Supplementary information

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Table 1: Above ground biomass (AGB) data sources used to estimation of total AGB carbon stock in Colombian mangroves and development of predictive models.

Department	Coast	Location	Coordinates		AGB	Source
			X	Y	(Mg ha-1)	
La Guajira	Caribbean	Brazo Riito-Ranchería river delta	-72.8931	11.5578	70.98	Lema and Polanía (2007)
La Guajira	Caribbean	Valle de los cangrejos-Ranchería river delta	-72.8914	11.5588	26.78	Lema and Polanía (2007)
Magdalena	Caribbean	CGSM-Rinconada	-74.4938	10.9615	91.40	De la Peña et al. (2010)
Magdalena	Caribbean	CGSM-Aguas Negras	-74.6075	10.8089	16.10	De la Peña et al. (2010)
Magdalena	Caribbean	CGSM-Caño Grande	-74.4814	10.8619	75.80	De la Peña et al. (2010)
Magdalena	Caribbean	CGSM-Luna	-74.938	10.9071	13.80	De la Peña et al. (2010)
Magdalena	Caribbean	Chengue bay- Tayrona NNP	-74.1284	11.3178	132.10	INVEMAR (2007)
Córdoba	Caribbean	Cispatá bay-Caño Tijí 1	-75.8378	9.3566	147.50	Bolivar et al. (In preparation)
Córdoba	Caribbean	Cispatá bay-Caño Tijí 2	-75.8284	9.3606	186.60	Bolivar et al. (In preparation)
Córdoba	Caribbean	Cispatá bay-Caño Palermo	-75.8423	9.3525	129.70	Bolivar et al. (In preparation)
Córdoba	Caribbean	Cispatá bay-Caño Grande 1	-75.8505	9.3712	153.20	Bolivar et al. (In preparation)
Córdoba	Caribbean	Cispatá bay-El Claval	-75.7912	9.3874	80.20	Bolivar et al. (In preparation)
Córdoba	Caribbean	Cispatá bay-Caño Garzal 1	-75.8563	9.382	122.80	Bolivar et al. (In preparation)
Córdoba	Caribbean	Cispatá bay-Caño Garzal 2	-75.8588	9.3811	159.30	Bolivar et al. (In preparation)
Córdoba	Caribbean	Cispatá bay-La Flotante-Caño Nisperal	-75.8029	9.3906	90.40	Bolivar et al. (In preparation)
Córdoba	Caribbean	Cispatá bay-Vertel-Caño el Nene	-75.8397	9.3823	151.20	Bolivar et al. (In preparation)
Córdoba	Caribbean	Cispatá bay-Caño Salado 1	-75.8721	9.4155	131.70	Bolivar et al. (In preparation)
Córdoba	Caribbean	Cispatá bay-Ciénaga Galo	-75.8266	9.3673	101.80	Bolivar et al. (In preparation)
Córdoba	Caribbean	Cispatá bay-Ostional	-75.8639	9.3961	89.30	Bolivar et al. (In preparation)
Córdoba	Caribbean	Cispatá bay-La Zona, Rincón el grillo	-75.8384	9.397	72.00	Bolivar et al. (In preparation)
Córdoba	Caribbean	Cispatá bay-La Camaronera	-75.7914	9.3844	74.00	Bolivar et al. (In preparation)
Córdoba	Caribbean	Cispatá bay-Ciénaga Remediapobres	-75.8435	9.3679	133.20	Bolivar et al. (In preparation)
