

Special Report on Climate Change and Land

The Land–Climate Interface



Agricultural landscape between Ankara and Hattusha, Anatolia, Turkey (40°00' N – 33°35' E)
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Louis Verchot
International Center Tropical Agriculture
Madrid, 5 December 2019

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INTERGOVERNMENTAL PANEL ON climate change



Table SPM1. Net anthropogenic emissions due to Agriculture, Forestry, and other Land Use (AFOLU) and non-AFOLU (Panel 1)

Gas	Units	Direct Anthropogenic						Indirect						
		Net anthropogenic emissions due to Agriculture, Forestry, and Other Land Use (AFOLU)			Non-AFOLU anthropogenic GHG emissions ⁶	Total net anthropogenic emissions (AFOLU + non-AFOLU) by gas		AFOLU as a % of total net anthropogenic emissions, by gas	Natural response of land to human-induced environmental change ⁷			Net land – atmosphere flux from all lands		
Panel 1: Contribution of AFOLU														
		FOLU	Agriculture	Total										
		A	B	C = A + B	D	E = C + D		F = (C/E) *100	G			A + G		
CO ₂ ²	Gt CO ₂ y ⁻¹	5.2 ± 2.6	No data ¹¹	5.2 ± 2.6	33.9 ± 1.8	39.1 ± 3.2		13%	-11.2	±	2.6	-6.0	±	3.7
	Mt CH ₄ y ⁻¹	19.2 ± 5.8	141.6 ± 42.5	160.8 ± 43	201.3 ± 100.6	362 ± 109								
CH ₄ ^{3,8}	Gt CO ₂ e y ⁻¹	0.5 ± 0.2	4.0 ± 1.2	4.5 ± 1.2	5.6 ± 2.8	10.1 ± 3.1		44%						
	Mt N ₂ O y ⁻¹	0.3 ± 0.1	8.3 ± 2.5	8.7 ± 2.5	2.0 ± 1.0	10.6 ± 2.7								
N ₂ O ^{3,8}	Gt CO ₂ e y ⁻¹	0.09 ± 0.03	2.2 ± 0.7	2.3 ± 0.7	0.5 ± 0.3	2.8 ± 0.7		81%						
	Total (GHG)	Gt CO ₂ e y ⁻¹	5.8 ± 2.6	6.2 ± 1.4	12.0 ± 2.9	40.0 ± 3.4	52.0 ± 4.5		23%					

