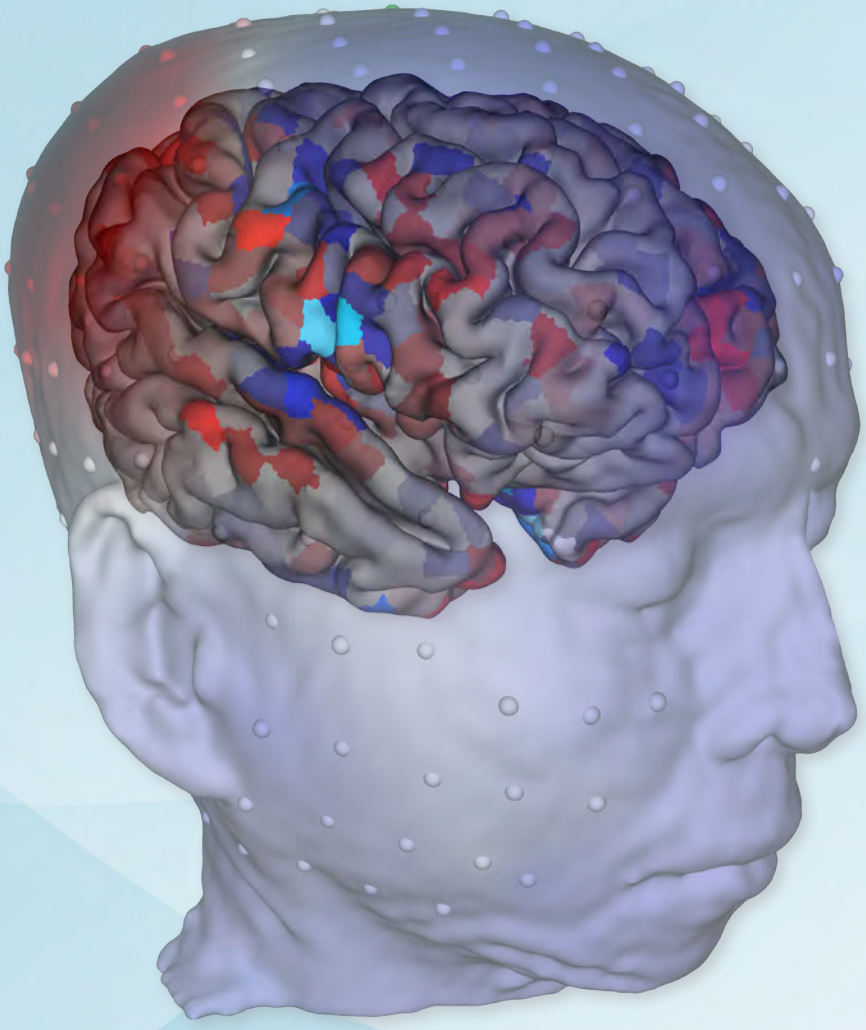
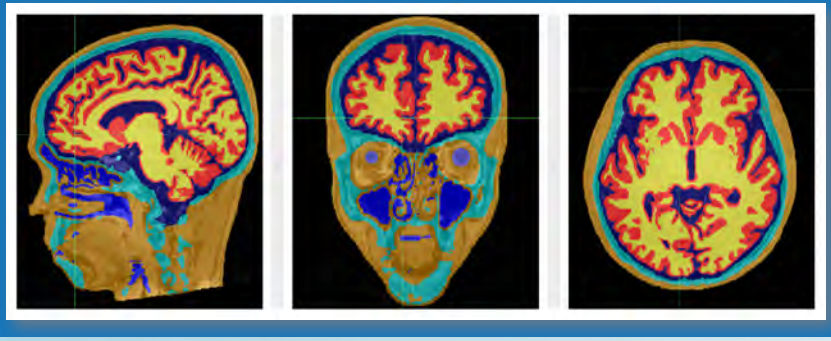
GeoSource 3 Research
Electrical Source Imaging Software

Now with individual head models



- Using high-resolution, dense array EEG with up to 256 channels
- Employing the Finite Difference Method (FDM) with 7 characterized tissue types for the most realistic head models
- Choose individual, atlas, or conformal/warped atlas head models



The culmination of 25 years of interdisciplinary research, GeoSource 3 Research software leverages **dense array EEG technology, high-resolution MRI imaging, sophisticated electric head modeling, and accelerated computing** to create a powerful platform for electrical source imaging, with head model validation, forward EEG data modeling, and support for advanced neuromodulation planning and other advanced research applications.