Córdoba	Caribbean	Cispatá bay-Ciénaga Soledad	-75.8464	9.3407	171.40	Bolivar et al. (In preparation)
Córdoba	Caribbean	Cispatá bay-Caño Garzal 3	-75.8447	9.3954	102.10	Bolivar et al. (In preparation)
Córdoba	Caribbean	Cispatá bay-Caño Grande 2	-75.854	9.3690	220.80	Bolivar et al. (In preparation)
Córdoba	Caribbean	Cispatá bay-Jesús Primera	-75.8439	9.3784	128.50	Bolivar et al. (In preparation)
Córdoba	Caribbean	Cispatá bay-Caño Salado 2	-75.8276	9.4183	69.30	Bolivar et al. (In preparation)
Córdoba	Caribbean	Cispatá bay-Angostura	-75.5885	9.4221	246.90	Bolivar et al. (In preparation)
Córdoba	Caribbean	Cispatá bay-Caño el Soldado	-75.8548	9.3557	77.70	Bolivar et al. (In preparation)
Antioquia	Caribbean	Atrato river delta	-77.1005	8.0508	178.60	Blanco et al. (2012)
Antioquia	Caribbean	Puerto Cesar - Punta Coquito	-76.7407	7.9592	41.60	Blanco et al. (2012)
Antioquia	Caribbean	Punta Yarumal-Punta Las Vacas	-76.7478	8.1111	61.60	Blanco et al. (2012)
Antioquia	Caribbean	Punta Yarumal-Punta Las Vacas 2	-76.7478	8.1111	35.00	Blanco et al. (2012)
Antioquia	Caribbean	Rionegro cove 1	-76.9292	8.5458	21.20	Blanco et al. (2012)
Antioquia	Caribbean	Rionegro cove 2	-76.9292	8.5458	43.80	Blanco et al. (2012)
Antioquia	Caribbean	Rionegro cove 3	-76.9292	8.5458	30.80	Blanco et al. (2012)
Valle del Cauca	Pacific	Málaga bay-Luisico	-77.2148	4.0678	109.60	Carbono & Bosques (2015)
Valle del Cauca	Pacific	Málaga bay-Luisico-Winul	-77.2055	4.0842	45.30	Carbono & Bosques (2015)
Valle del Cauca	Pacific	Málaga bay-Luisico-Cangrejal	-77.2051	4.0874	295.90	Carbono & Bosques (2015)
Valle del Cauca	Pacific	Málaga bay-El Morro-Aserrío	-77.1927	4.0506	4.00	Carbono & Bosques (2015)
Valle del Cauca	Pacific	Málaga bay-Corozal	-77.2678	4.0805	63.40	Carbono & Bosques (2015)
Valle del Cauca	Pacific	Málaga bay-Gegenera	-77.266	4.0543	51.00	Carbono & Bosques

Table 2: Statistical regression models for AGB. When log is the natural logarithm; AGB is the above ground biomass (Mg/ha); BIO9 is the mean temperature of driest quarter (℃); BIO10 mean temperature of warmest quarter (℃); BIO11 mean temperature of coldest quarter (℃); BIO16 is the precipitation of the wettest quarter (mm); EVI is the enhanced vegetation index; Lat is the absolute value of latitude (decimal degrees); n is the number of observations; $R_a{}^2$ is the adjusted coefficient of determination; MSE is the mean squared error; F is the F-statistic calculated; AIC is the akaike information criterion

Model	n	$R_a{}^2$	MSE	F	AIC
