Vatandaslar C, Bolat F, Abdikan S, Pamukcu-Albers P, Satiral C (2024). **Modeling aboveground carbon in flooded forests using Synthetic Aperture Radar data: a case study from a natural reserve in Turkish Thrace**
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Supplementary Material

Tab. S1 - Aboveground carbon (AGC) estimations aggregated by stand type.

Stand type	Area (ha)	# of plots fell within stand	Estimated * AGC (t C ha^{-1})	Stand type	Area (ha)	# of plots fell within stand	Estimated * AGC (t C ha^{-1})
AkMGncd3	9.2	1	97.1	Gncd3	91.5	6	126.3
BDs	41.9	2	127.5	GnDsAkbc3	9.5	3	42.6
BM	3.5	1	292.4	GnDsd3	51.1	7	127.2
DsAkcd3	98.4	15	175.9	GnDsDycd3	105.7	12	140.7
DsAkd3	43.9	5	130.4	GnDycd3	183.4	15	128.0
Dsb3	4.5	1	33.4	GnKvDsc3	5.9	3	125.0
Dscd3	35.3	3	128.8	GnMbc3	18.9	3	129.9
DsCvcd2	39.0	2	131.4	GnMDycd3	27.6	3	81.1
Dsd1	34.2	3	60.6	Kvcd3	1.7	3	47.6
DsDyd3	147.2	14	142.7	KvGnb3	4.1	3	27.5
DsGnAkcd3	38.5	3	124.1	KzCvDyd2	8.8	2	118.5
DsGncd3	50.7	7	107.4	KzDsKacd3	39.0	7	174.0
DsGnDyab3	6.5	1	10.5	Mab3	32.2	3	18.4
DsKabc3	15.1	1	103.1	Mb2	11.3	1	129.9
DsKad2	52.2	5	172.4	Mb3	478.5	34	52.8
DsKad3	41.9	5	131.1	Mbc3	369.3	26	87.1
DsKvab3	5.6	3	16.6	Mc3	19.3	3	172.0
DsKzd3	6.2	1	92.0	MDsbc3	26.2	3	58.3
DsKzDyd2	16.2	2	140.6	MGnbc3	81.2	6	81.1
Gnbc3	6.3	1	170.6	MGnDsbc3	3.9	1	76.1
Gnc2	2.5	3	133.7				

* Estimated AGCs are average pixel values within corresponding stand/sub-compartment polygons.

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Tab. S2 - Aboveground carbon (AGC) estimations aggregated by sub-compartment (patch).