GeoSource 3 Research packages improve on current ESI methodology by using dense array EEG data and much more realistic head models to define the path of electrical current from the cortex to the scalp.

Higher resolution with dense array EEG data

To provide the best source imaging results, GeoSource 3 software makes full use of **dense array EEG data**, with up to 256 sensors for **whole head** coverage.

More realistic head models with 7 different tissue types

Automated software characterizes tissue types — scalp, skull, cerebrospinal fluid, grey matter, white matter, air, and eyeballs — **directly from 1 mm MRI data** for the most realistic anatomy across the entire head.

More realistic electrical conductivity modeling using the Finite Difference Method (FDM)

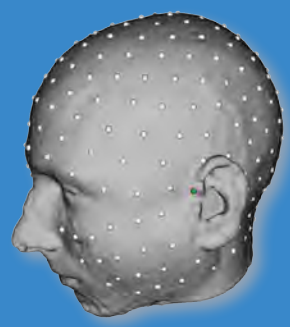
The FDM performs **voxel-by-voxel calculations** of the electric potentials, making full use of the high-resolution geometry of the original MRI image.

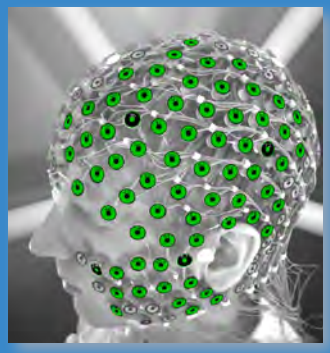
Fast and easy step-by-step head model building

- A dedicated pipeline software guides you through each step with opportunities to review the model at all stages of construction.
- The FDM software is **optimized for high-performance computing** and is performed using a **high-performance GPU compute node** (included with Intermediate and Advanced Packages) so that computing time is accelerated from days to minutes.

Sensor Registration for higher accuracy

Conformal and individual head models incorporate EEG sensor location to define the path of electrical current from the cortex to the scalp, a critical component for the most accurate source estimation.





Use the **Geodesic Photogrammetry System** with sensor digitization from whole-head photographs or the **GeoScan Sensor Digitization Device** for real-time digitization using an optical scanner.

Choose from three different packages, depending on your research needs

All packages include:

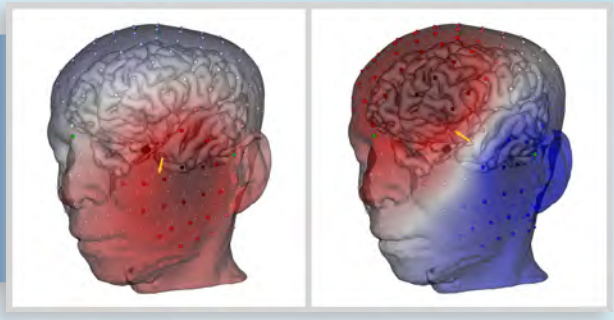
- LORETA, sLORETA, and LAURA source estimation algorithms
- FDM head models built from 1 mm resolution MRI data

Build individual head models with GeoSource 3 Research ADVANCED Package

Import MRI scans for the most realistic brain anatomy

Explore the FDM head model

Generate forward projections for scalp voltage data from any region of the cortex.



