FLORA HRVATSKE

Što nam biljke mogu "reći"

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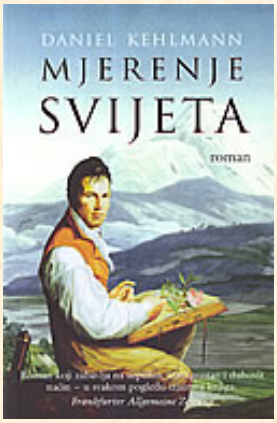
http://croatica.botanic.hr/~sven
http://croatica.botanic.hr/~ekolbilj



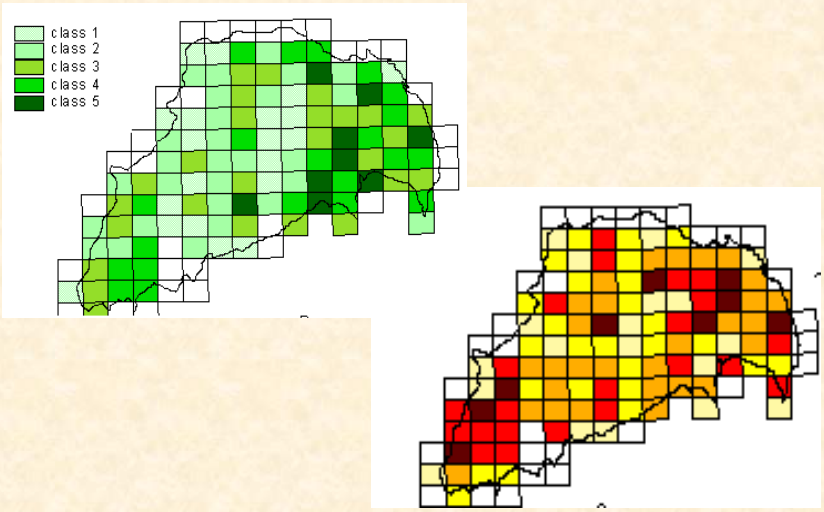
Alexander von Humboldt

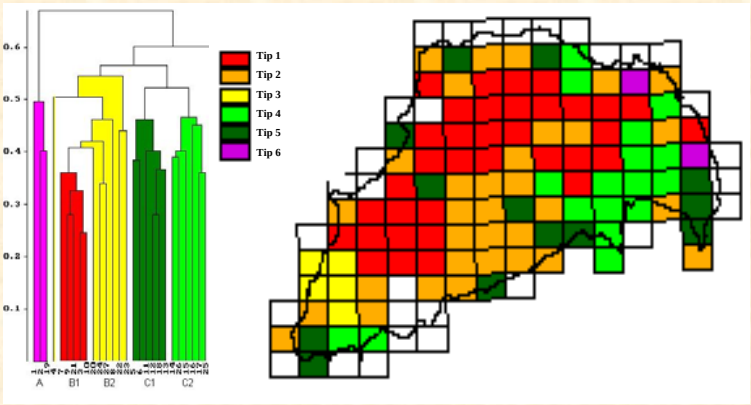
Carl Friedrich Gauss

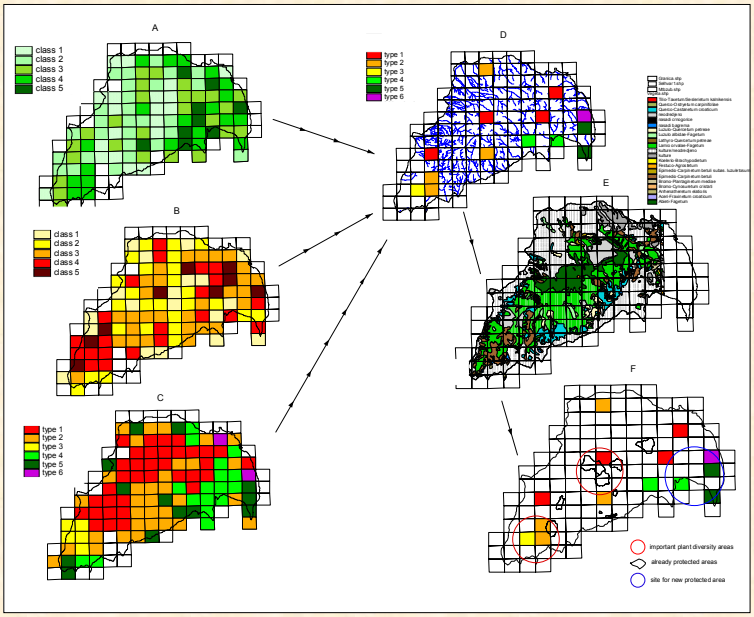
Primjer: Analiza i vrednovanje prostora s obzirom na prisutnu floru