Sub-compartment	Estimated * AGC (t C ha^{-1})	Sub-compartment	Estimated * AGC (t C ha^{-1})	Sub-compartment	Estimated * AGC (t C ha^{-1})	Sub-compartment	Estimated * AGC (t C ha^{-1})
BM	0.0001	Dscd3	64.1	GnDycd3	112.3	MGnbc3	154.8
BDs	0.0001	GnDsd3	64.9	GnMbc3	113.0	GnDsDycd3	155.0
BM	0.006	DsAkcd3	68.0	Mbc3	115.7	DsKad2	155.3
DsAkcd3	227.0	Mb2	69.7	MGnbc3	116.0	Dscd2	160.1
DsAkcd3	0.0001	Mb3	71.2	Mbc3	116.1	DsGncd3	162.1
DsAkcd3	0.0001	DsGnAkcd3	71.5	GnDsd3	117.0	DsGncd3	165.2
DsAkd3	1.2	Dscd3	72.3	Gnbc3	117.4	KzDsKacd3	165.7
Dscd3	0.0001	GnMDycd3	74.0	GnMbc3	117.8	DsKad2	167.8
Dscd3	168.0	AkMGncd3	74.1	Mb3	118.3	Dscd3	170.1
DsCvcd2	0.0001	BDs	75.7	Mb3	119.2	DsKad2	172.1
DsGnAkcd3	0.0001	MGnbc3	77.4	GnDycd3	120.1	GnMDycd3	175.2
DsGnAkcd3	0.0001	Mbc3	79.1	GnMbc3	122.0	DsAkcd3	175.7
DsGnAkcd3	0.0001	MGnDsbc3	80.9	DsDyd3	122.2	DsDyd3	177.8
DsGnDyab3	0.009	DsGnAkcd3	81.0	MDsbc3	125.2	DsDyd3	181.2
DsGnDyab3	0.0001	Mb2	83.3	MGnbc3	125.2	BDs	181.3
DsKvab3	0.0001	BKz	87.4	Mb3	125.2	GnDsAkbc3	182.2
DsKvab3	0.0001	BDs	91.1	GnDsDycd3	128.3	GnDsDycd3	189.4
DsKzd3	0.0001	Mb3	92.2	GnDsd3	128.6	GnDtcd3	193.0
DsKzd3	0.0001	DsKabc3	94.2	GnDycd3	129.6	DsAkcd3	197.5
DsKzd3	0.0001	Mc3	94.8	Dscd3	129.7	GnDycd3	199.3
DsKzd3	181.0	GnKvDsc3	95.7	Gncd3	132.6	DsCvcd2	200.3
DsKzd3	2.9	MDsbc3	96.1	DsCvcd2	132.7	Gncd3	204.0
Gncd3	0.002	Mb3	97.2	Mbc3	133.0	DsDyd3	206.3
Gncd3	0.0001	Mbc3	98.0	DsDyd3	134.2	DsDyd3	207.8
GnDsDycd3	0.0001	MGnDsbc3	99.4	DsKad2	135.3	MGnbc3	209.0
GnDsDycd3	0.0001	Mab3	99.6	GnMDycd3	135.4	Mbc3	213.5
GnDycd3	0.0001	Mbc3	101.3	DsDyd3	136.2	BM	214.5
GnDycd3	0.03	Mb3	101.5	DsKad2	137.8	MGnbc3	218.2
Kvcd3	0.0001	DsGncd3	101.8	DsKzDyd2	138.1	DsKabc3	222.2
Kvcd3	0.0001	Mb3	101.9	GnDsDycd3	138.1	DsKzDyd2	253.5
KvGnb3	0.0001	Mbc3	102.5	DsGnAkcd3	138.3	MGnDsbc3	255.8
Mab3	0.0001	Mbc3	103.0	Gncd3	138.5	DsCvcd2	262.9
Mbc3	277.0	Mb3	103.0	GnDsDycd3	139.2	DsKad3	263.4
Mbc3	0.0001	Mbc3	103.4	GnDycd3	139.5	MGnbc3	264.5
Mbc3	0.05	DsAkcd3	103.6	GnDycd3	139.6	DsAkd3	265.1
Mbc3	0.0001	GnDsDycd3	104.1	Gncd3	140.0	DsCvcd2	265.2

Sub-compartment	Estimated * AGC (t C ha^{-1})	Sub-compartment	Estimated * AGC (t C ha^{-1})	Sub-compartment	Estimated * AGC (t C ha^{-1})	Sub-compartment	Estimated * AGC (t C ha^{-1})
Mc3	0.0001	Dsd1	104.9	GnMDycd3	140.5	DsAkd3	269.7
MDsGncd3	0.0001	Mb3	105.0	Mb3	140.9	Dscd2	281.6
MGnbc3	94.2	Mb3	105.3	DsCvcd2	141.7	BDs	303.6
MGnbc3	0.0001	GnDsd3	105.9	GnDsDycd3	143.8	DsKad2	311.4
MGnbc3	0.0001	Mb3	106.0	KzCvDyd2	144.0	BKz	319.0
MGnbc3	0.0001	MGnbc3	107.6	GnDycd3	144.1	DsDyd3	332.4
MGnbc3	7.1	Mb3	108.0	DsDyd3	144.5	DsDyd3	334.6
GnDsDycd3	10.2	Mbc3	108.4	DsGncd3	144.5	DsCvcd2	340.8
MGnbc3	10.1	Mbc3	109.1	Dsb3	144.5	DsDyd3	362.4
GnMDycd3	16.3	DsGncd3	109.1	DsAkd3	144.6	Gncd3	388.1
DsKabc3	20.0	BDs	110.0	DsDyd3	146.3	DsCvcd2	399.3
Gncd3	28.9	GnDycd3	110.1	GnDycd3	146.4	MGnbc3	400.6
Mab3	32.8	DsGnAkcd3	110.5	GnDsAkbc3	146.5	DsKad2	454.9
DsGncd3	34.6	DsKad3	111.6	DsAkcd3	150.0	KzDsKacd3	538.7
Dscd3	41.1	Mb3	111.9	GnDycd3	150.3	GnDycd3	574.6
Mab3	53.0	GnMbc3	111.9	DsGncd3	151.5	DsAkcd3	958.7
BDs	57.9	Dsd1	112.0	KzDsKacd3	153.9		

