

FORESTS

SUPPORTING INFORMATION

Mapping Above Ground Carbon stocks at the landscape scale to support a carbon compensation mechanism: The Chocó Andino case study

TABLES

Table S1. Description of satellite bands used to build the Chocó Andino Biosphere Reserve AGC model.

Satellite	Bands	Resolution
Sentinel 2B		
	B2 – Blue	10
	B3 – Green	10
	B4 – Red	10
	B5 – Vegetation red edge	20
	B6 - Vegetation red edge	20
	B7 - Vegetation red edge	20
	B8 - NIR	10
	B11 – SWIR 1	20
	B12 – SWIR 2	20
Sentinel 2B / spectral indices		
Enhanced Vegetation Index 2	Evi2	
Bare Soil Index	bsi	
Soil Adjusted Total Vegetation Index	satvi	
Green Normalized Difference Vegetation Index	gndvi	
Green and Red ratio Vegetation Index	grvi	

Satellite	Bands	Resolution
Inverted Red Edge Chlorophyll Index	ireci	
Normalized difference index 4 and 5	Ndi45	
Normal deviation indices	Ndre1	
Sentinel 1		
Single co-polarization, vertical transmit/vertical receive	VV	10
Dual-band cross-polarization, vertical transmit / horizontal receive	VH	10
Cross-ratio	VV/VH	

Table S2. Variable relative importance of the Random Forest model performed to predict AGC in the RBCA for the reference year 2019. Number of Trees: 1000

Variable	Relative importance (%)
Elevation	18.62
Longitude	14.08
Latitude	9.13
S2_NDRE1	6.01
S2_GRVI	4.38
S2_bsi	4.3
S1_CR	4.13
S2_GNDVI	3.78
S2_B2	3.51
S1_VH	3.4
S2_NDI45	3.27
S2_IRECI	3.14

Variable	Relative importance (%)
S2_B5	2.91
S1_VV	2.52
S2_satvi	2.35
S2_B12	2.17
S2_B11	1.96
S2_B3	1.93
s2_b7	1.85
S2_B4	1.74
s2_B6	1.68
S2_EVI2	1.66
s2_B8	1.49

Table S3. Pixels that increase and decrease in Above Ground Carbon for the period 2018-2021 in the Chocó Andino Biosphere Reserve.

	AGC productivity (AGC Mg C ha⁻¹)	
	increase pixels	decrease pixels
Rang	0.01 - 8.7	-9.5 - -0.01
Mean	0.60	-0.48
± Sd	0.66	0.61
Sum	58,548	-34,469

