

Figure S1: Exemplary evaluation of the sensitivity of the three drought indices regarding the settings for the baseline period. Shown here is the analysis for the CHR dataset and the 2016 drought year. The sensitivity evaluation comprises the inclusion of the three drought years 2005, 2010 and 2016 in the baseline calculation (NE), a longer baseline period from 1981 to 2018 instead of the 2000-2016 baseline period used in this study (LB), and a different offset for scPDSI, using the JAN-MAR period instead of JUL-SEP (OF). Differences of Δ MCWD (a-c), scPDSI (d-f) and RA (g-i) to the standard setting of the respective index used in this study are shown. If a gridcell does not show at least moderate drought stress, it is marked white.

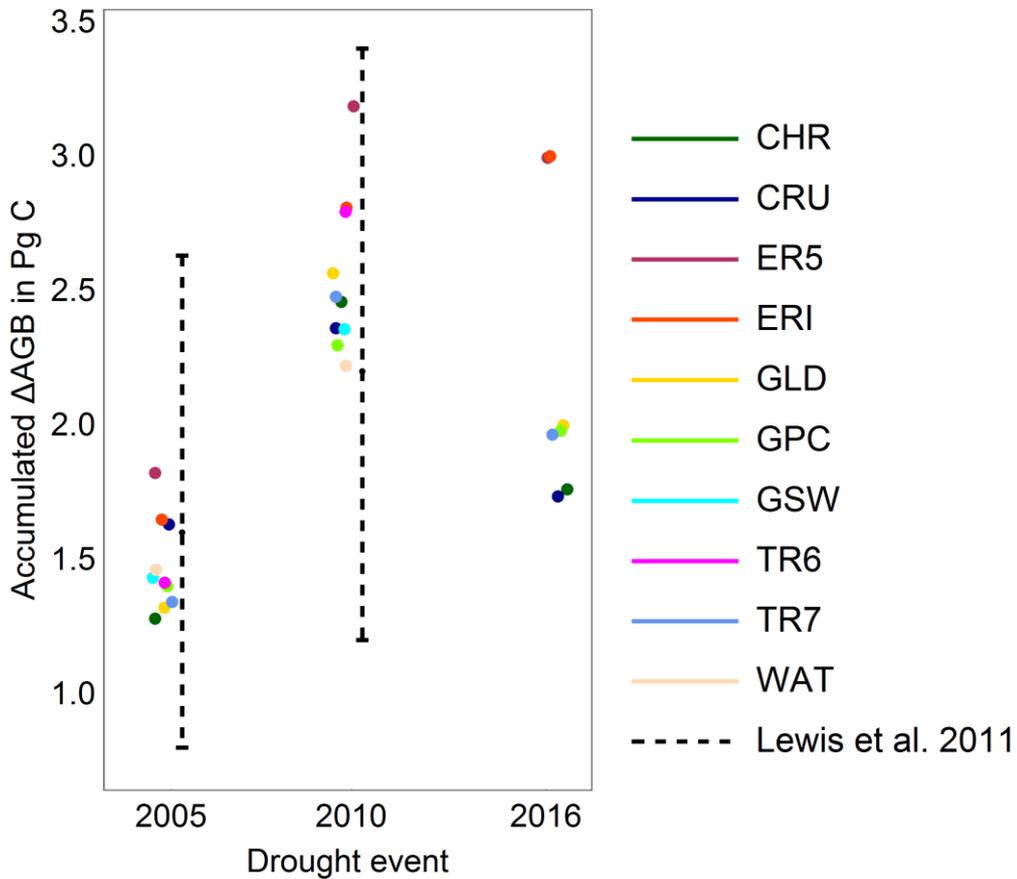


Figure S2: Impact of the 2005, 2010 and 2016 drought event on aboveground carbon biomass (AGB in Pg C). Here, instead of keeping ΔMCWD at a constant value of $100 \text{ mm month}^{-1}$, it was calculated with variable ET data from the ERA5 dataset. Biomass loss was calculated for each of the precipitation datasets (colored dots, for abbreviations see Tab. 1) based on a linear relation between biomass loss and ΔMCWD as proposed by Phillips et al. (2009). The dashed lines indicate the range of estimated carbon losses from Lewis et al. (2011).

