



Surface wave study at laboratory scale

Benoit de Cacqueray (1,2), Philippe Roux (2), Michel Campillo (2), Stefan Catheline (2), Julien Meunier (1), Thomas Bianchi (1), and Pierre Boué (2)

(1) CGGVeritas (benoit.de.cacqueray@cgveritas.com), (2) ISTerre - Université de Grenoble - CNRS (philippe.roux@obs.ujf-grenoble.fr)

SURFACE WAVE STUDY AT LABORATORY SCALE

The mix of body waves and surface waves is a recurrent problem for deep exploration in geophysical contexts. As they represent up to 70% of the recorded energy, surface waves hide a large part of the information coming from the sub-surface through body waves. Effort has been done in the past to better filter or remove them. But their impact is always far to be neglected, especially with strong backscattering contribution.

In parallel, taking advantage of an always growing number of channels, geophysical explorations face new opportunities to enhance the quality of earth imaging. For example, a better spatial sampling is a way to better use or remove the surface waves. There are compromises to find between higher spatial sampling and operational costs, even for on-field tests.

In this context, surface waves studies at laboratory scale is a flexible way to evaluate new acquisition designs and processing. This presentation shows how gel-based phantom can be successfully used to study wave mixing in the context of geophysics prospection. Small-scale experiments provide the record of thousands of traces which enables wave identification and extraction with the goal to adapt recent array processing algorithms to geophysical-like designs.