Sustainability consequences of making land change decisions based on current climatology in the Brazilian Cerrados

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Appendices

A. Weight of Evidence and land change modeling

From	To	Matopiba	Soy belt	Central area	West	Southeast
Native vegetation	Pasture	0.0092	0.0068	0.0295	0.0198	0.0229
	Crops	0.0037	0.0110	0.0022	0.0026	0.0033
Pasture	Nat. Veg.	0.0386	0.0286	0.0261	0.0224	0.0315
	Crops	0.0024	0.0618	0.0129	0.0081	0.0172
Crops	Nat. Veg.	0.0063	0.0042	0.0068	0.0059	0.0089
	Pasture	0.0029	0.0031	0.0084	0.0066	0.0076

Table S1. Results of annual transition probabilities matrix by land cover and subregion. Source: Author's analysis in Dinamica EGO.

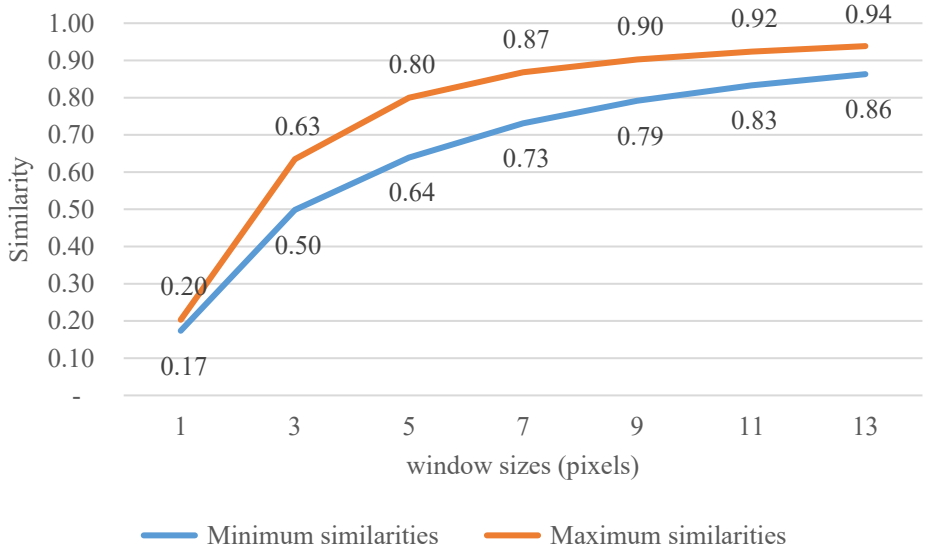

Figure S1: Similarity between land use simulation and current land use for Cerrado in 2016, with subregions at cluster level. Source: Author's analysis in Dinamica EGO.

Window sizes	Minimum similarities	Maximum similarities
1	0.08	0.50
3	0.19	0.80
5	0.33	0.90
7	0.45	0.93
9	0.54	0.94
11	0.61	0.95
13	0.67	0.95

Table S2. Similarity between land use simulation and current land use for Cerrado in 2016, without subregional models.

Window sizes	Minimum similarities	Maximum similarities
1	0.09	0.48
3	0.24	0.77
5	0.39	0.88
7	0.51	0.92
9	0.60	0.94
11	0.67	0.95
13	0.71	0.96

Table S3. Similarity between land use simulation and current land use for Cerrado in 2016, with subregions at the municipal level.

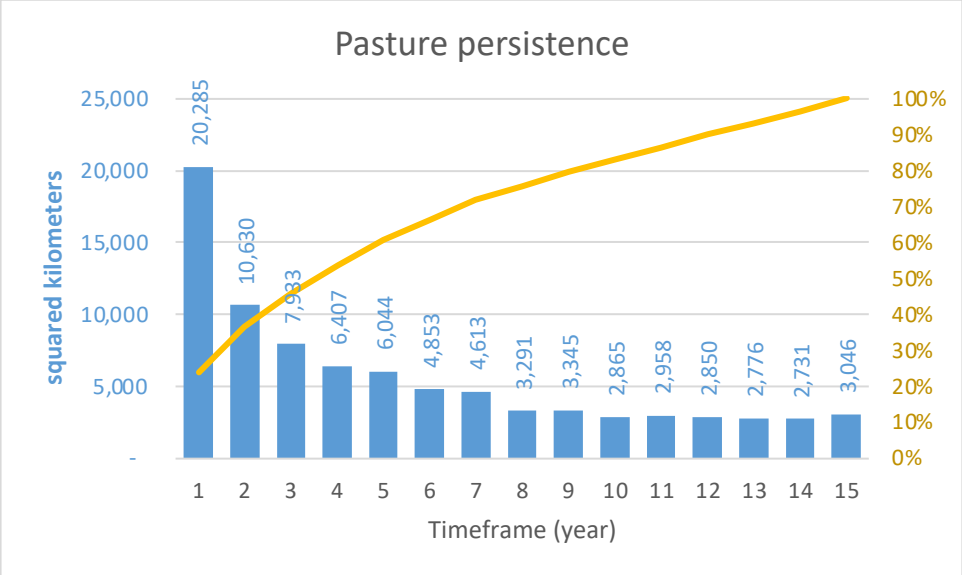

Table S4. Pasture persistence (turnover): timeframe that deforested areas to pasture turn into cropland in the Cerrado biome, from 2001 to 2016.

