

Article

The Configuration of Romanian Carpathians Landscape Controls the Volume Diversity of *Picea Abies* (L.) Stands

Vlad-Emil Crișan ^{1,*}, Lucian Dincă ¹, Cosmin Bragă ¹, Gabriel Murariu ^{2,*}, Eliza Tupu ³, George Danut Mocanu ⁴ and Romana Drasovean ²

¹ “Marin Dracea” National Research and Development Institute in Forestry, 13 Cloșca Street, 500040 Brașov, Romania

² Chemistry, Physics, and Environment Department, Faculty of Sciences and Environment, “Dunărea de Jos” University of Galați, No. 47 Street Domnească, 800008 Galați, Romania

³ Natural Sciences Museum Complex “Răsvan Angheluță” Galați, No. 11 Street Regimentul 11, 800340 Galați, Romania

⁴ Faculty of Physical Education and Sport, “Dunărea de Jos” University of Galați, No. 47 Street Domnească, 800008 Galați, Romania

* Correspondence: vlad_crsn@yahoo.com (V.-E.C.); gabriel.murariu@ugal.ro (G.M.)

Section C - Southern Carpathians - north south comparison database

Table SC.1. Descriptive Statistics Southern Carpathians North-South database Median values – Northern area

Variable - Altitude	Valid N	Mean	Minimum	Maximum	Std. Dev.	Standard Error
North 700 m	8	73.1250	48.0000	106.0000	20.27974	7.16997
North 800 m	6	76.5000	46.0000	114.0000	23.45847	9.57688
North 900 m	2	120.0000	93.0000	147.0000	38.18377	27.00000
North 1000 m	7	90.5714	55.0000	139.0000	30.32522	11.46186
North 1100 m	12	99.5833	57.0000	167.0000	39.61051	11.43457
North 1200 m	12	124.8333	68.0000	191.0000	37.76201	10.90095
North 1300 m	12	155.5833	96.0000	231.0000	38.86447	11.21921
North 1400 m	12	186.6667	128.0000	258.0000	48.77096	14.07896
North 1500 m	12	207.9167	121.0000	288.0000	50.66191	14.62483
North 1600 m	11	180.8182	111.0000	245.0000	44.93510	13.54844
North 1700 m	10	154.0000	58.0000	227.0000	51.79876	16.38020

Table SC.2. Descriptive Statistics Southern Carpathians North-South database Median values – Southern area

Variable - Altitude	Valid N	Mean	Minimum	Maximum	Std. Dev.	Standard Error
South 700	7	80.1429	37.0000	143.0000	35.11139	13.27086
South 800	7	89.1429	46.0000	118.0000	25.21526	9.53047
South 900	9	86.4444	59.0000	143.0000	27.33181	9.11060
South 1000	9	99.5556	83.0000	134.0000	18.58838	6.19613
South 1100	12	102.1667	62.0000	219.0000	38.32833	11.06443
South 1200	12	112.3333	64.0000	190.0000	29.68113	8.56821
South 1300	12	169.5833	87.0000	242.0000	49.28481	14.22730
South 1400	12	205.0833	28.0000	305.0000	67.52704	19.49338
South 1500	12	231.0833	126.0000	297.0000	58.71574	16.94977
South 1600	12	255.5833	129.0000	351.0000	62.77153	18.12058
South 1700	12	184.3333	92.0000	307.0000	65.58732	18.93343

Descriptive Statistics

Variable	Valid N	Mean	Minimum	Maximum	Std. Dev.	Std. Error
North Volume (m ³)	104	162.7500	65.00000	264.0000	51.41753	5.041903
South Volume (m ³)	116	173.1379	91.00000	297.0000	61.78503	5.736596

Correlations (00 Baze_Date_Complet_T3_T4_T10-t11-complet.sta) Marked correlations are significant at $p < .05000$ N=101 (Casewise deletion of missing data)

Variable	T3_North Volume (m3)	T3_South Volume (m3)
T3_North Volume (m3)	1.0000	.7616
	p= ---	p=0.00
T3_South Volume (m3)	.7616	1.0000
	p=0.00	p= ---

Table SC.3. T-test for Independent Samples (Southern Carpathians North-South database) Note: Variables are median values were treated as independent samples

Group 1 vs. Group 2	Mean Group 1	Mean Group 2	t-value	df	p	t separ. var.est.	df	p 2-sided	Std.Dev. Group 1	Std.Dev. Group 2
North 700 vs. South 700	73.1250	80.1429	-0.48230	13	0.637611	-0.46525	9.33247	0.652415	20.27974	35.11139
North 800 vs. South 700	76.5000	80.1429	-0.21557	11	0.833266	-0.22259	10.46932	0.828135	23.45847	35.11139
North 900 vs. South 900	120.0000	86.4444	1.49351	9	0.169509	1.17757	1.23867	0.417493	38.18377	27.33181
North 1000 vs. South 1000	90.5714	99.5556	-0.73297	14	0.475673	-0.68953	9.41610	0.507128	30.32522	18.58838

North 1100 vs. South 1100	99.5833	102.1667	-0.16236	22	0.872506	-0.16236	21.97622	0.872508	39.61051	38.32833
North 1200 vs. South 1200	124.8333	112.3333	0.90153	22	0.377068	0.90153	20.83706	0.377607	37.76201	29.68113
North 1300 vs. South 1300	155.5833	169.5833	-0.77268	22	0.447932	-0.77268	20.86561	0.448375	38.86447	49.28481
North 1400 vs. South 1400	186.6667	205.0833	-0.76589	22	0.451879	-0.76589	20.02126	0.452675	48.77096	67.52704
North 1500 vs. South 1500	207.9167	231.0833	-1.03482	22	0.311993	-1.03482	21.53792	0.312231	50.66191	58.71574
North 1600 vs. South 1600	180.8182	255.5833	-3.25632	21	0.003775	-3.30446	19.89655	0.003558	44.93510	62.77153
North 1600 vs. South 1700	180.8182	184.3333	-0.14852	21	0.883348	-0.15098	19.51961	0.881538	44.93510	65.58732
North 1700 vs. South 1700	154.0000	184.3333	-1.18512	20	0.249861	-1.21160	19.96123	0.239812	51.79876	65.58732

Table SC.4. T-test for Independent Samples (Southern Carpathians North-South database) Note: Variables are average values were treated as independent samples

Group 1 vs. Group 2	Mean Group 1	Mean Group 2	t-value	df	p	t separ. var.est.	df	p 2-sided	Std. Dev. Group 1	Std. Dev. Group 2
North 700 vs. South 700	101.7500	129.2857	-1.75755	13	0.102332	-1.76481	12.90367	0.101235	31.06100	29.32413
North 800 vs. South 800	103.1667	124.5714	-1.48732	11	0.165024	-1.50966	10.99855	0.159311	23.26729	27.84994
North 900 vs. South 900	183.5000	114.6667	4.66783	9	0.001172	10.07617	8.65339	0.000005	2.12132	19.99375
North 1000 vs. South 1000	109.8571	113.2222	-0.33805	14	0.740343	-0.33815	13.05965	0.740623	19.72670	19.77232
North 1100 vs. South 1100	122.5833	122.7500	-0.01397	22	0.988981	-0.01397	20.45292	0.988991	33.00264	24.88565
North 1200 vs. South 1200	157.7500	138.6667	1.63280	22	0.116744	1.63280	21.15050	0.117311	31.36624	25.59948
North 1300 vs. South 1300	179.5000	192.4167	-1.01956	22	0.319018	-1.01956	16.83156	0.322368	20.72109	38.68629
North 1400 vs. South 1400	207.6667	227.2500	-1.38667	22	0.179434	-1.38667	21.99796	0.179435	34.42603	34.75924
North 1500 vs. South 1500	215.5000	239.1667	-1.21484	22	0.237305	-1.21484	21.99820	0.237306	47.93461	47.50279
North 1600 vs. South 1600	187.2727	241.5000	-2.60781	21	0.016432	-2.62727	20.88837	0.015788	45.39183	53.52060
North 1700 vs. South 1700	170.1000	192.9167	-1.09858	20	0.285002	-1.12861	19.81173	0.272545	40.50912	54.17893

