perfiles ...YOUR GEOPHYSICAL NEWSLETTER

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induced polarization-resistivity–self potential–magnetics–gravity-radiometrics-electromagnetics-seismics–downhole
MINING – GROUNDWATER – ENGINEERING - ARCHAEOLOGY

CHEERS!

Welcome to the second *Perfiles* for 2010. The first five months of 2010 have been very active for us. We have been involved with a state-of-the-art modeling technique for potential fields which will be presented in this and possibly some other future editions of *Perfiles;* we have been also expanding our line of instruments.

We have been using these new modeling techniques since January, and they provide us with a whole new set of tools to complement our interpretations in mining exploration projects.

José R. Arce

NEW INSTRUMENTS

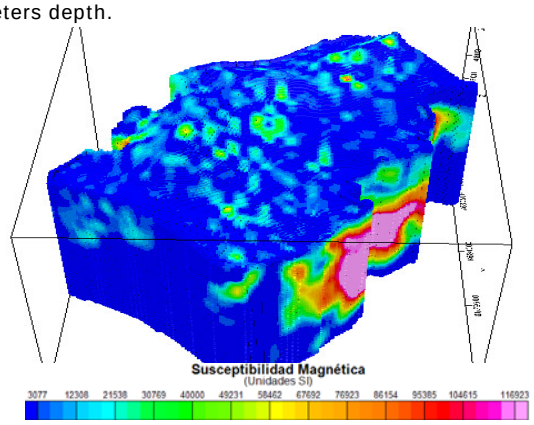
Since January, we have expanded our operational capabilities with three new instruments. First we added a new Trimble ProXRT Omnistar GPS unit, which uses the North American GPS satellites as well as the Russian Glonass satellite system. The second instrument is a new Scintrex Navmag SM5 cesium vapor magnetometer with integrated GPS; cesium vapor is the most stable sensor in magnetometry, and will work together with our previous SM5 as rover units to allow us to survey larger areas in less time. Finally, we are currently waiting for production to complete of our new Geometrics Smartseis ST seismograph. This instrument has been completely redesigned and has all the same functionality as our previous StrataVisor NZXP and StrataView R24 seismographs. We are also ordering a whole new set of accessories for this third seismograph. We expect to receive it within the next 5 weeks.

DETAILED 3D MAGNETICS MODELING

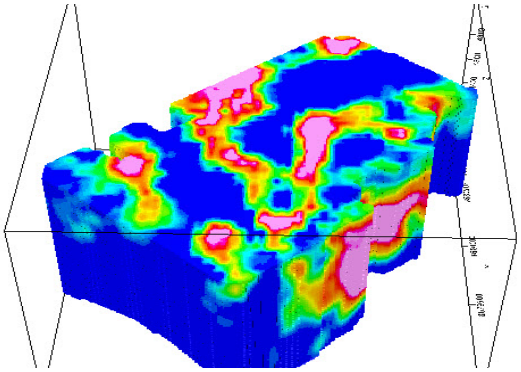
As geophysicists, we are always searching for new and better ways to increase reliability of our interpretations in exploration projects. Introducing 3D induced polarization in 2002 was a considerable improvement from our previous applications, and has greatly improved since our first application on April 2002.

On the other hand, several other modeling techniques have been developed for the gravity and magnetic methods over the years, such as the use of simple geometrical bodies as 3D models to allow a reasonable first approximation to local geology. Unfortunately these methods would not provide a very clear idea of density or magnetic susceptibility contrast over 3D space under the surface. For the last couple of years, the latest generation of these modeling techniques have been under development and we have tested them with several of our previous exploration campaigns, proving its quality and reliability.

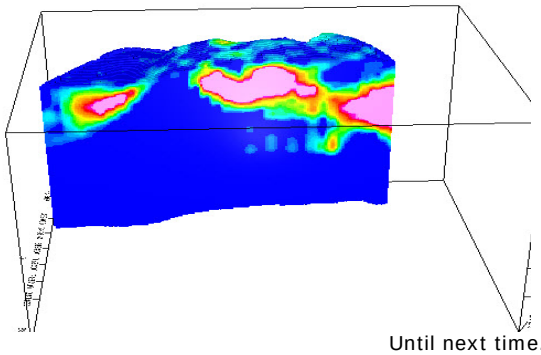
The example we show next is the final model from a ground magnetometer carried out in the high mountains of Lima. The first image shows the surface topography and the high magnetic susceptibility mass located at the Eastern flank of the survey area and at some 400 meters depth. These first two images are looking North. The color distribution represents magnetic susceptibility in SI units and the effective modeling penetration was close to 1000 meters, but we consider the resulting model to be most reliable up until 800 meters depth.



Removing model information, from surface and up to some 400 meters depth, we have a clear view of how the targets with high magnetic susceptibility are distributed in this deposit, currently under exploration.



The resulting model information may be then extracted into sections and map views of magnetic susceptibility at selected depths or elevations, according the requirements of our clients. Alternatively, results may be exported in various formats used by advanced visualization and data extraction programs for 3D space. The next image shows a North-South section, looking West, of the magnetic targets.



Until next time...

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