

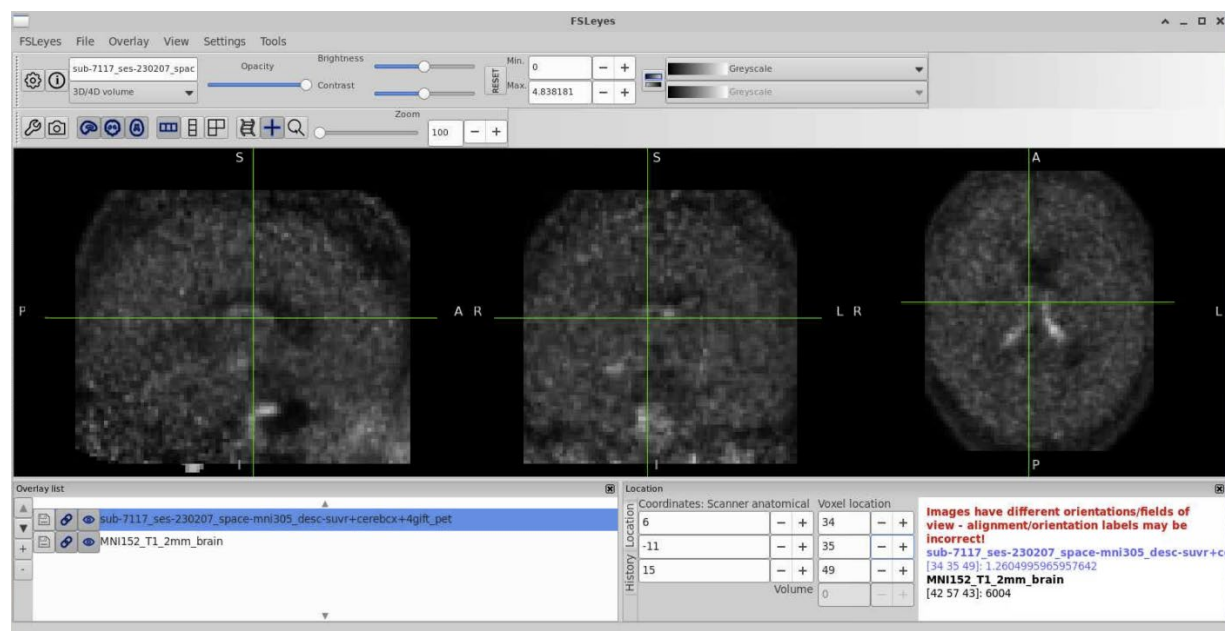
Comparison between our PET pipeline and other public pipeline Oct, 3, 2025

As our lab transitions from primarily working with fMRI and other non-PET modalities into PET imaging, I have been confident in the robustness of Helen's and our overall processing pipeline. However, during evaluation of the processed data, we have encountered a puzzling finding: our florbetapir (amyloid) images appear sharper, with clearly distinguishable borders, whereas our tau images look comparatively blurry.

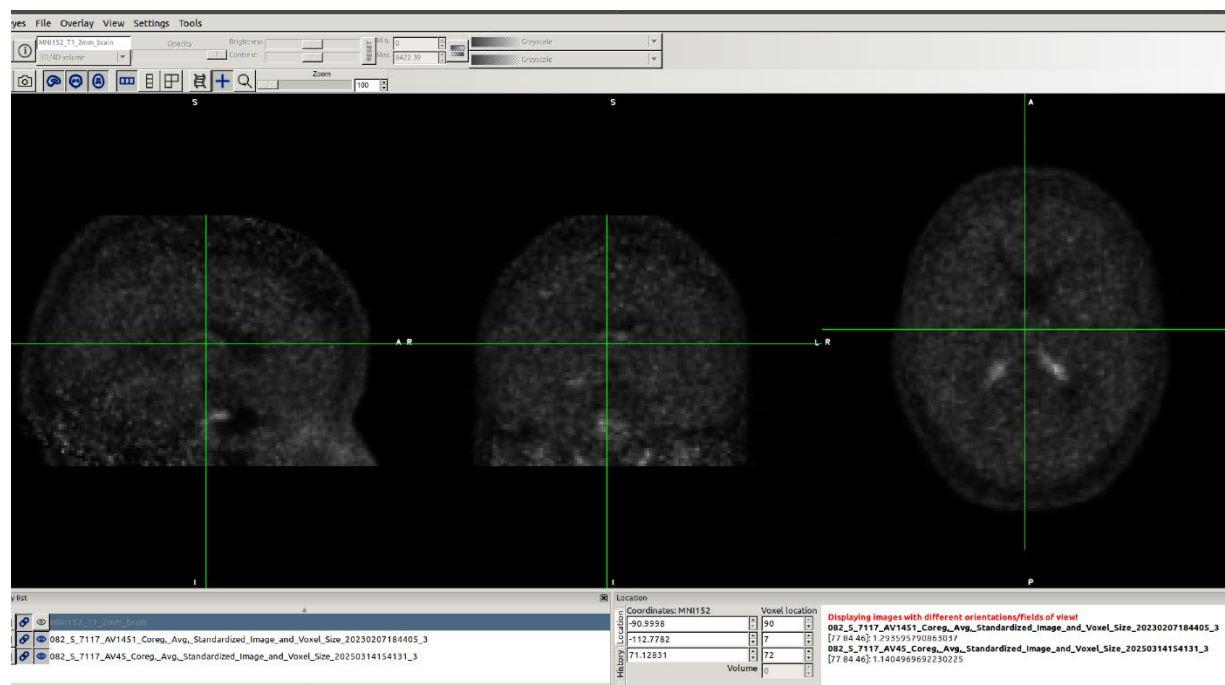
This is unexpected, since previous publications suggest the opposite pattern, tau imaging is generally considered more spatially specific, while florbetapir tends to appear less detailed. I cannot recall the exact references at this moment, but I remember encountering such findings in the literature.

