Supplemental Table 1. Numbers of participants who completed baseline scans under different

study protocols and follow-up scans for this follow-up study

	CU-	CU+	MCI+	DEM+
Scanned at baseline	66	8	38	46
Included in follow-up study	45	7	31	24
Reasons for exclusion				
Refused	14	1	5	6
Follow-up loss	4	0	1	0
Died	0	0	0	3
Severe dementia	0	0	0	6
Immobility	0	0	1	5
Other diseases[*]	2	0	0	1
Scan failure	1	0	0	1
% included (%)	68.2	87.5	81.6	52.2

*Two individuals with CU- were excluded due to Parkinson's disease and spasmodic dysphonia

diagnosed after the baseline study. One DEM+ patient was excluded due to insertion of cardiac

pacemaker after the baseline study.

Supplemental Table 2. Correlation between the longitudinal changes in PVE-corrected cortical ^{18}F-flortaucipir SUVR values obtained with the cerebellar crus as a reference region and cognitive decline in 62 Aβ-positive individuals

Regions		MMSE	CDR-SB	DS-BW	BNT	RCFT	SVLT-DR	RCFT-DR	COWAT
Global cortex	B	-0.426	0.369	-0.030	-0.443	-0.144	-0.150	-0.056	-0.272
	P	**0.001***	**0.004***	0.831	**0.001***	0.306	0.293	0.685	**0.048**
Prefrontal	B	-0.492	0.480	-0.021	-0.484	-0.246	-0.128	-0.073	-0.258
	P	**< 0.001***	**< 0.001***	0.878	**< 0.001***	0.075	0.369	0.596	0.059
Sensorimotor	B	-0.394	0.244	-0.078	-0.386	-0.082	-0.189	-0.108	-0.379
	P	**0.003***	0.061	0.568	**0.003***	0.554	0.176	0.426	**0.004**
Sup. parietal	B	-0.421	0.242	-0.034	-0.413	-0.109	-0.242	-0.119	-0.289
	P	**0.001***	0.062	0.804	**0.001***	0.430	0.081	0.383	**0.032**
Inf. parietal	B	-0.274	0.230	-0.101	-0.421	-0.063	-0.180	-0.048	-0.262
	P	**0.041**	0.078	0.470	**0.001***	0.655	0.207	0.729	0.057
Precuneus	B	-0.451	0.311	-0.025	-0.427	-0.098	-0.142	-0.047	-0.221
	P	**< 0.001***	**0.014***	0.857	**0.001***	0.478	0.309	0.729	0.104
Occipital	B	-0.393	0.314	0.101	-0.299	-0.142	-0.094	0.041	-0.191
	P	**0.003***	**0.015***	0.470	**0.028***	0.316	0.512	0.771	0.173
Sup. temporal	B	-0.288	0.320	-0.078	-0.351	-0.056	-0.131	-0.023	-0.240
	P	**0.032**	**0.013***	0.577	**0.009***	0.695	0.360	0.867	0.084
Mid. temporal	B	-0.375	0.334	-0.040	-0.388	-0.105	-0.076	-0.042	-0.200
	P	**0.005***	**0.011***	0.781	**0.004***	0.465	0.604	0.765	0.158
Inf. temporal	B	-0.390	0.409	-0.001	-0.423	-0.189	-0.110	-0.001	-0.189
	P	**0.003***	**0.001***	0.993	**0.001***	0.174	0.438	0.996	0.172
Hippocampus	B	-0.060	0.080	0.050	-0.203	-0.026	-0.075	-0.007	-0.088
	P	0.686	0.580	0.739	0.172	0.866	0.633	0.963	0.568
Entorhinal	B	-0.077	0.132	-0.021	-0.040	0.207	-0.162	0.005	-0.168
	P	0.560	0.303	0.874	0.763	0.122	0.238	0.970	0.211
Parahippocampal	B	-0.243	0.323	0.011	-0.319	-0.137	-0.084	0.004	-0.204
	P	0.068	**0.011***	0.937	**0.017***	0.325	0.550	0.978	0.136
Amygdala	B	-0.172	0.171	0.073	-0.220	0.088	-0.140	-0.027	-0.256
	P	0.204	0.192	0.599	0.108	0.533	0.323	0.843	0.062
Ant. cingulate	B	-0.347	0.397	0.073	-0.310	-0.101	-0.033	-0.008	-0.189
	P	**0.008***	**0.002***	0.596	**0.019***	0.462	0.812	0.950	0.165
Post. cingulate	B	-0.321	0.285	0.017	-0.366	-0.097	-0.105	-0.028	-0.245
	P	**0.013***	**0.023***	0.900	**0.005***	0.480	0.450	0.834	0.068
Insula	B	-0.317	0.327	-0.001	-0.381	-0.107	-0.167	-0.067	-0.216
	P	**0.019***	**0.012***	0.992	**0.005***	0.454	0.249	0.634	0.125

Regions which survived correcting for multiple comparisons marked with asterisks.

Abbreviations: B = Standardized regression coefficient, *P* = *P*-value, MMSE = Mini-Mental State Examination score, CDR-SB = Clinical Dementia Rating Sum of Boxes, DS-BW = Digit Span Backward test, BNT = Boston Naming Test, RCFT = Rey-Osterrieth Complex Figure Test,

SVLT-DR = Seoul Verbal Learning Test-Delayed Recall, RCFT-DR = Rey-Osterrieth Complex

Figure Test-Delayed Recall, and COWAT = Controlled Oral Word Association Test-Semantics

Supplemental Table 3. Longitudinal changes in cortical ^{18}F-flortaucipir SUVR values obtained with the PERSI reference region

		Data corrected for partial volume effect			
		CU-	**CU+**	**MCI+**	**DEM+**
cGM	$\varDelta$**SUVR**	0.01 ± 0.08	0.02 ± 0.09	0.12 ± 0.13	0.14 ± 0.15
	(%)	0.7 ± 5.8	1.5 ± 5.6	6.7 ± 6.7	7.6 ± 7.4
Stage I-II	$\varDelta$**SUVR**	0.05 ± 0.14	0.16 ± 0.19	0.34 ± 0.39	0.18 ± 0.35
	(%)	3.4 ± 9.0	8.5 ± 9.7	13.3 ± 13.2	6.9 ± 11.1
Stage III-IV	$\varDelta$**SUVR**	0.02 ± 0.10	0.05 ± 0.11	0.20 ± 0.17	0.23 ± 0.20
	(%)	1.6 ± 7.0	3.4 ± 7.6	10.8 ± 8.7	11.1 ± 8.3
Stage V	$\varDelta$**SUVR**	0.00 ± 0.09	0.02 ± 0.09	0.12 ± 0.15	0.15 ± 0.18
	(%)	0.5 ± 6.1	1.3 ± 5.7	6.3 ± 7.1	7.8 ± 8.5
Stage VI	$\varDelta$**SUVR**	-0.01 ± 0.08	0.00 ± 0.10	0.05 ± 0.11	0.04 ± 0.10
	(%)	-0.1 ± 5.9	0.0 ± 6.6	3.1 ± 6.8	2.9 ± 5.9
		Data uncorrected for partial volume effect			
		CU-	**CU+**	**MCI+**	**DEM+**
cGM	$\varDelta$**SUVR**	0.00 ± 0.02	0.00 ± 0.02	0.03 ± 0.04	0.03 ± 0.06
	(%)	-0.5 ± 2.6	0.1 ± 2.4	3.0 ± 3.9	3.0 ± 4.8
Stage I-II	$\varDelta$**SUVR**	0.01 ± 0.06	0.03 ± 0.08	0.05 ± 0.11	-0.01 ± 0.14
	(%)	0.9 ± 5.7	2.9 ± 6.3	4.1 ± 8.3	-0.3 ± 8.5
Stage III-IV	$\varDelta$**SUVR**	0.00 ± 0.04	0.01 ± 0.03	0.07 ± 0.06	0.06 ± 0.10
	(%)	0.2 ± 4.1	1.3 ± 3.4	5.7 ± 5.6	5.1 ± 6.5
Stage V	$\varDelta$**SUVR**	-0.01 ± 0.03	0.00 ± 0.03	0.03 ± 0.05	0.03 ± 0.07
	(%)	-0.6 ± 2.7	0.0 ± 2.7	2.8 ± 4.2	3.3 ± 5.5
Stage VI	$\varDelta$**SUVR**	-0.01 ± 0.02	-0.01 ± 0.03	0.01 ± 0.03	0.00 ± 0.03
	(%)	-0.9 ± 2.7	-1.0 ± 3.7	0.7 ± 3.7	0.2 ± 3.3

