



PhD position in Geophysics Centre de Géosciences Mines ParisTech

The Geophysical team of the Centre de Géosciences at Mines-ParisTech in Fontainebleau has a position for a PhD in geophysics (3 years) for a gifted young student on the following subject:

Near surface characterization using surface waves

Description :	<p>The research context of the PhD thesis is the geophysical exploration, whose aim is the study of the Earth subsurface by exploiting and analyzing the properties of seismic/elastic waves which are reflected by the subsurface in-homogeneities and recorded at the surface. The provided subsurface characterization is crucial for the petroleum industry to find oil and gas traps.</p> <p>In the context of hydrocarbon exploration, the seismic techniques that are traditionally more diffused are based on body-wave propagation, in particular P-wave reflections, since these waves spread energy into the Earth's interior and carry on interesting information about the deep subsurface. On the contrary surface waves, which represent about 67% of the propagating seismic energy, are usually considered as coherent noise to be removed or attenuated. However, the properties of surface waves depend on the elastic parameters of the shallow subsurface, whose lateral variations and heterogeneities strongly affect surface wave propagation.</p> <p>The objective of the PhD research is to investigate innovative techniques for extracting and using all the relevant information content of surface waves, before removing them from the acquired seismic data. The inversion of surface wave properties contributes to the creation of a near-surface model. For hydrocarbon exploration, proper knowledge of the near surface would allow to improve model building at the exploration target depth, as well as the quality of seismic data processing.</p> <p>While most of the traditional approaches generate a 1D model, the PhD project aims at extending actual methods to yield a 2D model of the near-surface. For the 2D inversion, it will be worthwhile to analyze first which of the model parameters are actually influenced by the surface wave propagation. This sensitivity analysis would allow the introduction in the inverse problem of novel kinds of independent information, such as the higher modes of surface waves and the polarization parameters, in order to increase the reliability and to better constraint the inversion result.</p>
Candidate profile:	The candidate must have a research master degree in physics, geophysics or applied mathematics, and be interested in seismic signal processing and seismic imaging. The candidate should also have experience in programming. Good knowledge of English is essential.
Location and dates :	<p>Location : Centre de Géosciences, Mines ParisTech, Fontainebleau, France</p> <p>Duration : 3 years, starting from September/October 2010</p> <p>Salary : Around 1500 euros per month (net salary)</p>
How to apply :	<p>Please post or email a detailed CV and a motivation letter to :</p> <p>Daniela Donno Centre de Géosciences, Mines ParisTech 35 rue Saint-Honoré, 77305 Fontainebleau, France E-mail: daniela.donno@mines-paristech.fr Tel: +33 1 64 69 49 38 Fax: +33 1 64 69 49 35</p> <p>Please quote reference : 10/geophy_sw</p>
For infos :	Please contact Daniela Donno (daniela.donno@mines-paristech.fr) or Hervé Chauris (herve.chauris@mines-paristech.fr), and also refer to http://www.geophy.ensmp.fr