BRIEF OUTLOOK FOR EMIGMA

For several years, one of our primary considerations for EMIGMA has been the addition of basic processing and mapping features. Many features have been included in these areas and we will continue to improve the processing features as well as developing faster methods to perform various processing aspects. Also, in the last several years, we have focused on the development of various inversion techniques for most data types. While, we will continue to improve and enhance our inversion applications, we are now in the process of returning to our roots to enhance and extend our forward modeling (simulation) algorithms.

One of the issues which has required our attention is to extend the ability of EMIGMA to manage not only the geophysical setup of your data allowing for automated modeling and inversion but all the inclusion of the associated data channels that may be crucial for your proper understanding of the inversion and simulation results. To this end, we have developed and continue to further develop our new software package, QCTool. QCTool is capable of handling huge amounts of data and to perform many basic and extended data processing functionalities. The combination of QCTool with EMIGMA will resolve our ultimate objective. Magnetic, Gravity, Airborne TEM, ZTEM data and MT /VLFR data can now be imported directly from the .qct format and we will be working on more direct QCTool exports to EMIGMA. This will allow for ready imports of quite a variety of relevant data into EMIGMA after having passed them through appropriate quality control and processing in QCTool. We are also working on the direct import of the other associated data channels into EMIGMA and the possibility of their display and analyses in graphical applications. Our latest version, released in 2010, offers enhancements to EMIGMA V8.1 which was released in the spring of 2008. EMIGMA is now fully compatible with Vista and Windows 7 for both the 32-bit and 64-bit versions.

Many EMIGMA licenses are now shipped with QCTool included. However, QCTool is available from our websites for a free 30 days use but it only costs $300CAD. In the meantime we will be enhancing the linkages between the two packages to provide you with this “all-in-one” smart and easy-to-use software platform.

Another important consideration for EMIGMA is to increase its capability of handling and processing large datasets whether collected on the ground or in the air. To this end, we have been extending our principal algorithms and approaches to have them work faster and more efficiently. Great progress has already been made with regard to modeling and inversion solutions. A major new design was ready in 2009 but limited to UXO functionality. The next version of this will be for potential fields and is to be called EMIGMA 9. Sometime in 2011, EMIGMA 10 incorporating all functionalities in this new design will be available.

EMIGMA'S PRESENT TECHNIQUES TO BE EXTENDED

- Airborne TEM inversions now available in an array of configurations.
  IP effects in TEM inversions (already available in modeling)
- Storage of TEM source moments (current and dipole moments) (now available)
- 3D magnetic inversions - use of gradients (now available). A new more powerful version is soon to be ready allowing for many more datapoints and cells as well as enhanced ability to constrain the inversion model.
- 3D Gravity inversion (3D gravity available, a new version on its way)
- 3D Resistivity Inversion now available
- New CSAMT 1D inversion with 3D source. No need to use far-field results, Inversion on impedances or electric fields or magnetic fields.
- Enhanced FEM inversions included constrained Marquardt style
- MTEM modeling and inversion with SEGY imports
- CSEM modeling
- More general multi-array resistivity imports, enhanced IRIS system imports
- New TEM imports for such systems as FASTEM, TERRATEM, Phoenix TEM and the new Chinese system - WTEM
- Basic gravity processing – Bouguer, topographic, terrain, etc (available)
- Enhanced mapping tools (available but constantly in development)
- Model, inversion and processed signal outputs to GEOTIFF format (available)
- Inversion models to plan section exports
- Multi-component, Multi-station TEM inversion – ie. Laterally constrained
- New fast but extremely accurate inductive plate algorithm
- Invert for density variations or susceptibility variations within topography
- Inversion for freespace plates in development
- 3D MT inversion in development
- new potential field imaging tools in development