Biogeosciences
Discussions

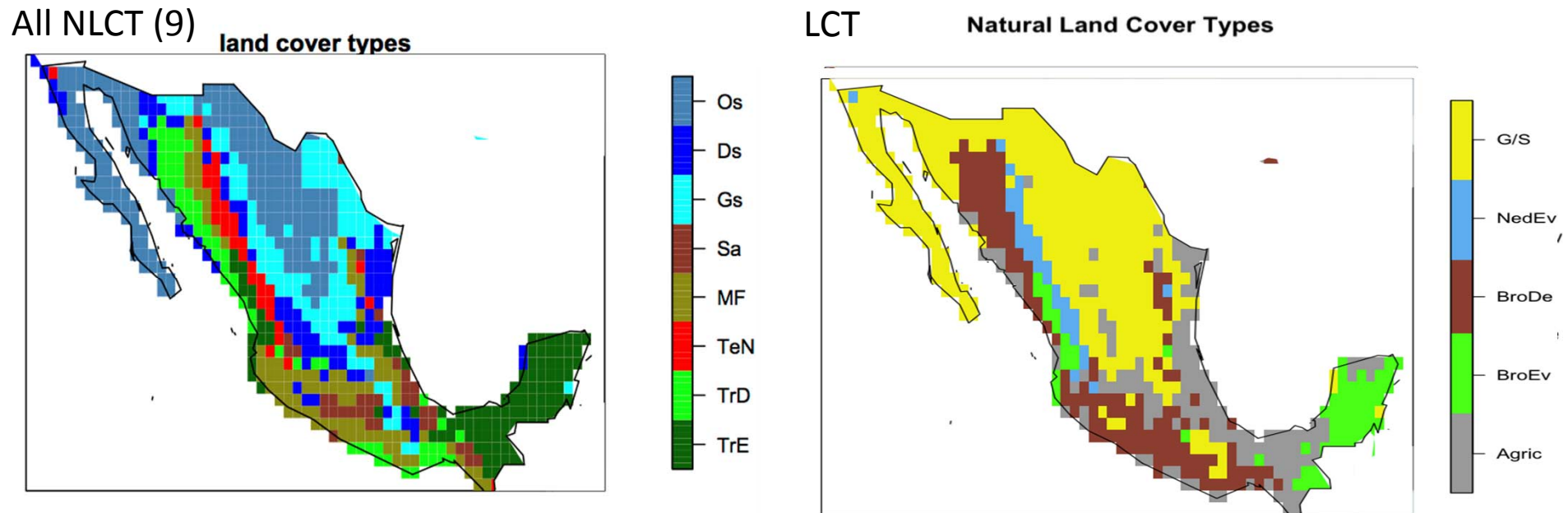Open Access

Supplement of

The carbon cycle in Mexico: past, present and future of C stocks and fluxes

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Figure S1: Vegetation cover types

All NLCT (9)

LCT

Supplementary 1: natural land cover types (right) and aggregated covers (left). OS: Open shrubland, Ds: Dense Shrubland; Gs: Grassland; Sa: Savanna; MF: Mixed Forest; TeN: Temperate Needleaf forest; TrD: Tropical Deciduous Forest, TrE: Tropical Evergreen forest.

We aggregate the natural land cover type into four functional types to simplify the analysis and masked the areas where the agricultural fraction what higher than 50%. This four aggregated categories are in good agreement with the vegetation maps by Rzedowski (1978), except we aggregated all deciduous categories into one as they tend to co-exist at this scale. Additionally, we merged the shrublands and grasslands into one category for easier comparison against forested lands

Figure S2. Sampling points for the field data (vegetation and soil)