Despite our results showing greater apparent spatial detail in florbetapir than tau, I accept that tracer properties vary, and that this "eyeball" impression may not fully align with what I recall from the literature. Importantly, I continue to trust our processing pipeline. Still, given that others have voiced concerns, I performed a quick validation test. Specifically, I compared our processed images against those produced by another well-established pipeline (for example, UC Berkeley's) available through ADNI. This allows us to directly confirm whether our processed results are consistent with an independent reference. Below, I present a comparison between our results and those from the other site:

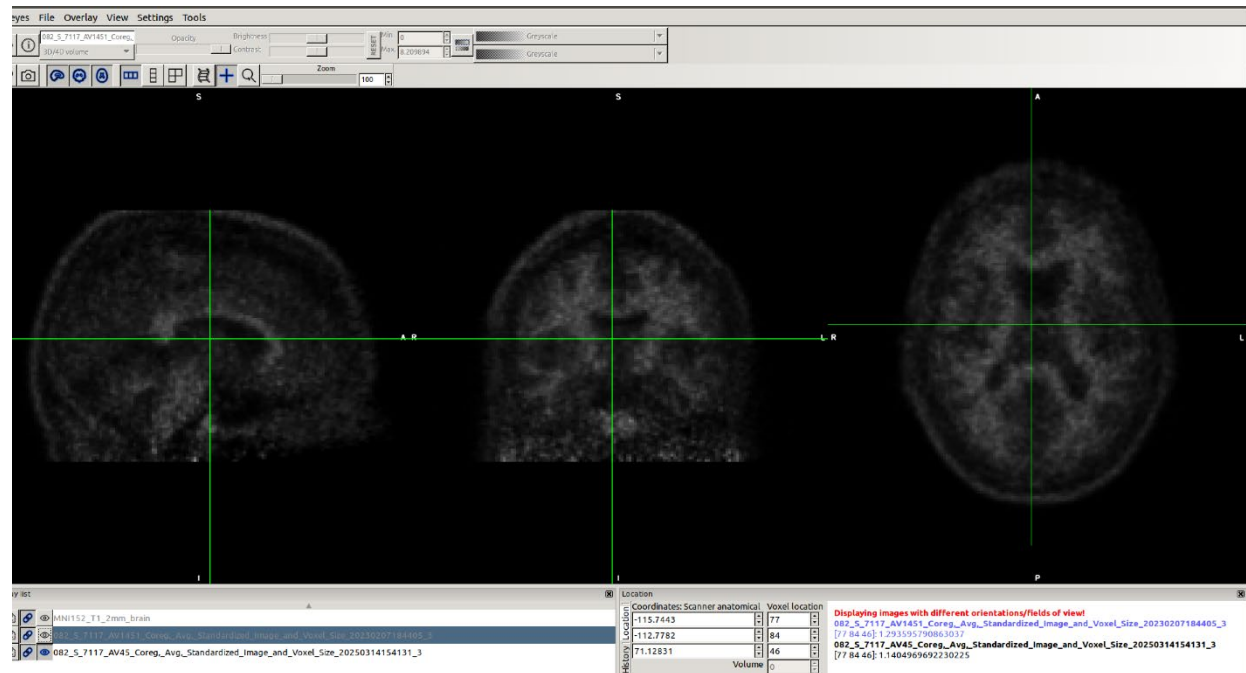
1) Our resulting tau image for subject 082_S_7117 scanned 2/7/2023, labeled raw imageid 10277644 and located at /data/qneuromark/Data/ADNI/PET_tracers/TAU/derivatives/GIFT-BIDS/preproc/sub-7117/ses-230207/sub-7117_ses-230207_space-mni305_desc-suvr+cerebcx+4gift_pet.nii.gz