Abbreviations: CU = cognitively unimpaired; MCI = mild cognitive impairment; DEM = dementia; +/- = Aβ-positivity; $\varDelta$SUVR = amount of change in standardized uptake value ratio during the two-years' follow-up period; (%) = percent change of SUVR compared to baseline value; cGM = global cortical gray matter; Stage = regions corresponding to Braak's neurofibrillary tangle stages; PERSI = Parametric Estimation of Reference Signal Intensity

Supplemental Table 4. A comparison between the global cortical ^{18}F-flortaucipir SUVR values obtained with the cerebellar crus and PERSI reference regions at baseline and follow-up

Reference region		Data corrected for partial volume effect			
		CU-	CU+	MCI+	DEM+
Cerebellar crus	SUVR$_{BL}$	1.47 ± 0.13	1.50 ± 0.07	1.71 ± 0.31	2.12 ± 0.63
	SUVR$_{FU}$	1.46 ± 0.12	1.49 ± 0.16	1.78 ± 0.44	2.31 ± 0.84
	$\mathit{\Delta}$SUVR	-0.01 ± 0.10	-0.01 ± 0.16	0.06 ± 0.15	0.19 ± 0.34
PERSI	SUVR$_{BL}$	1.48 ± 0.16	1.57 ± 0.15	1.68 ± 0.25	1.99 ± 0.50
	SUVR$_{FU}$	1.48 ± 0.15	1.59 ± 0.16	1.80 ± 0.36	2.13 ± 0.51
	$\mathit{\Delta}$SUVR	0.01 ± 0.08	0.02 ± 0.09	0.12 ± 0.13	0.14 ± 0.15
Reference region		Data uncorrected for partial volume effect			
		CU-	CU+	MCI+	DEM+
Cerebellar crus	SUVR$_{BL}$	1.15 ± 0.10	1.15 ± 0.06	1.29 ± 0.20	1.51 ± 0.35
	SUVR$_{FU}$	1.14 ± 0.09	1.14 ± 0.13	1.31 ± 0.27	1.59 ± 0.46
	$\mathit{\Delta}$SUVR	-0.01 ± 0.10	-0.01 ± 0.16	0.06 ± 0.15	0.19 ± 0.34
PERSI	SUVR$_{BL}$	0.95 ± 0.04	0.97 ± 0.04	1.01 ± 0.09	1.12 ± 0.22
	SUVR$_{FU}$	0.95 ± 0.04	0.97 ± 0.04	1.04 ± 0.13	1.15 ± 0.20
	$\mathit{\Delta}$SUVR	0.00 ± 0.02	0.00 ± 0.02	0.03 ± 0.04	0.03 ± 0.06

Abbreviations: CU = cognitively unimpaired; MCI = mild cognitive impairment; DEM = dementia; +/- = Aβ-positivity; $\mathit{\Delta}$SUVR = amount of change in standardized uptake value ratio during the two-years' follow-up period, BL/FU = baseline and follow-up

Supplemental Table 5. Correlation between the longitudinal changes in PVE-corrected cortical ^{18}F-flortaucipir SUVR values obtained with the PERSI reference region and cognitive decline in 62 Aβ-positive individuals

Regions		MMSE	CDR-SB	DS-BW	BNT	RCFT	SVLT-DR	RCFT-DR	COWAT
Global cortex	B	-0.473	0.320	0.002	-0.328	-0.397	-0.162	-0.134	-0.162
	P	< 0.001*	0.012	0.987	0.014	0.004*	0.260	0.336	0.247
Prefrontal	B	-0.542	0.482	-0.003	-0.395	-0.538	-0.105	-0.144	-0.154
	P	< 0.001*	< 0.001*	0.983	0.003*	< 0.001*	0.470	0.303	0.276
Sensorimotor	B	-0.430	0.180	-0.047	-0.256	-0.266	-0.230	-0.221	-0.380
	P	0.001*	0.162	0.731	0.054	0.050	0.097	0.099	0.004
Sup. parietal	B	-0.428	0.169	0.010	-0.333	-0.227	-0.274	-0.181	-0.233
	P	0.001*	0.180	0.942	0.010*	0.089	0.042	0.169	0.079
Inf. parietal	B	-0.246	0.125	-0.109	-0.351	-0.168	-0.229	-0.092	-0.183
	P	0.061	0.333	0.419	0.007*	0.220	0.098	0.496	0.179
Precuneus	B	-0.502	0.262	0.012	-0.371	-0.219	-0.156	-0.087	-0.143
	P	< 0.001*	0.039	0.929	0.005*	0.113	0.270	0.524	0.299
Occipital	B	-0.291	0.190	0.184	-0.040	-0.251	-0.022	0.010	-0.043
	P	0.023	0.131	0.172	0.764	0.062	0.874	0.941	0.750
Sup. temporal	B	-0.240	0.217	-0.105	-0.162	-0.244	-0.136	-0.064	-0.095
	P	0.079	0.103	0.458	0.243	0.087	0.353	0.651	0.508
Mid. temporal	B	-0.281	0.161	-0.034	-0.150	-0.268	-0.018	-0.069	0.016
	P	0.036	0.222	0.807	0.275	0.055	0.899	0.618	0.910
Inf. temporal	B	-0.355	0.297	0.020	-0.246	-0.384	-0.082	-0.038	-0.001
	P	0.009*	0.025	0.890	0.078	0.006*	0.575	0.788	0.994
Hippocampus	B	0.027	-0.058	0.063	0.065	-0.159	-0.010	-0.049	0.139
	P	0.851	0.673	0.662	0.646	0.272	0.944	0.730	0.335
Entorhinal	B	-0.043	0.066	-0.034	0.099	0.150	-0.143	-0.020	-0.041
	P	0.747	0.609	0.805	0.462	0.269	0.298	0.879	0.760
Parahippocampal	B	-0.210	0.253	0.029	-0.148	-0.363	-0.068	-0.026	-0.045
	P	0.149	0.071	0.847	0.324	0.014*	0.660	0.863	0.766
Amygdala	B	-0.180	0.140	0.171	-0.070	-0.070	-0.188	-0.096	-0.144
	P	0.239	0.346	0.269	0.651	0.655	0.232	0.530	0.350
Ant. cingulate	B	-0.302	0.306	0.174	-0.062	-0.344	0.044	-0.026	0.038
	P	0.021	0.016	0.220	0.660	0.013*	0.761	0.852	0.788
Post. cingulate	B	-0.373	0.254	0.070	-0.316	-0.261	-0.122	-0.073	-0.178
	P	0.005*	0.054	0.624	0.022	0.066	0.404	0.605	0.212
Insula	B	-0.279	0.226	0.036	-0.172	-0.391	-0.189	-0.141	0.021
	P	0.044	0.094	0.802	0.226	0.006*	0.202	0.325	0.887

Regions which survived correcting for multiple comparisons marked with asterisks.