FIGURES

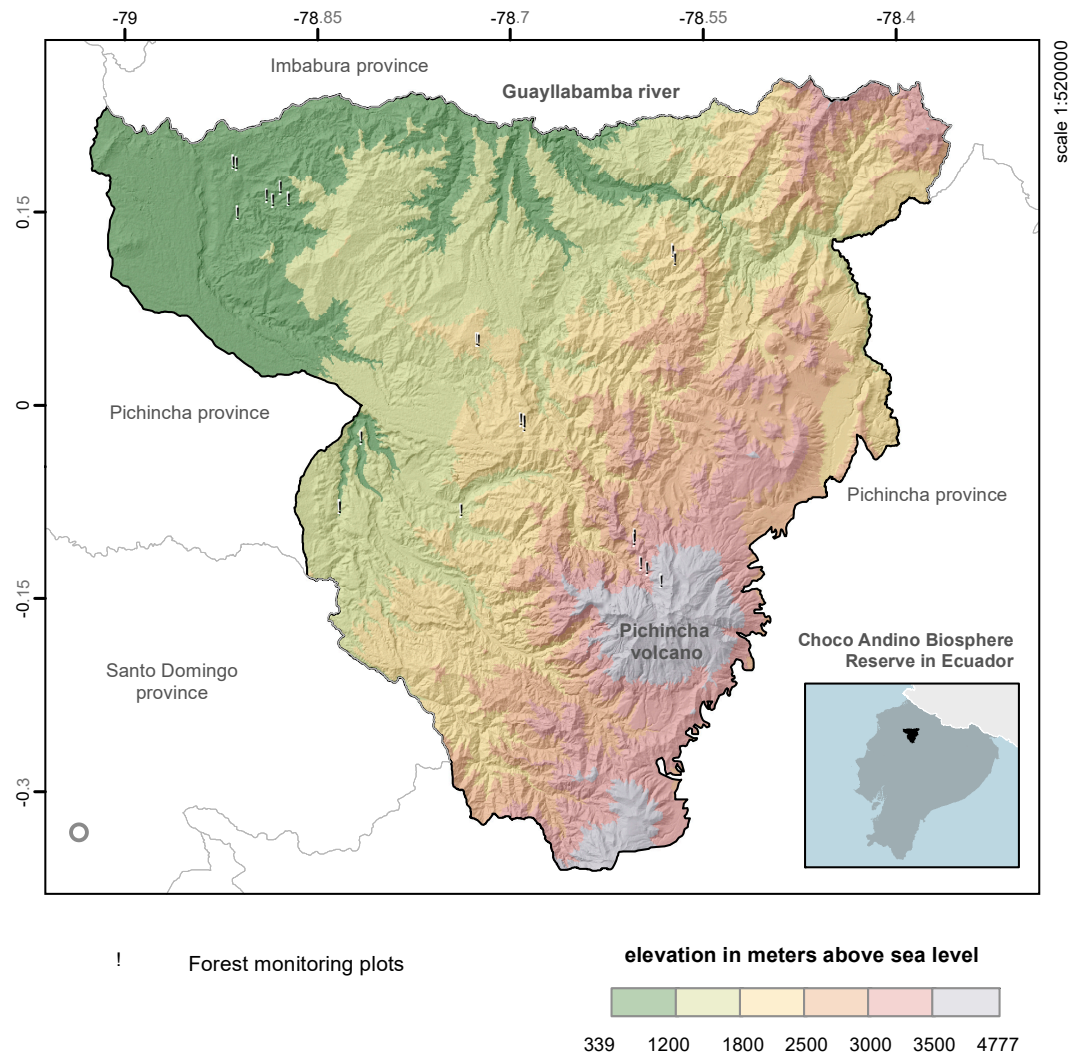


Figure S1. Location of the 23 permanent plots across an elevation gradient on the Choco Andino Biosphere Reserve (RBCA for its Spanish acronym).

