Title:

Hemifield columns co-opt ocular dominance column structure in human achiasma

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Supplementary material:

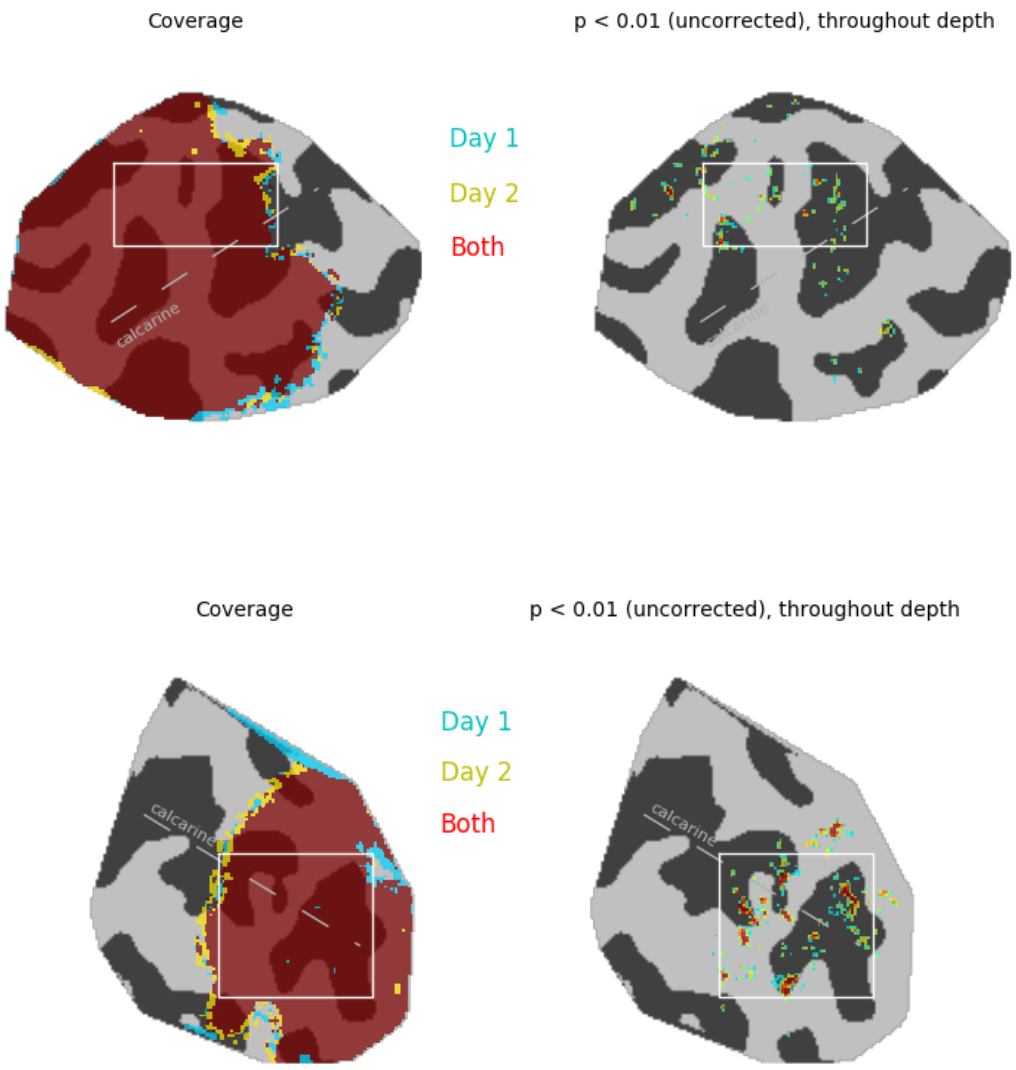
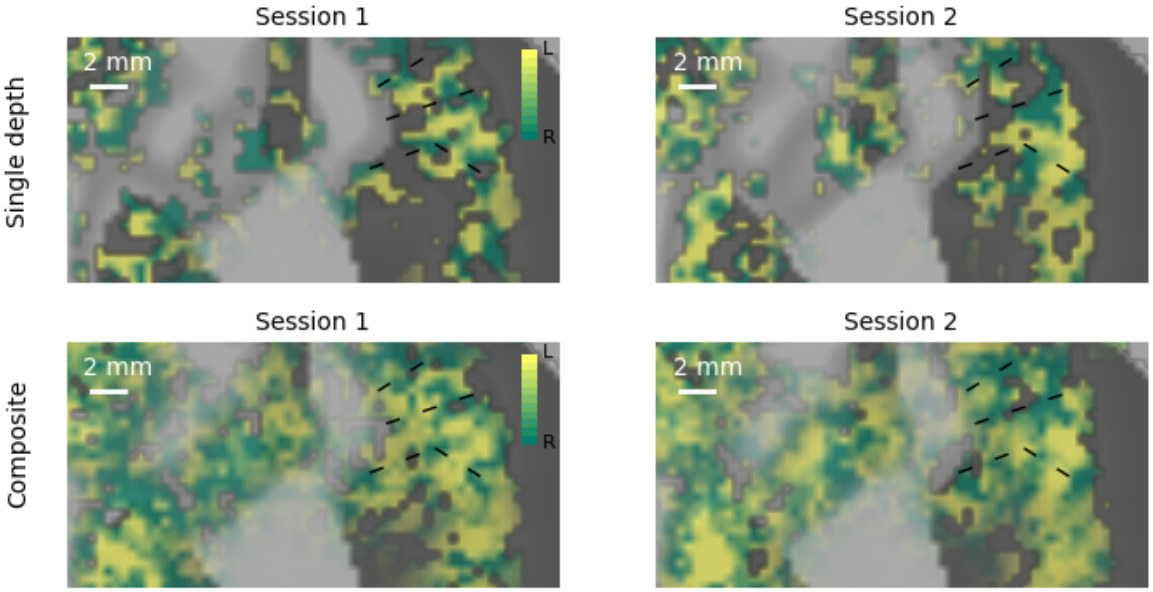