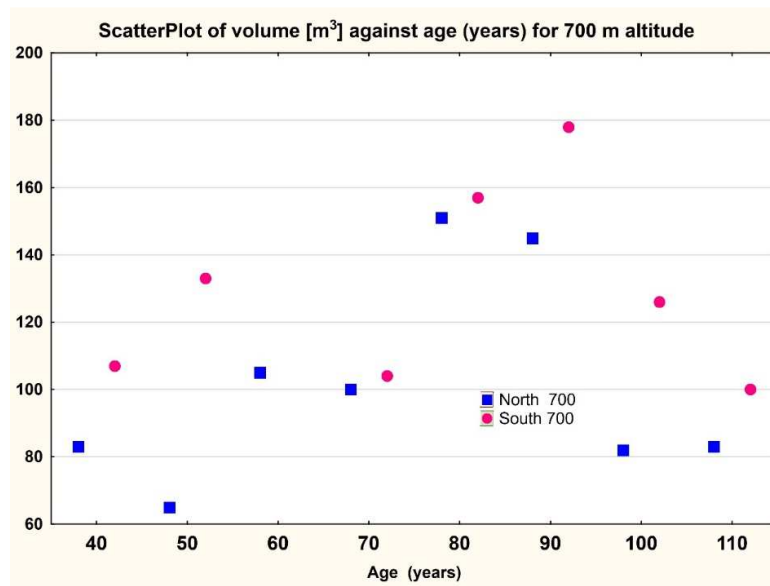


Fig. SC.1. – Scatter Plot for altitude of 700 m

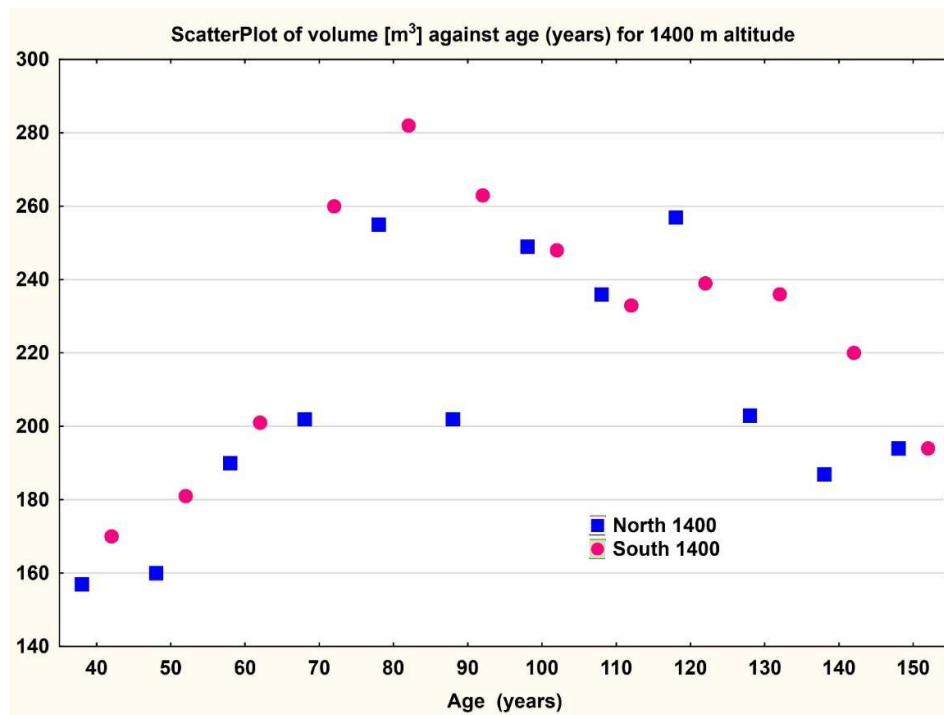


Fig. SC.2. – Scatter Plot for altitude of 1400 m

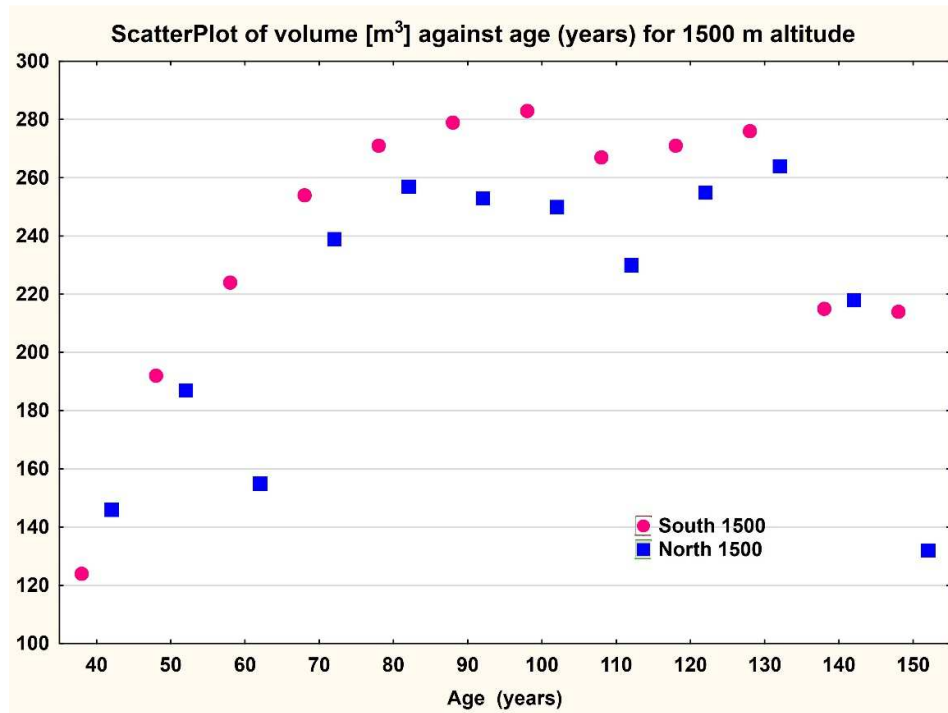


Fig. SC.3. – Scatter Plot for altitude of 1500 m

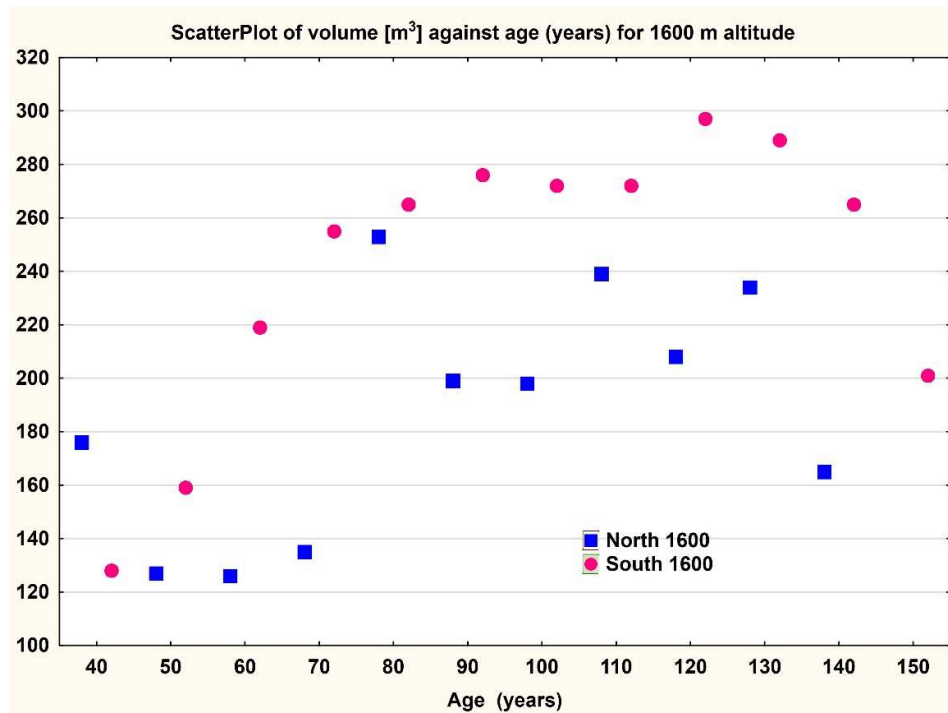


Fig. SC.3. – Scatter Plot for altitude of 1600 m

Table SC.4. Univariate Tests of Significance, Effect Sizes, and Powers for Southern Carpathians North-South database Sigma-restricted parameterization Effective hypothesis decomposition

Effect	SS	Degr. of Freedom	MS	F	p	Partial eta-squared	Non-centrality
Intercept	27.4	1	27.43	0.01749	0.895038	0.000173	0.01749
Age (years)	11799.2	1	11799.24	7.52500	0.007201	0.069339	7.52500
Altitude (m)	95092.8	1	95092.76	60.64567	0.000000	0.375177	60.64567
Error	158368.6	101	1568.01				

Table SC.5. Test of SS Whole Model vs. SS Residual - Southern Carpathians North-South database

Dependent Variable											
	Multiple R	Multiple R ²	Adjusted R ²	SS Model	df Model	MS Model	SS Residual	df Residual	MS Residual	F	p
T3_North Volume (m3)	0.646854	0.418420	0.406904	113938.9	2	56969.46	158368.6	101	1568.006	36.33243	0.000000

Table SC.6. Univariate Tests of Significance, Effect Sizes, and Powers for Southern Carpathians North-South database Sigma-restricted parameterization Effective hypothesis decomposition