Abbreviations: B = Standardized regression coefficient, *P* = *P*-value, MMSE = Mini-Mental State Examination score, CDR-SB = Clinical Dementia Rating Sum of Boxes, DS-BW = Digit Span Backward test, BNT = Boston Naming Test, RCFT = Rey-Osterrieth Complex Figure Test,

SVLT-DR = Seoul Verbal Learning Test-Delayed Recall, RCFT-DR = Rey-Osterrieth Complex

Figure Test-Delayed Recall, and COWAT = Controlled Oral Word Association Test-Semantics

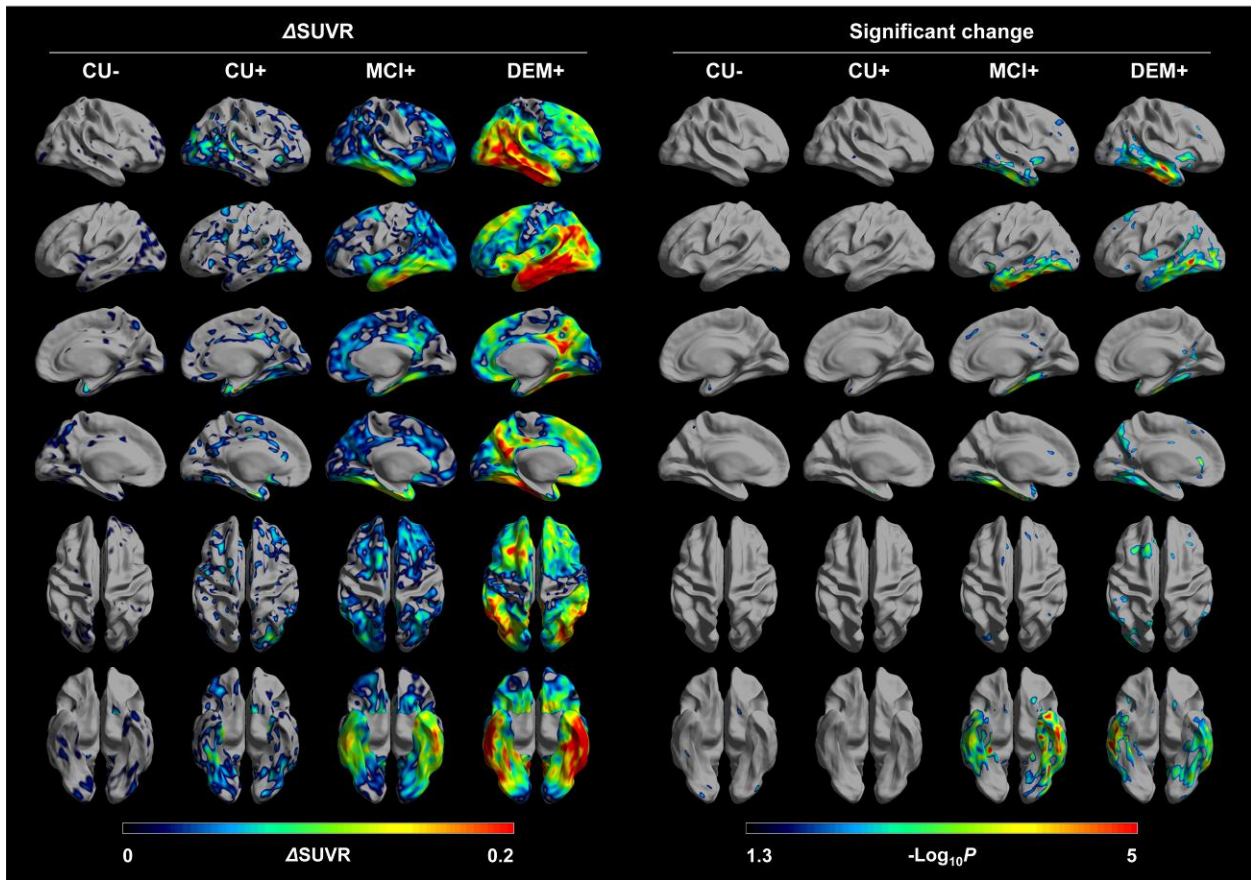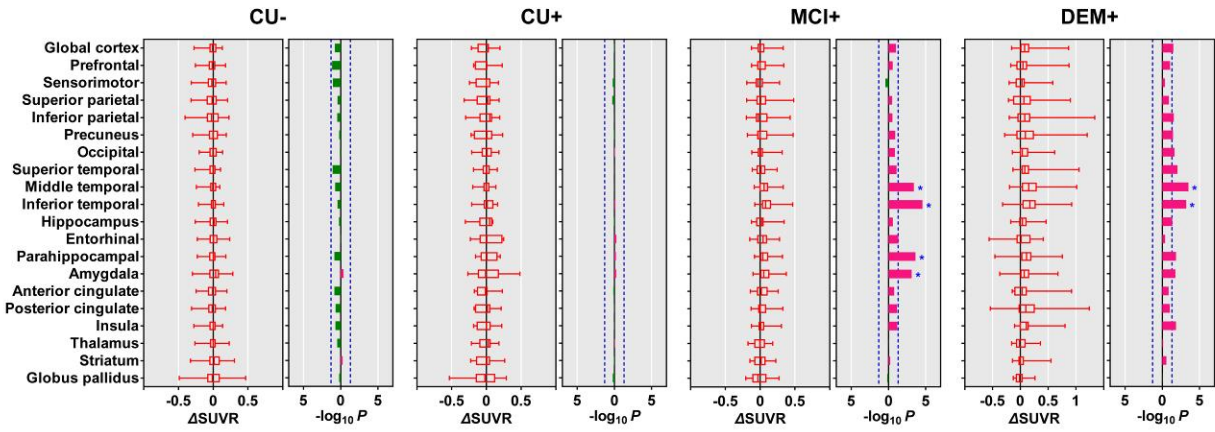**Supplemental Table 6.** Longitudinal changes in cortical volume

		CU-	CU+	MCI+	DEM+
cGM	*Δ*Vol (mL)	-2.8 ± 10.3	-6.9 ± 5.4	-8.1 ± 11.3	-12.9 ± 12.8
	(%)	-0.6 ± 2.4	-1.6 ± 1.3	-1.9 ± 2.7	-3.1 ± 3.1
Stage I-II	*Δ*Vol (mL)	-0.4 ± 0.4	-0.4 ± 0.3	-0.6 ± 0.9	-0.9 ± 0.7
	(%)	-3.3 ± 3.5	-3.5 ± 3.2	-6.5 ± 9.2	-10.0 ± 7.4
Stage III-IV	*Δ*Vol (mL)	-0.8 ± 2.9	-2.3 ± 1.9	-3.1 ± 3.3	-4.4 ± 3.3
	(%)	-0.8 ± 3.2	-2.5 ± 2.1	-3.6 ± 3.7	-5.3 ± 3.9
Stage V	*Δ*Vol (mL)	-1.6 ± 5.9	-4.1 ± 4.0	-4.2 ± 7.7	-6.9 ± 8.2
	(%)	-0.5 ± 2.3	-1.6 ± 1.5	-1.6 ± 3.0	-2.8 ± 3.4
Stage VI	*Δ*Vol (mL)	0.0 ± 2.6	-0.2 ± 3.3	-0.2 ± 2.5	-0.6 ± 2.5
	(%)	0.1 ± 3.8	-0.2 ± 5.0	-0.3 ± 3.5	-0.8 ± 3.8