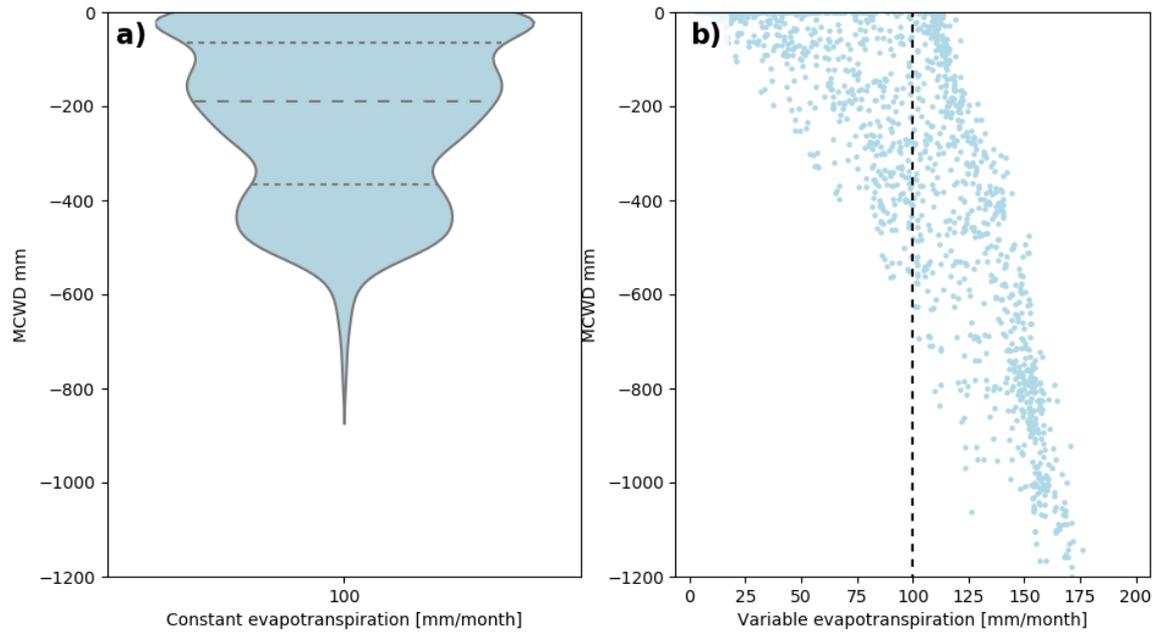


Figure S3: a) Distribution of MCWD as calculated for the CHR dataset for 2010 with constant evapotranspiration of 100mm month⁻¹. Dashed lines show 25, 50 and 75 quantiles. b) Scatterplot of MCWD based in the ERA-5 evapotranspiration data for 2010 and the CHR dataset. The dashed line reflects the constant 100mm ET used in a). Values with ET > 100 contribute to strong decrease in MCWD.

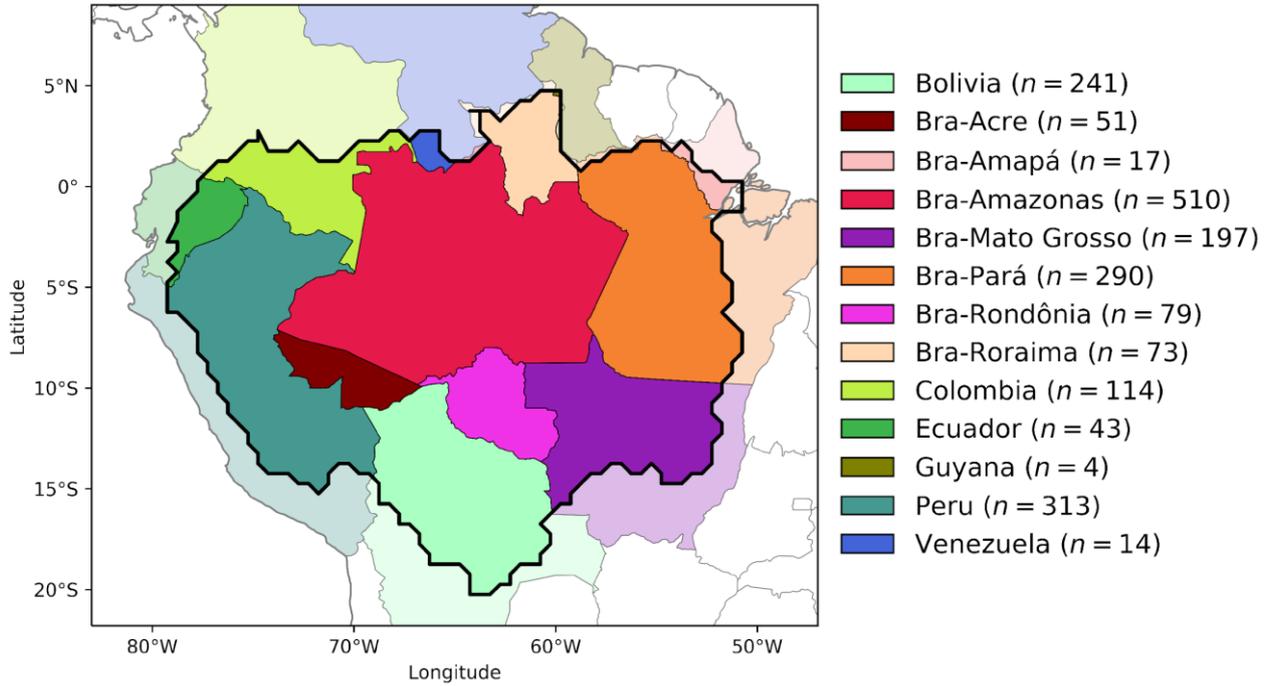


Figure S4: Delineation of the Amazon basin as used in the present study. Subdivision of the Amazon Basin into Countries and States of Brazil. n represents the number gridcells that each of the areas is associated with. There are 1946 gridcells in total.