Transition from	Transition to	First variable	Second variable	Cramer
Native vegetation	Pasture	Distance to Pasture	Protected Areas	0.384
Native vegetation	Cropland	Protected Areas	roads	0.246
Native vegetation	Pasture	Protected Areas	roads	0.241
Native vegetation	Cropland	Distance to Crops	Protected Areas	0.228
Pasture	Cropland	Distance to Crops	Protected Areas	0.223
Pasture	Cropland	Protected Areas	roads	0.208
Native vegetation	Pasture	Protected Areas	suitability	0.148
Native vegetation	Cropland	Protected Areas	suitability	0.148
Pasture	Cropland	Protected Areas	suitability	0.148
Native vegetation	Cropland	Distance to Crops	suitability	0.146
Pasture	Cropland	Distance to Crops	suitability	0.145
Native vegetation	Pasture	Distance to Pasture	roads	0.126
Native vegetation	Pasture	Distance to Pasture	suitability	0.111
Native vegetation	Cropland	slope	suitability	0.105
Native vegetation	Pasture	slope	suitability	0.099
Pasture	Cropland	slope	suitability	0.094
Native vegetation	Pasture	Protected Areas	slope	0.091
Native vegetation	Cropland	Protected Areas	slope	0.09
Pasture	Cropland	Distance to Crops	roads	0.086
Pasture	Cropland	Protected Areas	slope	0.078
Native vegetation	Pasture	roads	suitability	0.072
Native vegetation	Cropland	roads	suitability	0.07
Pasture	Cropland	roads	suitability	0.065
Native vegetation	Pasture	Distance to Pasture	slope	0.063
Pasture	Cropland	roads	slope	0.061
Native vegetation	Cropland	Distance to Crops	roads	0.058
Pasture	Cropland	Distance to Crops	slope	0.055
Native vegetation	Cropland	roads	slope	0.052
Native vegetation	Cropland	Distance to Crops	slope	0.047
Native vegetation	Pasture	roads	slope	0.044

Table S5. Cramer's V test to assess the spatial correlation between the variables.