Abbreviations: CU = cognitively unimpaired; MCI = mild cognitive impairment; DEM = dementia; +/- = Aβ-positivity; *Δ*Vol = amount of change in standardized uptake value ratio during the two-years' follow-up period; (%) = percent change of SUVR compared to baseline value; cGM = global cortical gray matter; Stage = regions corresponding to Braak's neurofibrillary tangle stages
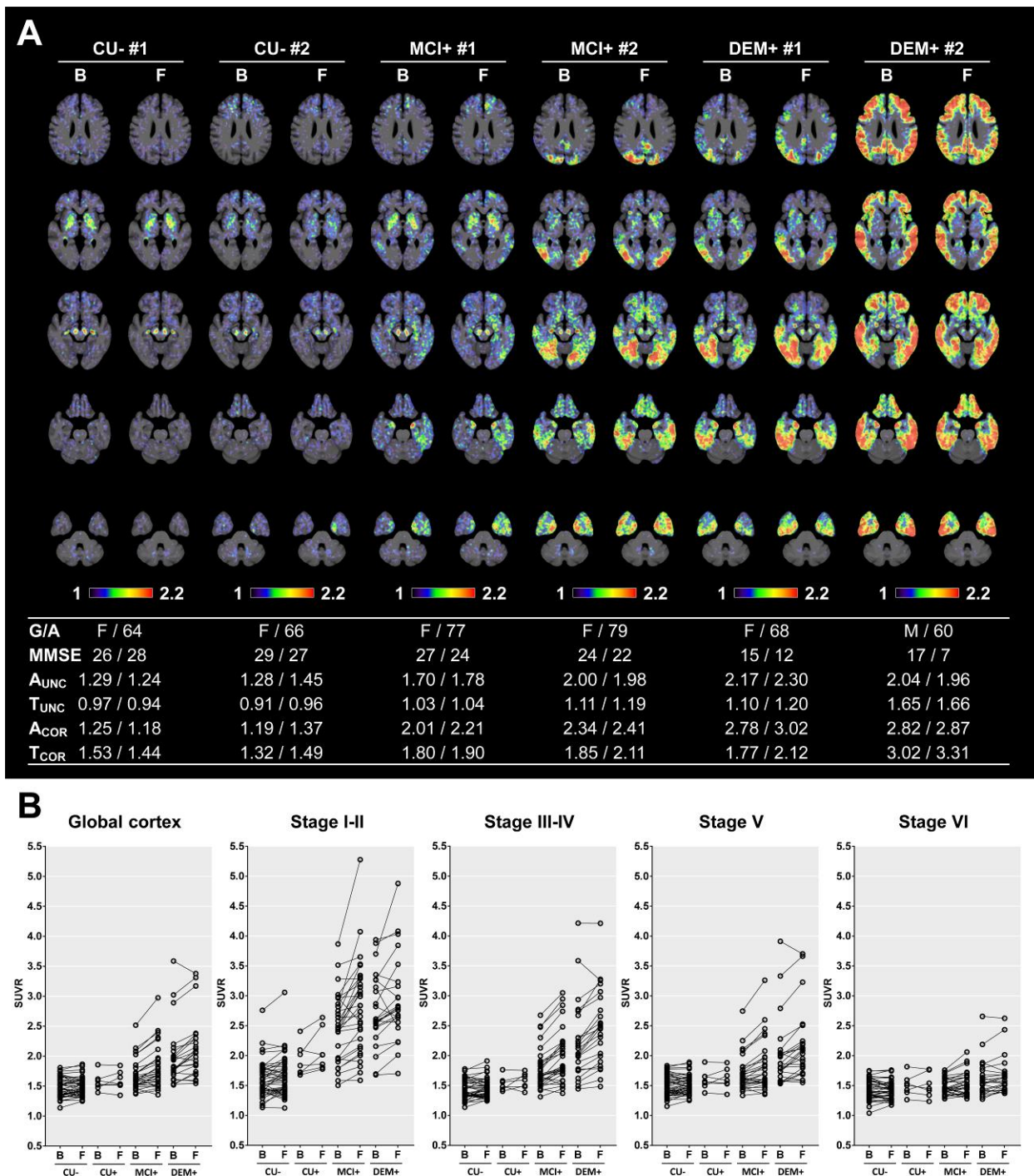
Supplemental Table 7. Longitudinal changes in cortical ^{18}F-flortaucipir SUVR values obtained with the cerebellar crus as a reference region and corrected for partial volume effect by Metzer's method

|		Data corrected for partial volume effect			
		CU-	CU+	MCI+	DEM+
cGM	�_SUVR	-0.02 ± 0.13	0.00 ± 0.19	0.07 ± 0.18	0.19 ± 0.35
	(%)	-0.9 ± 6.7	-0.2 ± 10.4	2.6 ± 7.4	6.8 ± 10.9
Stage I-II	�_SUVR	0.03 ± 0.15	0.14 ± 0.24	0.28 ± 0.41	0.26 ± 0.33
	(%)	1.4 ± 8.2	6.7 ± 11.8	9.3 ± 11.3	8.3 ± 9.6
Stage III-IV	⎍SUVR	0.00 ± 0.10	0.03 ± 0.13	0.14 ± 0.19	0.28 ± 0.34
	(%)	-0.1 ± 5.6	1.3 ± 7.5	6.1 ± 7.2	9.9 ± 9.5
Stage V	⎍SUVR	-0.02 ± 0.14	-0.01 ± 0.21	0.06 ± 0.20	0.19 ± 0.39
	(%)	-1.0 ± 7.1	-0.4 ± 11.2	2.3 ± 8.1	7.0 ± 12.2
Stage VI	⎍SUVR	-0.04 ± 0.15	-0.03 ± 0.22	-0.01 ± 0.15	0.07 ± 0.28
	(%)	-2.0 ± 7.7	-1.5 ± 12.0	-0.8 ± 7.4	2.8 ± 10.7
		Data uncorrected for partial volume effect			
		CU-	CU+	MCI+	DEM+
cGM	⎍SUVR	-0.02 ± 0.08	-0.01 ± 0.12	0.03 ± 0.09	0.08 ± 0.19
	(%)	-1.2 ± 6.5	-0.7 ± 10.9	1.5 ± 6.4	5.0 ± 10.1
Stage I-II	⎍SUVR	0.00 ± 0.09	0.04 ± 0.17	0.04 ± 0.11	0.03 ± 0.21
	(%)	0.1 ± 6.4	2.1 ± 12.8	2.4 ± 6.5	1.4 ± 10.0
Stage III-IV	⎍SUVR	-0.01 ± 0.06	0.01 ± 0.11	0.07 ± 0.10	0.13 ± 0.19
	(%)	-0.6 ± 5.1	0.3 ± 9.3	4.1 ± 5.7	6.9 ± 8.4
Stage V	⎍SUVR	-0.02 ± 0.09	-0.01 ± 0.13	0.02 ± 0.10	0.09 ± 0.22
	(%)	-1.3 ± 7.0	-0.7 ± 11.4	1.3 ± 7.2	5.3 ± 11.6
Stage VI	⎍SUVR	-0.02 ± 0.09	-0.02 ± 0.13	-0.01 ± 0.08	0.03 ± 0.15
	(%)	-1.6 ± 7.6	-1.7 ± 12.0	-0.7 ± 6.9	2.2 ± 10.5

Abbreviations: CU = cognitively unimpaired; MCI = mild cognitive impairment; DEM = dementia; +/- = Aβ-positivity; ⎍SUVR = amount of change in standardized uptake value ratio during the two-years' follow-up period; (%) = percent change of SUVR compared to baseline value; cGM = global cortical gray matter; Stage = regions corresponding to Braak's neurofibrillary tangle stages

Supplemental Figure 1. Longitudinal changes in PVE-uncorrected ^{18}F-flortaucipir SUVR values obtained with the cerebellar crus as a reference region

Regional changes and their statistical significances are shown in the upper panel. Horizontal bars in leftward (green) and rightward (red) direction represent *P*-values in log scale with decrease and increase of regional uptake at follow-up, respectively. Vertical blue dotted-lines represent

the cut-off P-value 0.05 (-$\log_{10}P$ = 1.3), and asterisks represent the regions that survived correcting for multiple comparisons.

Surface-based analyses of longitudinal changes are shown in the lower panel. Mean amounts of increase in cortical ^{18}F-flortaucipir SUVR values (lower left) and the cortical areas with significantly increased uptake at follow-up compared to those at baseline (lower right) are displayed on cortical surface. Only the vertices that survived correcting for multiple comparisons are displayed. For simplicity, negative changes are not displayed. Color bars represent ΔSUVR and P-values in log scale.

Abbreviations: CU = cognitively unimpaired; MCI = mild cognitive impairment; DEM = dementia; +/- = Aβ-positivity; ΔSUVR = amount of change of standardized uptake value ratio; PVE = partial volume effect

Supplemental Figure 2. Examples of ^{18}F-flortaucipir PET SUVR images created with the PERSI reference region and their longitudinal changes in PVE-corrected SUVR values obtained at baseline and follow-up

Examples are spatially normalized PET images uncorrected for partial volume effect, and ^{18}F-florbetaben and ^{18}F-flortaucipir SUVR values and MMSE scores are presented in the table (A). ^{18}F-flortaucipir SUVR values measured in the global cortical gray matter and the composite regions corresponding to different Braak's stages are displayed (B). Color bars represent SUVR values.