Field Data Sampling Points

Figure S3: Gridded temperature trend for 2005-2100 for four RCPs. Stippled for >66% model agreement.
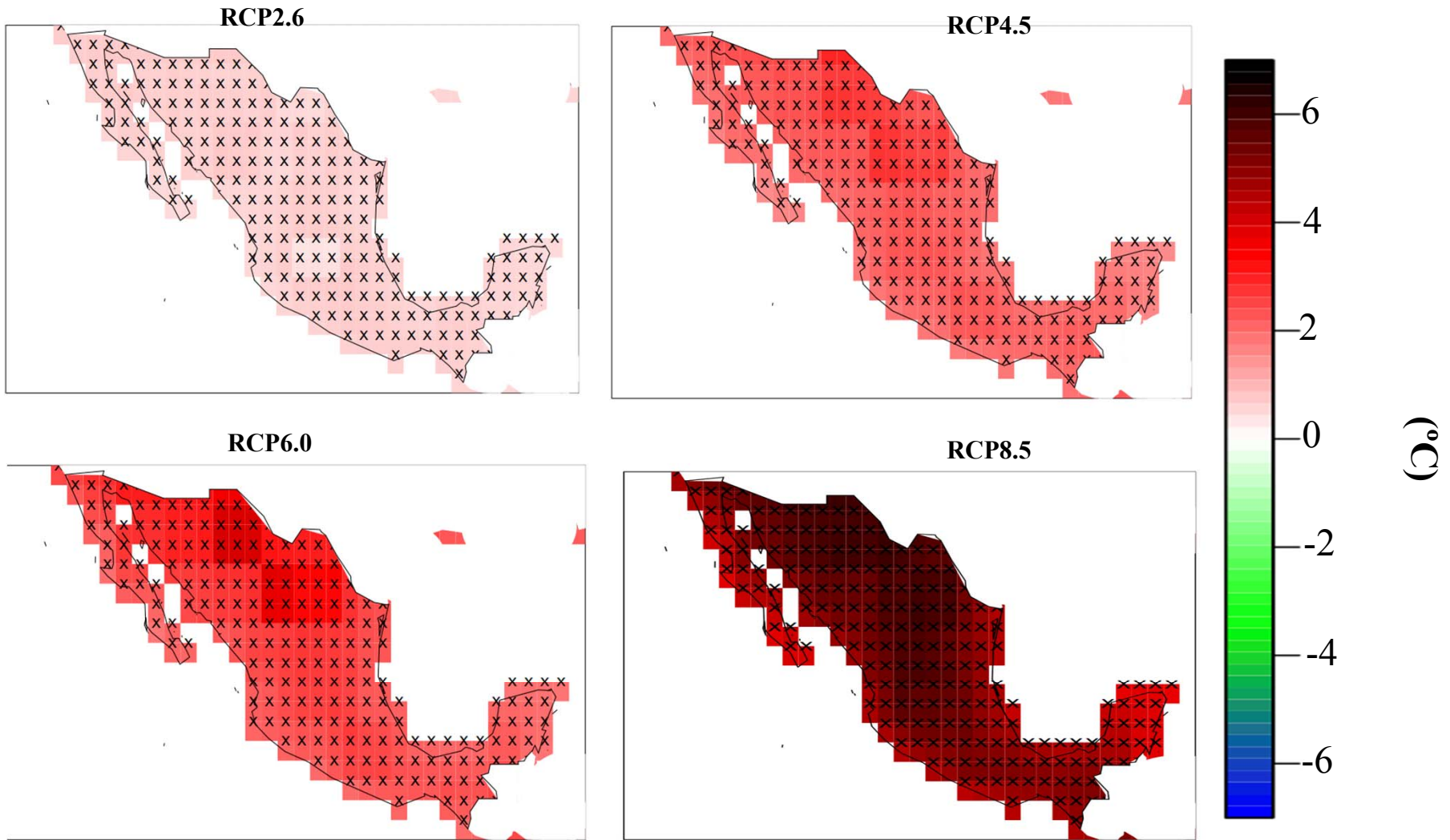

Temperature change (2080:2099 – 1980:1999)

Figure S4: Gridded precipitation trend for 2005-2100 for four RCPs. Stippled for >66% model agree

Precipitation change (2080:2099 – 1980:1999)

