## MNI Templates

Hi-res

A close-up of a brain scan

Description automatically generated

Low-res spm default

A close-up of x-ray images

Description automatically generated

## Normalization Using Default SPM12 ‘New approach’ default template/tpm

TPM Path: 'M:\jsalminen\GitHub\par\_EEGProcessing\submodules\fieldtrip\external\spm12\tpm\TPM.nii'

A computer screen shot of a code

Description automatically generated

## Normalization Using Default SPM12 ‘Old approach’ template

Template Path: 'M:\jsalminen\GitHub\par\_EEGProcessing\submodules\fieldtrip\external\spm12\toolbox\OldNorm\T1.nii'

A screen shot of a computer code

Description automatically generated

Example (H1020)

A close-up of a brain scan

Description automatically generated

Example (NH3113)

A close-up of a brain scan

Description automatically generated

## Normalization Using SPM12 ‘Old approach’ with hi-res template

Template Path: 'M:\jsalminen\GitHub\par\_EEGProcessing\src\\_data\\_resources\mni\_icbm152\_nlin\_sym\_09a\mni\_icbm152\_t1\_tal\_nlin\_sym\_09a.nii'

TPM Path: 'M:\jsalminen\GitHub\par\_EEGProcessing\src\\_data\\_resources\mni\_icbm152\_nlin\_sym\_09a\custom\_tpm.nii'

Example of Young Adult (H1020)

A close-up of a brain scan

Description automatically generated

Example of older adult with bad alignment (NH3113)

A close-up of a brain scan

Description automatically generated

## Normalization Using SPM12 ‘New approach’ with hi-res template

NOTE: This bugs out, assumedly because the TPM I’m using is not compatible with SPM12’s new method of normalization. You’d need a 5 layer tpm map: gray, white, csf, skull, air

Example (NH3113)

A close-up of a brain scan

Description automatically generated

## Normalization Using ANTS with hi-res template

Example (H1020)

A close-up of x-ray images

Description automatically generated

Example (NH3113)

A close-up of x-ray images

Description automatically generated

Example (NH3105)

A close-up of x-ray images

Description automatically generated

# Bug Fix (05/01/2024), ANTs Coordinate System Discrepancy

Seems like the ants function antsApplyTransformsToPoints() uses the LPS space while fieldtrip uses the RAS space. A transformation must be made to the normalized subject-specific coordinates before being inputted into this function. The transformation is x=-x and y=-y. See src/1\_PREPROCESS/mim/analyze\_data/anlz\_ants\_trans.m

Results:

Original dipoles (subject specific MRI, non-transformed dipoles)

|  |  |  |
| --- | --- | --- |
| A close-up of a brain scan  Description automatically generated | A close-up of a brain scan  Description automatically generated | A close-up of a brain scan  Description automatically generated |

Subject Space Normalized dipoles (normalized subject specific MRI, red: non-fixed normalized dipoles, blue: fixed normalized dipoles)

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| A close-up of a brain scan  Description automatically generated | A close-up of a brain scan  Description automatically generated | A mri of a brain  Description automatically generated |

MNI Space Normalized dipoles (MNI MRI, red: non-fixed normalized dipoles, blue: fixed normalized dipoles)

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| A close-up of a brain scan  Description automatically generated | A brain scan with red and blue dots  Description automatically generated | A close-up of a brain scan  Description automatically generated |