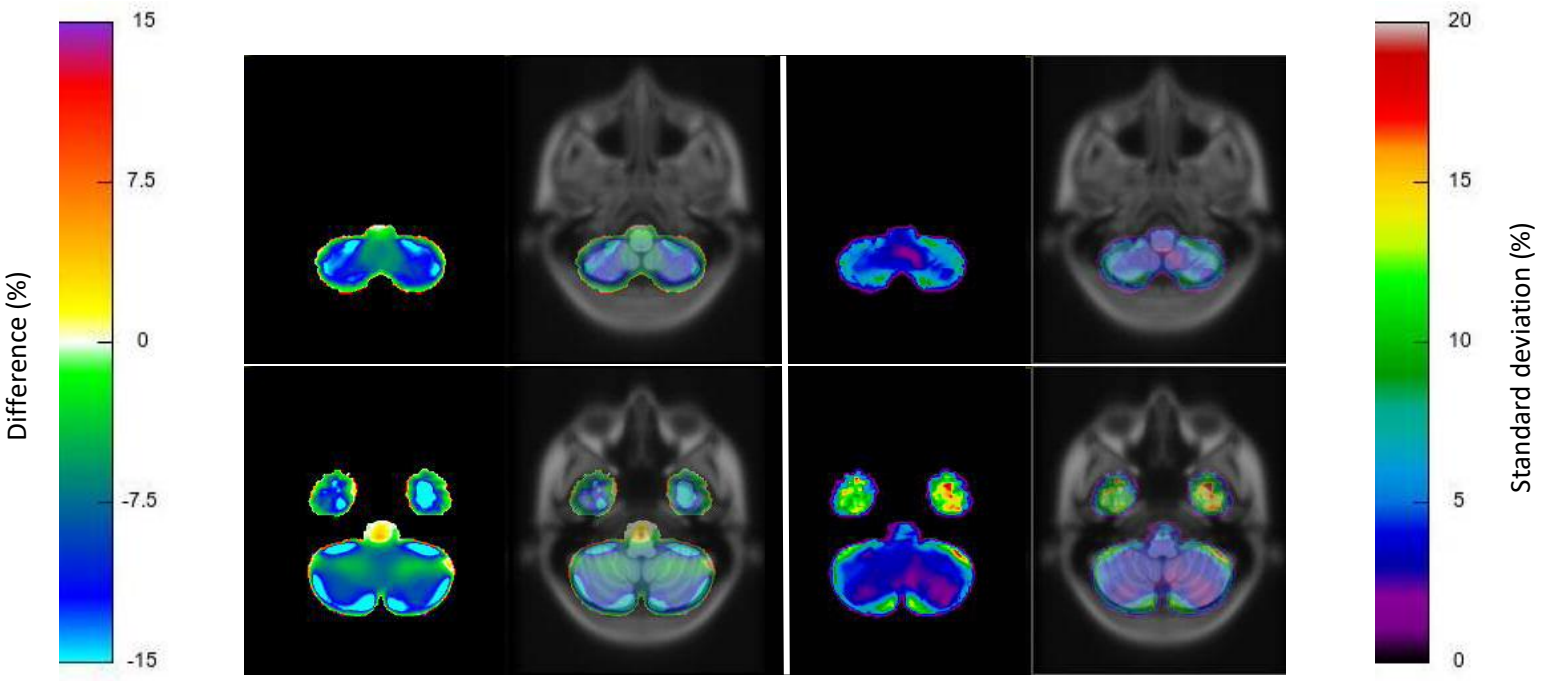
PET/MRI for oncological brain imaging: A comparison of standard MR-based attenuation corrections with a novel, model-based approach for the Siemens mMR PET/MR system

This supplemental material contains further evaluations of [18F]-fluoro-2-deoxy-D-glucose Positron Emission Tomography (PET) examinations of the brain of 11 healthy subjects. Voxel-based average difference images and corresponding images of standard deviations of the Standardized Uptake Value (SUV) in PET images reconstructed with different attenuation correction approaches are shown. All values are relative to the PET images with computed tomography (CT) based attenuation correction (CTref).

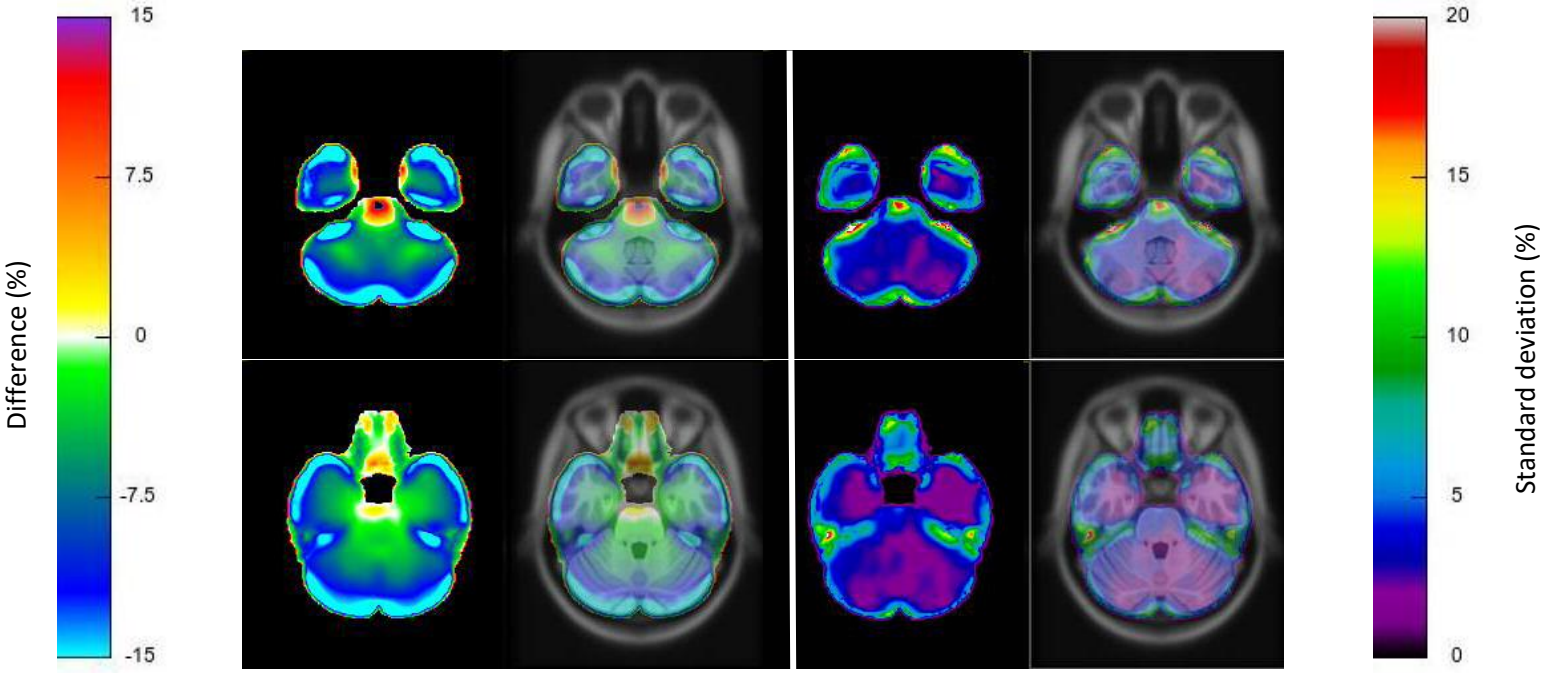
1 %- difference average image for the DIXON MR-AC

The %-difference images (masked within the brain) of each patient is aligned to MNI space and averaged. The resulting average images and standard deviation images are obtained.

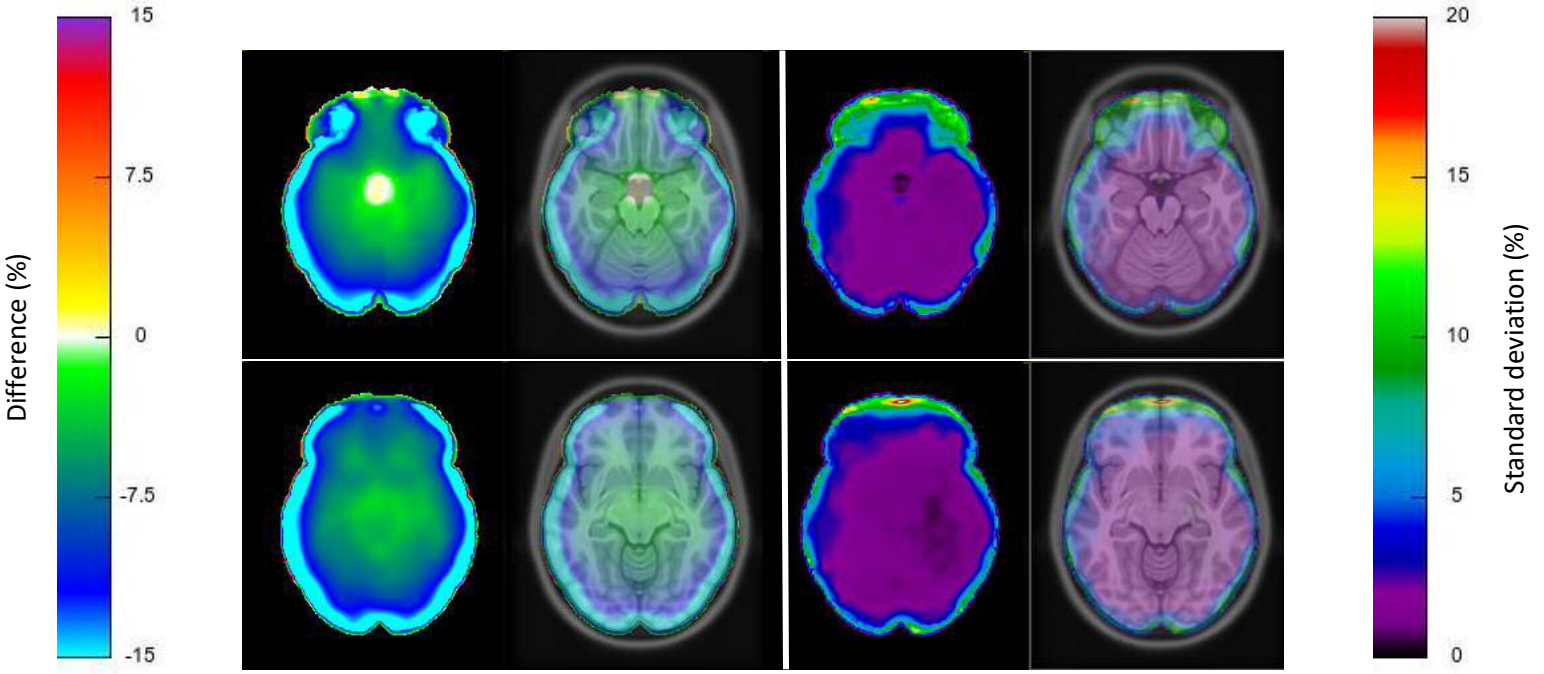
Below the results for the transaxial slices using slice spacing of 10 mm starting from world coordinate -60 (base of skull / cerebellum) and to 80 (top of the skull) are shown.