(1) $AGB = -2.210^{e+03} + 2.946^{e+00} BIO10 + 4.687^{e+00} BIO11 + 2.108^{e-01} BIO16 - 2.334^{e-01} BIO17 + 2.465^{e+02} EVI$	40	0.04163	4157	1.34	
(2) $AGB = -1.876^{e+03} + 7.766^{e+00} BIO1 + 7.64^{e-02} BIO4 + 5.413^{e-03} BIO12 - 2.908^{e-00} BIO15$	43	-0.0278	4338	0.72	
(3) $AGB = -3.260^{e+03} + 1.233^{e+01} BIO1 + 1.61^{e-01} BIO4 + 1.934^{e-02} BIO12 - 3.805^{e+00} BIO15 + 2.835^{e+02} EVI$	40	0.07695	4003	1.65	
(4) $AGB = -1.920^{e+03} - 7.292^{e+01} Lat + 7.878^{e+00} BIO10 + 1.846^{e+00} BIO11 - 1.115^{e-01} BIO16 + 2.404^{e-02} BIO17 + 1.561^{e-02} EVI$	40	0.1288	3779	1.961	
(5) $AGB = -1.372^{e+03} + 6.358^{e+00} BIO10 + 1.789^{e+00} BIO11 - 7.389^{e-02} BIO16 - 1.229^{e-01} BIO17 - 7.746^{e+01} Lat$	43	0.154	3571	2.529	
(6) $AGB = -1.286^{e+03} - 9.594^{e+01} Lat + 8.621^{e+00} BIO1 + 1.161^{e-01} BIO4 - 6.145^{e-02} BIO12 - 4.687^{e-01} BIO15$	43	0.1819	3453	2.868	
(7) $AGB = -2.219^{e+03} - 7.703^{e+01} Lat + 1.113^{e+00} BIO1 + 1.885^{e-01} BIO4 - 4.071^{e-02} BIO12 - 1.735^{e-01} BIO15 + 1.813^{e+02} EVI$	41	0.1762	3573	2.39	
(8) $AGB = 35338.8860 - 155.9330\|Lat\| - 2490.0405 \frac{BIO1}{10} + 49.1282(\frac{BIO1}{10})^2 - 85.6399 \frac{BIO11}{10} - 0.1171 BIO12 + 0.4483 BIO15$	43	0.1975	3387	2.72	479.88247
(9) $AGB = 60064.4482 - 127.7343\|Lat\| - 4376.4264 \frac{BIO1}{10} + 81.8955(\frac{BIO1}{10})^2 - 17.3961 \frac{BIO11}{10} - 0.1014 BIO12 + 1.9823 BIO15 + 320.5646 EVI$	41	0.2835	3046	3.26	454.33614
(10) $AGB = -1916.5321 + 7.3424 BIO9 + 0.1126 BIO17$	43	0.1456	3607	4.58	479.11018
(11) $AGB = -1.693^{e+03} - 2.897^{e+01} Lat + 7.567^{e+00} BIO9 - 4.108^{e-02} BIO17$	43	0.2072	3346	4.66	476.80085
(12) $AGB = -1.485^{e+03} - 1.662^{e+00} Lat + 5.443^{e+00} BIO9 + 5.658^{e-02} BIO17 + 2.770^{e+02} EVI$	41	0.2755	3080	4.80	452.36112
(13) $AGB = -1368.411 - 11.799 Lat + 5.451 BIO9 + 231.860 EVI$	41	0.2889	3023	6.42	450.71764
(14) $AGB = -716.047 + 2.522 BIO9 + 335.402 EVI$	41	0.2713	3098	8.44	450.81526
(15) $AGB = -1860.211 + 7.958 BIO9 - 22.944 Lat$	43	0.2225	3282	7.01	475.05212
(16) $AGB = -423.235 + 1.943 BIO9$	43	0.01697	4149	1.72	484.20182
(17) $AGB = -856.79518 - 6.53917 BIO11 + 0.01171 BIO16 + 9.62033 BIO9 + 200.26658 EVI$	41	0.2859	3036	5.00	451.76863
(18) $AGB = -1364.4334 + 4.8624 BIO11 + 0.0324 BIO16 + 358.2106 EVI$	46	0.2492	3192	5.42	452.94654
(19) $AGB = -822.9927 + 3.0227 BIO11 + 0.2433 BIO16 - 0.4077 BIO17$	43	0.04791	4019	1.70	484.67591
(20) $AGB = -319.78271 - 13.78940 BIO11 - 0.00399 BIO16 + 9.78050 BIO9 + 4.98395 BIO1 + 231.90575 EVI$	41	0.2792	3064	4.10	452.99699
