

Supporting Information

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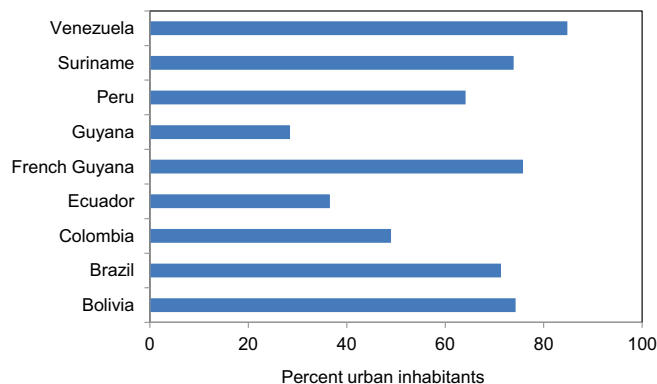


Fig. S1. Proportion of Amazonian inhabitants living in urban areas by country. Sources are refs. 1–8.

1. Instituto Nacional de Estadística de Bolivia (2001) *Censo de Población Vivienda [Population and Household Census]* (Instituto Nacional de Estadística de Bolivia, La Paz, Bolivia). Spanish.

2. Instituto Brasileiro de Geografia e Estatística (2007) *Contagem da População 2007 [Population Census 2007]* (Instituto Brasileiro de Geografia e Estatística, Rio de Janeiro). Portuguese.

3. Departamento Nacional de Estadística (DANE) (2005) *Censo General [General Census]* (Departamento Nacional de Estadística, Bogotá, Colombia). Spanish.

4. Instituto Nacional de Estadística y Censos (INEC) (2001) *VI Censo de Poblacion y V de Vivienda [VI Population Census and V Household Census]* (Instituto Nacional de Estadística y Censos, Quito, Ecuador). Spanish.

5. Institute National de la Statistique et des Études Économiques (2007) *Populations Légales. [Legal Population]* (Institute National de la Statistique et des Études Économiques, Guadeloupe, French Guyana). French.

6. Guyana Bureau of Statistics (2002) (Guyana Bureau of Statistics, George Town, Guyana).

7. Algemeen Bureau voor de Statistiek (2010) (Algemeen Bureau voor de Statistiek, Paramaribo, Suriname). Dutch.

8. Instituto Nacional de Estadística de la Republica Bolivariana de la Venezuela (2001) *Censo de Población y de Vivenda [Population and Household Census]* (Instituto Nacional de Estadística de la Republica Bolivariana de la Venezuela, Caracas, Venezuela). Spanish.



Fig. S2. Study region encompasses 81 provinces. A province was included in the study if its centroid fell within the wet tropical forest biome. Biome GIS layer used for selection was from ref. 1.