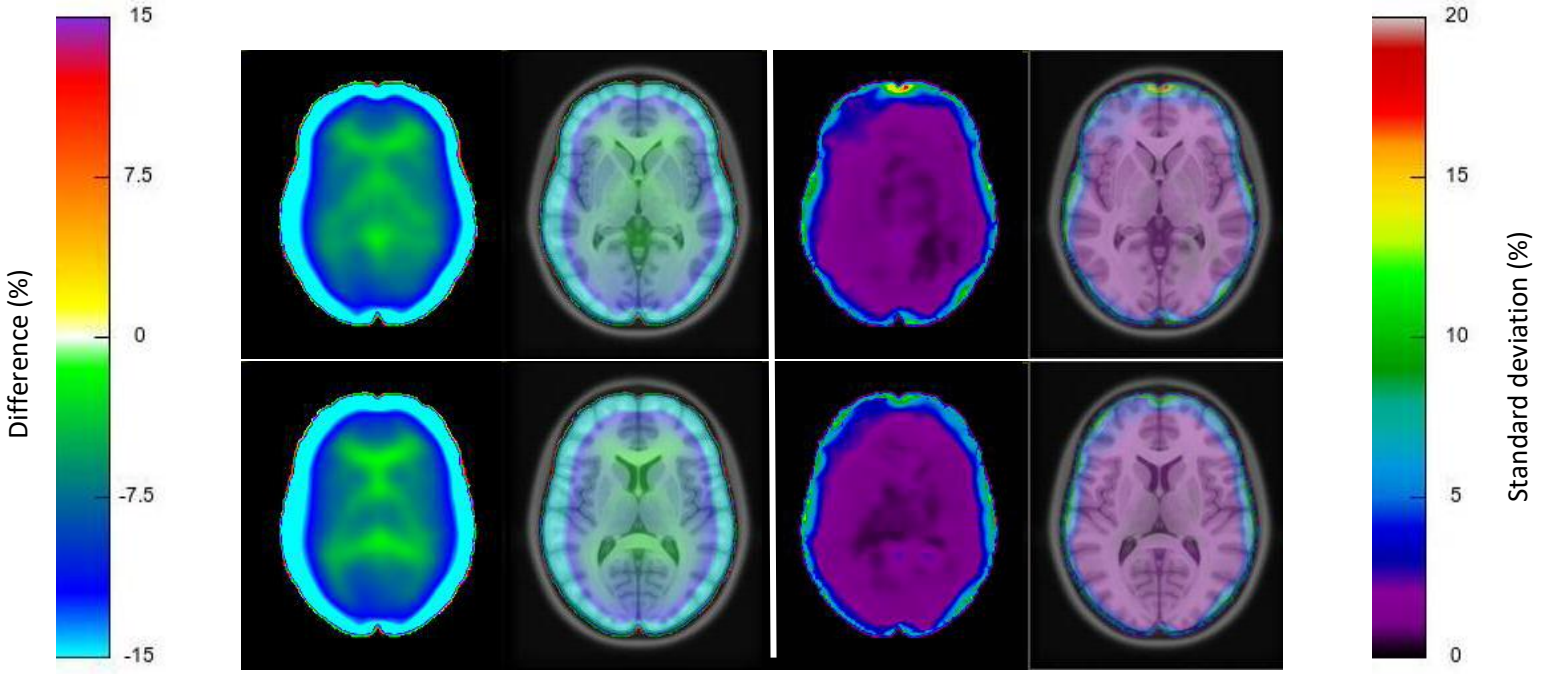
Supplemental Figure 1: %-difference (left) and standard deviation images (right) in image fusion mode with the anatomical reference image. World z-coordinate: -60 (top) and -50 (bottom)



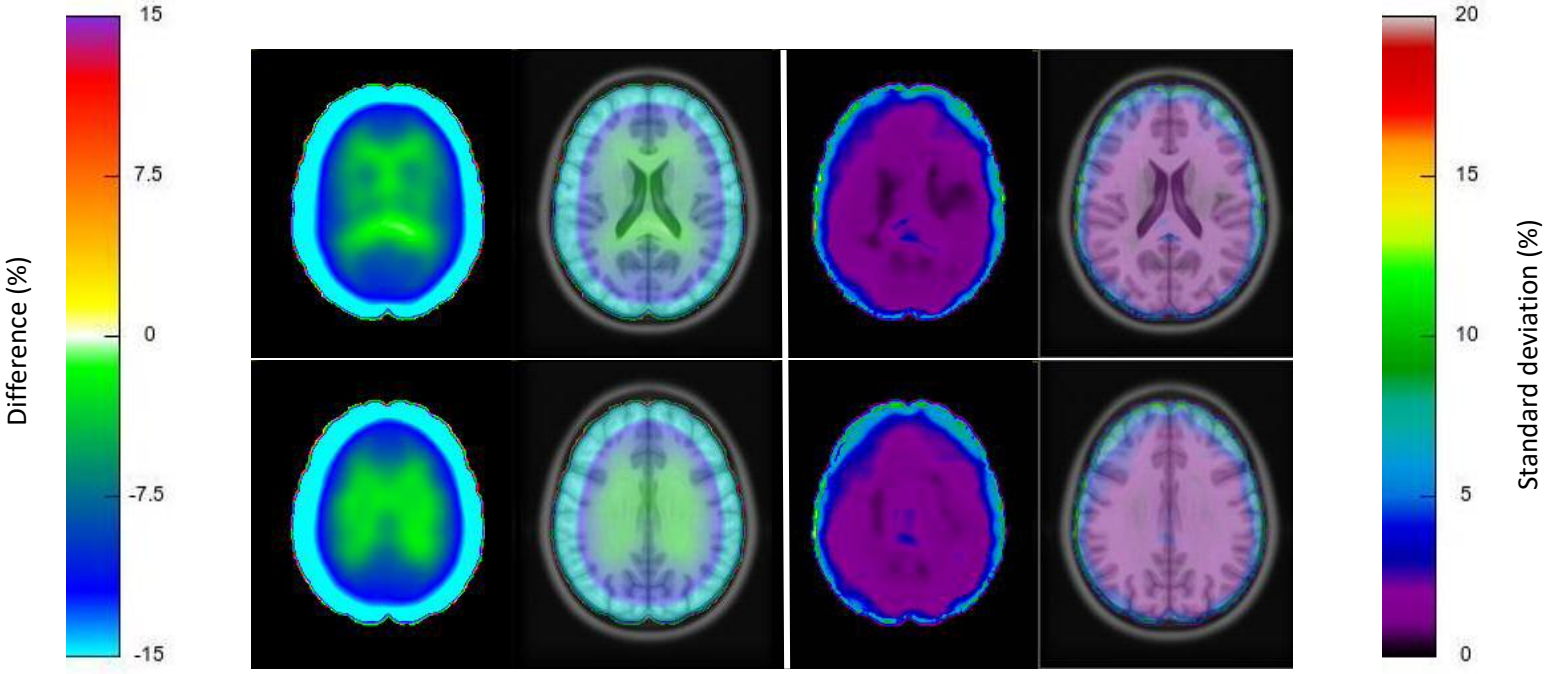
Supplemental Figure 2: %-difference (left) and standard deviation images (right) in image fusion mode with the anatomical reference image. World z-coordinate: -40 (top) and -30 (bottom)