(21) $AGB = 4.173^{e+04} - 1.606^{e+02} \frac{BIO11}{10} - 4.733^{e-02} BIO16 + 1.602^{e+02} \frac{BIO9}{10} - 3.083^{e+03} \frac{BIO1}{10} + 5.685^{e+01} (\frac{BIO1}{10})^2 + 2.826^{e+02} EVI$	41	0.3096	2935	3.99	452.03760
(22) $AGB = -3.485^{e+02} + 1.954^{e-03} BIO10^2 + 3.104^{e-03} BIO11^2 - 6.339^{e-05} BIO16^2 + 3.609^{e-04} BIO17^2 + 5.595^{e+02} EVI^2$	41	0.233	3261	3.43	455.54124
(23) $\log AGB = -54.802662 + 5.751671 \log BIO10 + 5.097236 \log BIO11 - 0.003928 \log BIO16 - 0.004322 \log BIO17 + 1.691458 \log EVI$	41	0.2164	0.585	3.21	101.88486
(24) $AGB = -3301.918 + 718.549 \log BIO10 - 122.657 \log BIO11 + 30.615 \log BIO16 - 6.271 \log BIO17 + 131.200 \log EVI$	41	0.2008	3397	3.01	457.22750
(25) $\log AGB = -100.7499 + 18.7172 \log BIO9 + 0.2023 \log BIO16 + 1.1821 \log EVI$	41	0.3038	0.520	6.82	95.31651
(26) $\log AGB = -25.6202 + 12.1786 \log BIO9 - 4.1606 \log BIO16 + 0.9976 \log EVI - 1.1664\|Lat\|$	41	0.3777	0.465	7.07	91.59005
(27) $\log AGB = 26.5733 + 29.8163 \log BIO9 - 3.8958 \log BIO16 + 0.7998 \log EVI - 0.9563\|Lat\| - 27.7092 \log BIO11$	41	0.3701	0.470	5.70	92.93683
(28) $AGB = 1098.74 - 284068.51 \frac{1}{BIO9} + 35004.17 \frac{1}{BIO16} - 36.37 \frac{1}{EVI} + 713.59 \frac{1}{\|Lat\|}$	41	0.256	3163	4.44	453.44744
(29) $\frac{1}{AGB} = 1.763^{e-01} - 6.966^{e-04} BIO9 + 3.451^{e-05} BIO16 - 1.008^{e-01} EVI + 5.315^{e-03} \|Lat\|$	41	0.1325	0.0014	2.53	-147.62232
(30) $\frac{1}{AGB} = -0.12246 + 28.07379 \frac{1}{BIO9} - 10.38792 \frac{1}{BIO16} + 0.01322 \frac{1}{EVI} + 0.18235 \frac{1}{\|Lat\|}$	41	0.0917	0.0014	2.01	-145.73673
(31) $\log AGB = 55.0753 + 0.3973 \log BIO9 - 5.0320 \log BIO16 + 2.0524 \log EVI - 8.5249 \log \|Lat\|$	41	0.3756	0.466	7.01	91.73306
(32) $\log AGB = -1.615^{e+01} + 7.970^{e-02} \log BIO9 - 3.738^{e-04} \log BIO16 + 2.816^{e+00} \log EVI - 2.259^{e-01} \|Lat\|$	41	0.3193	0.508	5.69	95.26750
(33) $AGB = 2577.5 + 186.7 \log BIO9 - 325.0 \log BIO16 + 142.5 \log EVI - 593.8 \log \|Lat\|$	41	0.3223	2881	5.76	449.62118
(34) $AGB = -2541.15 + 178.36\sqrt{BIO9} - 2.78\sqrt{BIO16} + 259.48\sqrt{EVI} - 130.84\sqrt{\|Lat\|}$	41	0.2699	3104	4.70	452.67672
(35) $\sqrt{AGB} = -7.719^{e+01} + 3.201^{e-01} BIO9 - 7.403^{e-05} BIO16 + 1.253^{e+01} EVI - 5.965^{e-01} \|Lat\|$	41	0.3357	7.53	6.05	205.81366
(36) $\log AGB = 20.8619 - 4507.8468 \frac{1}{BIO9} + 324.2172 \frac{1}{BIO16} - 0.4312 \frac{1}{EVI} + 5.6351 \frac{1}{\|Lat\|}$	41	0.2717	0.544	4.73	98.04207