

SEMINAR

Speaker: **Dr. Valentina Socco**
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Title: **Advances in surface wave inversion**

Date: **October 5, 2006**

Time: **12:00**

Location: **SEB 122**

ABSTRACT: Surface wave interpretation is usually performed by inverting the experimental dispersion curve, assumed to be the fundamental mode of Rayleigh waves, to retrieve a 1D profile of shear wave velocity, V_s . The inversion process suffers from strong problems of solution non uniqueness and low resolution of model parameters. Using local search methods, great care in model parameterization and solution assessment is necessary to avoid local minima in the objective function in which the estimated solution is biased by the starting model. A priori information plays a very important role and can help to obtain a consistent final model in spite of inherent limitation of the method. Moreover, the effect of lateral variations should be assessed because the 1D inversion does not account for them. The use of a Laterally Constrained Inversion (LCI) scheme can alleviate the aforementioned problems. In addition to LCI, a Montecarlo approach is used to select initial model parameters and to assess the consistence of final models. Beside the random walk through model parameter space a convergence criterion based on scaling properties of dispersion curves is implemented to reduce the number of necessary simulations. The potentialities of an integrated approach based on the alternate application of deterministic and stochastic inversion will be discussed with the support of a series of applications to field data.