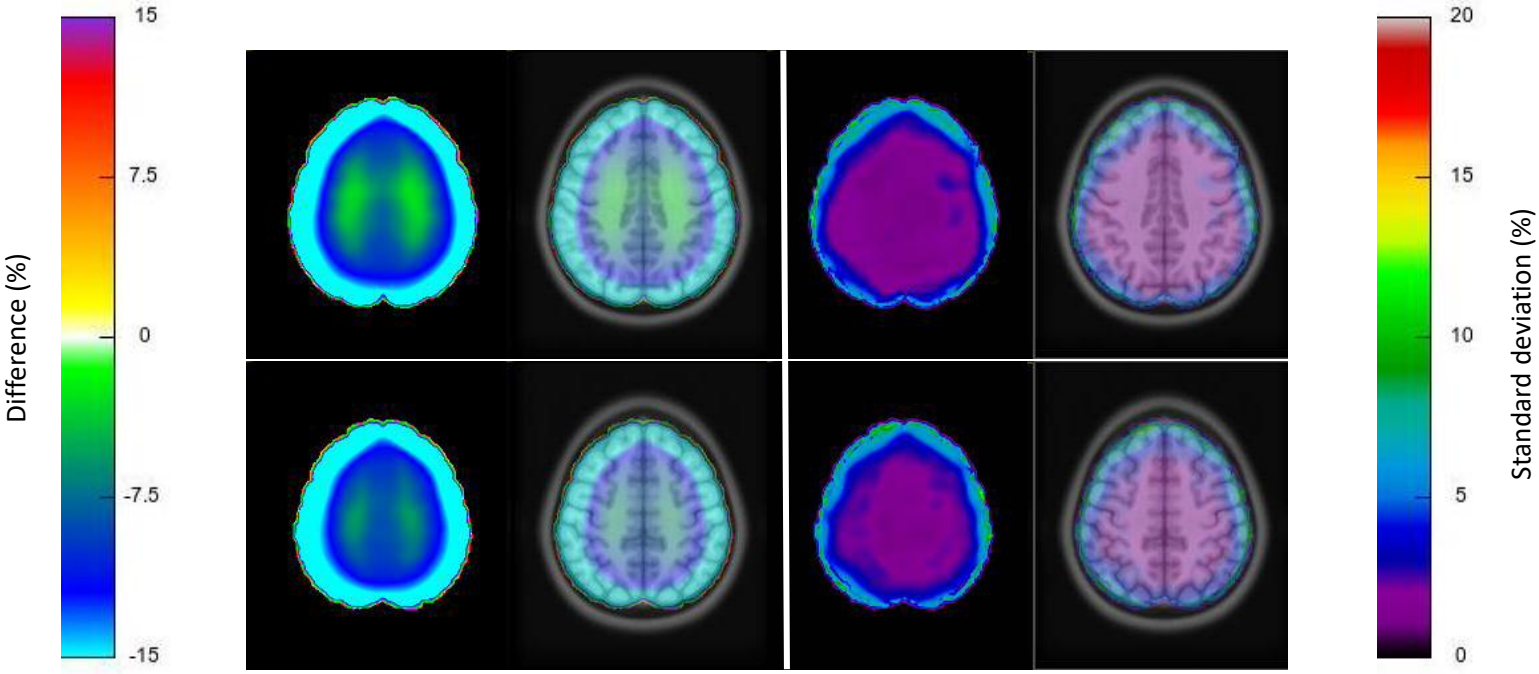
Supplemental Figure 3: %-difference (left) and standard deviation images (right) in image fusion mode with the anatomical reference image. World z-coordinate: -20 (top) and -10 (bottom)



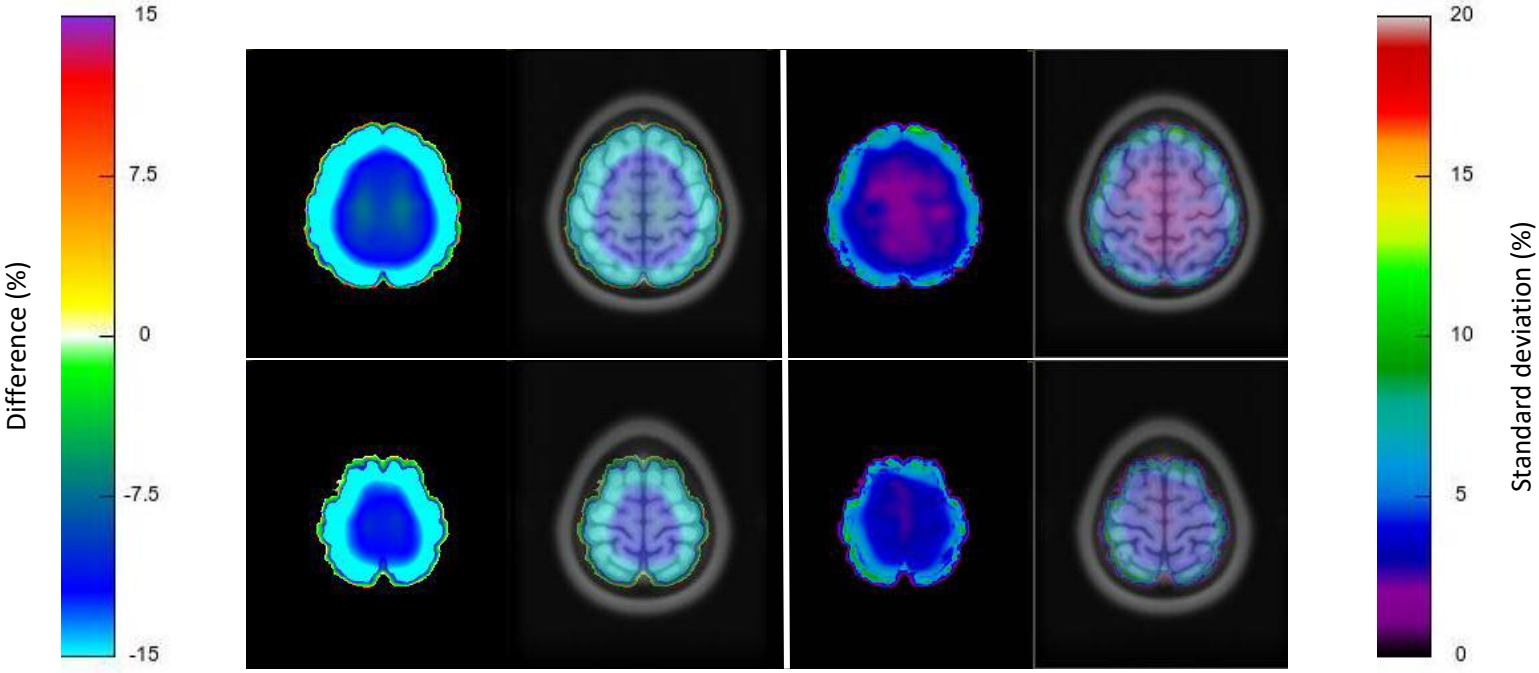
Supplemental Figure 4: %-difference (left) and standard deviation images (right) in image fusion mode with the anatomical reference image. World z-coordinate: 0 (top) and 10 (bottom)



Supplemental Figure 5: %-difference (left) and standard deviation images (right) in image fusion mode with the anatomical reference image. World z-coordinate: 20 (top) and 30 (bottom)



Supplemental Figure 6: %-difference (left) and standard deviation images (right) in image fusion mode with the anatomical reference image. World z-coordinate: 40 (top) and 50 (bottom)

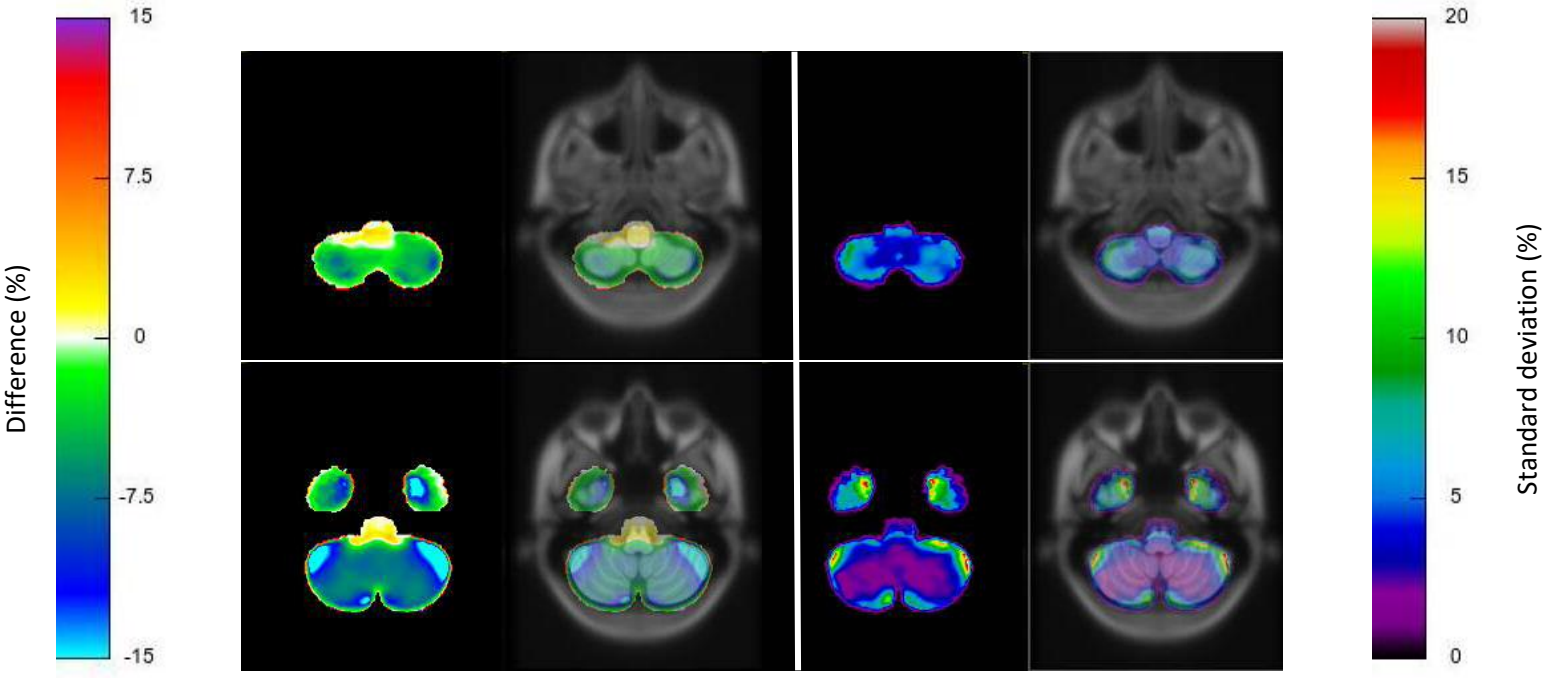


Supplemental Figure 7: %-difference (left) and standard deviation images (right) in image fusion mode with the anatomical reference image. World z-coordinate: 60 (top) and 70 (bottom)

