



## Product Brochure

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# The new standard for Human Neurophysiology Research

Available in 40,130 and 280 channels, the **BEL EEG System One** delivers unprecedented resolution and reproducibility

The Brain Electrophysiology Laboratory Company (BEL) is led by the scientific team of Dr. Don Tucker, PhD and CEO, and Dr. Phan Luu, Chief Science Officer. Almost 30 years ago, Dr. Tucker pioneered geodesic tessellation for electrodes (Tucker, 1993), providing dense array, whole head coverage of EEG electrodes.

The BEL team has now created a new technology in dense array EEG for improved fit, comfort and usability, and introduces BEL's Geodesic Head Web in different channel counts and sizes.



The Geodesic Head Web uses BEL's patented design of the Modular Pentagonal Element (MPE) to achieve a better fit to all human head shapes and sizes. Elegant electrode wire management and a small, lightweight connector give the Geodesic Head Web high marks in usability.

A new single cord lock system provides a fast and first-fit advantage.



Along with the Geodesic Head Web, BEL announces a new complete EEG solution for human neurophysiology researchers:



Geodesic Head Web



BEL Amp One



BEL View



SOURCERER + FLOW

The BEL EEG System One is a complete system for EEG acquisition and analysis. Designed with new hardware architecture for accuracy, efficiency, miniaturization, mobility, and on-board storage and computation, the BEL Amp One amplifier offers innovations like no other. The BEL View software for acquisition and simple review is intuitive and easy to use, suitable for all applications and experience levels.



# It's not just another Geodesic EEG system. It's a Geodesic EEG Ecosystem.

The **BEL EEG System One** is the foundation of the **Geodesic EEG Ecosystem** – an environment built for human neurophysiology research. From the moment of dense array electrode acquisition with our new, comfortable **Geodesic Head Web**, through the miniaturized and portable **BEL Amp One**, to elegant visualization in our **BEL View software**, your research comes to life with cutting edge technology. With the integration of **FLOW**, your data is permanently stored, managed and protected. Your customizable workflows are easily shared with colleagues. All the software is web browser-based and enables access from any computer.

Where will your next experiment take you?



Inside **FLOW**, researchers create analysis pipelines using **Docker container** technology. This container technology ensures that the analysis script will perform exactly the same on every device, **giving reproducibility to your collaborators**. Containers can be built with specific workflows, such as event-related potential (ERP) derivations, using open-source analysis toolboxes, such as **EEGLAB** and **MNE**, and these containerized workflows are supported by **FLOW**.



Taking the human neuroscience laboratory beyond EEG acquisition, the **BEL EEG System One** includes **FLOW**, a laboratory information system, providing an ecosystem for collaboration with others, using open-source software in workflows, data review and analysis, with integral file storage and management.

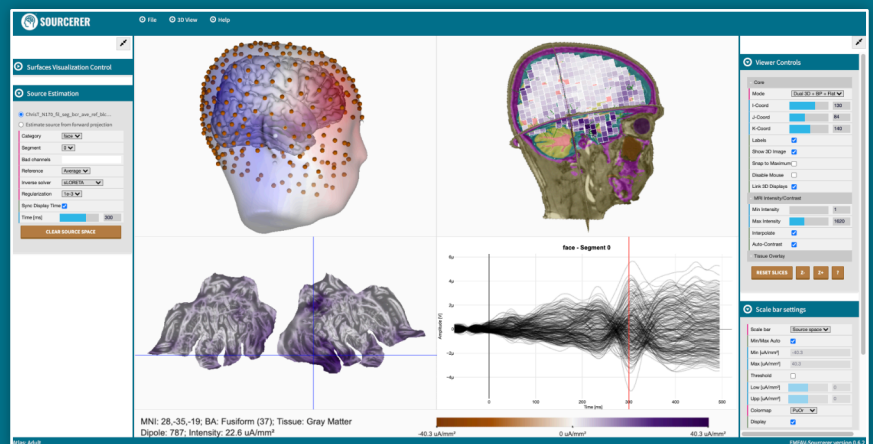


**FLOW** is an all-in-one solution for **EEG database management**, **ERP analysis pipelines**, and **visualization**, with **AWS cloud** or **on-premises server implementation**. **Containerization technology** runs **ERP analysis Python scripts** as modular units with I/O to the **FLOW** database, thus facilitating reproducibility across different stages of analysis.

## Interested in mapping EEG features to brain anatomy? Add **SOURCERER** to the **BEL EEG System One**

Designed with state-of-the-art software architecture that speeds computation, **SOURCERER** is fast, intuitive and includes the new **Bayesian multiple sparse priors** and **Frequency Localization**.

Contact us





# FLOW<sup>®</sup>

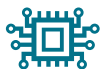
## One platform, one copy of data, multiple workflows



Structured data science platform provides a secure database, user authentication, user permission levels, search, storage, status, and analytic workflows.



Scripting, linking technology, and Docker containers support analytic workflows with various data types to execute **consistently and reliably for scientific rigor and reproducibility**.



High performance computing includes **machine learning**, with a first functional application for **sleep staging**.



Integrating user scripts and workflows from the **open source community (MNE, EEGLAB)** into structured containers allows improved reproducibility for cross-laboratory sharing and dissemination. Includes **Jupyter notebooks** integration.



Remote data access shared with your collaborators without ever having to copy any of the data.

ERP and Cognitive Neuroscience Studies

Cognitive Neuroscience of Sleep Research

Brain Computer Interface  
and Real Time Feedback

Clinical Neuroscience Research

Functional Brain Connectivity

Kinesiology Research

Intraoperative & EMU Research

Traumatic Brain Injury



**BEL EEG**  
System One

Developmental Neuroscience across all ages from infants to adults

## Product Specifications

### Geodesic Head Web

Number of Channels: .....	40, 130, 280
Sizes: .....	Small (54 - 57cm); Large (57 - 60cm); future sizes in Child and Infants
Hardware Reference Electrode: .....	Cz
Noise: .....	< 1.3 $\mu$ V RMS
Impedance: .....	< 1 Kohms in electrolyte and typically 50 Kohms on scalp at 20 Hz
Storage Temperature: .....	0° to 47° C (32° to 116° F)
Operating Temperature: .....	10° to 35° C (50° to 95° F)
Relative Humidity: .....	5% to 95% noncondensing

### BEL Amp One

Number of Channels: .....	40, 130, 280
Power Supply: .....	Wall Power and Battery Power
Battery Life: .....	4 hours of EEG recording
Data Communication: .....	Ethernet and Wi-Fi
External Digital Communications: .....	Supported, as with PST Chronos Device
Resolution: .....	24-bit
Digital Inputs: .....	16
Analog Inputs: .....	8
Input Noise: .....	< 6 $\mu$ V peak-to-peak at 10 Kohms
Amplifier Native Sampling Rate: .....	8,000 s/s
Sampling Rate: .....	250, 500, 1000 s/s
Gain .....	10



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Contact us

All of the BEL products are developed under BEL's quality system to meet regulatory standards.  
BEL products are not yet cleared as medical devices.