Effect	SS	Degr. of Freedom	MS	F	p	Partial eta-squared	Non-centrality
Intercept	1248.6	1	1248.6	0.60884	0.436855	0.005359	0.60884
Age (years)	5175.7	1	5175.7	2.52375	0.114938	0.021846	2.52375
Altitude (m)	190591.4	1	190591.4	92.93534	0.000000	0.451284	92.93534
Error	231739.9	113	2050.8				

Table SC.7. Test of SS Whole Model vs. SS Residual (Southern Carpathians North-South database)

Dependent Variable	Multiple R	Multiple R ²	Adjusted R ²	SS Model	df Model	MS Model	SS Residual	df Residual	MS Residual	F	p
T3_South Volume (m3)	0.687109	0.472118	0.462775	207259.9	2	103629.9	231739.9	113	2050.796	50.53158	0.000000

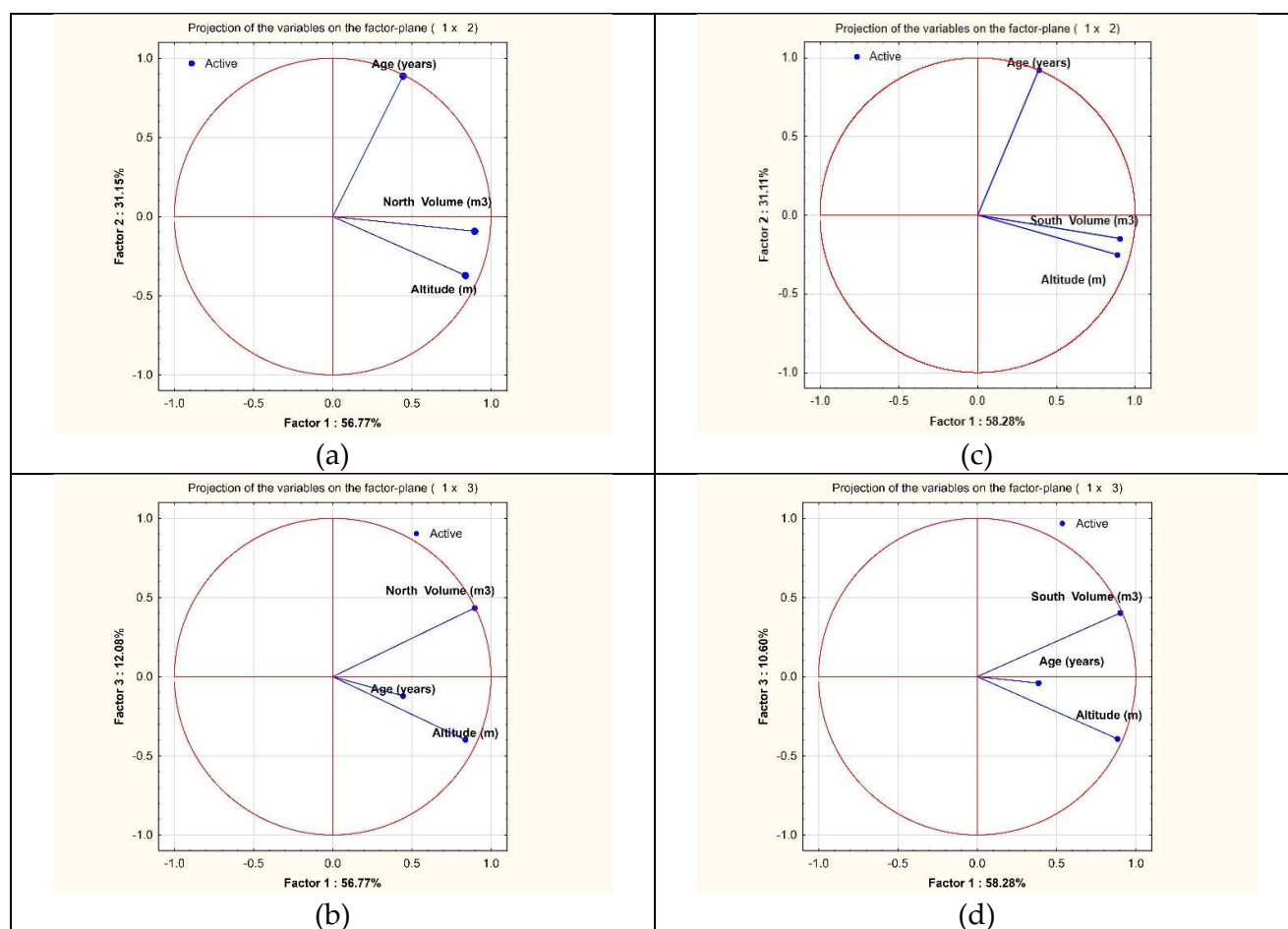


Fig. C.3 – PCA representation for (Southern Carpathians database)

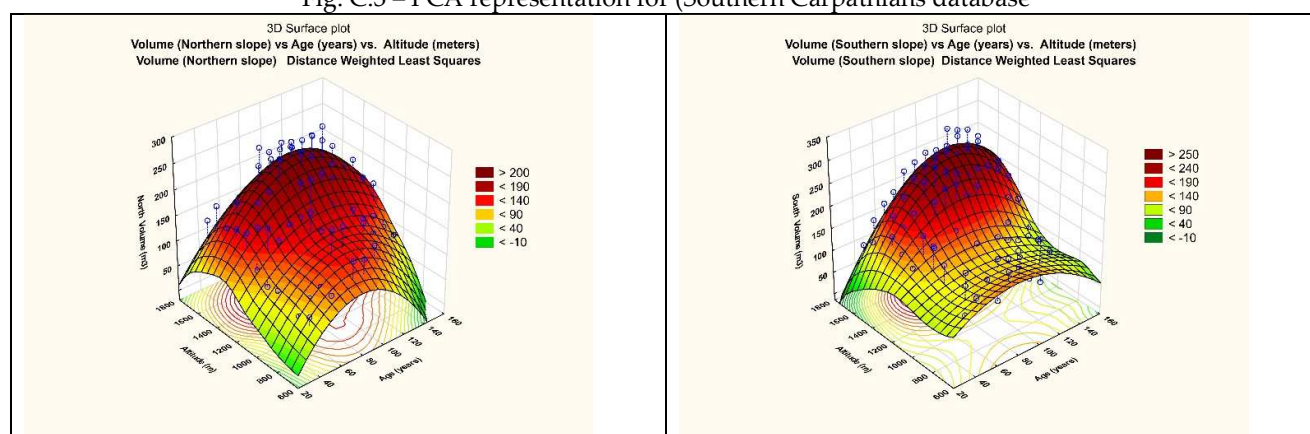


Fig. SC.4 – Scatter plot representation for (Southern Carpathians database)

Section D - Southern Carpathians (East of Olt) north south slope database

Table SD.0. Correlations (Southern Carpathians (East of Olt)) Marked correlations are significant at $p < .05000$ N=107 (Case wise deletion of missing data)

Variable	South Volume (m ³)	North Volume (m ³)
South Volume (m3)	1.0000	.4606
	p= ---	p=.000
North Volume (m3)	.4606	1.0000
	p=.000	p= ---

Table SD.1. Descriptive Statistics Southern Carpathians (East of Olt) Northern slope database

Variable						
	Valid N	Mean	Minimum	Maximum	Std.Dev.	Standard Error
North 700	7	165.1429	95.0000	210.0000	40.44514	15.28683
North 800	10	166.7000	112.0000	213.0000	40.86305	12.92203
North 900	11	167.9091	122.0000	236.0000	39.27201	11.84096
North 1000	12	169.0000	100.0000	229.0000	43.12983	12.45051
North 1100	12	173.9167	119.0000	213.0000	35.44896	10.23323
North 1200	12	173.7500	118.0000	239.0000	46.65565	13.46833
North 1300	12	184.0000	129.0000	245.0000	35.73386	10.31548
North 1400	12	199.8333	105.0000	243.0000	39.63661	11.44210
North 1500	12	180.5000	99.0000	228.0000	42.88356	12.37942
North 1600	12	187.0000	106.0000	232.0000	36.53392	10.54643
North 1700	1	123.0000	123.0000	123.0000		

Table SD.2. Descriptive Statistics Southern Carpathians (East of Olt) north south slope database

Variable	Valid N	Mean	Minimum	Maximum	Std. Dev.	Standard Error
South 700	7	186.1429	128.0000	213.0000	27.08892	10.23865
South 800	7	186.7143	112.0000	221.0000	36.99421	13.98250
South 900	10	176.3000	117.0000	235.0000	38.59778	12.20569
South 1000	12	171.8333	132.0000	248.0000	36.95657	10.66844
South 1100	12	171.0000	116.0000	231.0000	37.92097	10.94684
South 1200	12	156.5000	109.0000	223.0000	32.84814	9.48244
South 1300	12	160.9167	127.0000	198.0000	21.99776	6.35021
South 1400	12	192.5833	163.0000	224.0000	19.92923	5.75307
South 1500	12	209.9167	165.0000	258.0000	27.31120	7.88406
South 1600	12	193.3333	142.0000	233.0000	25.59593	7.38891