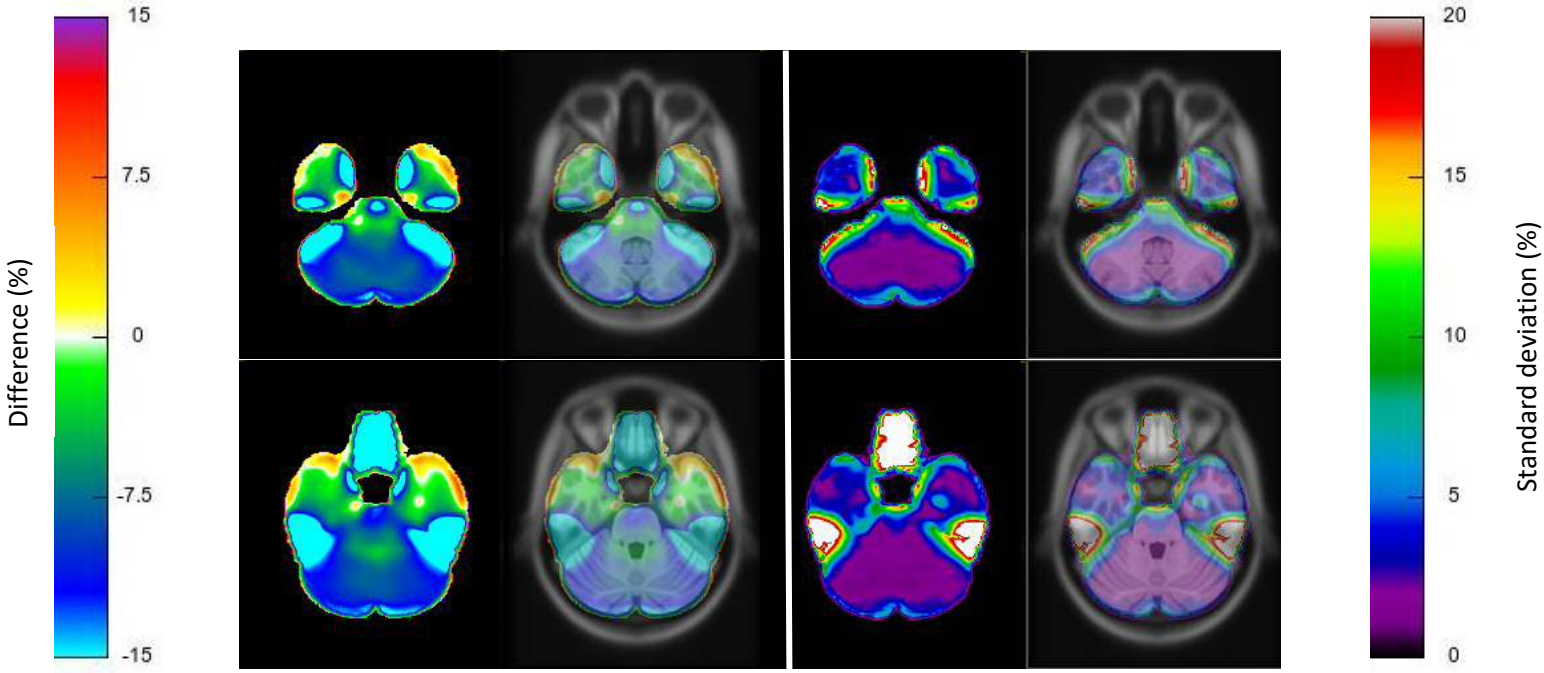
2 %- difference average image for the UTE MR-AC

The %-difference images (masked within the brain) of each patient is aligned to MNI space and averaged. The resulting average images and standard deviation images are obtained.

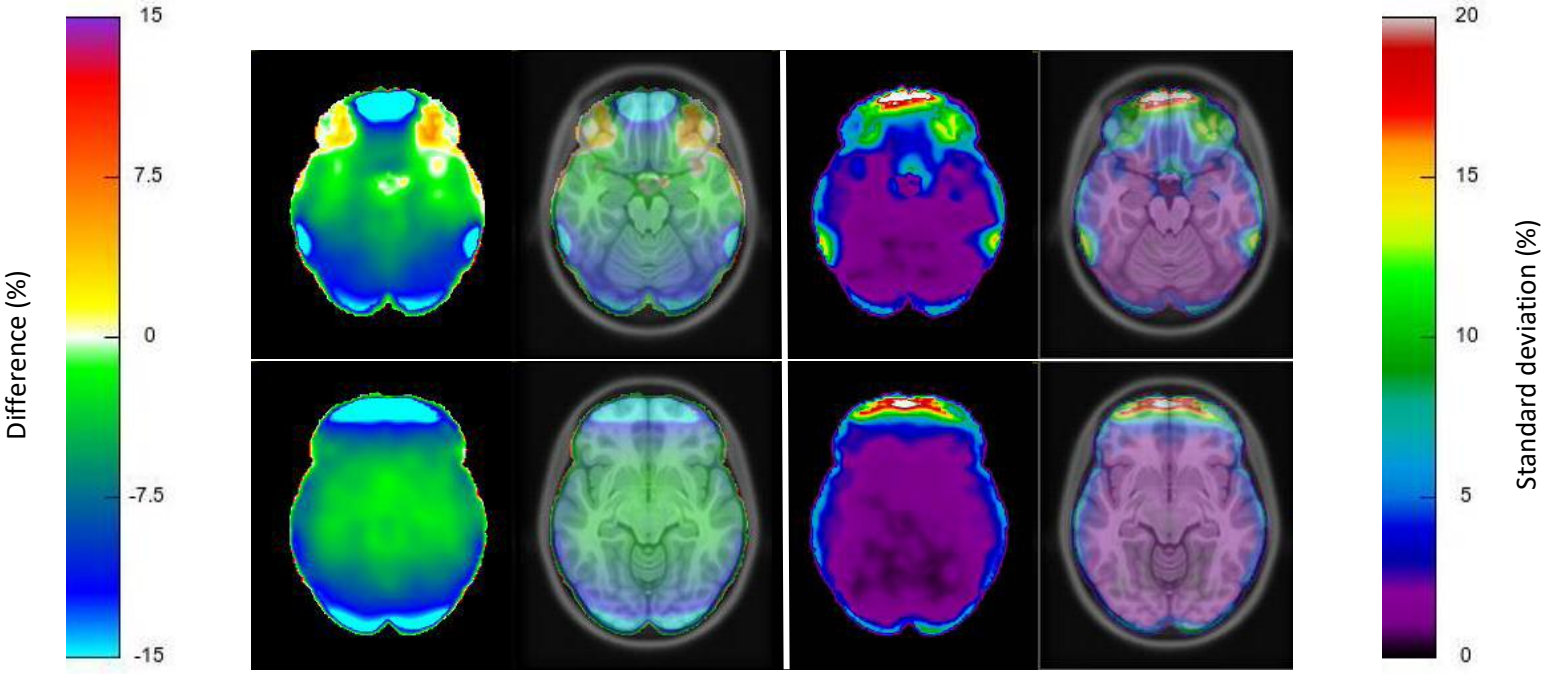
Below the results for the transaxial slices using slice spacing of 10 mm starting from world coordinate -60 (base of skull / cerebellum) and to 80 (top of the skull) are shown.



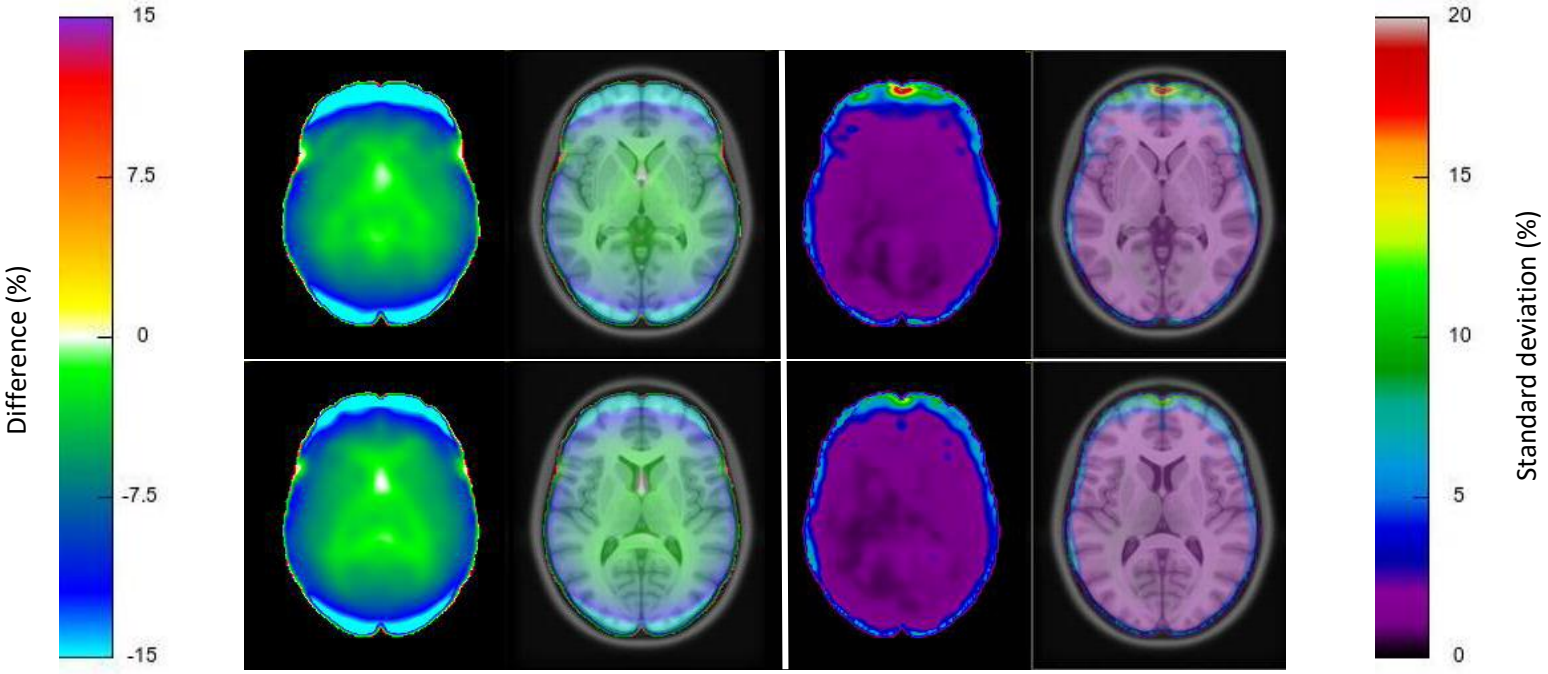
Supplemental Figure 8: %-difference (left) and standard deviation images (right) in image fusion mode with the anatomical reference image. World z-coordinate: -60 (top) and -50 (bottom)