Figure 1. Coverage and analysis regions for two control participants. Top panels: s1000; bottom panels: s1008. The data for s1000 (top panel) were acquired with a reduction factor of 3 (R=3), instead of R=2, which was used for s1008 and the achiasmic participant. This was done to decrease distortion and aid with registration between functional and anatomical images, but the loss of contrast to noise ratio from increased sampling reduction is evident.



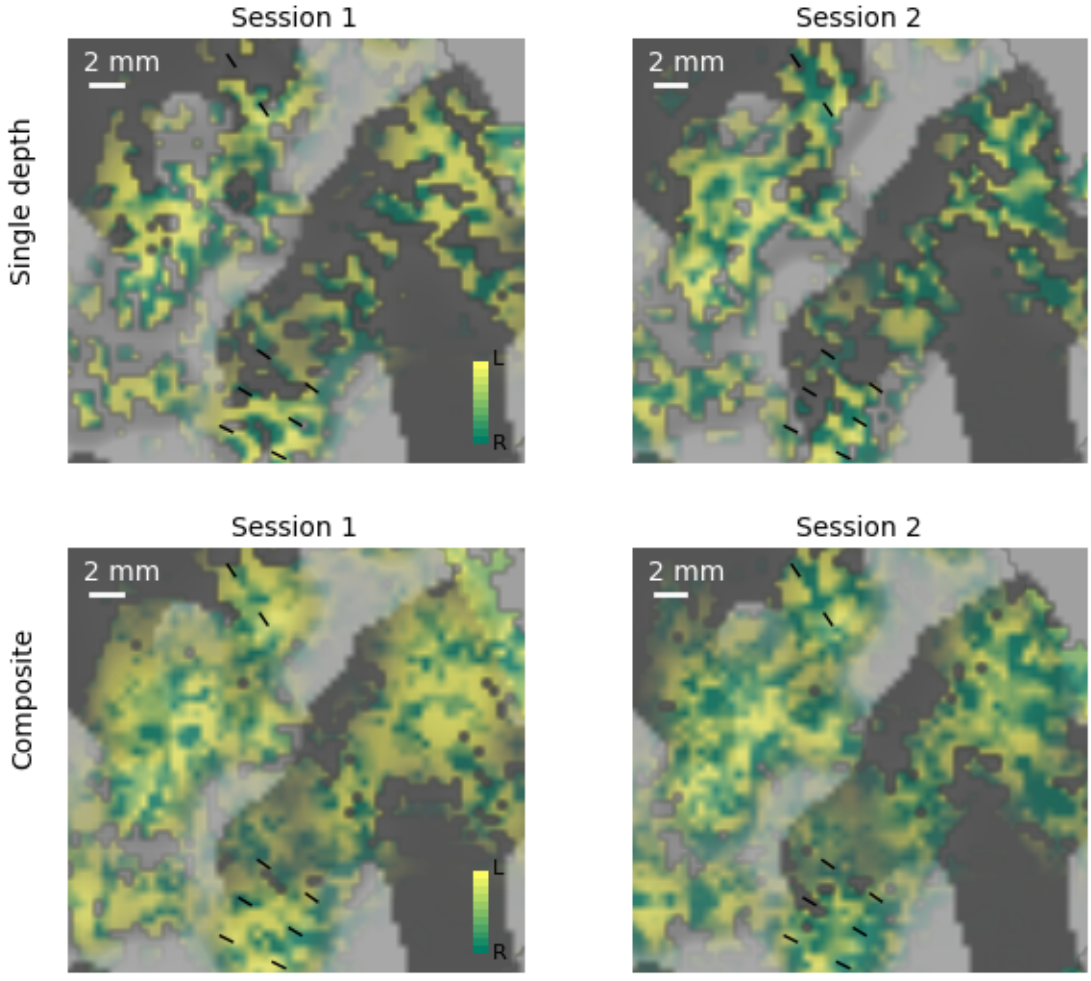


Figure 2. Single-depth and composite ocular dominance maps for two control participants. Top group of 4 panels: s1000; bottom group of 4 panels: s1008. Selectivity for left and right eye stimulation was much lower for the control participants than for the achiasmic participant (main paper, Figure 3), resulting in

disappointingly weak maps of ocular dominance columns using this particular mapping approach (single condition) and resolution (0.8 mm isotropic). For each participant, black fiducial marks indicate regions where columnar organization may be visible. The separation of apparent eye-dominance stripes is comparable to the spacing visual field dominance stripes observed in the achiasmic participant. The method used to enhance the