Abbreviations: CU = cognitively unimpaired; MCI = mild cognitive impairment; DEM = dementia; +/- = Aβ-positivity; B = baseline; F = follow-up; G/A = gender/age; MMSE = mini-mental state examination score; A or T = global cortical SUVR value of ^{18}F-florbetaben (A) or ^{18}F-flortaucipir (T) PET; subscript COR or UNC = SUVR values with (COR) or without (UNC) partial volume effect correction; Aβ = amyloid positivity; $\mathit{\Delta}$SUVR = amount of change of standardized uptake value ratio; (%) = percent change of SUVR; cGM = global cortical gray matter; Stage = regions corresponding to Braak's neurofibrillary tangle stages; PVE = partial volume effect; PERSI = Parametric Estimation of Reference Signal Intensity
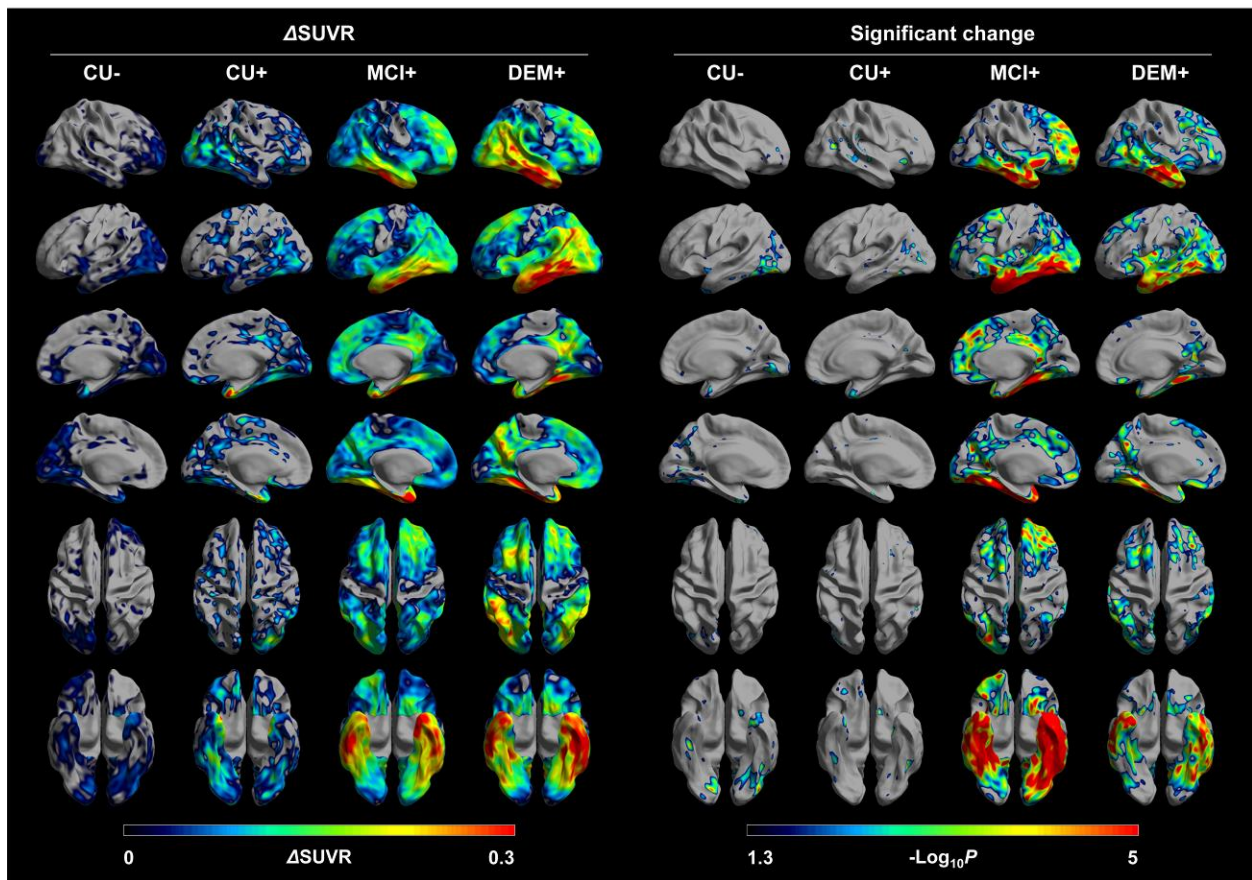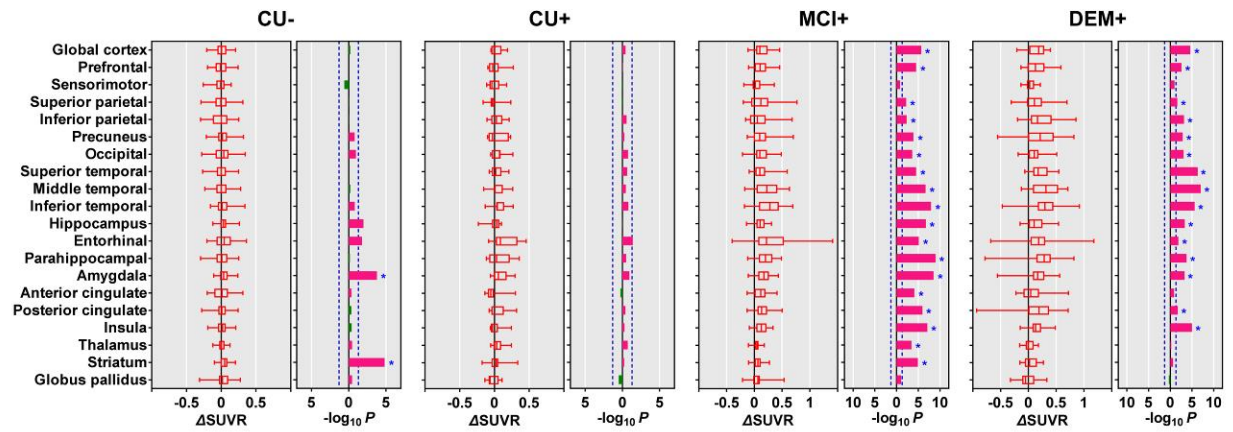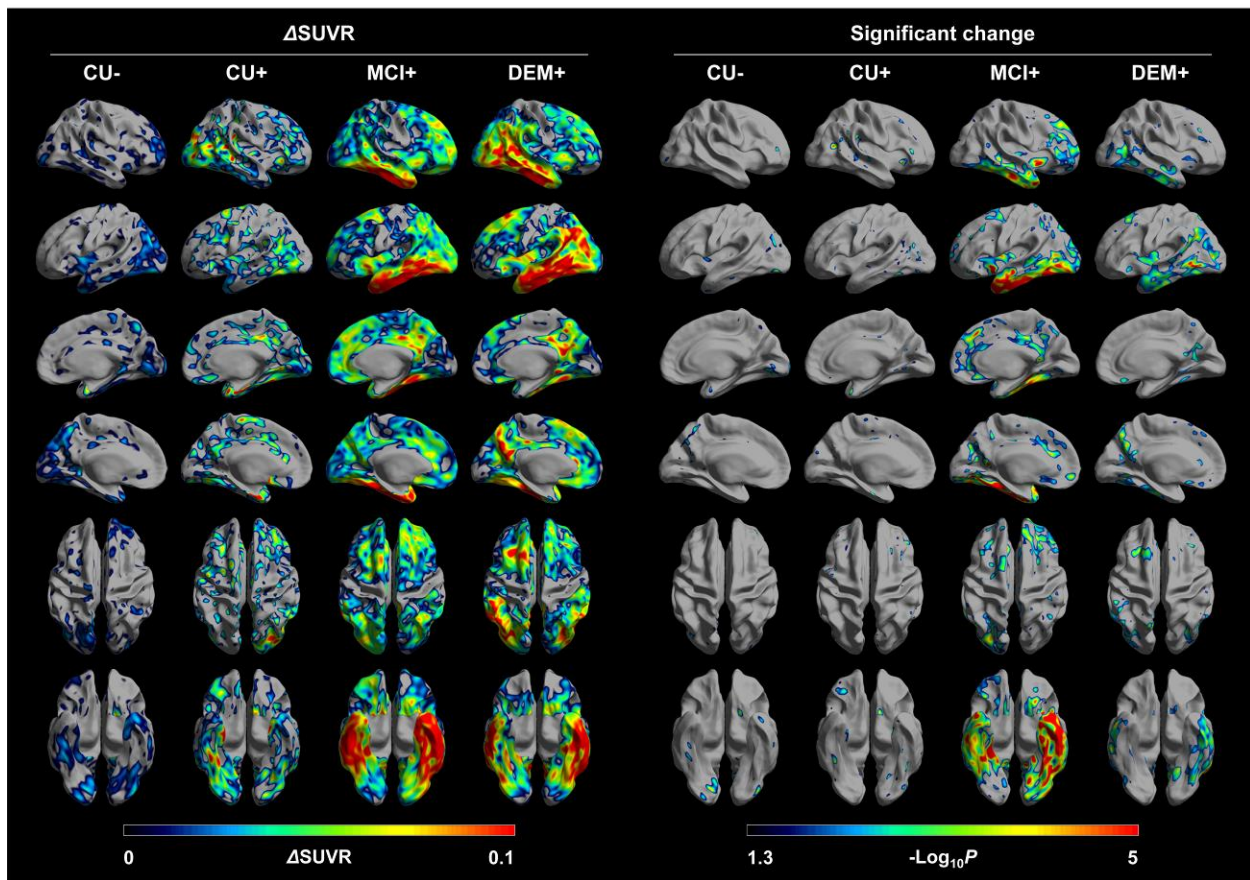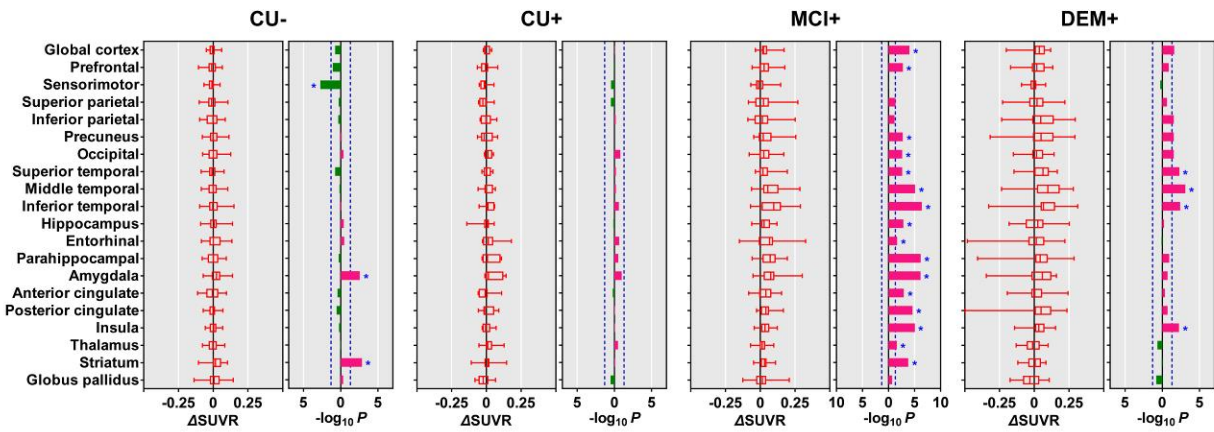
Supplemental Figure 3. Longitudinal changes in PVE-corrected ^{18}F-flortaucipir SUVR values