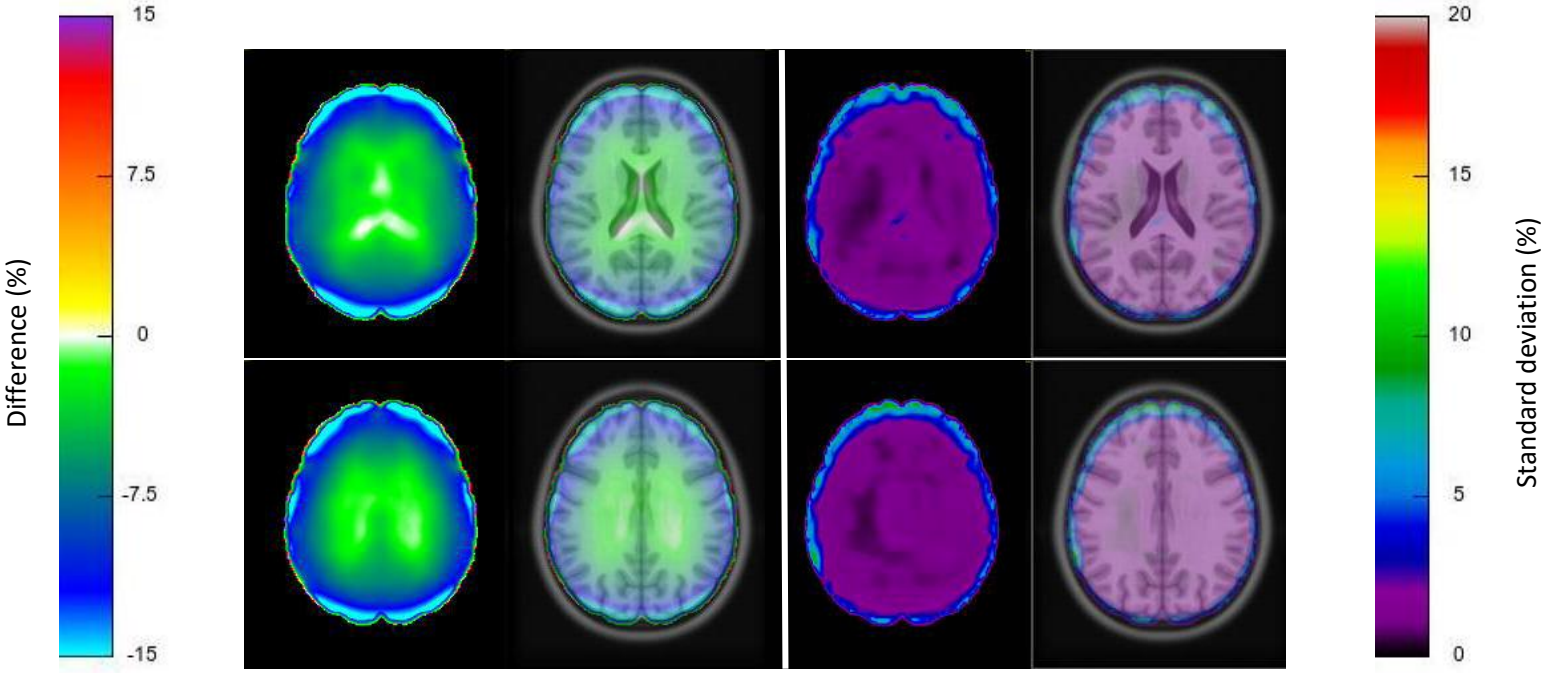
Supplemental Figure 9: %-difference (left) and standard deviation images (right) in image fusion mode with the anatomical reference image. World z-coordinate: -40 (top) and -30 (bottom)



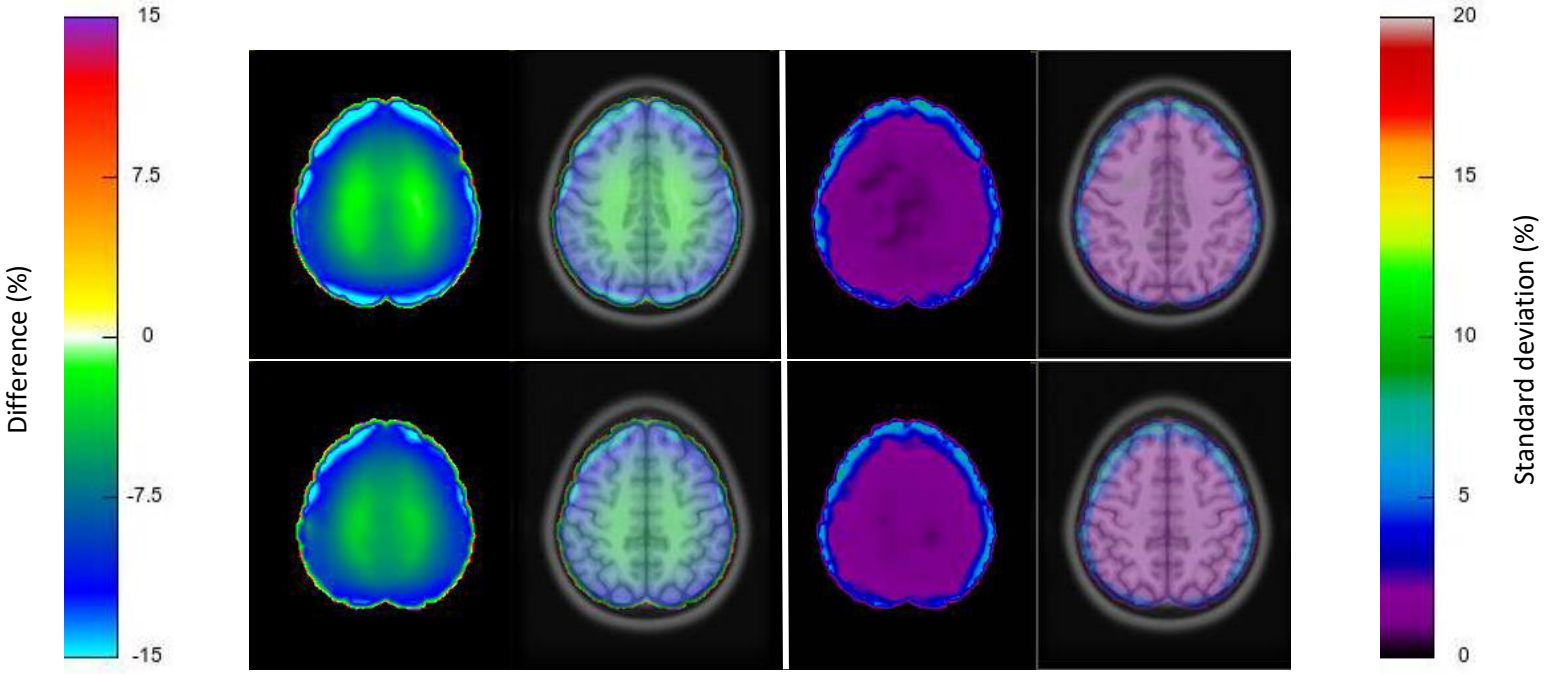
Supplemental Figure 10: %-difference (left) and standard deviation images (right) in image fusion mode with the anatomical reference image. World z-coordinate: -20 (top) and -10 (bottom)