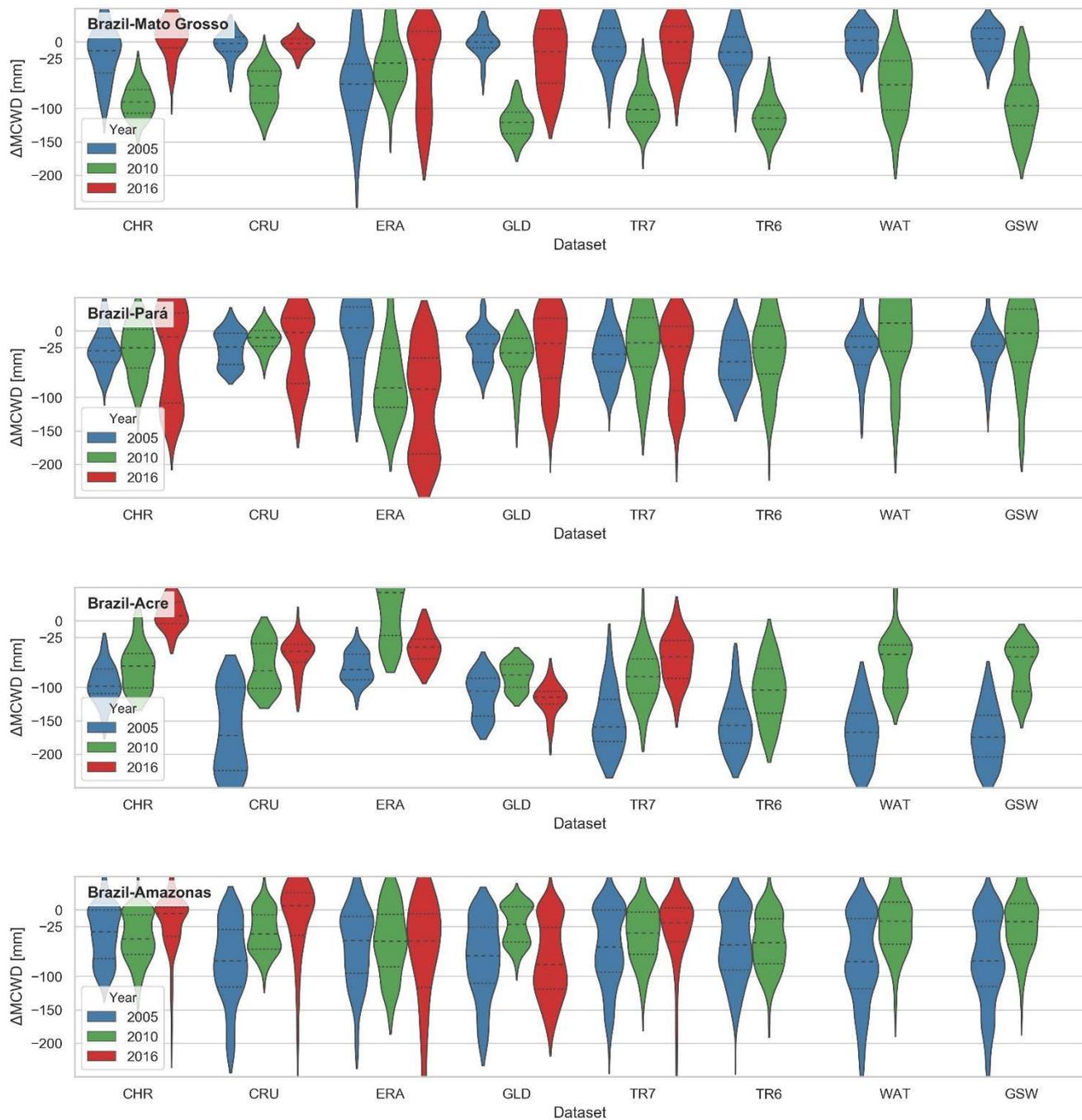


Figure S5: Violin plots of regional impacts of the 2005, 2010 and 2015/2016 drought event. All regions shown are part of Brazil and the corresponding spatial extend is based on the classification of figure S4