obtained with the PERSI reference region

Regional changes and their statistical significances are shown in the upper panel. Horizontal bars

in leftward (green) and rightward (red) direction represent *P*-values in log scale with decrease

and increase of regional uptake at follow-up, respectively. Vertical blue dotted-lines represent

the cut-off *P*-value 0.05 (-$\log_{10}P$ = 1.3), and asterisks represent the regions that survived correcting for multiple comparisons.

Surface-based analyses of longitudinal changes are shown in the lower panel. Mean amounts of increase in cortical ^{18}F-flortaucipir SUVR values (lower left) and the cortical areas with significantly increased uptake at follow-up compared to those at baseline (lower right) are displayed on cortical surface. Only the vertices that survived correcting for multiple comparisons are displayed. For simplicity, negative changes are not displayed. Color bars represent *ΔSUVR* and *P*-values in log scale.

Abbreviations: CU = cognitively unimpaired; MCI = mild cognitive impairment; DEM = dementia; +/- = Aβ-positivity; *ΔSUVR* = amount of change of standardized uptake value ratio; PVE = partial volume effect; PERSI = Parametric Estimation of Reference Signal Intensity
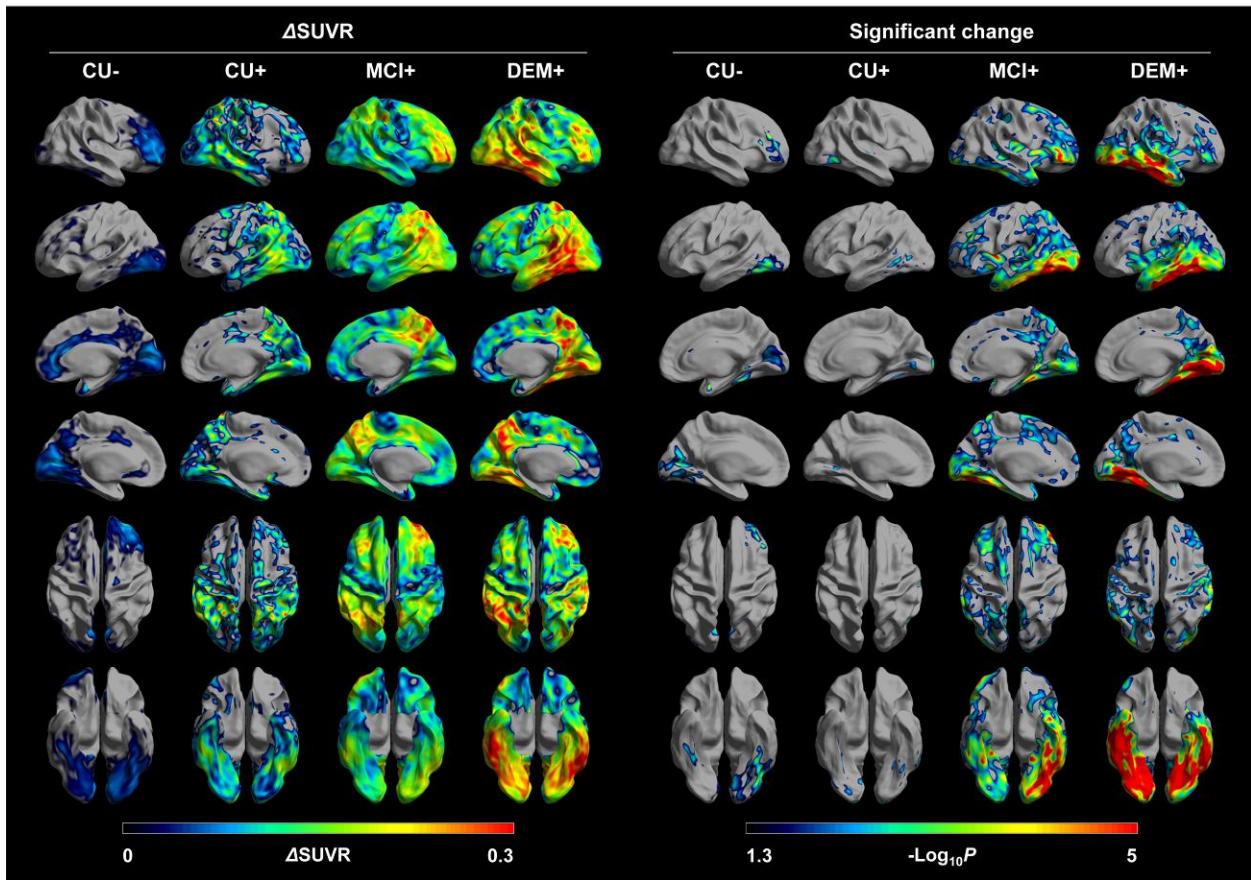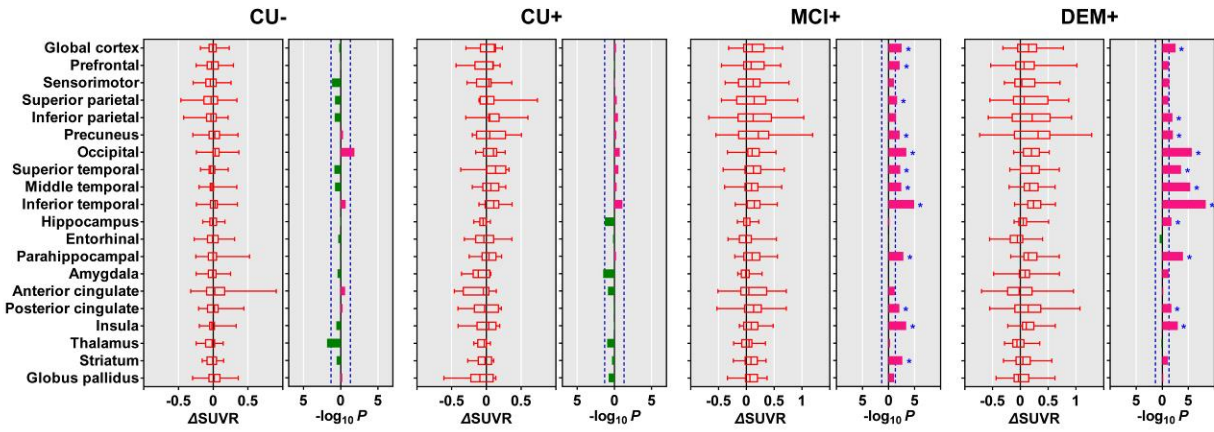
Supplemental Figure 4. Longitudinal changes in PVE-corrected ^{18}F-flortaucipir SUVR values