2) The other university processed tau image received from ADNI, for subject 082_S_7117 scanned 2/7/2023 with from raw imageid 10277644 and now retrievable from ADNI using processed imageID 10279039

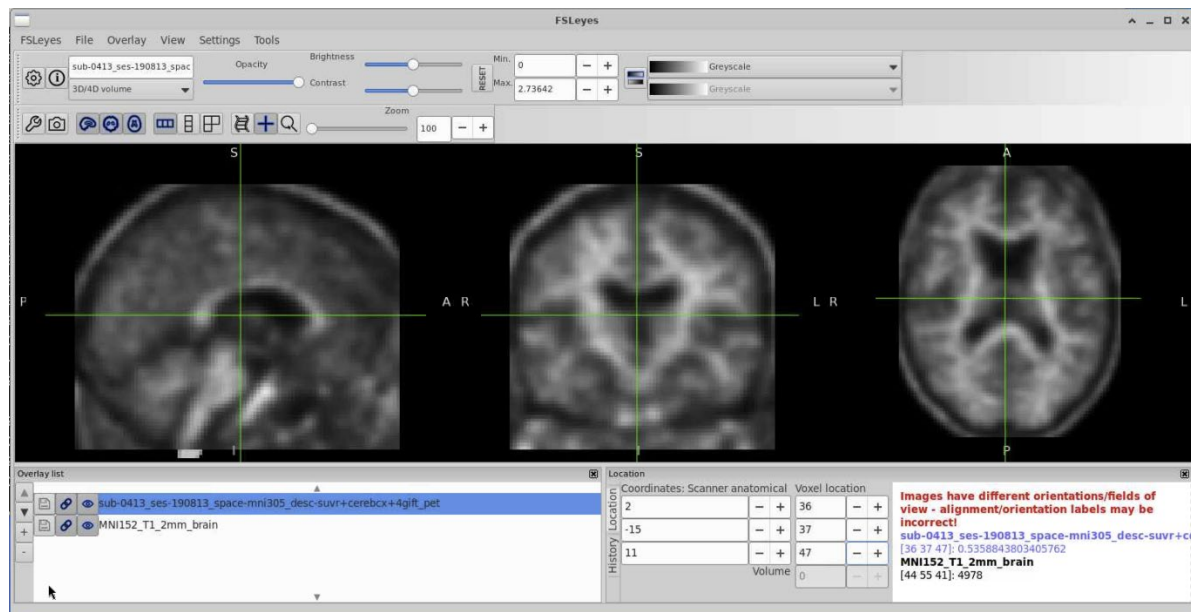


3) Again the exact same subject (082_S_7117) was preprocessed from a florbetapir image (raw imageid=11165588) by the other university (but was not for some reason never processed by us) and other university's result is found below and at ADNI ImageID=11173711.

