continuous recordings, which a large part was discarded as noise.

Recently, an increasing interest emerged when it was realized that the so-called noise contains a wealth of information on the seismic structure of the Earth, its slight temporal changes and the interaction of fluid envelopes with the solid Earth. We present the theoretical background behind the use of noise correlation functions to image the Earth. We address shortly the question of the origin of the noise and its possible use for non-seismological applications. We discuss the effect of a non-isotropic illumination. We present examples of noise-based tomography in Europe. The continuous excitation of the background noise allows envisioning a continuous monitoring of Earth properties such as seismic speed. We discuss the limits of the present techniques and show some example of monitoring of volcanoes and faults.



*Ambient noise tomography: the Moho beneath the Alps (Stehly et al., 2009)*