South 1700	12	151.8333	96.0000	189.0000	28.56518	8.24606
------------	----	----------	---------	----------	----------	---------

Descriptive Statistics

Variable	Valid N	Mean	Minimum	Maximum	Std.Dev.	Standard Error
North Volume (m3)	113	177.0708	95.00000	245.0000	40.06729	3.769214
South Volume (m3)	120	177.2333	96.00000	258.0000	34.25969	3.127468

Table SD.3. T-test for Independent Samples - Southern Carpathians (East of Olt) North South slope database

Group 1 vs. Group 2	Mean Group 1	Mean Group 2	t-value	df	p	t separ. var.est.	df	p 2-sided	Std. Dev. Group 1	Std. Dev. Group 2
North 700 vs. South 700	165.1429	186.1429	-1.14138	12	0.275979	-1.14138	10.48130	0.279120	40.44514	27.08892
North 800 vs. South 800	166.7000	186.7143	-1.03180	15	0.318515	-1.05122	13.87712	0.311121	40.86305	36.99421
North 900 vs. South 900	167.9091	176.3000	-0.49300	19	0.627665	-0.49342	18.86977	0.627407	39.27201	38.59778
North 1000 vs. South 1000	169.0000	171.8333	-0.17281	22	0.864384	-0.17281	21.49515	0.864421	43.12983	36.95657
North 1100 vs. South 1100	173.9167	171.0000	0.19464	22	0.847462	0.19464	21.90078	0.847470	35.44896	37.92097
North 1200 vs. South 1200	173.7500	156.5000	1.04726	22	0.306350	1.04726	19.75423	0.307625	46.65565	32.84814
North 1300 vs. South 1300	184.0000	160.9167	1.90560	22	0.069853	1.90560	18.29022	0.072544	35.73386	21.99776
North 1400 vs. South 1400	199.8333	192.5833	0.56610	22	0.577058	0.56610	16.22764	0.579074	39.63661	19.92923
North 1500 vs. South 1500	180.5000	209.9167	-2.00430	22	0.057501	-2.00430	18.66264	0.059769	42.88356	27.31120
North 1600 vs. South 1600	187.0000	193.3333	-0.49182	22	0.627715	-0.49182	19.70208	0.628279	36.53392	25.59593
North 1700 vs. South 1700	123.0000	151.8333	-0.96979	11	0.352993				0.00000	28.56518

T-test for Independent Samples Note: Variables were treated as independent samples

Group 1 vs. Group 2	Mean Group 1	Mean Group 2	t-value	df	p	t separ. var.est.	df	p 2-sided	Std. Dev. Group 1	Std. Dev. Group 2
Volume (North) vs. Volume (South)	177.0708	175.7750	0.269838	231	0.787525	0.268301	217.5575	0.788722	40.06729	33.07884

Fig. D.1. – Scatter Plot for altitude of 1600 m

Table SD.4. Univariate Tests of Significance for Volume (Northern slope) (Sigma-restricted parameterization Effective hypothesis decomposition;

Effect	SS	Degr. of Freedom	MS	F	p	Partial eta-squared	Non-centrality
Intercept	74000.0	1	73999.97	48.74721	0.000000	0.307074	48.74721
Age (years)	6645.6	1	6645.57	4.37774	0.038712	0.038274	4.37774
Altitude (meters)	5005.0	1	5004.98	3.29701	0.072130	0.029101	3.29701
Error	166983.9	110	1518.04				

Table SD.5. Test of SS Whole Model vs. SS Residual (Southern Carpathians (East of Olt)) – Northern slope

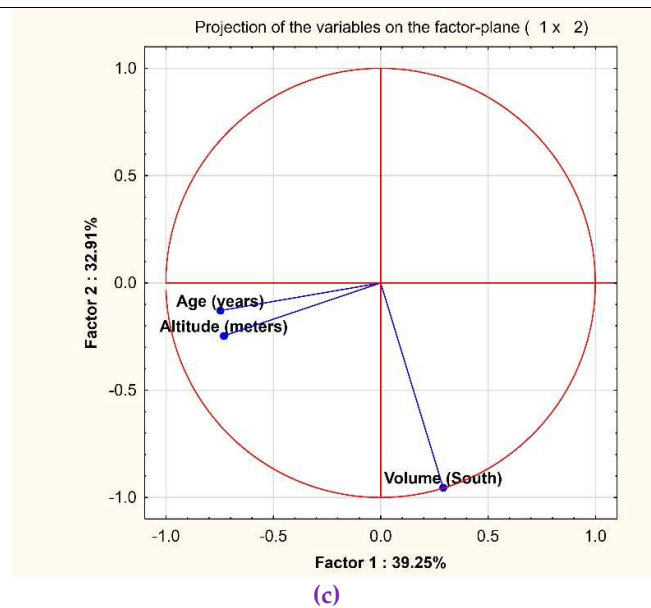
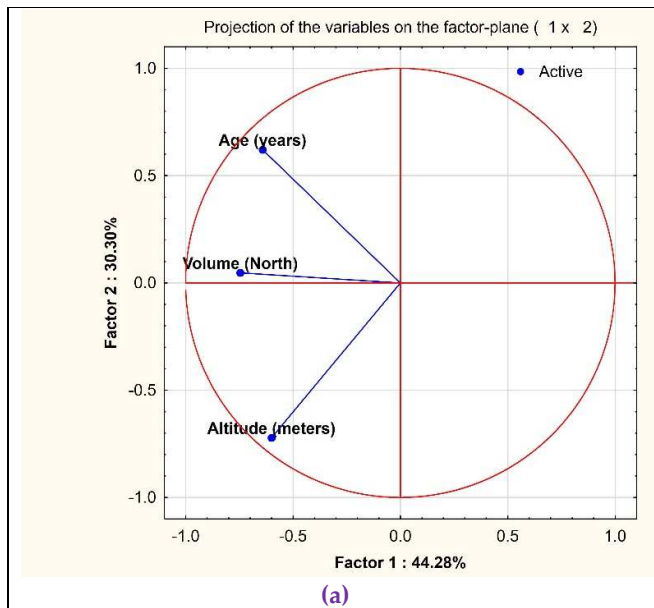
Dependent Variable	Multiple R	Multiple R ²	Adjusted R ²	SS Model	df Model	MS Model	SS Residual	df Residual	MS Residual	F	p
Volume (North)	0.267016	0.071298	0.054412	12819.58	2	6409.789	166983.9	110	1518.035	4.222425	0.017108

Table SD.6. Univariate Tests of Significance, Effect Sizes, and Powers for Volume (Southern slope) Sigma-restricted parameterization Effective hypothesis decomposition

Effect	SS	Degr. of Freedom	MS	F	p	Partial eta-squared	Non-centrality
Intercept	177483.9	1	177483.9	159.8438	0.000000	0.577379	159.8438
Age (years)	214.5	1	214.5	0.1931	0.661130	0.001648	0.1931
Altitude (meters)	44.5	1	44.5	0.0401	0.841663	0.000342	0.0401
Error	129911.9	117	1110.4				

Table S D.7. Test of SS Whole Model vs. SS Residual (Southern Carpathians (East of Olt)) – Southern slope

Dependent Variable	Multiple R	Multiple R ²	Adjusted R ²	SS Model	df Model	MS Model	SS Residual	df Residual	MS Residual	F	p
Volume (South)	0.047919	0.002296	-0.014758	298.9990	2	149.4995	129911.9	117	1110.358	0.134641	0.874165