* Estimated AGCs are average pixel values within corresponding stand/sub-compartment polygons.

Tab. S3 - Aboveground carbon (AGC) estimations: field plot data.

Plot no.	AGC (t C ha^{-1})	Plot no.	AGC (t C ha^{-1})	Plot no.	AGC (t C ha^{-1})	Plot no.	AGC (t C ha^{-1})
4002	129.9	4069	116.6	4173	28.6	4299	104.0
4004	115.0	4070	120.2	4174	42.0	4301	112.1
4005	135.7	4071	159.0	4175	52.6	4304	138.9
4006	154.4	4072	131.4	4176	34.8	4305	166.4
4007	202.3	4073	129.6	4177	33.1	4306	174.1
4008	170.6	4074	121.1	4178	42.6	4307	110.7
4009	114.8	4075	89.2	4179	45.2	4308	178.4
4010	114.8	4076	326.1	4180	34.2	4309	232.2
4011	96.4	4078	217.1	4182	71.3	4310	169.5
4013	102.8	4080	156.8	4183	90.9	4313	118.3
4014	248.5	4081	162.9	4184	70.9	4315	154.0
4016	122.3	4082	229.6	4185	69.4	4316	99.8
4017	110.6	4083	221.6	4191	69.4	4317	77.4
4018	105.8	4084	300.3	4192	70.7	4318	152.8
4019	116.8	4085	118.6	4197	55.5	4319	157.1
4020	10.5	4086	143.6	4199	84.0	4320	181.6
4021	99.1	4087	292.4	4201	78.6	4323	141.4
4022	163.4	4092	105.4	4202	107.7	4324	105.7
4023	187.8	4093	146.1	4203	36.9	4325	134.9
4024	96.1	4094	108.2	4204	48.0	4326	75.7
4025	72.7	4095	133.4	4205	44.6	4327	155.6
4026	103.3	4096	127.0	4209	57.5	4328	158.7
4027	63.5	4067	115.5	4219	78.1	4329	179.1
4028	243.4	4098	153.9	4220	38.4	4332	69.1
4029	141.9	4099	103.1	4221	73.0	4334	109.0
4030	255.8	4105	85.1	4224	62.5	4335	102.5
4031	197.2	4106	106.4	4225	72.0	4341	97.1
4032	136.9	4135	40.2	4229	68.6	4344	53.7
4033	140.3	4136	27.2	4233	76.1	4345	87.2
4034	112.4	4138	31.8	4235	95.4	4400	33.4
4035	143.2	4139	31.1	4240	81.5	4401	29.6
4036	71.6	4140	61.4	4246	52.0	4402	22.5
4037	28.4	4142	74.9	4251	138.2	4403	83.0
4038	136.2	4143	55.0	4253	92.0	4405	82.6
4039	175.8	4144	40.5	4257	147.7	4410	130.8
4040	227.6	4145	44.6	4259	63.5	5000	80.7
4041	160.6	4146	122.2	4260	132.2	5001	122.9