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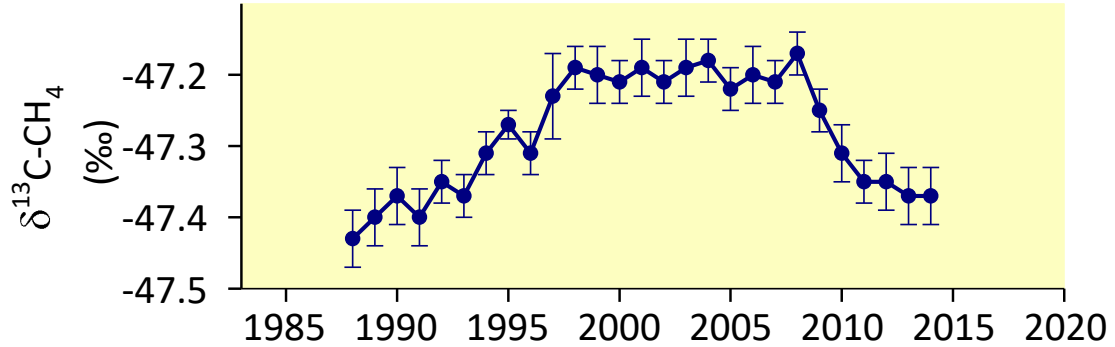
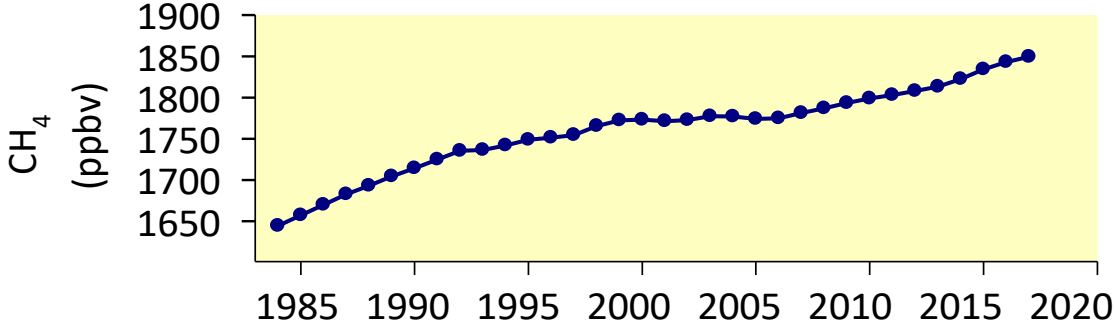
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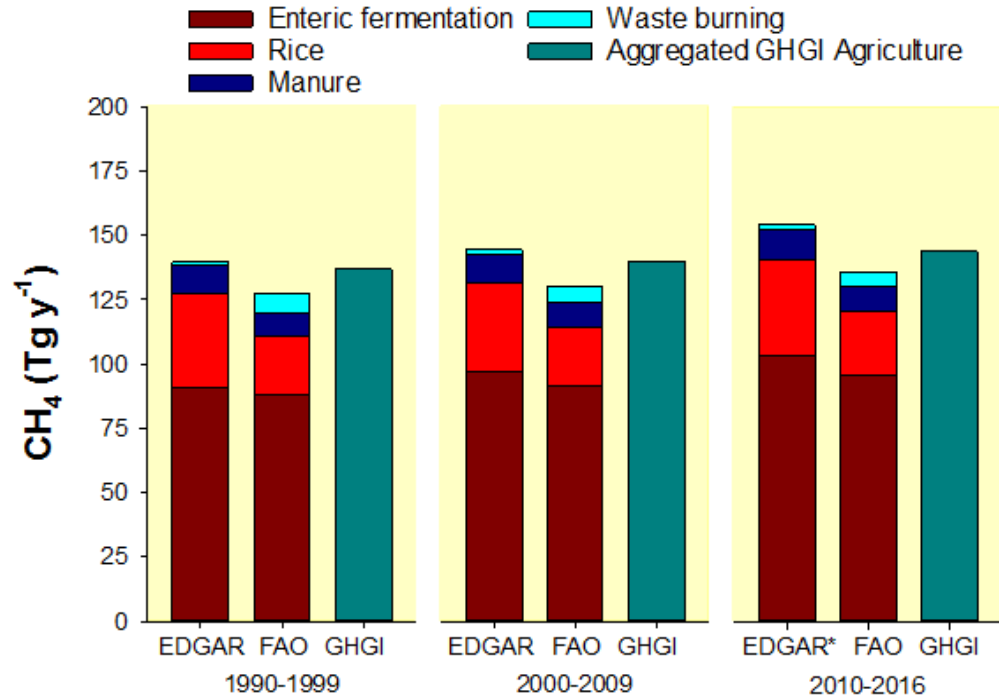
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Methane accumulation in the atmosphere has increased over time, but with a pause between 1999 and 2006

