

Fingertap.avi

This movie shows the magnetic fields evoked by pneumatic stimulation of the index finger. The MEG participants received pneumatic stimulation to their left index finger every 500 ms. This stimulation was repeated several hundred times. To study the responses to this somatosensation we averaged an epoch of the data that started 100ms before the stimulation, and ended 300ms after stimulation.

Periods of neural activity are represented by dipolar magnetic fields that are generated by synaptic activity. These dipoles are the positive and negative poles of the magnetic fields that radiate out of the head. In the movie, the distribution of the magnetic fields are updated approximately every 1.5 msec. The precise timing is updated at the top of the movie for each frame. Activity is presented as it would be detected by the MEG sensors.

As you play the movie you will notice a clear dipolar distribution that develops between 90 – 110 msec, which peaks at 100 msec. The negative pole of this dipole is towards the top of the plot, with the positive pole underneath. This response represents the processing of the pneumatic stimulation in the primary somatosensory areas. On the movie plot, the origin of this response source would be between these two dipolar poles.

During the rest of the movie, dipolar structures appear in a similar location but with a different orientation. These later activities represent the stimuli being processed in secondary and associated cortical areas near to the primary somatosensory cortex. Notable fields are observed around 170 msec, 220 msec, 245 msec, and 300 msec. There is also a dipolar structure at about 400 msec, which can be seen at the start of the movie (-100 msec pre stimulus). However, by 450 msec post stimulus (-50 msec pre-stimulus), these dipolar structures no longer appear. This indicates that most of the processing of this stimulus has within these first 450 msec.