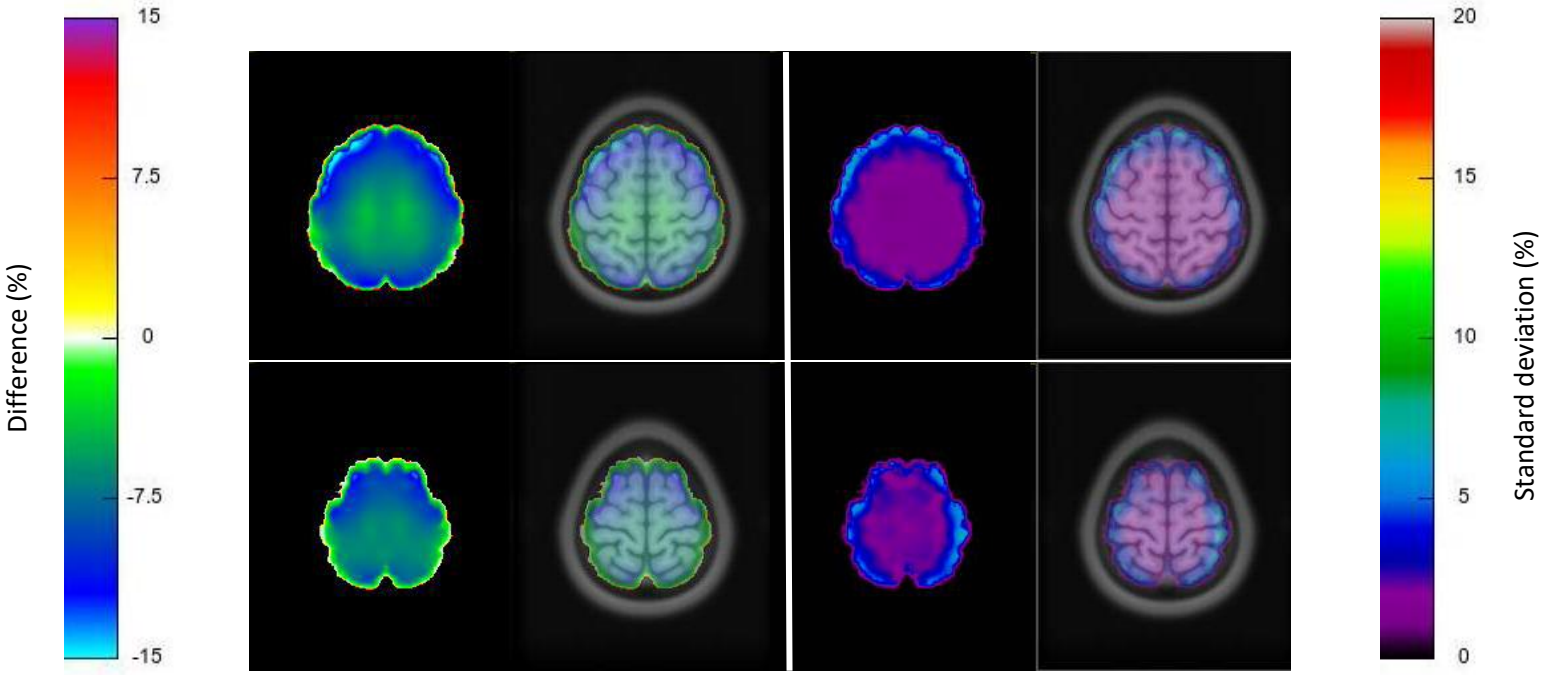
Supplemental Figure 11: %-difference (left) and standard deviation images (right) in image fusion mode with the anatomical reference image. World z-coordinate: 0 (top) and 10 (bottom)



Supplemental Figure 12: %-difference (left) and standard deviation images (right) in image fusion mode with the anatomical reference image. World z-coordinate: 20 (top) and 30 (bottom)



Supplemental Figure 13: %-difference (left) and standard deviation images (right) in image fusion mode with the anatomical reference image. World z-coordinate: 40 (top) and 50 (bottom)

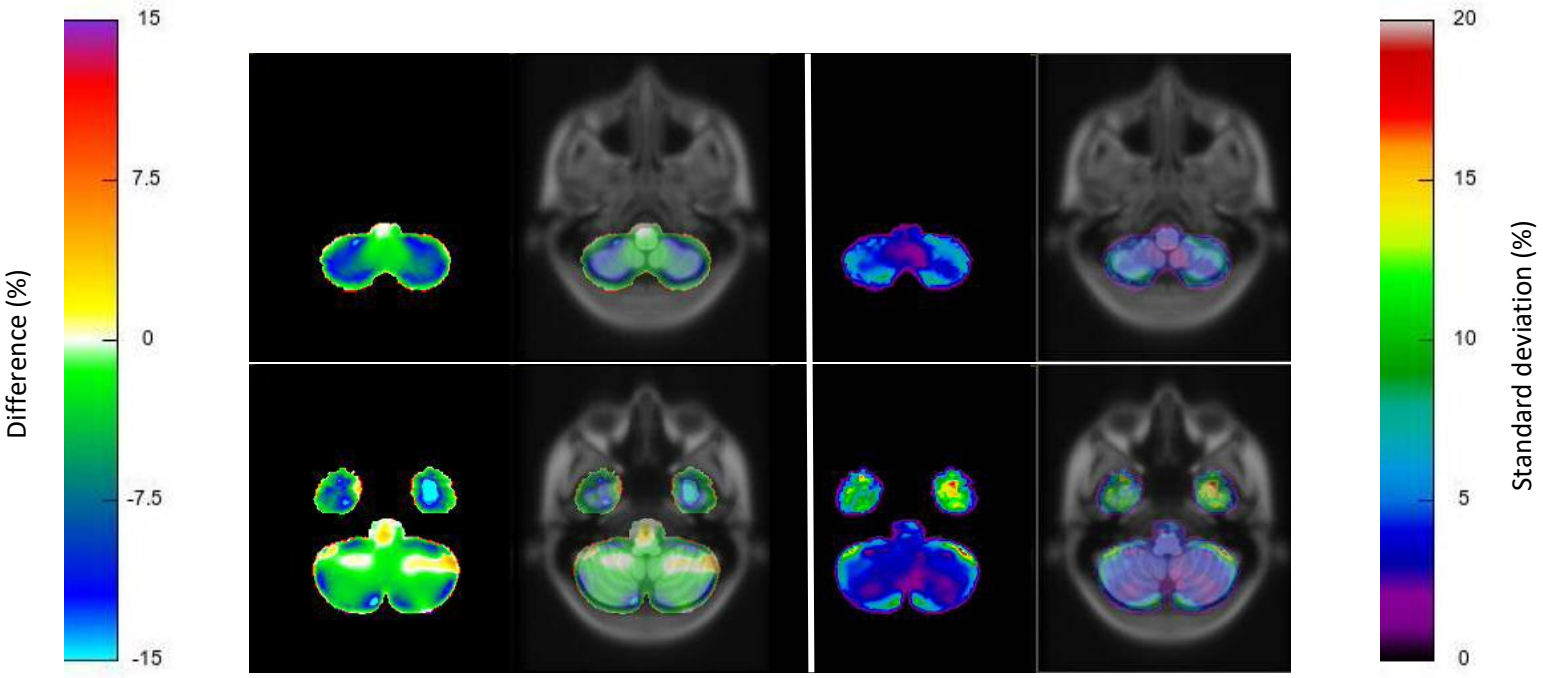


Supplemental Figure 14: %-difference (left) and standard deviation images (right) in image fusion mode with the anatomical reference image. World z-coordinate: 60 (top) and 70 (bottom)

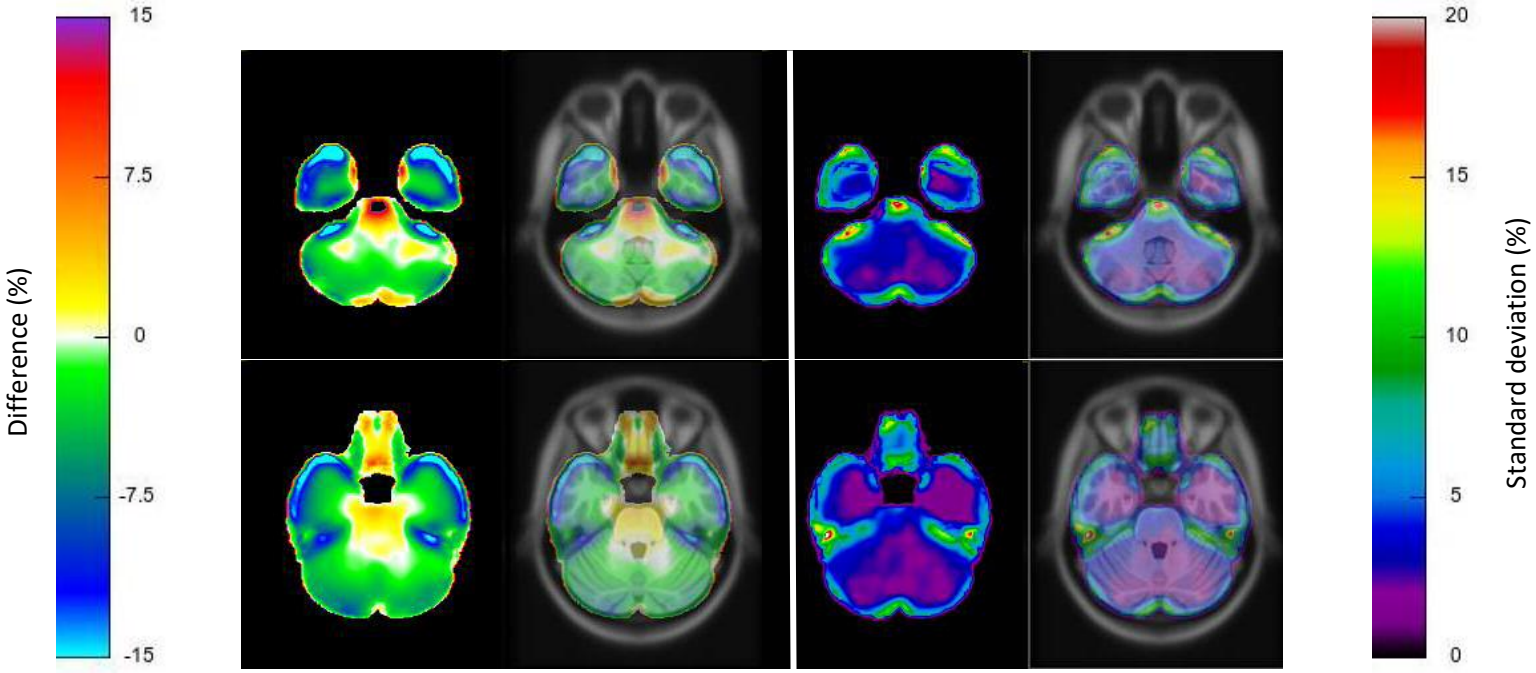
3 %- difference average image for BD MR-AC

The %-difference images (masked within the brain) of each patient is aligned to MNI space and averaged. The resulting average images and standard deviation images are obtained.