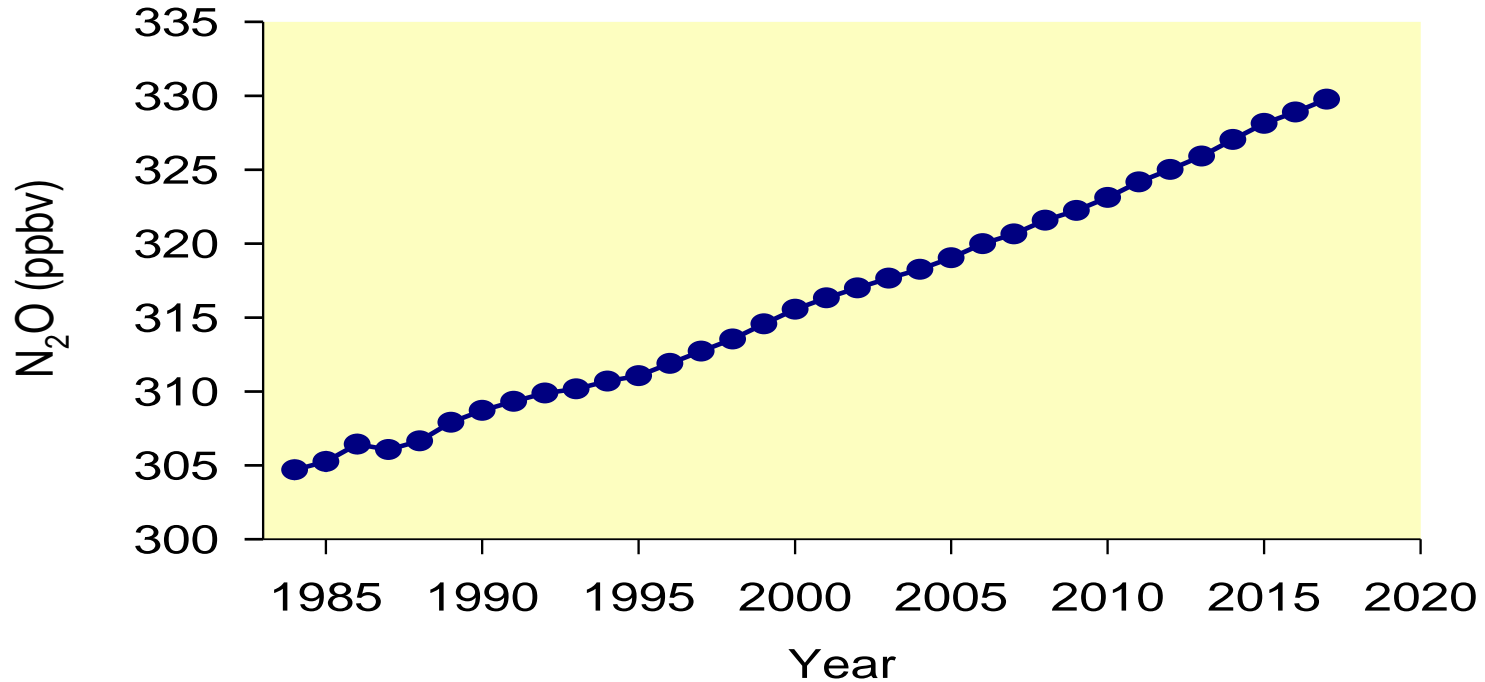




Agriculture is responsible for 44% of global methane emissions

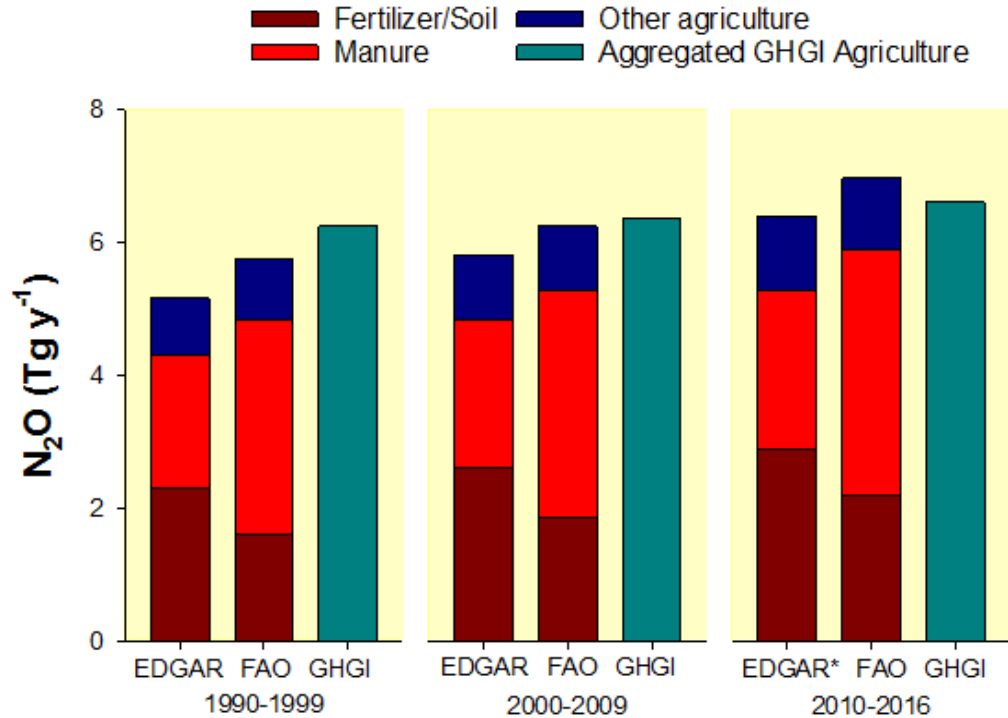


N_2O continues to increase almost linearly

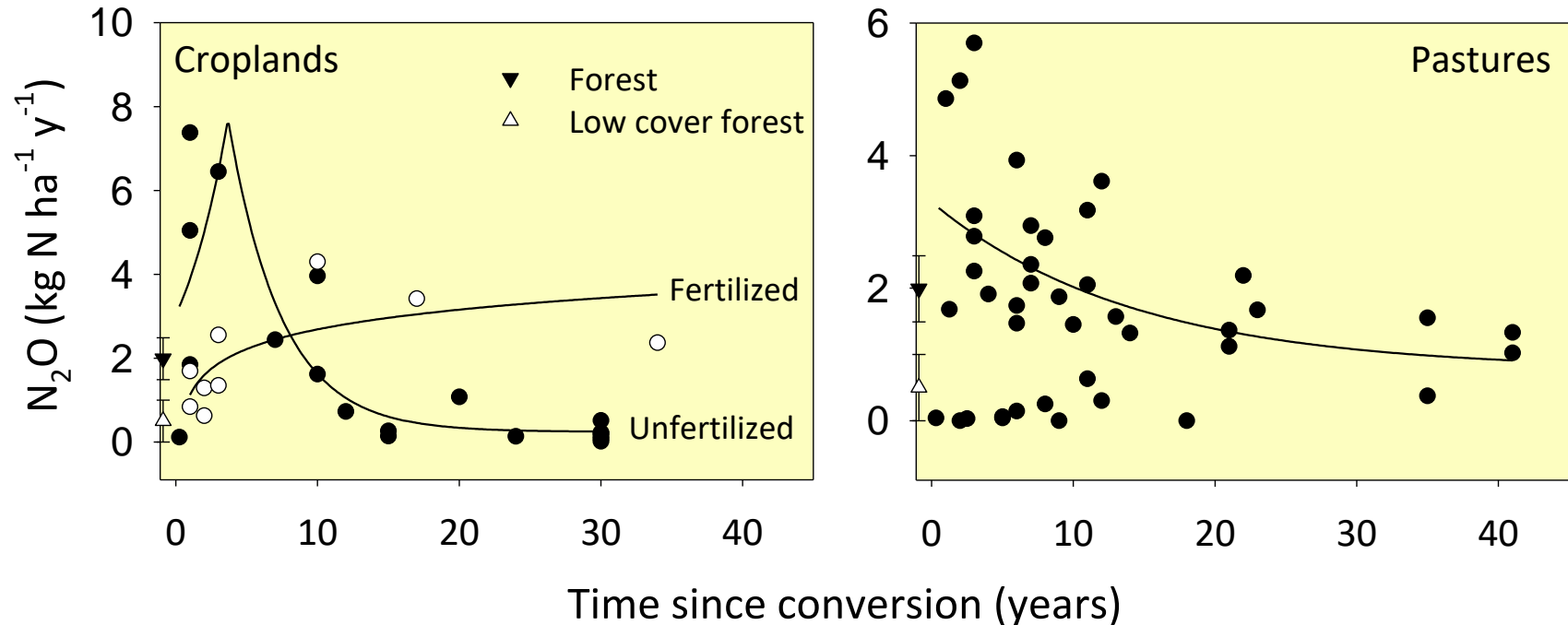


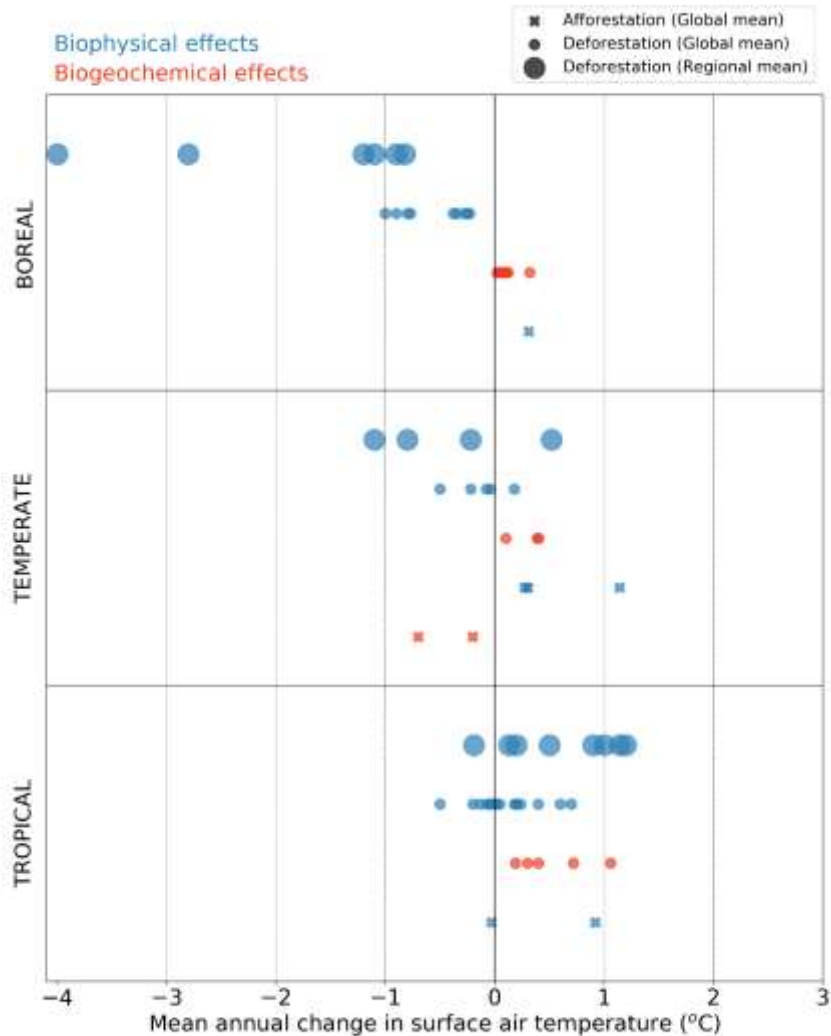