Plot no.	AGC (t C ha^{-1})	Plot no.	AGC (t C ha^{-1})	Plot no.	AGC (t C ha^{-1})	Plot no.	AGC (t C ha^{-1})
4042	143.1	4148	45.1	4261	152.9	5006	20.7
4043	10.8	4149	33.5	4262	84.0	5007	21.8
4044	25.5	4150	43.4	4263	44.6	5008	32.3
4045	92.1	4151	34.9	4272	71.7	5009	28.4
4046	86.8	4152	41.4	4273	56.5	5010	115.2
4047	176.5	4154	51.8	4279	179.0	5011	144.8
4048	131.0	4155	81.1	4283	208.0	5012	15.9
4050	18.9	4156	66.9	4284	191.1	5013	9.5
4052	170.8	4157	46.5	4285	135.9	5014	24.3
4056	126.6	4161	42.7	4286	117.8	5015	38.1
4060	108.0	4162	39.3	4287	130.9	5016	50.6
4061	93.4	4163	50.9	4288	126.2	5017	54.1
4062	175.0	4164	46.3	4289	143.5	5100	135.1
4063	236.7	4165	80.7	4294	260.9	8073	104.9
4064	172.7	4168	62.9	4295	210.0	8074	131.1
4065	91.1	4170	57.6	4296	195.2	8075	155.8
4067	194.0	4171	35.8	4297	177.1	8076	138.6
4068	143.3	4172	36.5	4298	92.6		144.8

* Estimated AGCs are average pixel values within corresponding stand/sub-compartment polygons.

Fig. S1 - The number of important variables based on various lambda values. The dashed vertical black line shows the cross-validated minimum mean squared error.

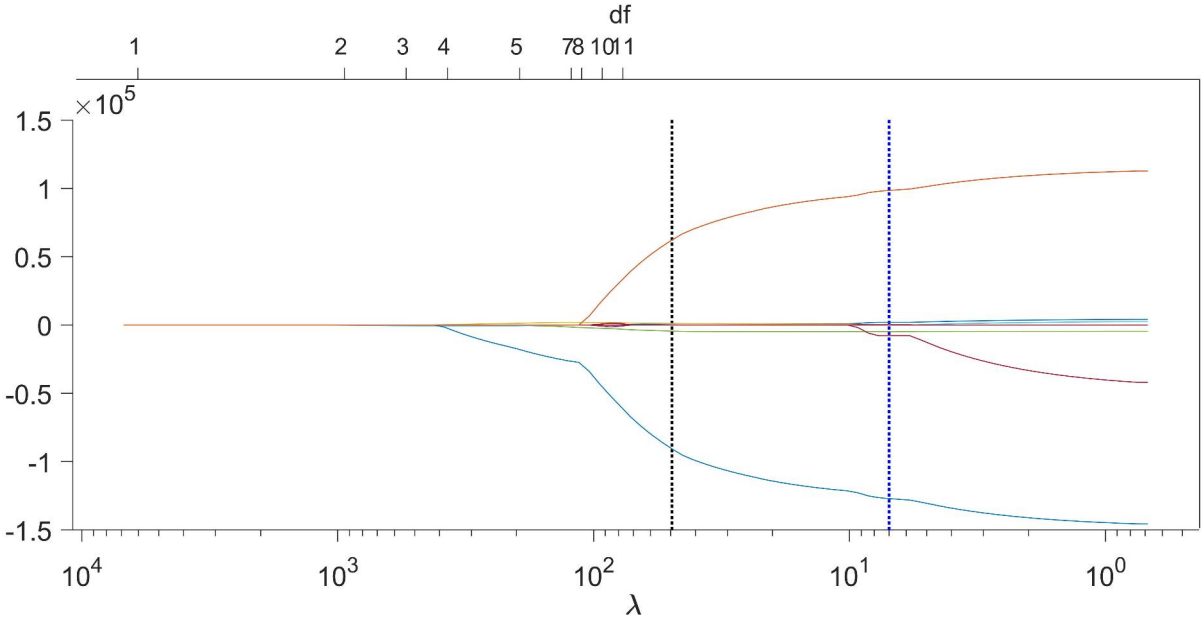

Fig. S2 - The main effect of each predictor variable with 95% confidence bounds.