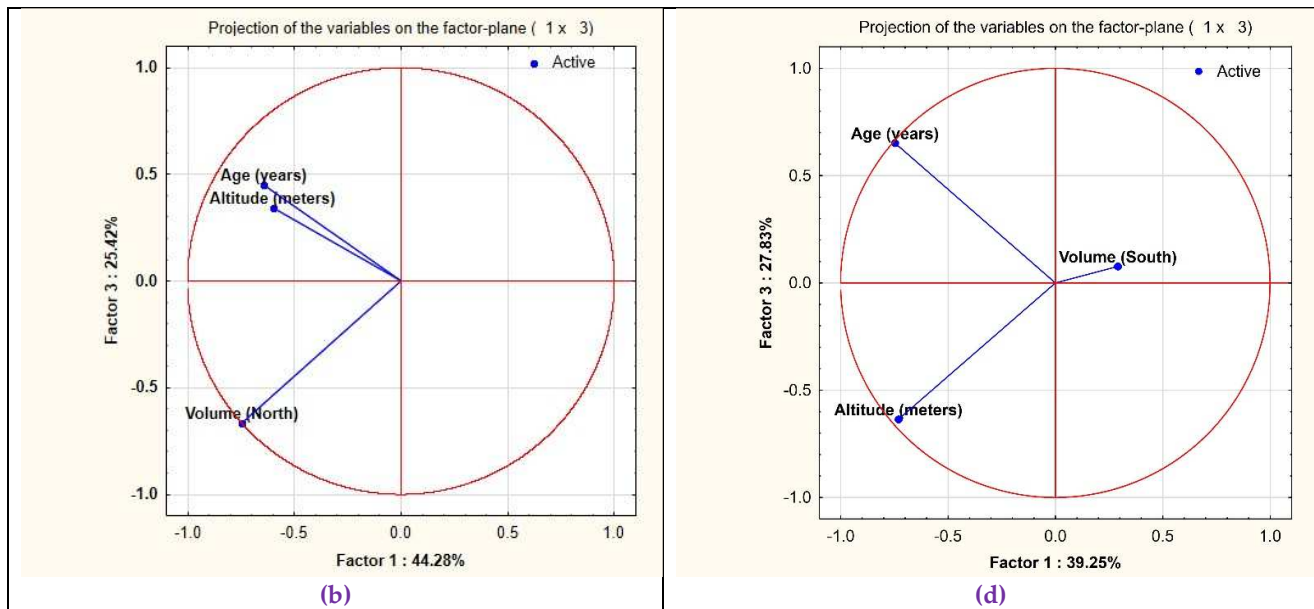


Fig. SD.3 – PCA representation for South and North database

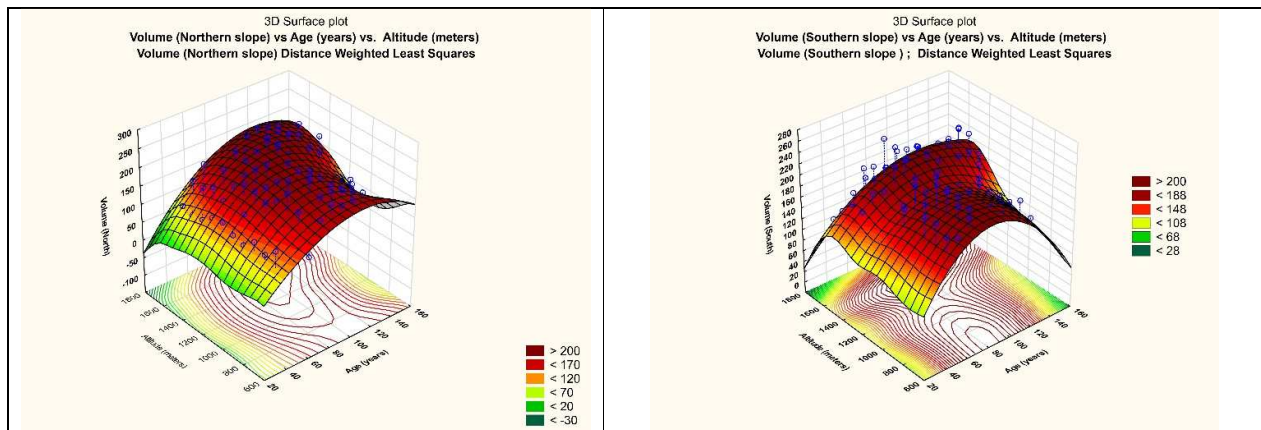


Fig. SD.4 – Surface plots representation for South and North database

Section E - Southern Carpathians North-South (Total) database

Table SE.0. Correlations (Southern Carpathians North-South (Total) full database) Marked correlations are significant at $p < .05000$ N=122 (Case wise deletion of missing data)

Variable	Volume (North)	Volume (South)
Volume (North)	1.0000	.6068
	p= ---	p=.000
Volume (South)	.6068	1.0000
	p=.000	p= ---

Table SE.1. Descriptive Statistics Southern Carpathians North-South (Total) database - Northern slope database

Variable	Valid N	Mean	Minimum	Maximum	Std. Dev.	Standard Error
North 700	8	133.2500	96.0000	187.0000	31.12532	11.00446
North 800	10	151.9000	103.0000	212.0000	38.24904	12.09541
North 900	11	163.1818	128.0000	206.0000	26.75750	8.06769
North 1000	12	162.9167	106.0000	208.0000	38.00110	10.96997
North 1100	12	161.9167	108.0000	209.0000	33.07143	9.54690
North 1200	12	172.6667	121.0000	220.0000	35.57664	10.27009
North 1300	12	182.5000	151.0000	223.0000	25.39685	7.33144
North 1400	12	200.4167	140.0000	234.0000	28.82379	8.32071
North 1500	12	196.3333	136.0000	236.0000	37.71986	10.88879
North 1600	12	190.4167	146.0000	235.0000	31.00574	8.95059
North 1700	10	167.1000	102.0000	226.0000	42.46947	13.43002

Table SE.2. Descriptive Statistics Southern Carpathians North-South (Total) database - Southern slope database

Variable	Valid N	Mean	Minimum	Maximum	Std. Dev.	Standard Error
South 700	8	158.8750	100.0000	194.0000	32.05102	11.33175
South 800	9	165.1111	92.0000	229.0000	44.16572	14.72191
South 900	12	150.3333	97.0000	222.0000	40.56719	11.71074
South 1000	12	155.0000	118.0000	231.0000	35.47342	10.24029
South 1100	12	153.9167	108.0000	201.0000	35.26641	10.18054
South 1200	12	149.4167	107.0000	196.0000	26.14803	7.54829
South 1300	12	181.8333	132.0000	231.0000	31.84860	9.19390
South 1400	12	215.0000	166.0000	265.0000	29.67092	8.56526
South 1500	12	225.7500	151.0000	258.0000	33.46674	9.66102
South 1600	12	216.7500	136.0000	253.0000	35.79773	10.33391
South 1700	12	174.3333	109.0000	244.0000	37.69575	10.88183

Table SE.3. T-test for Independent Samples Southern Carpathians North-South (Total) database Note: Variables were treated as independent samples

Group 1 vs. Group 2	Mean Group 1	Mean Group 2	t-value	df	p	t separ. var.est.	df	p 2-sided	Std. Dev. Group 1	Std. Dev. Group 2
North 700 vs. South 700	133.2500	158.8750	-1.62227	14	0.127042	-1.62227	13.98799	0.127061	31.12532	32.05102
North 800 vs. South 800	151.9000	165.1111	-0.69892	17	0.494057	-0.69337	15.97517	0.498035	38.24904	44.16572

North 900 vs. South 900	163.1818	150.3333	0.88746	21	0.384884	0.90350	19.16934	0.377473	26.75750	40.56719
North 1000 vs. South 1000	162.9167	155.0000	0.52754	22	0.603100	0.52754	21.89659	0.603125	38.00110	35.47342
North 1100 vs. South 1100	161.9167	153.9167	0.57321	22	0.572319	0.57321	21.90977	0.572342	33.07143	35.26641
North 1200 vs. South 1200	172.6667	149.4167	1.82415	22	0.081743	1.82415	20.19969	0.082959	35.57664	26.14803
North 1300 vs. South 1300	182.5000	181.8333	0.05669	22	0.955301	0.05669	20.96153	0.955326	25.39685	31.84860
North 1400 vs. South 1400	200.4167	215.0000	-1.22124	22	0.234922	-1.22124	21.98157	0.234933	28.82379	29.67092
North 1500 vs. South 1500	196.3333	225.7500	-2.02082	22	0.055635	-2.02082	21.69247	0.055813	37.71986	33.46674
North 1600 vs. South 1600	190.4167	216.7500	-1.92618	22	0.067100	-1.92618	21.56076	0.067367	31.00574	35.79773
North 1700 vs. South 1700	167.1000	174.3333	-0.42324	20	0.676637	-0.41847	18.25789	0.680486	42.46947	37.69575

Table SE.4. Univariate Tests of Significance for Volume - Southern Carpathians North-South (Total) database (Northern slope) (Sigma-restricted parameterization Effective hypothesis decomposition;

Effect	SS	Degr. of Freedom	MS	F	p	Partial eta-squared	Non-centrality
Intercept	47480.3	1	47480.30	42.69398	0.000000	0.262419	42.69398
Age (years)	10791.9	1	10791.86	9.70397	0.002300	0.074816	9.70397
Altitude (meters)	21237.3	1	21237.32	19.09646	0.000027	0.137289	19.09646
Error	133452.9	120	1112.11				

Table SE.5. Test of SS Whole Model vs. SS Residual (Southern Carpathians North-South (Total) full database) (Northern slope)

	Multiple R	Multiple R ²	Adjusted R ²	SS Model	df Model	MS Model	SS Residual	df Residual	MS Residual	F	p
Volume (North)	0.459176	0.210842	0.197690	35655.16	2	17827.58	133452.9	120	1112.108	16.03045	0.000001