Agriculture is responsible for 81% of nitrous oxide emissions



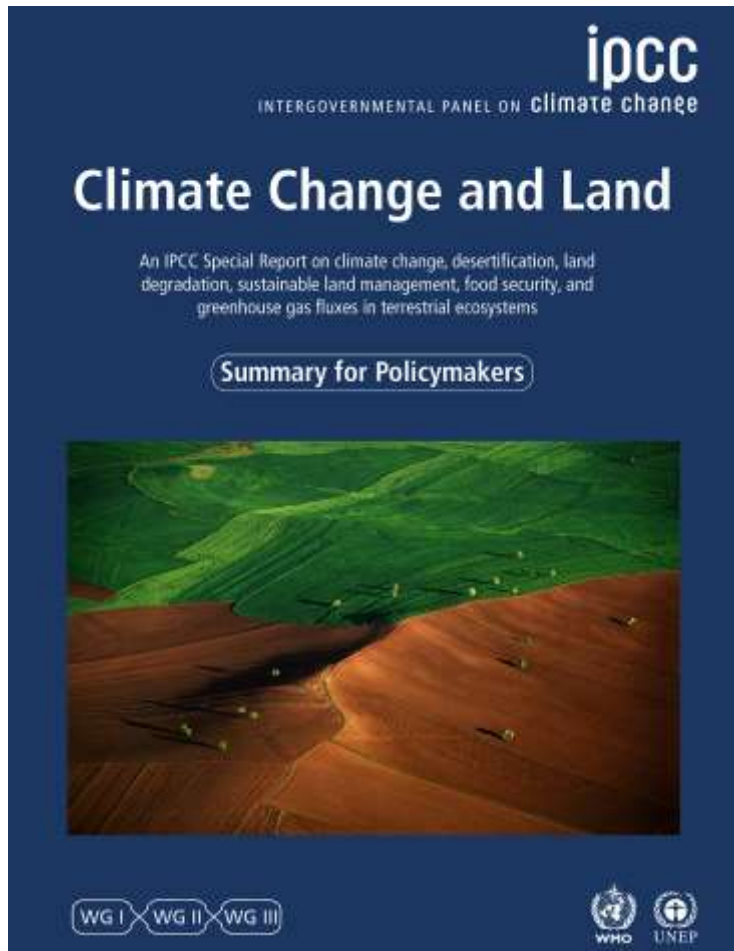
Land use change decreases N₂O fluxes in unfertilized situations and increases emissions in fertilized systems





Changes in mean annual surface air temperature (°C) in response to idealised large scale deforestation (circles) or forestation (crosses), estimated from a range of studies

Temperature changes resulting from biophysical processes : albedo evapotranspiration, and roughness.



FOR MORE INFORMATION:

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