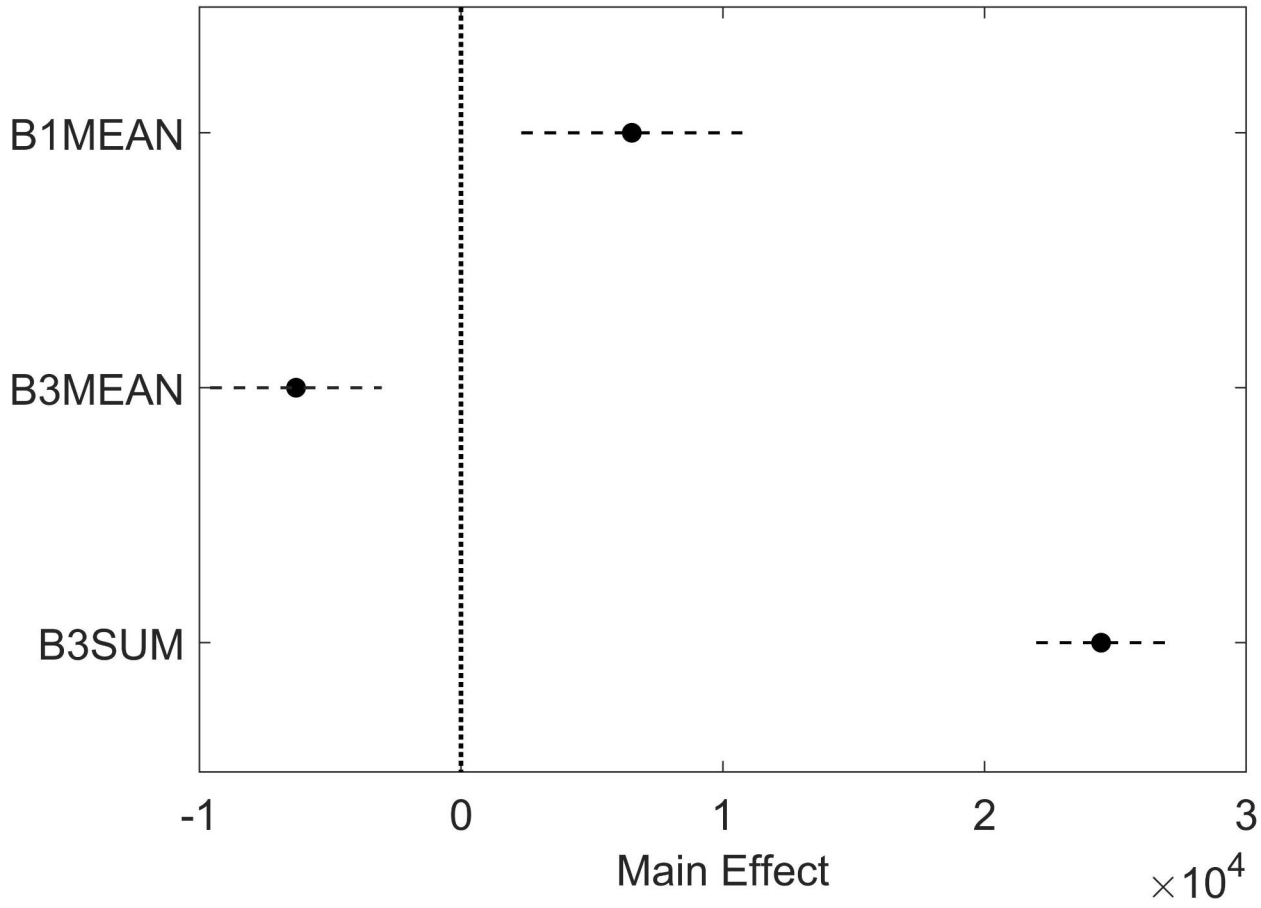

Fig. S3 - The box plots of observed and predicted AGC values in pure (n=11) and mixed forest (n=27) stands. Solid lines within box plots indicate the median, and the bottom and top edges of the box plots indicate the 25th and 75th percentiles, respectively. The sign "●" refers to outliers.