visualization of columnar organization by combining maps across depth, using a weighting function based on relative Fourier power in the 2-3 cyc/mm band, does not enhance visualizations in these control participants. This confirms that the method of forming composite images does not create artificial columnar structures.

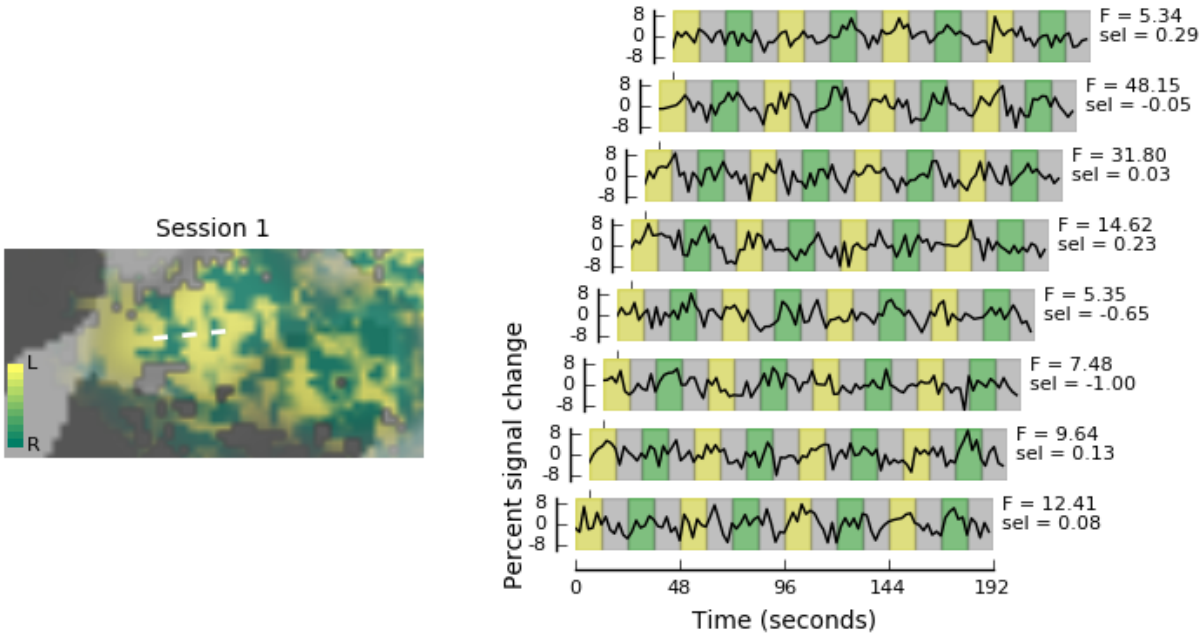


Figure 3. *Individual voxel* time courses for functional data in achiasmic participant. The white dashed line on the left panel indicates the region in which functional data were sampled. Traces at right are time courses for 8 functional voxels, sampled from the middle of the cortical depth in the distortion-compensated data (12 scans were averaged together, and the first 6 and last 2 rest volumes were discarded; bottom trace comes from voxel farthest to the left in left panel). No baseline detrending has been performed on these data. The strong parenchymal response is evident in the second trace from the top, with stimulus-driven modulations of several percent, even in these T_2-weighted data. The low signal-to-noise ratio of these type of data is also evident, although it is important to bear in mind that these are *individual* voxels at *sub-millimeter* resolution.