## Erratum from Volume 4, Number 2 :

# Seeing Through the Skull: Advanced EEGs Use MRIs to Accurately Measure Cortical Activity from the Scalp

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In figure 9 of Gevins et al. (1991), our initial three dimensional EEG-MRI visualization method was illustrated with data from a pilot subject consisting of steady-state somatosensory evoked potential dipoles, two of which were located approximately 2 centimeters anterior to the central sulcus. The paper represented work in progress which was presented as an invited lecture at the International Society for Brain Electromagnetic Topography and was not peer-reviewed prior to publication. We wish to clarify that the result shown in Figure 9 is not representative of the accuracy which can be obtained with EEG dipole localization procedures. Subsequent analyses and review of the recording procedures have indicated that the anterior displacements of the dipoles in that figure were caused by a shift in the electrode hat after the electrode positions were measured, and by the exclusion of higher harmonics in the steady-state analysis procedure. To eliminate these sources of error we adopted a procedure of measuring the positions of electrodes before and after each recording to detect and correct for possible shifts of the hat with respect to the head, and we now include higher harmonics of the steady state data in analyses. With these revised procedures, the somatosensory dipoles for all 5 subsequent subjects in the same study were found to be situated in close proximity to the central sulcus (Gevins et al, in press). An example of somatosensory dipole localization is shown in Figure 1; the dipole is within 0.1 cm of the central sulcus.

## References

Gevins, A., Le, J., Brickett, P., Reutter, B., and Desmond, J. Seeing through the skull: advance EEGs use MRIs to accurately measure cortical activity from the scalp. Brain Topography, 1991, 4(2): 125-131.

Gevins, A., Le, J., Martin, N., Reutter, B., Desmond, J. and McLaughlin, J. High resolution EEG: 124-channel recording, spatial enhancement and MRI integration methods. Electroenceph. Clin. Neurophysiol. (in press 1993).

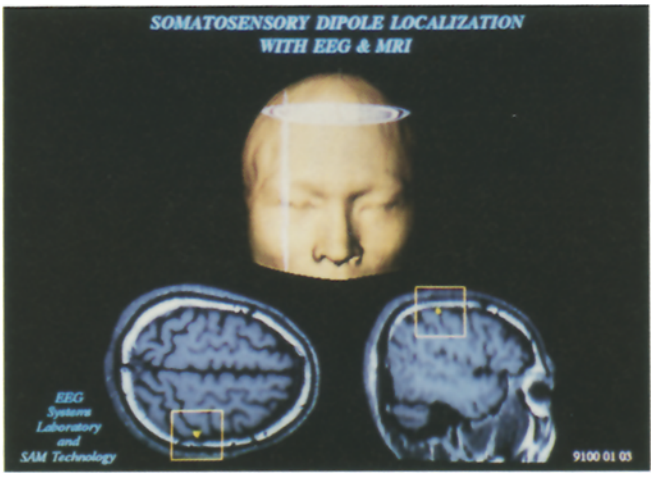


Figure 1. A single dipole was computed from 61-channel evoked potential data 23 msec after electrical stimulation of the left index finger. The single equivalent dipole is illustrated with respect to the horizontal and sagital MRI slices in which the dipole lies. The same MRI slices are also shown with respect to the subject's MRI-reconstructed scalp surface at the top of the figure. The dipole (which is enclosed by a box) is represented as an arrowhead with the center of the arrowhead base positioned at the dipole's location and with the arrowhead pointing in the direction of the dipole's orientation. The dipole is situated 0.1 cm behind the central sulcus oriented in a tangential direction, consistent with theory that the generator of the P20-N20 is located in area 3b in the posterior bank of the central sulcus.