B. Water yield model and future climate data

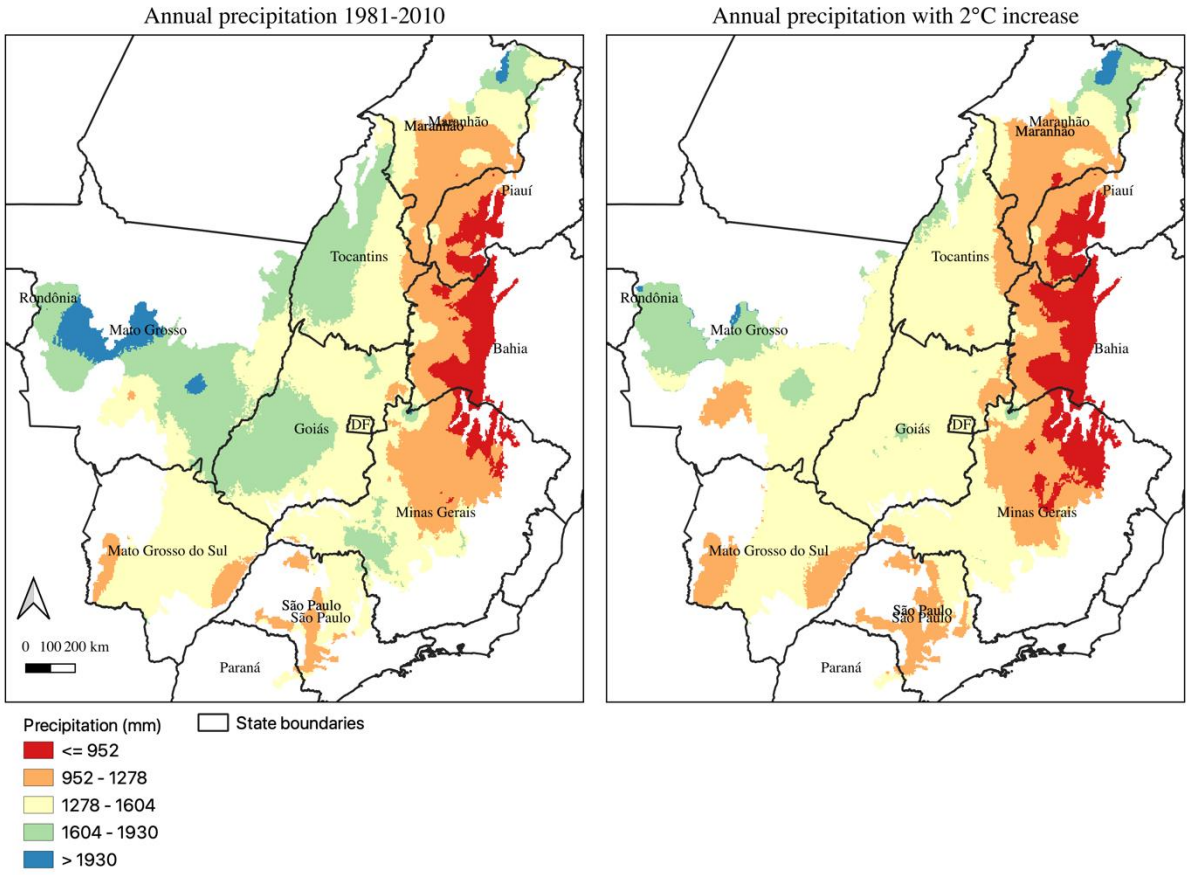

Figure S2. Precipitation (mm/year) for historical and future climate scenarios. Source: adapted from Terraclimate Project (Abatzoglou et al., 2018).

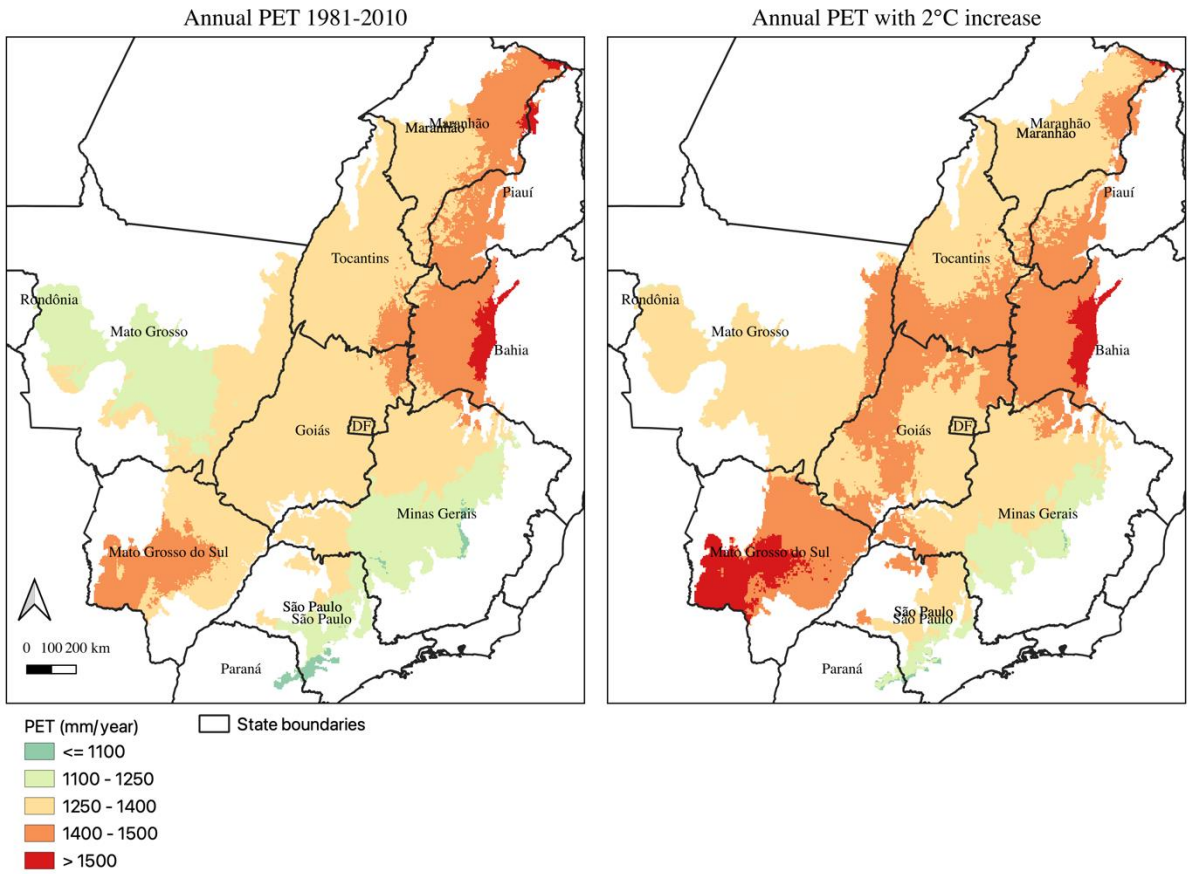

Figure S3. Potential evapotranspiration (PET, in mm/year) for historical and future climate scenarios. Source: adapted from Terraclimate Project (Abatzoglou et al., 2018).

References

Abatzoglou, J.T., S.Z. Dobrowski, S.A. Parks, K.C. Hegewisch. (2018). Terraclimate, a high-resolution global dataset of monthly climate and climatic water balance from 1958-2015. Scientific Data. Available at: https://www.nature.com/articles/sdata2017191