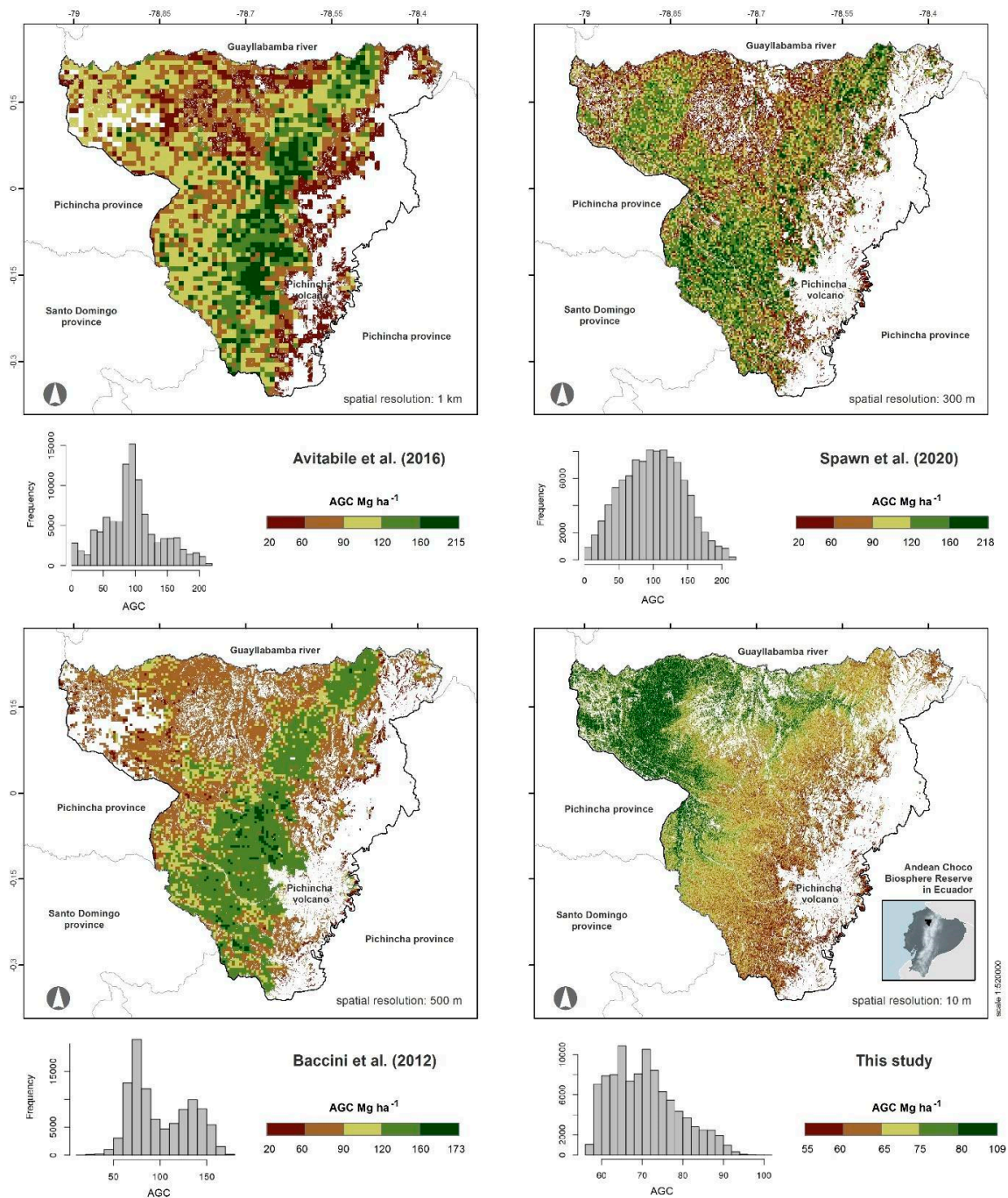


Figure S3. AGC stock estimates by four different models. Maps A-C correspond to global carbon models for the tropics at different spatial resolutions.

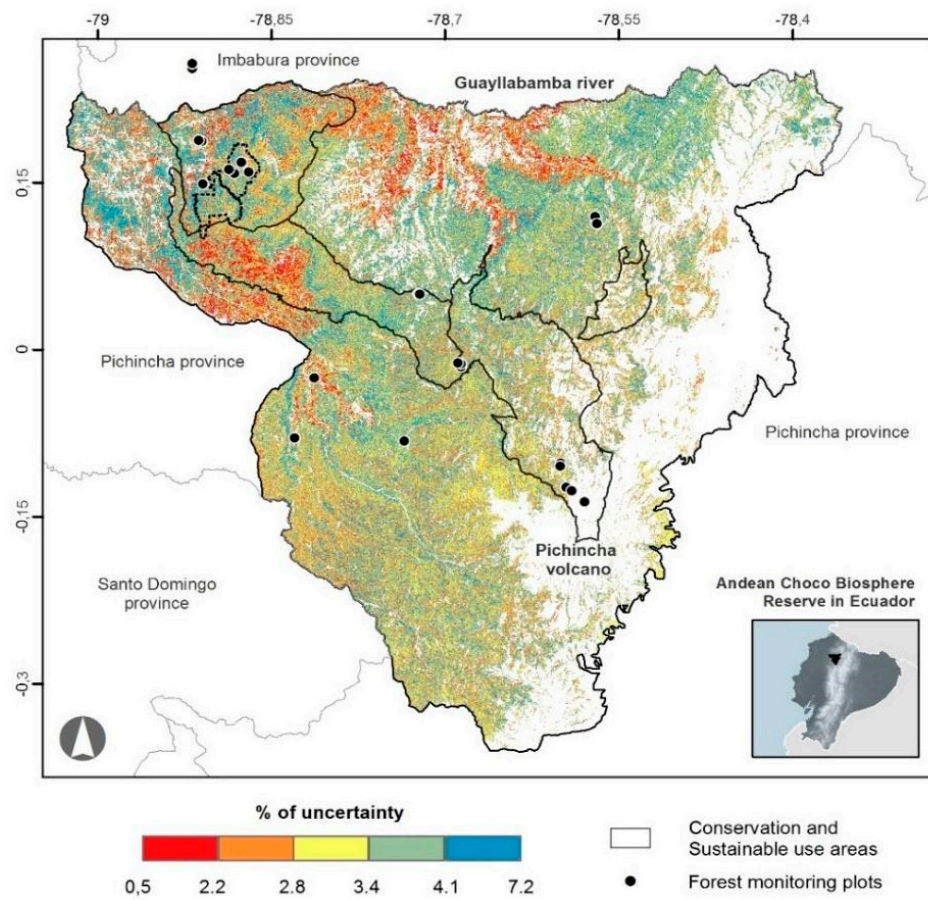


Figure S4. Variation in AGC uncertainty at pixel scale based on the coefficient of variation of 10 random forest models. White areas within the RBCA represent no-forest cover (i.e., pixels with less than 70% of forest cover, based on [49] for the year 2021). Polygons inside de RBCA delimit Quito municipality conservation and sustainable use areas (ACUs for its Spanish acronym).