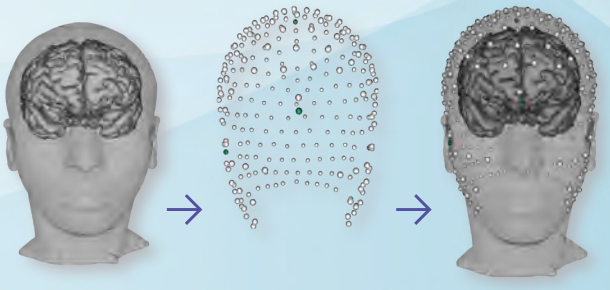
No Individual MRI data?

Use atlas head models included in the BASIC package

Includes built-in age and gender specific head models
1 infant, 2 pediatric, and 3 adult

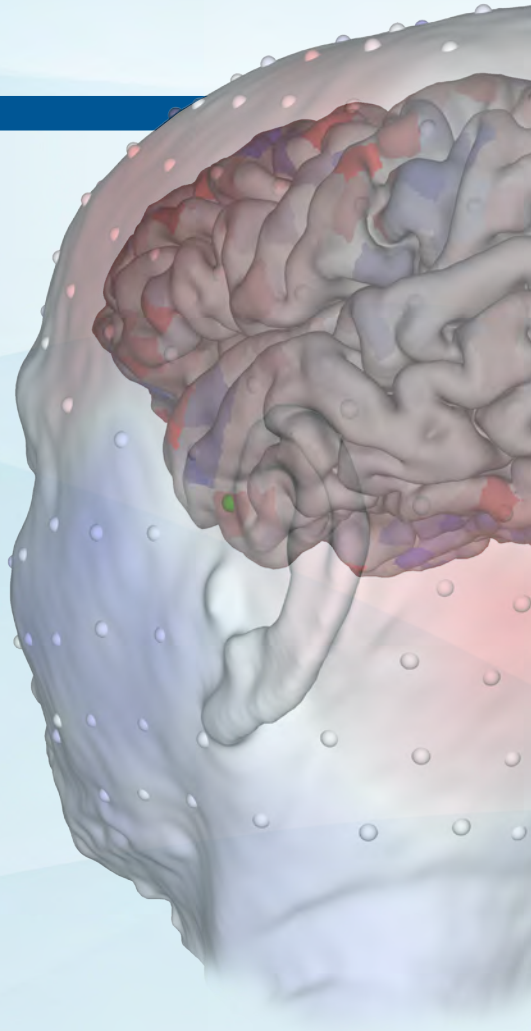
Build conformal atlas head models with the INTERMEDIATE package

Use digitized sensor positions to conform/warp an atlas head model to individual head geometry (requires sensor registration)



GeoSource 3 Research software is seamlessly integrated with EGI's GTEN 100 Neuromodulation System, for defining dense array neuromodulation targets.

GeoSource 3 Research	Advanced Package	Intermediate Package	Basic Package
Source Estimation Software	✓	✓	✓
FDM Atlas Electric Head Models	✓	✓	✓
Software module for building conformal/warped FDM head models using sensor position data*	✓	✓	
High-performance GPU compute node for building FDM head models	✓	✓	
Software for importing MRI DICOM data	✓		



*Requires the Geodesic Photogrammetry System or the GeoScan Sensor Digitization Device.

GeoSource 3 Research software is for research use only. However, every GeoSource 3 Research Package also includes the clinically cleared GeoSource 2 software for laboratories or clinics requiring both options.

Related products:

Geodesic EEG System™ (GES) 400, 405 and 410 – for dense array EEG acquisition, review, and analysis using Net Station 5 software.

Geodesic Sensor Nets – fast-application electrode nets with 32, 64, 128, or 256 channels for whole head, dense array EEG.

Geodesic Photogrammetry System™ (GPS) and GeoScan™ Sensor Digitization Device – complete hardware and software packages for digitizing the sensor positions. (GeoScan is for research use only.)

GTEN™ 100 Research Upgrade Package – for dense array neuromodulation integrated with source estimation. (For research use only.)

To schedule a demo, or for more information, contact info@egi.com

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EGI dense array EEG