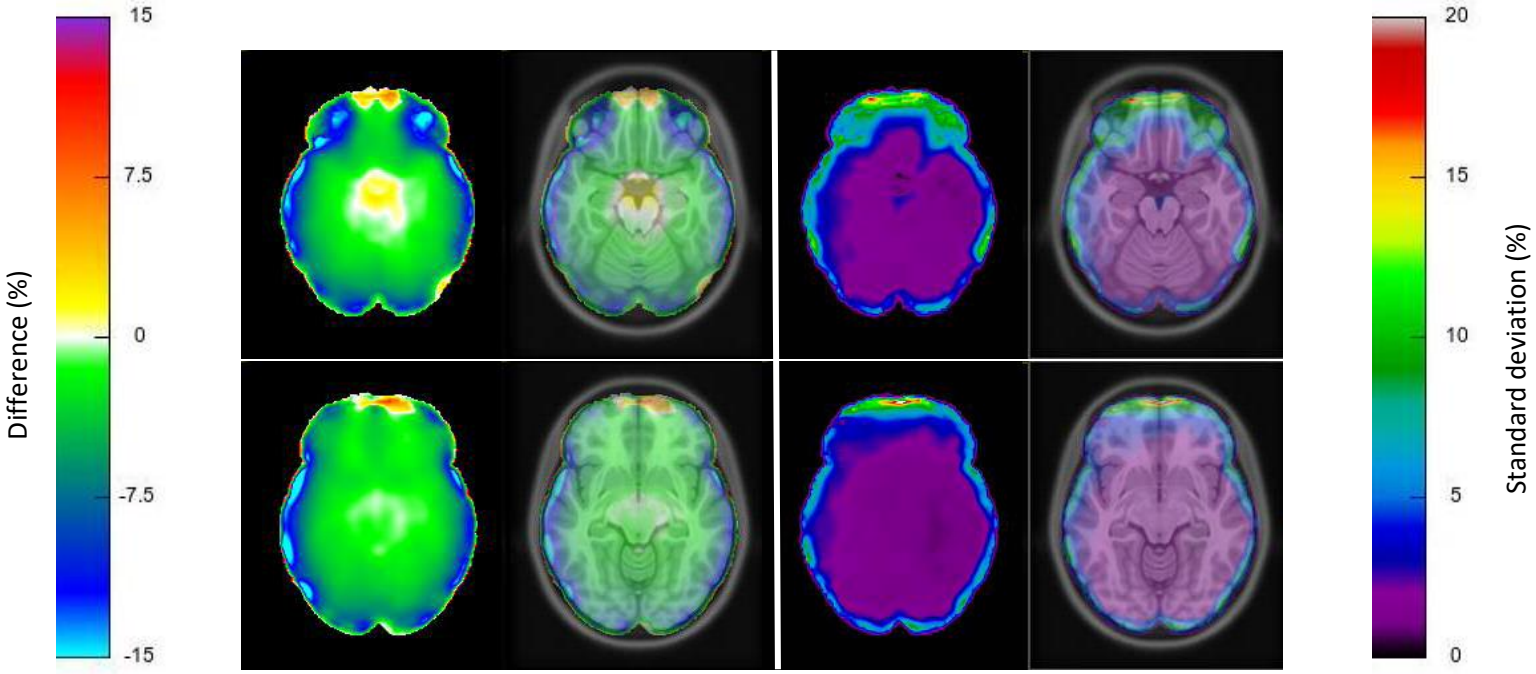
Below the results for the transaxial slices using slice spacing of 10 mm starting from world coordinate -60 (base of skull / cerebellum) and to 80 (top of the skull) are shown.



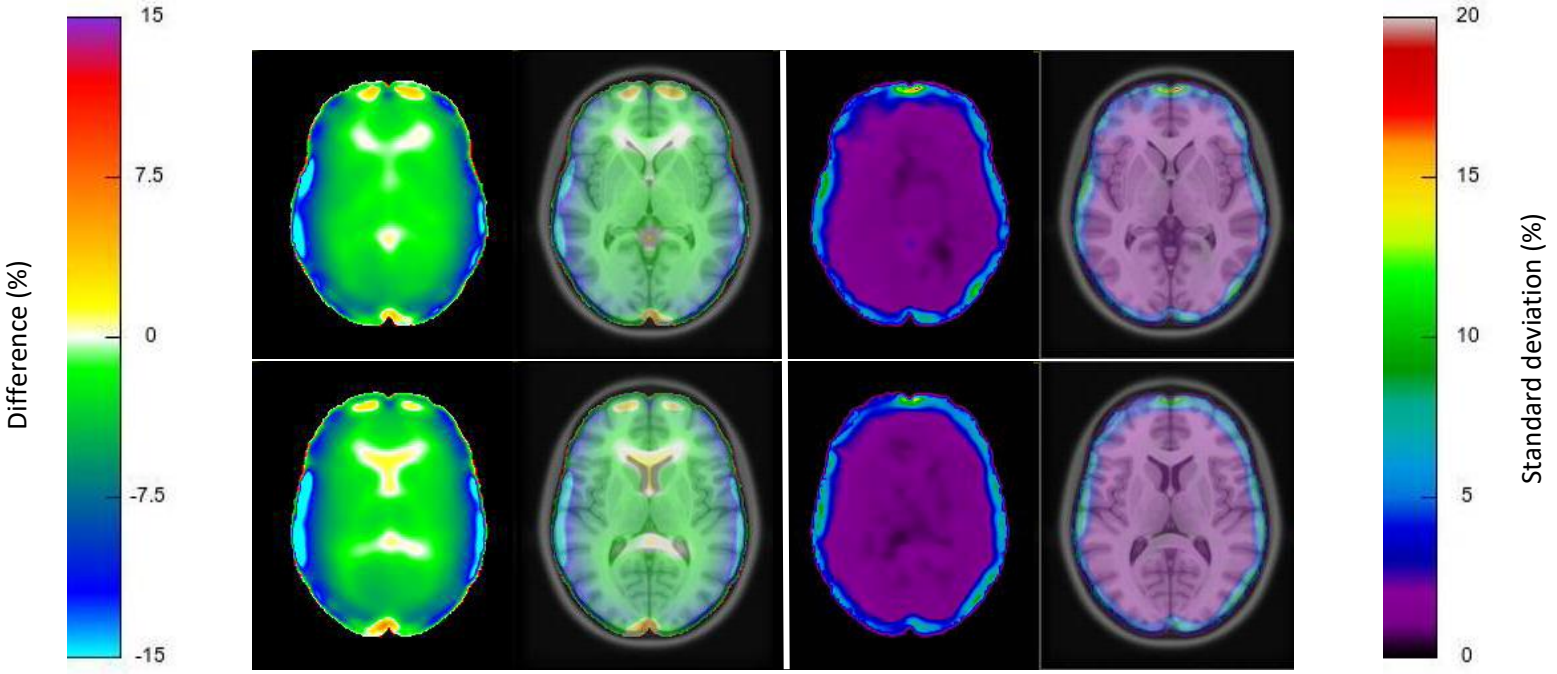
Supplemental Figure 15: %-difference (left) and standard deviation images (right) in image fusion mode with the anatomical reference image. World z-coordinate: -60 (top) and -50 (bottom)