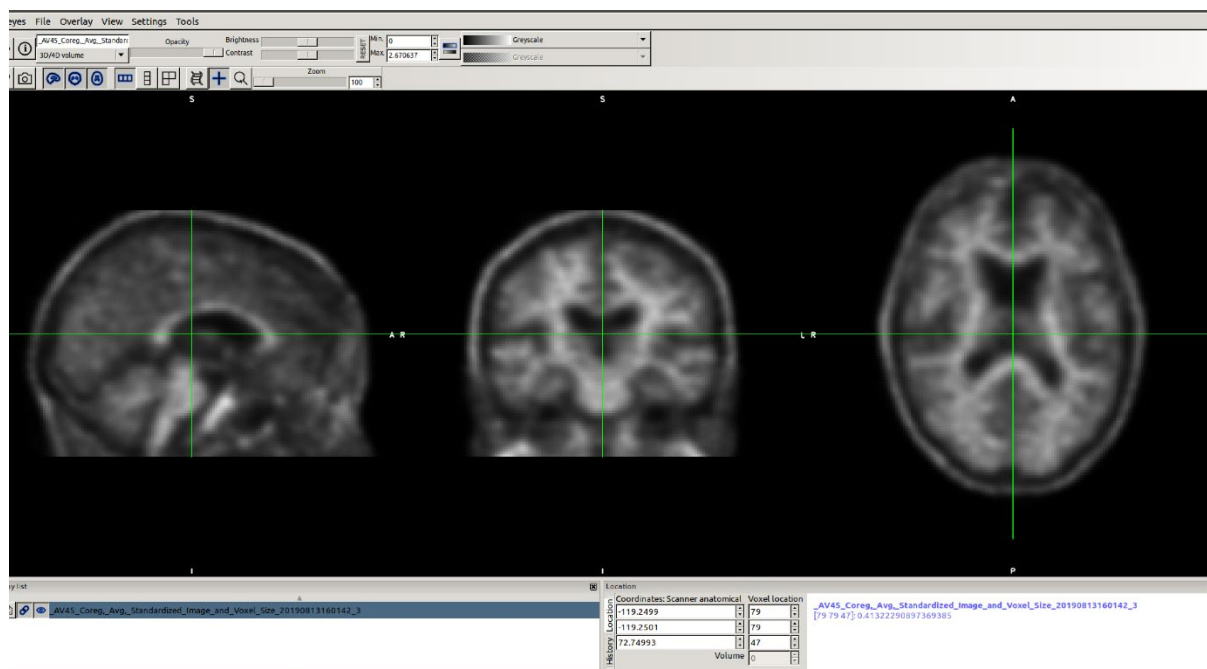


For subject 002_S_0413 we did have a match between our and other university for florbetapir. Therefore, we looked at 002_S_0413 seen at next page as well...

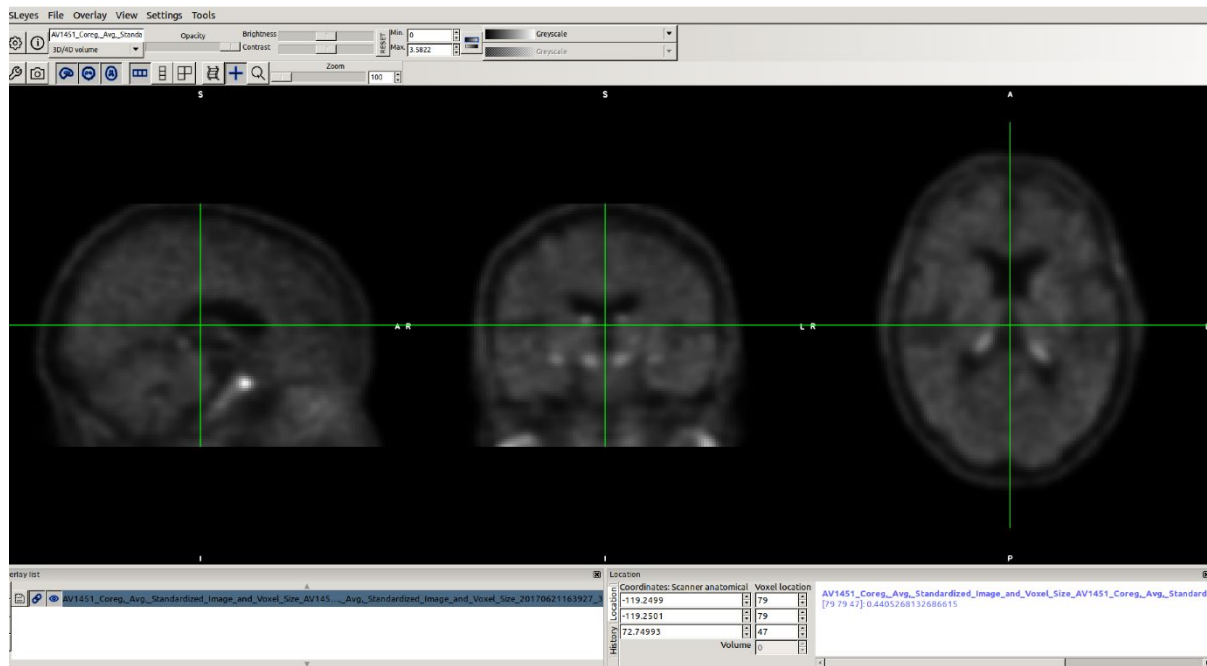
4) Our resulting florbetapir image from subject 002_S_0413 scanned 8/13/2019 with from raw imageid 1208189 and located at /data/qneuromark/Data/ADNI/PET_tracers/FPB/FPB_SUVr_BIDS/derivatives/GIFT-BIDS/preproc/sub-0413/ses-190813/sub-0413_ses-190813_space-mni305_desc-suvr+cerebcx+4gift_pet.nii.gz



5) The other university processed florbetapir image received from ADNI, from subject 002_S_0413 scanned 8/13/2019 from raw imageid 1208189 and now retrievable from ADNI using imageID 1222099



6) Other university had the tau image processed for subject 002_S_0413 (but we do not) and their ADNI imageid is 871786



Above images do not include smoothing. We have both smoothed and unsmoothed images for all florbetapir and tau and you can easily run 10mm gauss smooth test to confirm it was done correctly. The above results show that in the case of the ADNI source images florbetapir (at least for “eyeballs”) show more detail and is blurrier for tau imaging, based on our pipeline and other university’s pipeline (we match other pipeline).

By Cyrus Eierud

10/03/2025