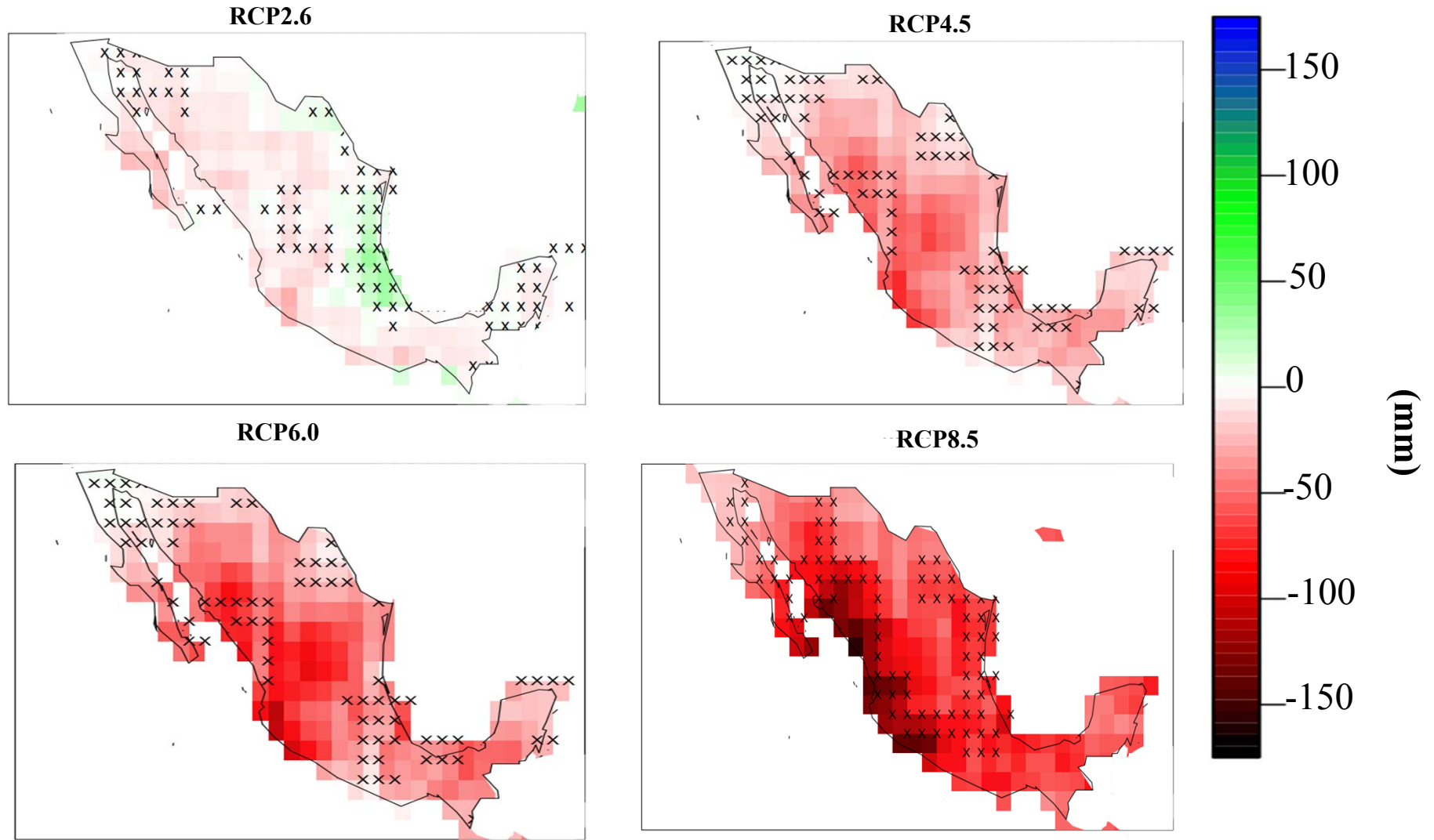Figure S5: Change in the mean residence time of C over the last 60 years (1950-2010).

Carbon Mean Residence Time Trend (1901-2000)
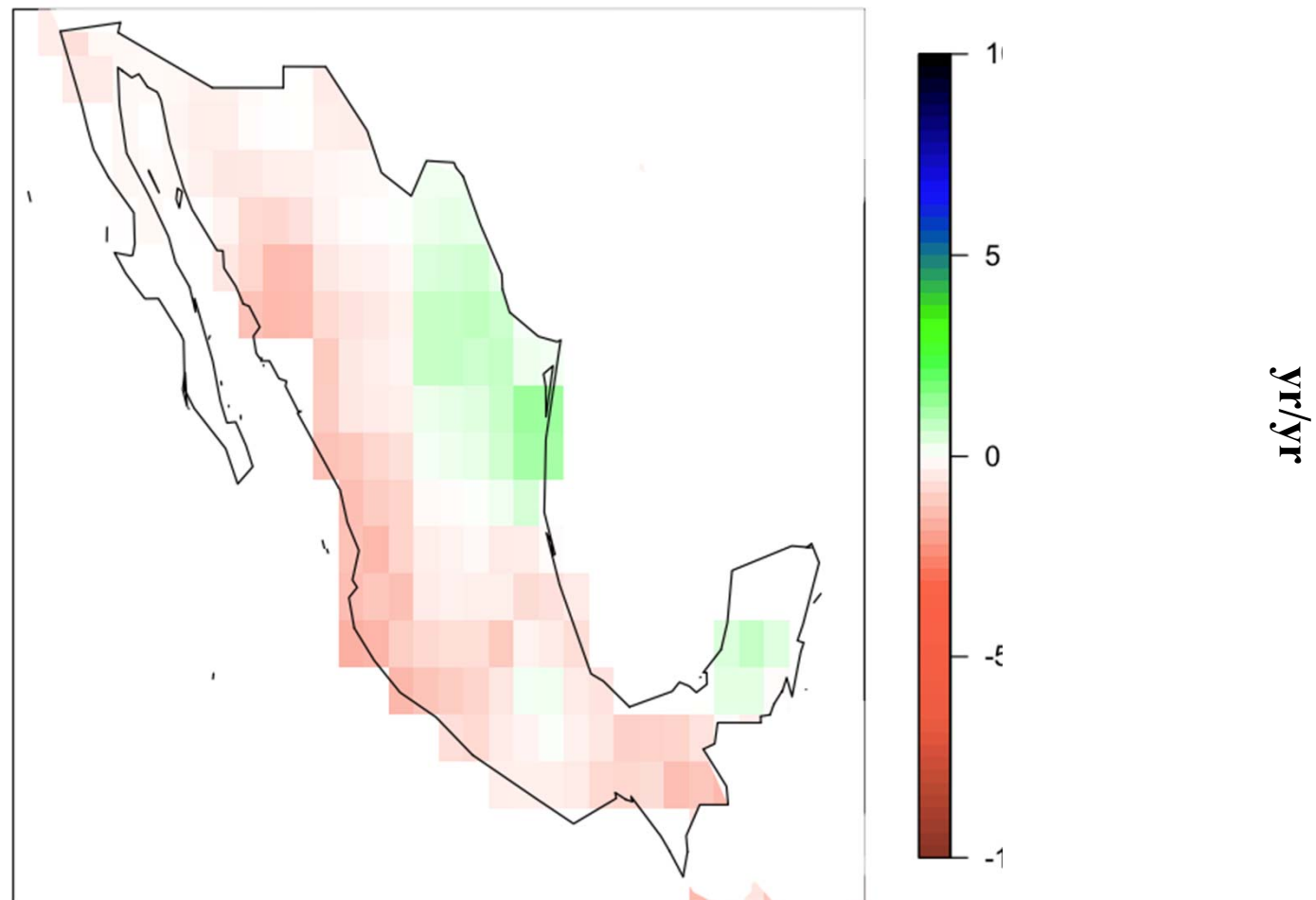
Table S1. Models used for the analysis.