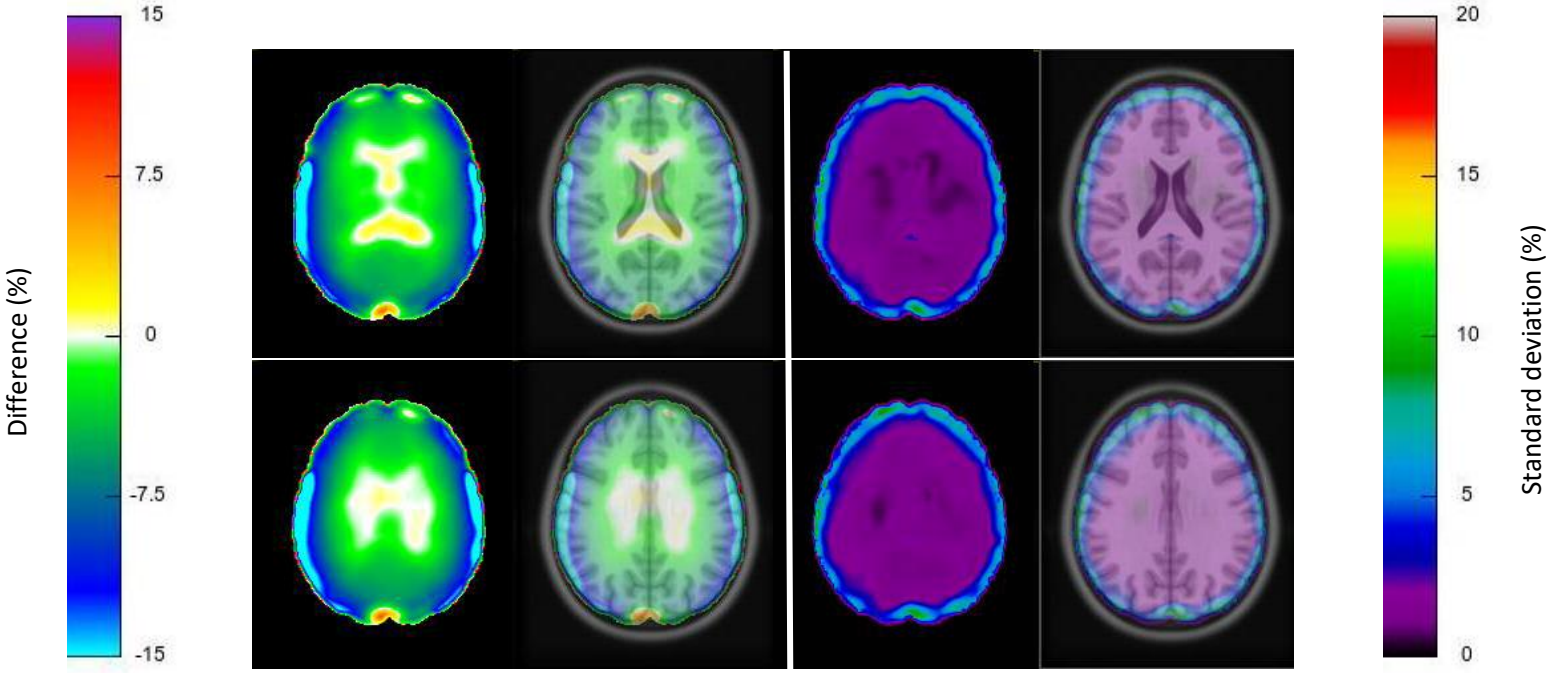
Supplemental Figure 16: %-difference (left) and standard deviation images (right) in image fusion mode with the anatomical reference image. World z-coordinate: -40 (top) and -30 (bottom)



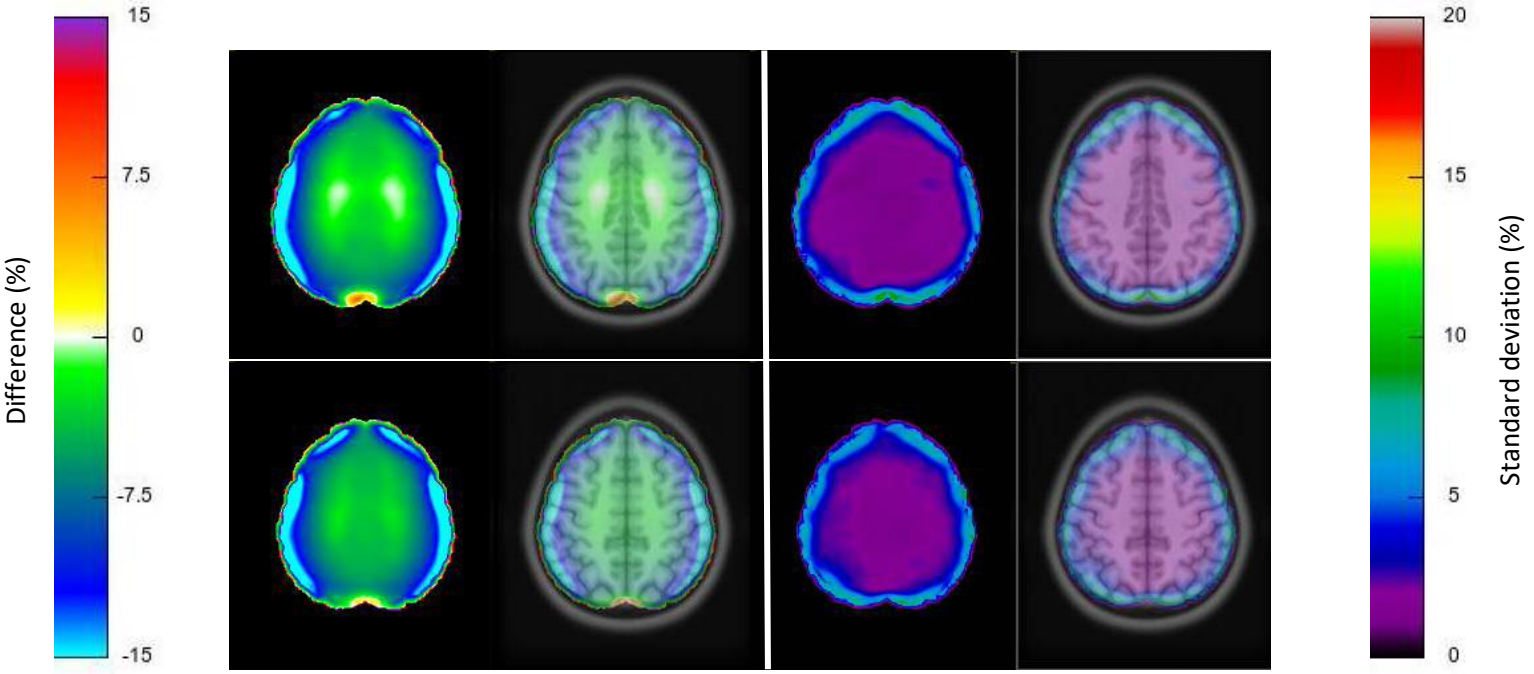
Supplemental Figure 17: %-difference (left) and standard deviation images (right) in image fusion mode with the anatomical reference image. World z-coordinate: -20 (top) and -10 (bottom)



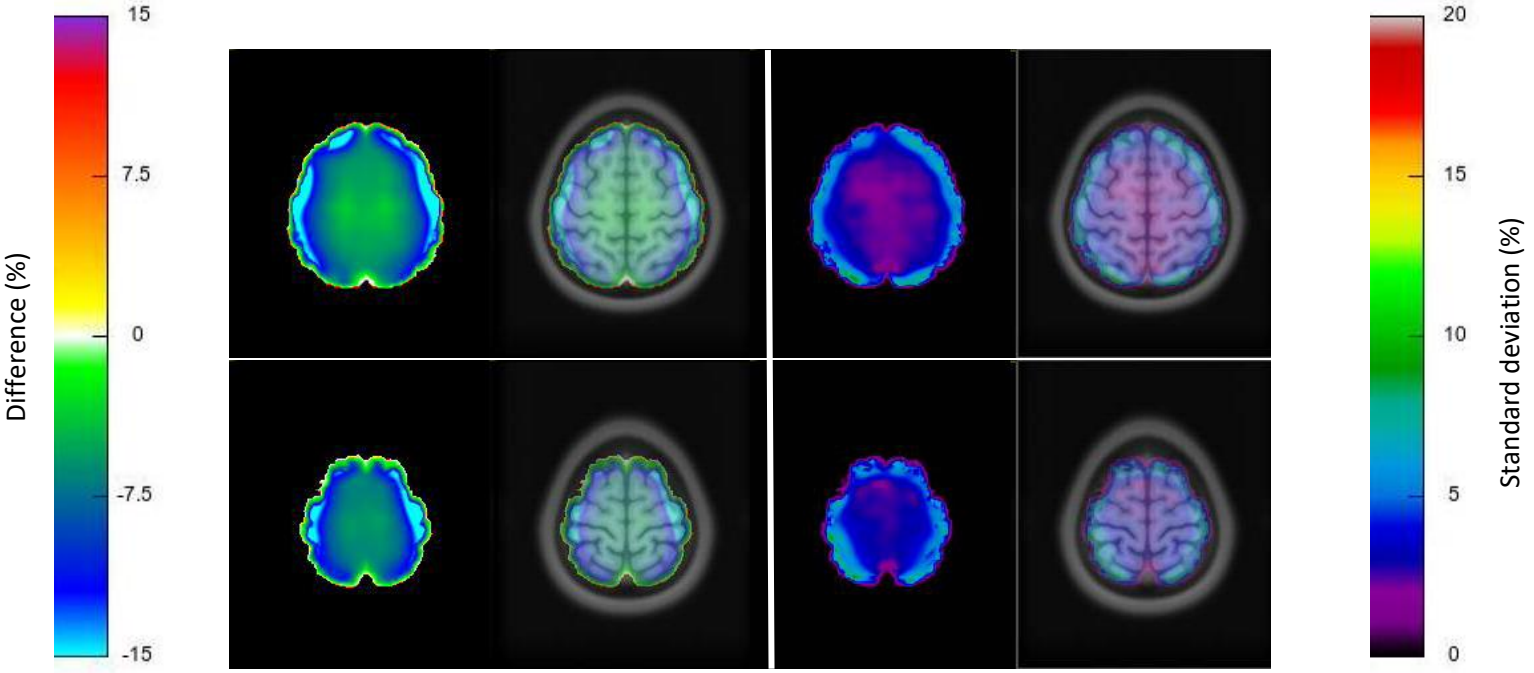
Supplemental Figure 18: %-difference (left) and standard deviation images (right) in image fusion mode with the anatomical reference image. World z-coordinate: 0 (top) and 10 (bottom)



Supplemental Figure 19: %-difference (left) and standard deviation images (right) in image fusion mode with the anatomical reference image. World z-coordinate: 20 (top) and 30 (bottom)



Supplemental Figure 20: %-difference (left) and standard deviation images (right) in image fusion mode with the anatomical reference image. World z-coordinate: 40 (top) and 50 (bottom)



Supplemental Figure 21: %-difference (left) and standard deviation images (right) in image fusion mode with the anatomical reference image. World z-coordinate: 60 (top) and 70 (bottom)