

### CHEERS!

Welcome to the first edition of *Perfiles* of 2007. We have started this year with all our crews in the field in various projects in Perú and Central America.

We mentioned in a previous *Perfiles* that our Trimble AGGPS114 Omnistar GPS with a Ranger 300X data collector, is a unit originally designed and marketed for the agriculture industry. We selected this instrument after carefully evaluating dozens of different GPS units currently available from Trimble, because it was better customized to our fieldwork designs. We have received the interesting news that other geophysical companies in Perú have purchased exactly the same unit.

We would like to start this year of *Perfiles* with a particular engineering geophysics application, which we feel will be of interest amongst our readers.

*José R. Arce*

### INSTRUMENTS

We have an announcement which will be of most interest to our friends and clients. We have ordered a state-of-the-art Scintrex CG-5 gravimeter, which will be delivered to us by the end of June. This instrument is currently the most advanced of its kind in the world and it is two to three generations newer than some units currently available in Perú. The CG-5 has excellent specifications, starting with its electronic sensor which outdates the old gravity meters with mechanical sensors. The CG-5 has a resolution of 1 microgal, which allows gravity surveys with the highest possible resolution. Also, the instrument has automatic compensations for temperature, drift, inclination and tides, among others, which reduce possible operation-related mistakes. To further complement this instrument, we are presently acquiring various gravity modeling and detailed topography correction programs, to guarantee a reliable application of the gravity method under most conditions.

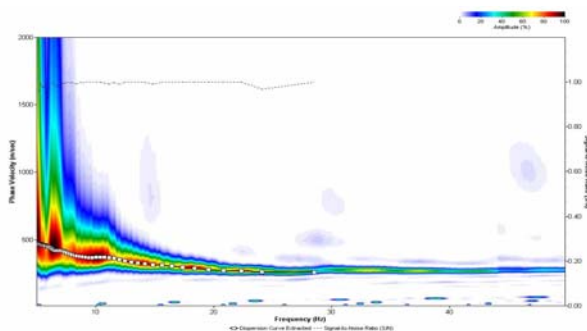


*Scintrex CG-5  
Digital Automatic  
Gravity Meter*

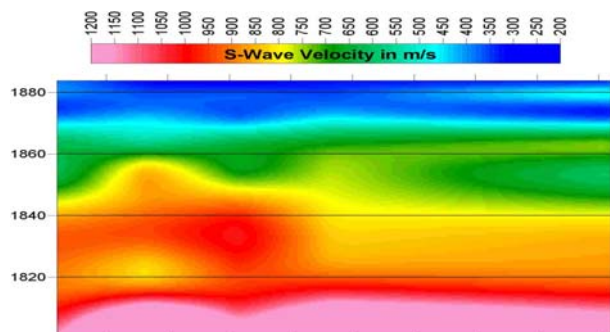
### MASW in 2D

In July 2005 we started our latest engineering geophysics applications in Perú with the MASW (Multichannel Analysis of Surface Waves) method, to model S-wave velocities through the analysis of phase velocity variation versus frequency of surface waves. Until recently our MASW applications were only done in discrete stations and by modeling S-wave velocity variations with depth. Now we have the means and experience to offer these measurements along a two dimensional profiles.

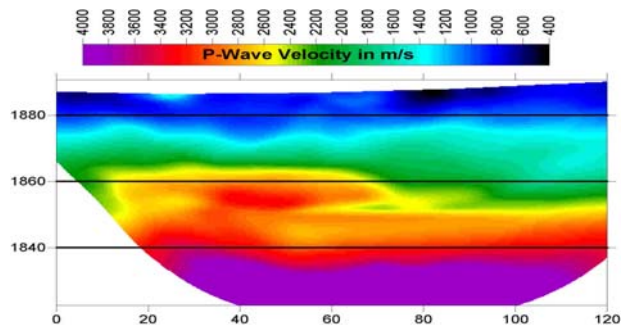
The case we will show next is the result of 2D modeling of P-wave measurements and MASW over a tailings dam area. In this particular case, we did 120 meters of P-wave profiling using the wavepath eikonal tomography modeling technique. On the same profile we did MASW measurements at 30 meter spacing and with various offset shotpoints. The MASW inversion in 2D was done by combining the overtone analysis results for the individual stations and introducing them into the modeling process as a single profile. The following image is the overtone analysis of one of the stations, where red and brown represent the higher amplitude percentage of the surface wave and the white squares represent our surface wave selection picks.



The 2D modeling result after combining all overtone images picks for the line yields the next image of S-wave velocities.



Now, combining the S-wave velocity section with the P-wave velocity model (shown below), various parameters such as the dynamic elastic moduli or Poisson's coefficient may be estimated for the structural design of this dam.



Until next time.....