Table SE.6. Univariate Tests of Significance for Volume - Southern Carpathians North-South (Total) database (Southern slope) (Sigma-restricted parameterization Effective hypothesis decomposition)

Effect	SS	Degr. of Freedom	MS	F	p	Partial eta-squared	Non-centrality
Intercept	61726.2	1	61726.16	39.53693	0.000000	0.244755	39.53693
Age (years)	606.7	1	606.73	0.38862	0.534188	0.003175	0.38862
Altitude (meters)	47219.5	1	47219.50	30.24510	0.000000	0.198661	30.24510
Error	190469.8	122	1561.23				

Test of SS Whole Model vs. SS Residual (Southern Carpathians North-South (Total) full database) (Southern slope)

Dependent Variable	Multiple R	Multiple R ²	Adjusted R ²	SS Model	df Model	MS Model	SS Residual	df Residual	MS Residual	F	p
Volume (South)	0.445716	0.198663	0.185526	47220.19	2	23610.09	190469.8	122	1561.228	15.12277	0.000001

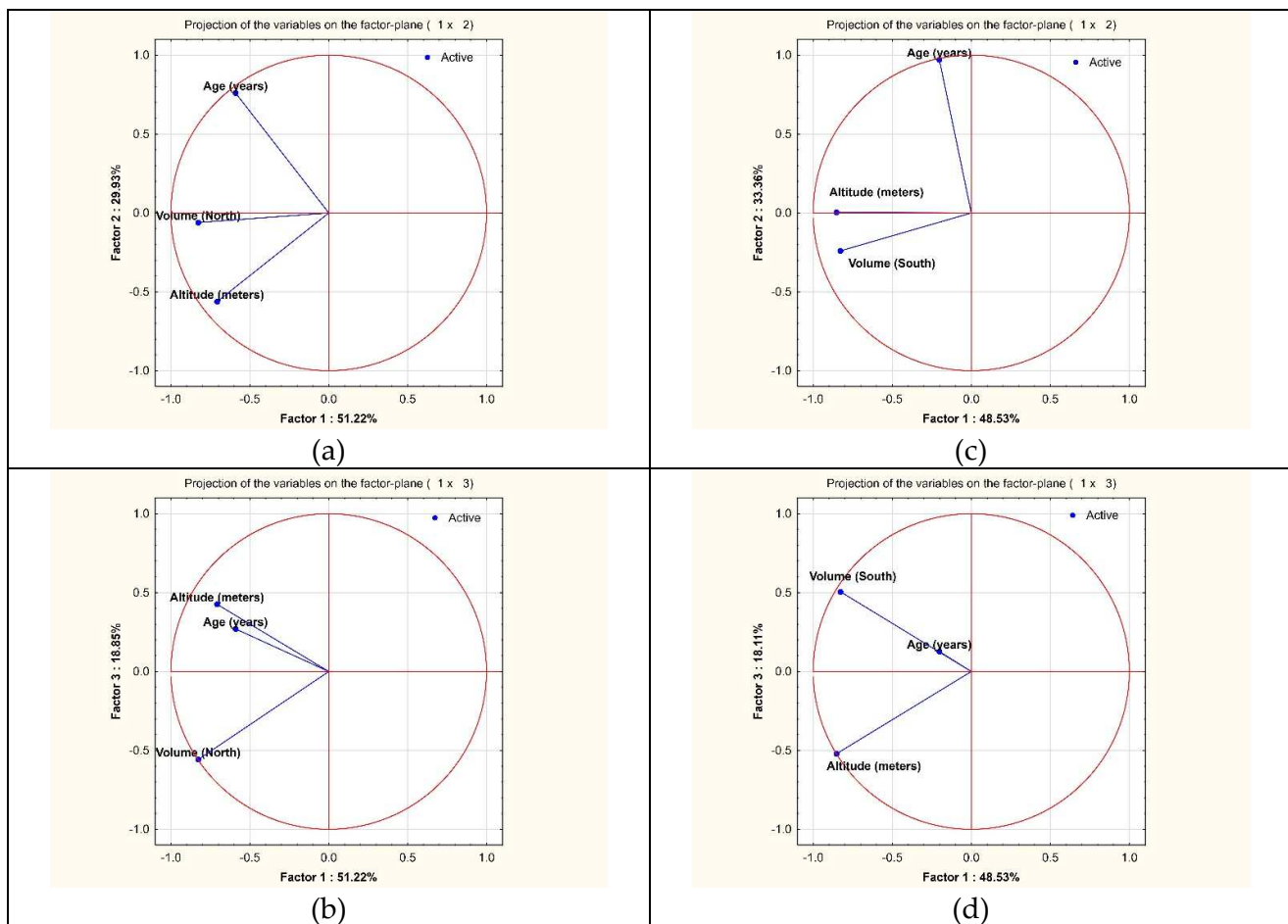


Fig. SE.3 – PCA representation for Southern Carpathians North-South (Total) database

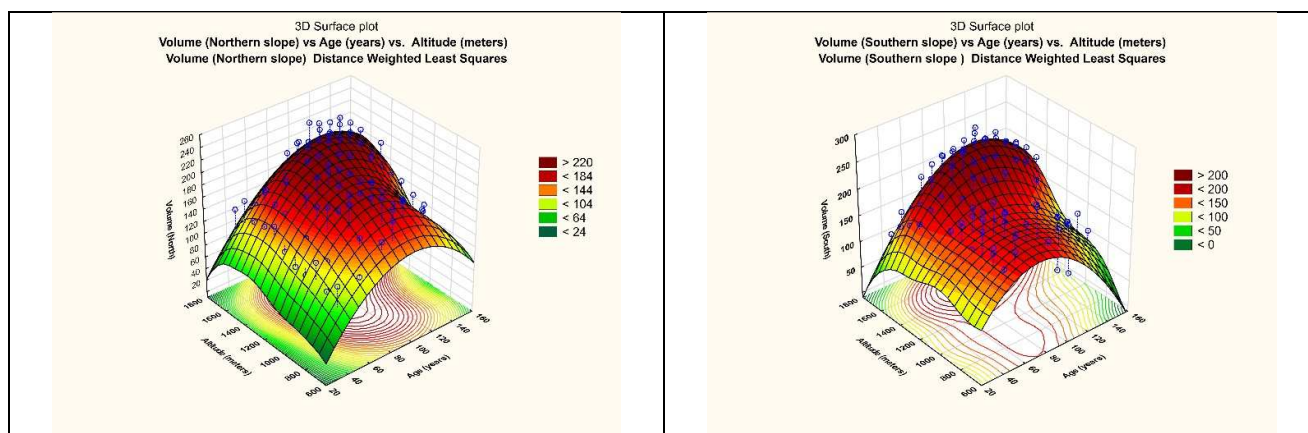


Fig. SE.4 – Surface plots representation for Southern Carpathians North-South (Total) database

Section G - Table 7 Eastern Carpathians (East West slope) database

Table SG.1. Descriptive Statistics Eastern Carpathians (Eastern slope) database

Variable	Valid N	Mean	Minimum	Maximum	Std. Dev.	Standard Error
East 700	5	231.4000	195.0000	249.0000	21.80138	9.74987
East 800	9	192.5556	136.0000	271.0000	43.18307	14.39436
East 900	10	179.1000	124.0000	259.0000	44.08439	13.94071
East 1000	10	187.3000	114.0000	263.0000	49.79748	15.74735
East 1100	10	170.9000	110.0000	235.0000	39.11933	12.37062
East 1200	10	173.8000	104.0000	240.0000	45.89311	14.51268
East 1300	10	182.9000	101.0000	231.0000	42.29381	13.37448
East 1400	10	189.8000	129.0000	272.0000	51.32424	16.23015
East 1500	9	184.3333	119.0000	272.0000	47.47631	15.82544
East 1600	8	174.1250	114.0000	278.0000	61.64515	21.79485
East 1700	1	123.0000	123.0000	123.0000		