obtained with the PERSI reference region in MCI patients who progressed or did not progress to

dementia and in AD patients who showed progression of cognition or not.

In VOI-based analysis (A), color bars represent *P*-values in log scale, and horizontal bars in

leftward (green) and rightward (red) direction represent *P*-values in log scale with decrease and

increase of regional uptake at follow-up, respectively. Vertical blue dotted-lines represent the

cut-off *P*-value 0.05 ($-\log_{10}P = 1.3$), and asterisks represent the regions that survived correcting

for multiple comparisons. In surface-based analysis (B), only the vertices that survived

correcting for multiple comparisons are displayed. For simplicity, negative changes are not

displayed.

Abbreviations: npMCI+ = MCI+ who did not progress to dementia; pMCI+ = MCI+ who

progressed to dementia; npDEM+ = DEM+ who did not show progression; pDEM+ = DEM+

who showed progression; $\varDelta$SUVR = amount of change of standardized uptake value ratio; PVE = partial volume effect; PERSI = Parametric Estimation of Reference Signal Intensity

Supplemental Figure 5. Longitudinal changes in PVE-uncorrected ^{18}F-flortaucipir SUVR values obtained with the PERSI reference region

Regional changes and their statistical significances are shown in the upper panel. Horizontal bars in leftward (green) and rightward (red) direction represent *P*-values in log scale with decrease and increase of regional uptake at follow-up, respectively. Vertical blue dotted-lines represent

the cut-off *P*-value 0.05 (-log$_{10}$*P* = 1.3), and asterisks represent the regions that survived correcting for multiple comparisons.

Surface-based analyses of longitudinal changes are shown in the lower panel. Mean amounts of increase in cortical ^{18}F-flortaucipir SUVR values (lower left) and the cortical areas with significantly increased uptake at follow-up compared to those at baseline (lower right) are displayed on cortical surface. Only the vertices that survived correcting for multiple comparisons are displayed. For simplicity, negative changes are not displayed. Color bars represent *Δ*SUVR and *P*-values in log scale.

Abbreviations: CU = cognitively unimpaired; MCI = mild cognitive impairment; DEM = dementia; +/- = Aβ-positivity; *Δ*SUVR = amount of change of standardized uptake value ratio; PVE = partial volume effect; PERSI = Parametric Estimation of Reference Signal Intensity
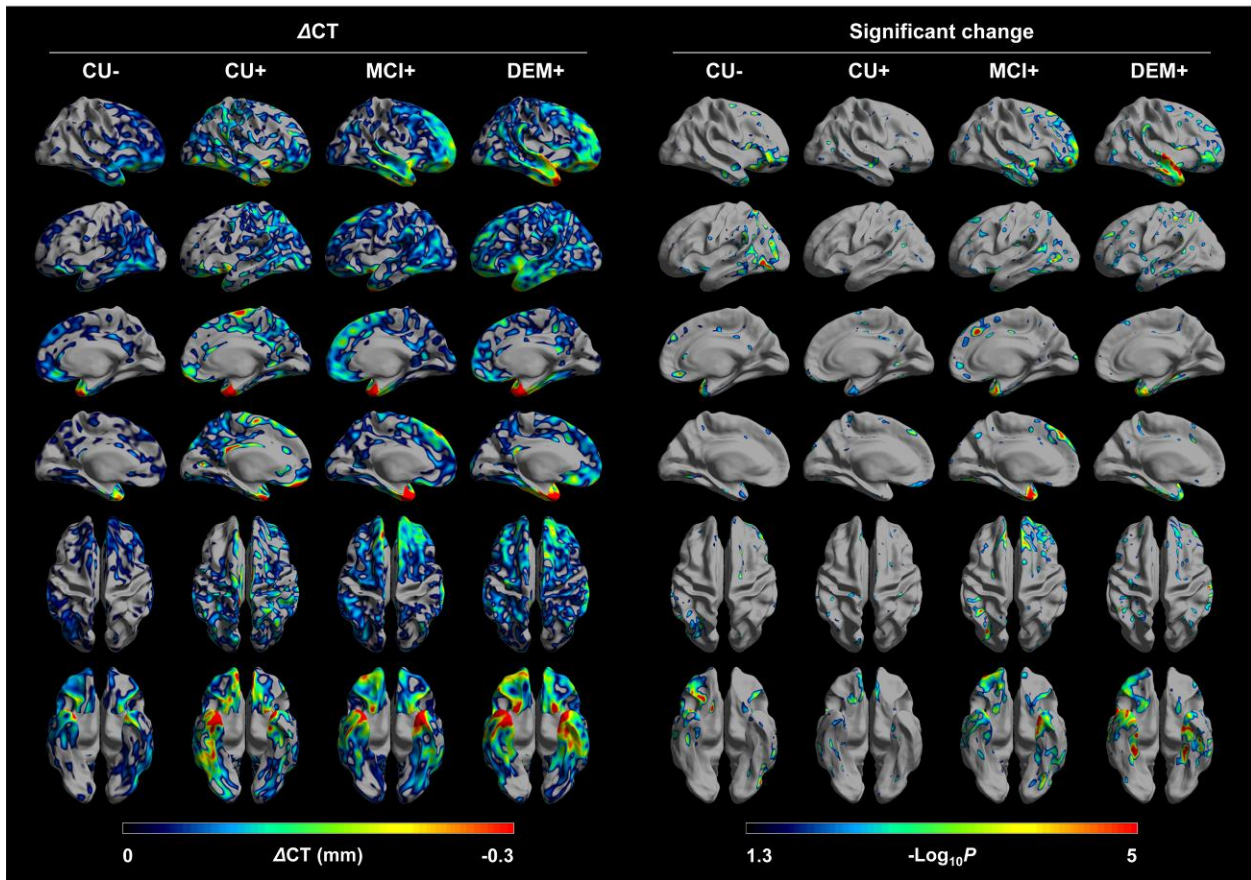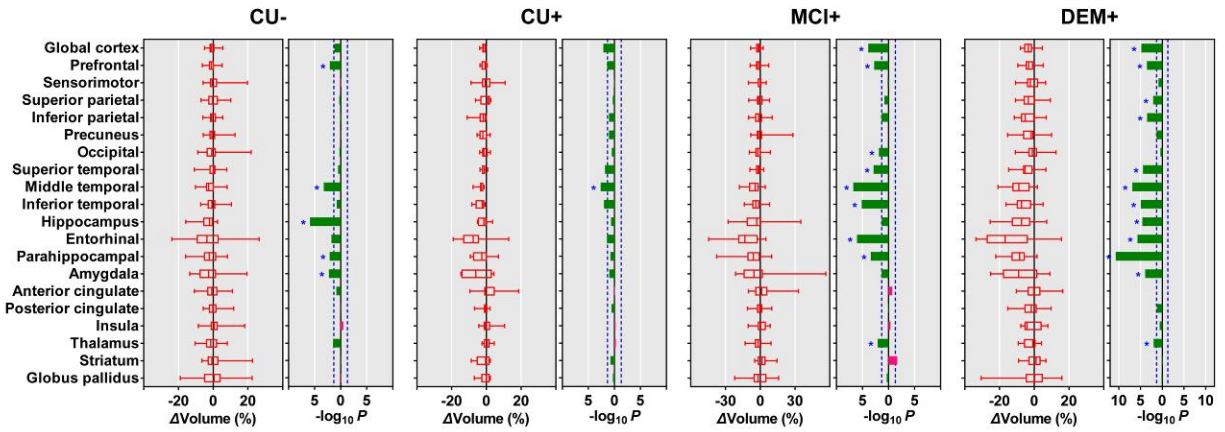
Supplemental Figure 6. Longitudinal changes in PVE-corrected ^{18}F-florbetaben SUVR values obtained with the cerebellar crus as a reference region