1. Olson D, et al. (2001) Terrestrial ecoregions of the world: A new map of life on earth. *Bioscience* 51:933–938.

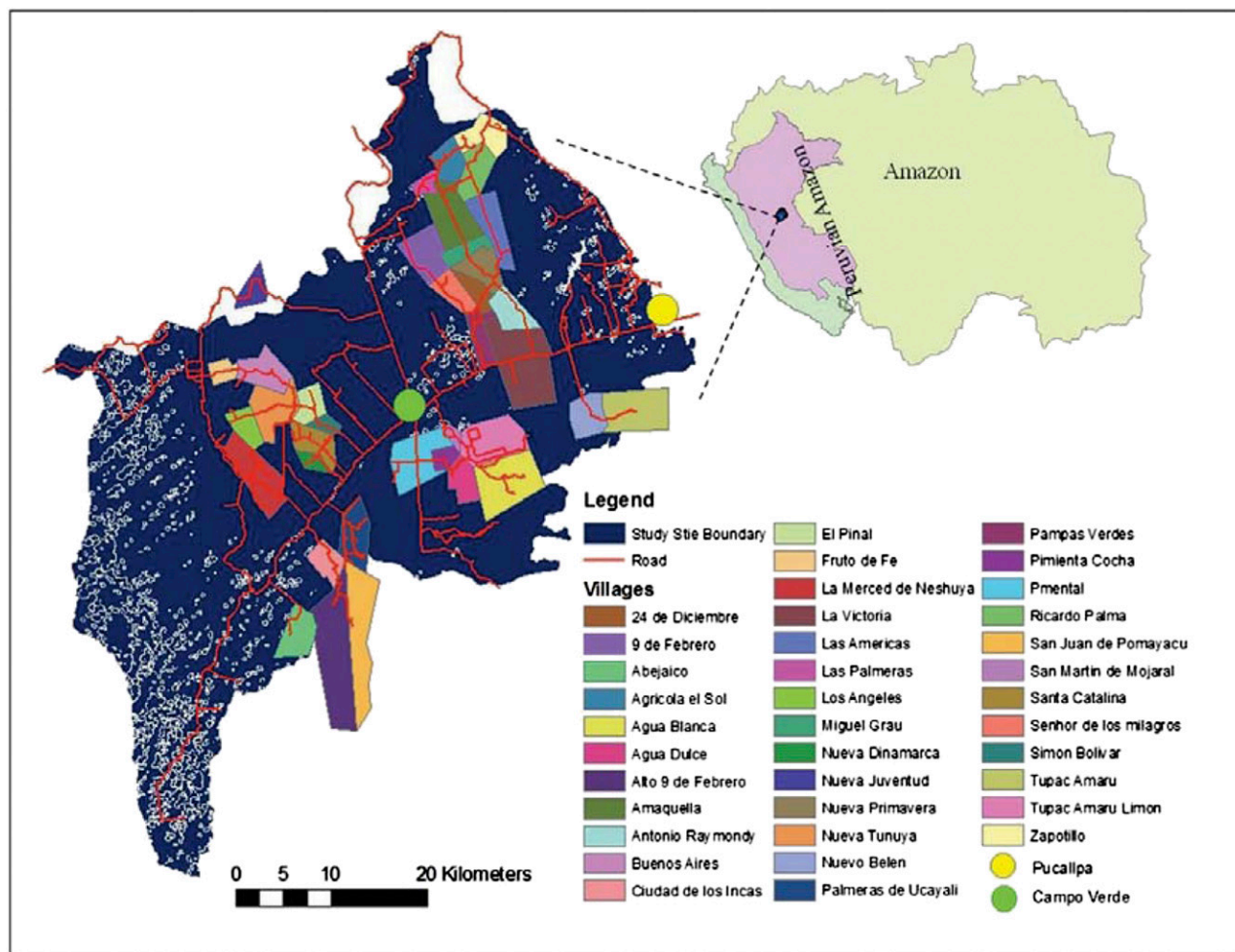


Fig. S3. Area of the local study, showing the 37 communities included in the analyses.

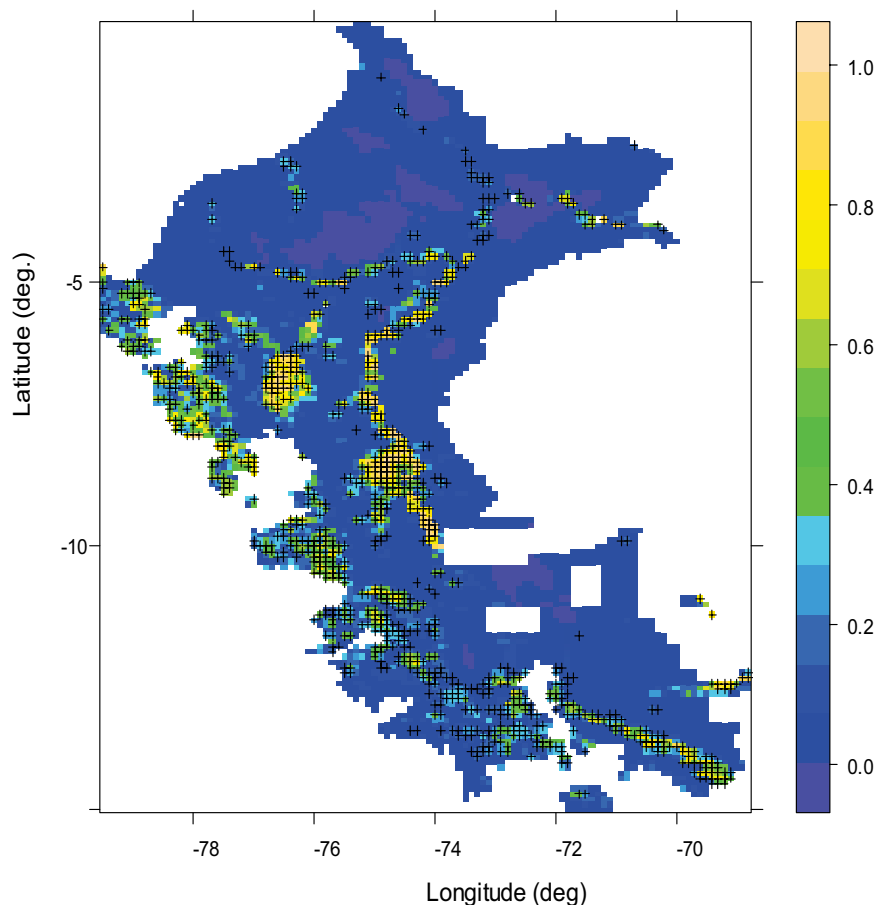


Fig. S4. Distribution of fire (black crosses) and predicted probabilities of occurrence (color legend) for 2005. The blank quadrats indicate missing climate data for those quadrat-years.