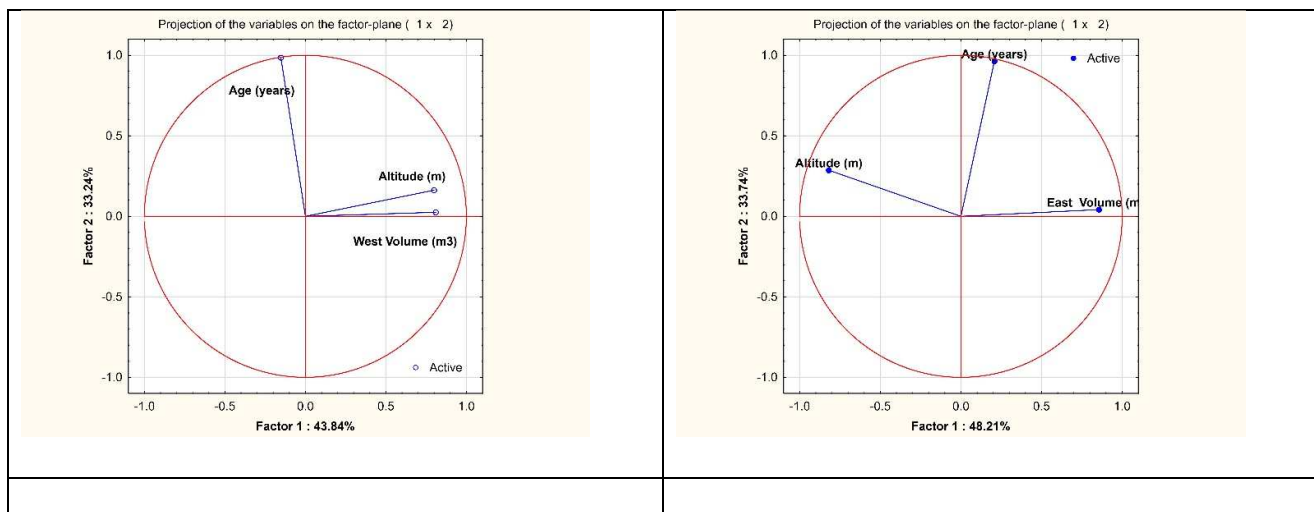
Table SG.2. Descriptive Statistics - Eastern Carpathians (Western slope) database

	Valid N	Mean	Minimum	Maximum	Std. Dev.	Standard Error
West 700	8	140.1250	85.0000	192.0000	39.62841	14.01076
West 800	10	122.7000	84.0000	166.0000	25.23247	7.97921
West 900	10	116.8000	69.0000	180.0000	36.17181	11.43853

West 1000	10	122.5000	88.0000	158.0000	26.33650	8.32833
West 1100	10	139.4000	96.0000	199.0000	37.85117	11.96959
West 1200	10	162.0000	107.0000	197.0000	34.62177	10.94836
West 1300	10	175.0000	107.0000	241.0000	38.73557	12.24926
West 1400	10	179.6000	121.0000	265.0000	50.99717	16.12672
West 1500	10	168.4000	101.0000	240.0000	47.33615	14.96901
West 1600	6	114.8333	78.0000	159.0000	35.74027	14.59090
West 1700	0					

Table SG.3 T-test for Independent Samples - Eastern Carpathians database Note: Variables were treated as independent samples

Group 1 vs. Group 2	Mean Group 1	Mean Group 2	t-value	df	p	t separ. var.est.	df	p 2-sided	Std. Dev. Group 1	Std. Dev. Group 2
East 700 vs. West 700	231.4000	140.1250	4.676397	11	0.000675	5.347316	10.93400	0.000240	21.80138	39.62841
East 1000 vs. West 1000	187.3000	122.5000	3.637580	18	0.001883	3.637580	13.66939	0.002788	49.79748	26.33650
East 900 vs. West 900	179.1000	116.8000	3.454808	18	0.002826	3.454808	17.33877	0.002955	44.08439	36.17181
East 1100 vs. West 1100	170.9000	139.4000	1.829963	18	0.083867	1.829963	17.98049	0.083886	39.11933	37.85117
East 1500 vs. West 1500	184.3333	168.4000	0.731565	17	0.474399	0.731445	16.77962	0.474600	47.47631	47.33615
East 1400 vs. West 1400	189.8000	179.6000	0.445807	18	0.661053	0.445807	17.99926	0.661053	51.32424	50.99717
East 1300 vs. West 1300	182.9000	175.0000	0.435593	18	0.668310	0.435593	17.86275	0.668350	42.29381	38.73557



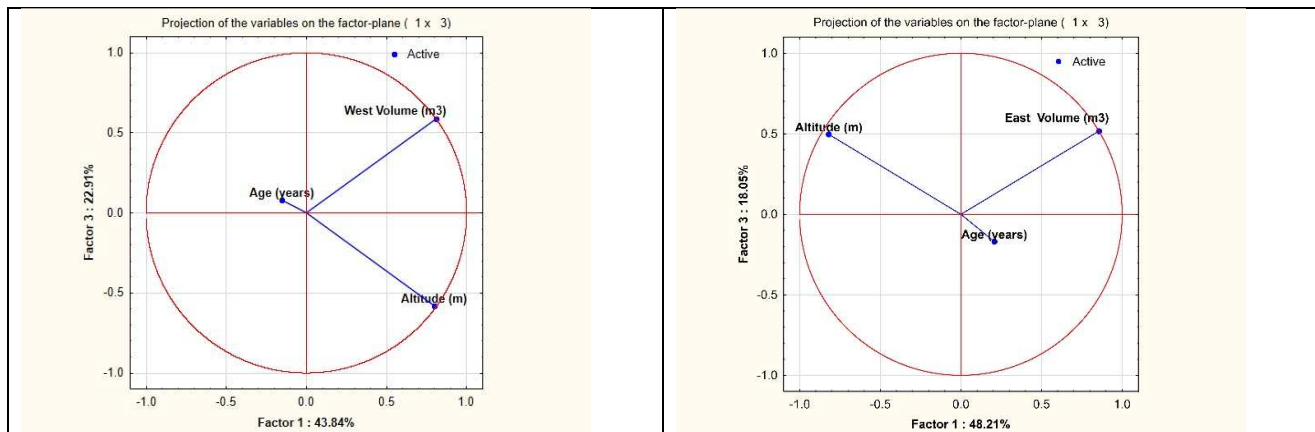


Fig. SG.3 – PCA representation for Eastern Carpathians database

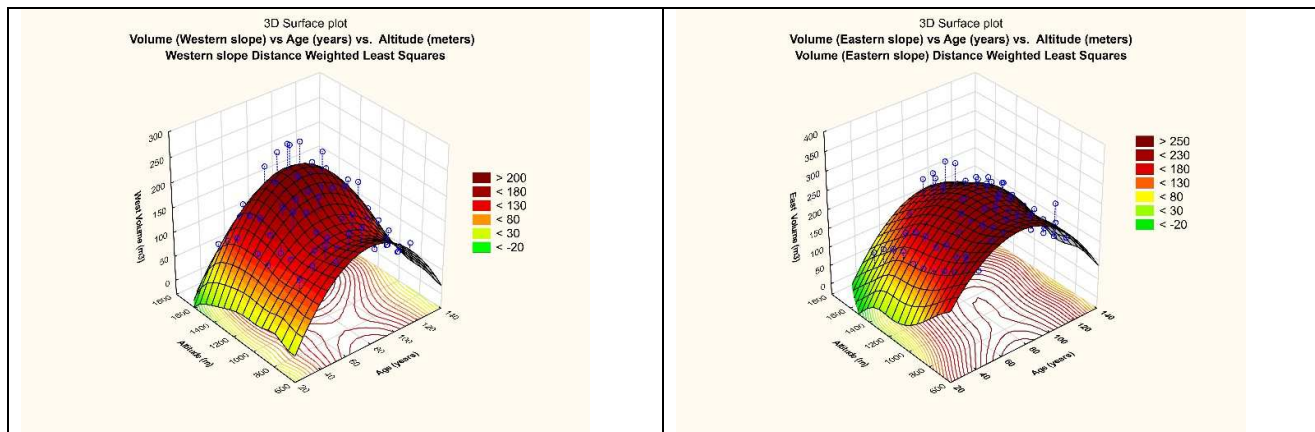


Fig. SG.4 – Surfaceplot representation for Eastern Carpathians database

Section J - Table 10 Southern Carpathians Total Pure stands versus mixed stands

Table SJ.1 Descriptive Statistics

Variable	Valid N	Mean	Minimum	Maximum	Std. Dev.	Standard Error
Pure forest Volume (m3)	89	360.3596	133.0000	564.0000	99.78901	10.57761
Mixed forest Volume (m3)	110	146.1727	54.0000	216.0000	36.27794	3.45897

Table SJ.2. Descriptive Statistics

Variable	Valid N	Mean	Minimum	Maximum	Std.Dev.	Standard Error
Pure stands 700	5	456.2000	259.0000	700.000	169.7445	75.9121
Pure stands 800	5	532.0000	417.0000	800.000	153.2531	68.5369
Pure stands 900	7	484.5714	272.0000	900.000	201.0604	75.9937
Pure stands 1000	9	471.4444	206.0000	1000.000	226.4349	75.4783
Pure stands 1100	8	518.0000	197.0000	1100.000	262.1156	92.6718
Pure stands 1200	11	463.6364	210.0000	1200.000	259.5324	78.2520
Pure stands 1300	11	439.4545	192.0000	1300.000	296.2541	89.3240
Pure stands 1400	11	439.6364	194.0000	1400.000	327.2972	98.6838
Pure stands 1500	11	441.6364	174.0000	1500.000	358.0157	107.9458
Pure stands 1600	11	418.4545	179.0000	1600.000	397.1613	119.7486
Pure stands 1700	11	392.8182	133.0000	1700.000	438.0687	132.0827