DGVMs	ESMs
CLM4.5	CCSM4
ISAM	GFDL-ESM2G
LPJ	HadGEM2-ES
LPJ-GUESS	IPSL-CM5A-LR
LPX-Bern	IPSL-CM5A-MR
JULES3.2	MIROC-ESM
OCN	MIROC-ESM-CHEM
VEGAS	NorESM1-M
VISIT	NorESM1-ME

Table S2: GPP for each product by NLCT

GPP	DGVM		Satellite		Fluxtower	
Potential Land Cover Type	**Mean (gC m⁻² yr⁻¹)**	**Sum (TgC)**	**Mean (gC m⁻² yr⁻¹)**	**Sum (TgC)**	**Mean (gC m⁻² yr⁻¹)**	**Sum (TgC)**
Broadleaf evergreen forest	2.16	555	2.29	588	2.01	516
Broadleaf deciduous forest	1.11	486	1.25	547	1.20	525
Needleleaf evergreen forest	1.41	129	1.42	130	1.57	144
Grassland/Shrubland	0.62	463	0.58	433	0.49	366
Croplands	1.15	486	1.19	503	1.27	537
National total		2119		2203		2089

Table S3: Vegetation and Soil C for each product by NLCT

Vegetation Carbon	DGVMs		SATELLITE		FIELD	
	Mean	**Sum**	**Mean**	**Sum**	**Mean**	**Sum**
Land Cover Type	**(gC m^{-2})**	**(TgC)**	**(gC m^{-2})**	**(TgC)**	**(gC m^{-2})**	**(TgC)**
Broadleaf evergreen forest	23.8	6116	22.8	5859	22.1	5679
Broadleaf deciduous forest	12.5	5475	11.9	5212	12.8	5606
Needleleaf evergreen forest	15.2	1398	14.2	1306	15.8	1453
Grassland/Shrubland	6.6	4930	6.3	4706	5.1	3809
Cropland	7.4	3130	7.2	3045	7.8	3299
TOTALS		21050		20129		19864

Soil Carbon	DGVMs		FAO		Field	
	Mean	**Sum**	**Mean**	**Sum**	**Mean**	**Sum**
Land Cover Type	**(gC m^{-2})**	**(TgC)**	**(gC m^{-2})**	**(TgC)**	**(gC m^{-2})**	**(TgC)**
Broadleaf evergreen forest	11.8	3032	12.5	3212	11.9	3058
Broadleaf deciduous forest	8.9	3898	8.3	3625	9.4	4117
Needleleaf evergreen forest	10.5	966	11.2	1030	11.0	2012
Grassland/Shrubland	4.2	3137	4.5	3361	5.5	4108
	5.8	2454	6.2	2622	6.7	2834
TOTALS		13487		13862		15130