Table S1. Data variables included in the model with sources, and spatial and temporal scales at which they were used

Variables	Sources and scales
Fire activity	MODIS, no. of hot pixels 0.1°, 2000–2010 (NEO)
Biophysical	Rivers (CIESIN) 1 x 1 km, 2005
Infrastructure	Roads (CIESIN) 1 x 1 km, 2005
Demographic	Population density 2007 Rural population 2007/rural population 1993 INEI
Agricultural activity	Extent of pastures and crops 0.083° (1)
Climate	SPI-JAS, SENAMHI 0.1°, 2000–2010

See *Methods* for details. CIESIN, Center for International Earth Science Information Network at Columbia University (<http://sedac.ciesin.columbia.edu/es/aglands.html>); INEI, Instituto Nacional de Estadística e Informática (access at www.inei.gob.pe); MODIS, moderate resolution imaging spectroradiometer; NEO, NASA Earth Observatory (<http://neo.sci.gsfc.nasa.gov/>); SENAMHI, Servicio Nacional de Meteorología e Hidrología; SPI-JAS, standardized precipitation index July–August–September.

1. Ramankutty N, Evan AT, Monfreda C, Foley JA (2000) *Global Agricultural Lands: Pastures, 2000. Data Distributed by the NASA Socioeconomic Data and Applications Center (SEDAC)*. Available at <http://sedac.ciesin.columbia.edu/es/aglands.html>. Accessed July 6, 2011.

Table S2. Data variables included in the local model of fire frequency and size with sources, and spatial scales at which they were used

Variables	Sources, resolution, and values
Fire frequency	MODIS 1 x 1 km Fires/ha
Fire intensity	MODIS 250 x 250 m Maximum burn scar size (no. pixels)
Proportion of fallow land	Landsat 30 x 30 m
Population density	Survey data
% Farmers using fire control methods	Survey data, Community scale
% Farmers residing in their property	Survey data, Community scale

See *Methods* for details. MODIS, moderate resolution imaging spectro-radiometer.

Table S3. Explained variance at the data and site (quad) levels for best models of fire occurrence and frequency calculated using methods described in ref. 1

	Fire occurrence		Fire frequency	
	Data R^2	Quad R^2	Data R^2	Quad R^2
Best model	0.060	0.435	0.231	0.212

Values of R^2 at the data level indicate the importance of temporal variation in covariates in explaining fire activity; R^2 at the site level indicates importance of spatial variation in covariates.

1. R Development Core Team (2008) *R: A Language and Environment for Statistical Computing* (R Foundation for Statistical Computing, Vienna).

Table S4. VIF for all of the variables initially included in the regressions for fire occurrence and frequency

Variable	VIF fire occurrence	VIF fire frequency
SPI	1.50	1.01
Pasture	1.44	1.26*
Agricultural crops	1.28	1.24*
Distance to roads	1.31	1.35
Distance to rivers	1.10	1.03*
Population density 2007	1.16*	1.02*
Rural population ratio (2007/1993)	1.13*	1.09

Variance inflation factor (VIF) should be <5 to avoid multicollinearity (1). SPI, standardized precipitation index.

*Indicates variables not retained in the final models.

1. Belsey DA, Kuh E, Welsch RE (2004) *Regression Diagnostics: Identifying Influential Data and Sources of Collinearity* (Wiley, New York).

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Table S11. VIF for all of the variables initially included in the regressions for fire scar numbers

Predictor	No. scars ha
% community in fallow	1.12
% community in pasture*	1.32
% community in crops*	1.31
Population density*	1.28
% farmers who live on property*	1.42
% farmers who do not engage in fire control*	1.01

VIF should be <5 to avoid multicollinearity.
 *Indicates variables not retained in the final models. Covariates were eliminated using stepwise regression. All condition indexes were less than 10.

Table S12. VIF for all of the variables initially included in the regressions for fire scar average size

Predictor	Mean scar size
% community in fallow	1.37
% community in pasture*	1.40
% community in crops*	1.35
Farm area*	1.27
Population density*	1.79
% farmers who live on property*	1.46
% farmers who do not engage in fire control*	1.09

VIF should be <5 to avoid multicollinearity.
 *Indicates variables not retained in the final models. Covariates were eliminated using stepwise regression. All condition indexes were less than 10.

Table S13. Projected changes in rural population between 2010 and 2050 for countries in the Amazon basin

Country	Ratio of projected 2050–2010 population
Bolivia	0.78
Brazil	0.53
Colombia	0.76
Ecuador	0.64
Guyana	0.58
French Guyana	1.16
Peru	0.72
Suriname	0.63
Venezuela	0.67
Average	0.72

Data are from ref. 1.

1. United Nations (2009) *World Urbanization Prospects: The 2009 Revision* (United Nations, New York).