Regional changes and their statistical significances are shown in the upper panel. Horizontal bars in leftward (green) and rightward (red) direction represent *P*-values in log scale with decrease and increase of regional uptake at follow-up, respectively. Vertical blue dotted-lines represent

the cut-off P-value 0.05 (-$\log_{10}P$ = 1.3), and asterisks represent the regions that survived correcting for multiple comparisons.

Surface-based analyses of longitudinal changes are shown in the lower panel. Mean amounts of increase in cortical ^{18}F-florbetaben SUVR values (lower left) and the cortical areas with significantly increased uptake at follow-up compared to those at baseline (lower right) are displayed on cortical surface. Only the vertices that survived correcting for multiple comparisons are displayed. For simplicity, negative changes are not displayed. Color bars represent $\varDelta$SUVR and P-values in log scale.

Abbreviations: CU = cognitively unimpaired; MCI = mild cognitive impairment; DEM = dementia; +/- = Aβ-positivity; $\varDelta$SUVR = amount of change of standardized uptake value ratio; PVE = partial volume effect
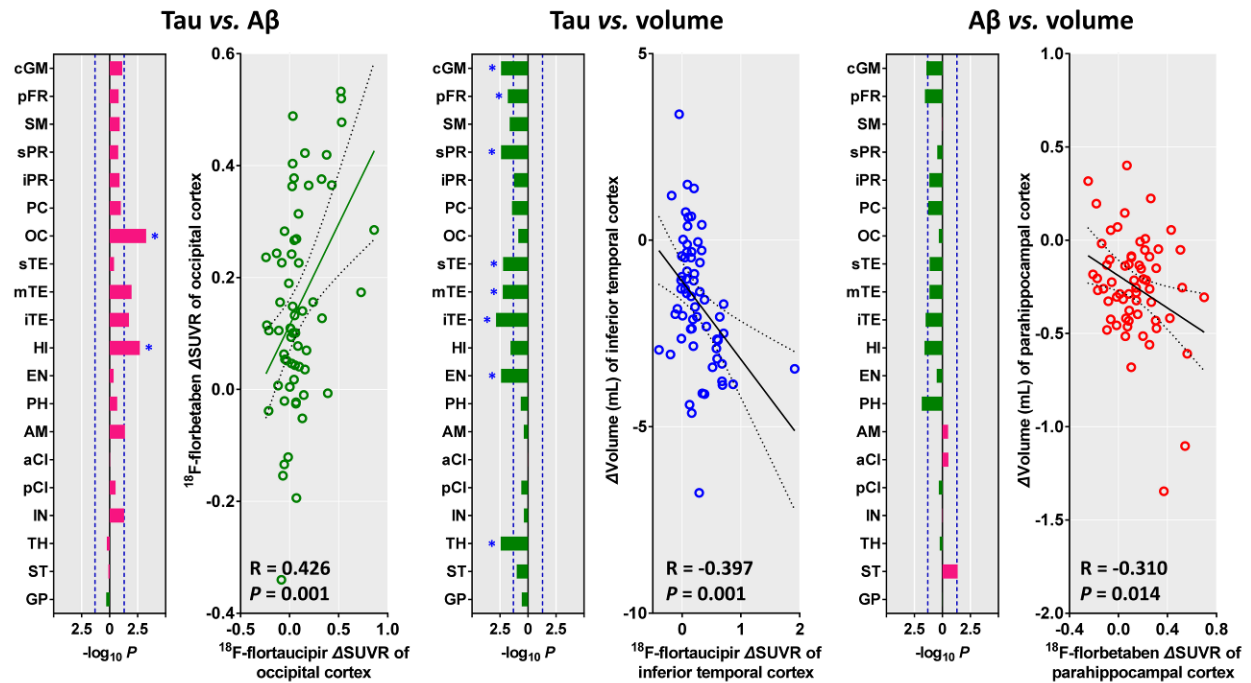
Supplemental Figure 7. Longitudinal changes in regional volume and cortical thickness

Regional changes and their statistical significances are shown in the upper panel. Horizontal bars

in leftward (green) and rightward (red) direction represent *P*-values in log scale with decrease

and increase of regional volume at follow-up, respectively. Vertical blue dotted-lines represent

the cut-off *P*-value 0.05 (-$\log_{10}P$ = 1.3), and asterisks represent the regions that survived

correcting for multiple comparisons.

Surface-based analyses of longitudinal changes are shown in the lower panel. Mean amounts of decrease in cortical thickness (lower left) and the cortical areas with significantly decreased thickness at follow-up compared to those at baseline (lower right) are displayed on cortical surface. Only the vertices that survived correcting for multiple comparisons are displayed. For simplicity, positive changes are not displayed. Color bars represent ΔCT and *P*-values in log scale.

Abbreviations: CU = cognitively unimpaired; MCI = mild cognitive impairment; DEM = dementia; +/- = Aβ-positivity; ΔCT = amount of change in cortical thickness

Supplemental Figure 8. Correlation between the longitudinal changes in PVE-corrected cortical ^{18}F-flortaucipir and ^{18}F-florbetaben SUVR values obtained with the cerebellar crus as a reference region and volume in 62 Aβ-positive individuals

Horizontal bars in leftward (green) and rightward (red) direction represent *P*-values in log scale with negative and positive correlation, respectively. Vertical blue dotted-lines represent the cut-off *P*-value 0.05 (-$\log_{10}P$ = 1.3). Asterisks mean the regions that survived correcting for multiple comparisons.

Abbreviations: *Δ*SUVR = amount of change of standardized uptake value ratio; PVE = partial volume effect; cGM = global cortical gray matter; pFR = prefrontal; SM = sensorimotor; sPR = superior parietal; iPR = inferior parietal; PC = precuneus; OC = occipital; sTE = superior temporal; mTE = middle temporal; iTE = inferior temporal; meTE = medial temporal; HI = hippocampus; EN = entorhinal; PH = parahippocampal; AM = amygdala; aCI = anterior cingulate; pCI = posterior cingulate; IN = insula regions; TH = thalamus; ST = striatum; GP = globus pallidus