Table SJ.3. Descriptive Statistics

Variable	Valid N	Mean	Minimum	Maximum	Std.Dev.	Standard Error
Mixed stands 700	11	183.0909	93.0000	700.000	173.5410	52.3246
Mixed stands 800	11	199.8182	89.0000	800.000	201.5881	60.7811
Mixed stands 900	11	215.6364	100.0000	900.000	229.5353	69.2075
Mixed stands 1000	11	223.0909	84.0000	1000.000	260.2301	78.4623
Mixed stands 1100	11	228.1818	89.0000	1100.000	291.0886	87.7665
Mixed stands 1200	11	235.4545	99.0000	1200.000	321.0328	96.7950
Mixed stands 1300	11	255.9091	108.0000	1300.000	347.0946	104.6530
Mixed stands 1400	11	283.1818	100.0000	1400.000	371.9225	112.1389
Mixed stands 1500	11	289.9091	102.0000	1500.000	402.7171	121.4238
Mixed stands 1600	11	281.9091	79.0000	1600.000	438.5630	132.2317
Mixed stands 1700	11	265.5455	54.0000	1700.000	477.9833	144.1174

Table SJ.3. T-test for Independent Samples Note: Variables were treated as independent samples

Group 1 vs. Group 2	Mean Group 1	Mean Group 2	t-value	df	p	t separ. var.est.	df	p 2-sided	Std.Dev. Group 1	Std.Dev. Group 2
Pure stands 700 vs. Mixed stands 700	456.2000	183.0909	2.936006	14	0.010842	2.962196	7.98296	0.018128	169.7445	173.5410
Pure stands 800 vs. Mixed stands 800	532.0000	199.8182	3.257885	14	0.005722	3.626205	10.23397	0.004471	153.2531	201.5881
Pure stands 900 vs. Mixed stands 900	484.5714	215.6364	2.536506	16	0.021995	2.616486	14.21351	0.020119	201.0604	229.5353
Pure stands 1000 vs.	471.4444	223.0909	2.248116	18	0.037336	2.281132	17.90508	0.035004	226.4349	260.2301

Mixed stands 1000										
Pure stands 1100 vs. Mixed stands 1100	518.0000	228.1818	2.231380	17	0.039409	2.270656	16.11402	0.037229	262.1156	291.0886
Pure stands 1200 vs. Mixed stands 1200	463.6364	235.4545	1.833235	20	0.081696	1.833235	19.15900	0.082353	259.5324	321.0328
Pure stands 1300 vs. Mixed stands 1300	439.4545	255.9091	1.334003	20	0.197196	1.334003	19.51847	0.197560	296.2541	347.0946
Pure stands 1400 vs. Mixed stands 1400	439.6364	283.1818	1.047377	20	0.307419	1.047377	19.68192	0.307618	327.2972	371.9225
Pure stands 1500 vs. Mixed stands 1500	441.6364	289.9091	0.933887	20	0.361501	0.933887	19.72938	0.361652	358.0157	402.7171
Pure stands 1600 vs. Mixed stands 1600	418.4545	281.9091	0.765409	20	0.452967	0.765409	19.80651	0.453053	397.1613	438.5630
Pure stands 1700 vs. Mixed stands 1700	392.8182	265.5455	0.651051	20	0.522425	0.651051	19.84983	0.522480	438.0687	477.9833

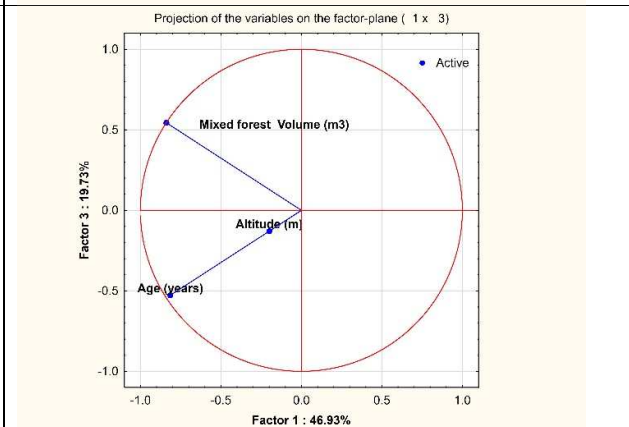
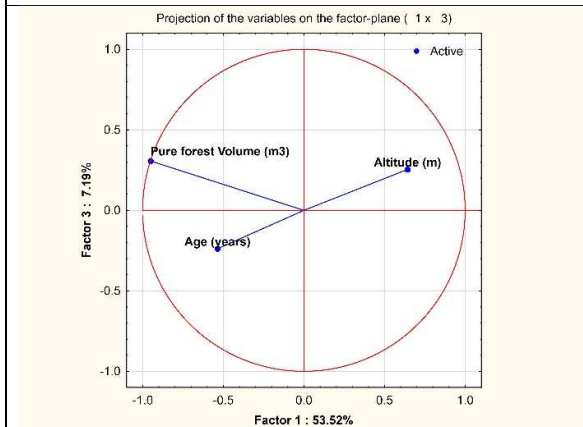
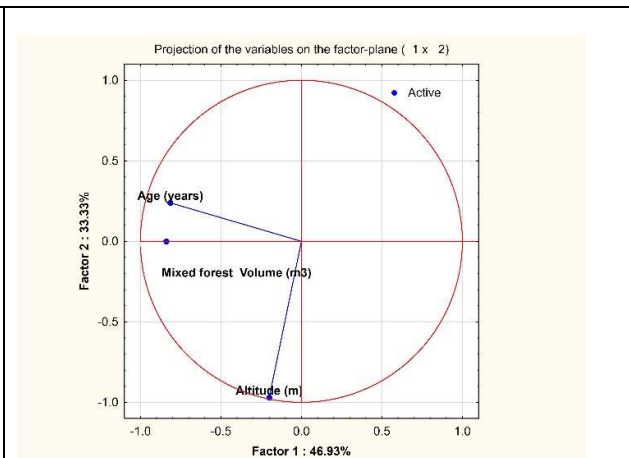
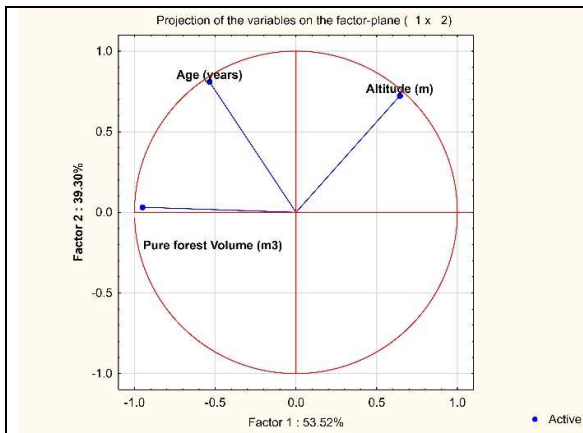


Fig. SJ.3 – PCA representation for Southern Carpathians Total Pure stands versus mixed stands

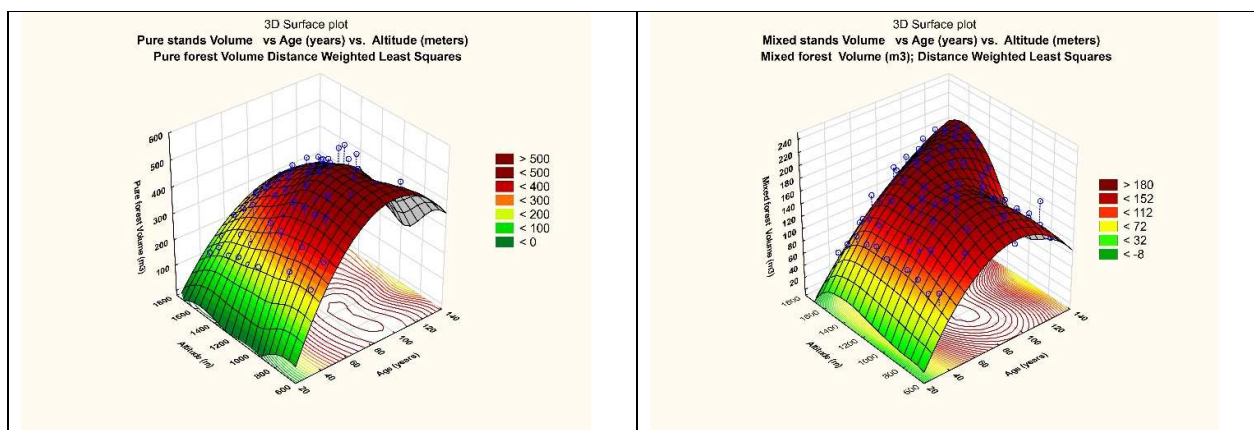


Fig. SJ.4 – Surface plot representation for Southern Carpathians Total Pure stands versus mixed stands