Odabir područja prioritetnih za zaštitu biljne raznolikosti

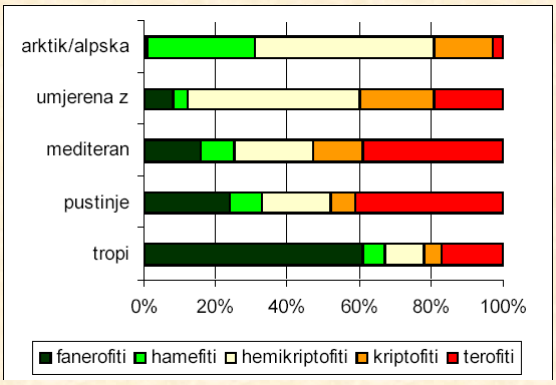
Park prirode “Medvednica”



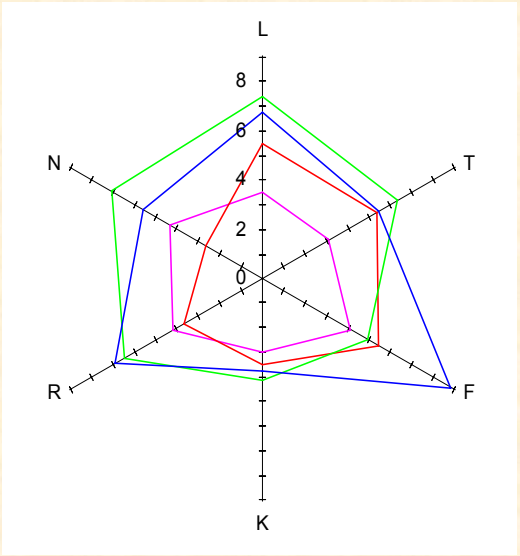

0.6
0.5
0.4
0.3
0.2
0.1
A
B1
B2
C1
C2
Tip 1
Tip 2
Tip 3
Tip 4
Tip 5
Tip 6


A
class 1
class 2
class 3
class 4
class 5
B
class 1
class 2
class 3
class 4
class 5
C
type 1
type 2
type 3
type 4
type 5
type 6
D
type 1
type 2
type 3
type 4
type 5
type 6
E
F
important plant diversity areas
already protected areas
site for new protected area

Raunkiaer – životni oblici

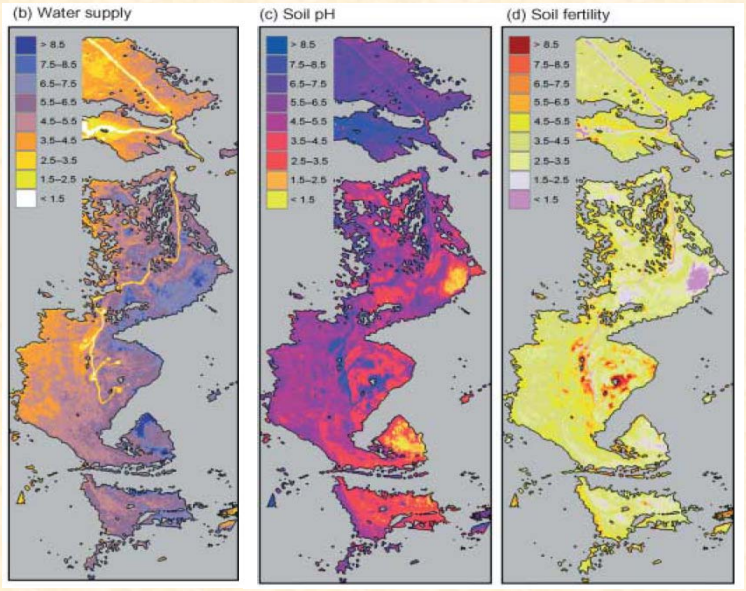


Ellenberg – indikatorske vrijednosti biljaka



Kartiranje Ellenbergovih indeksa pomoću satelitskih snimaka

Schmidtlein, J.App.Ecol. 2005, 42:966-974



Primjer: Analiza floističkog sastava jedne biljne zajednice

Dinarska šuma bukve i jele

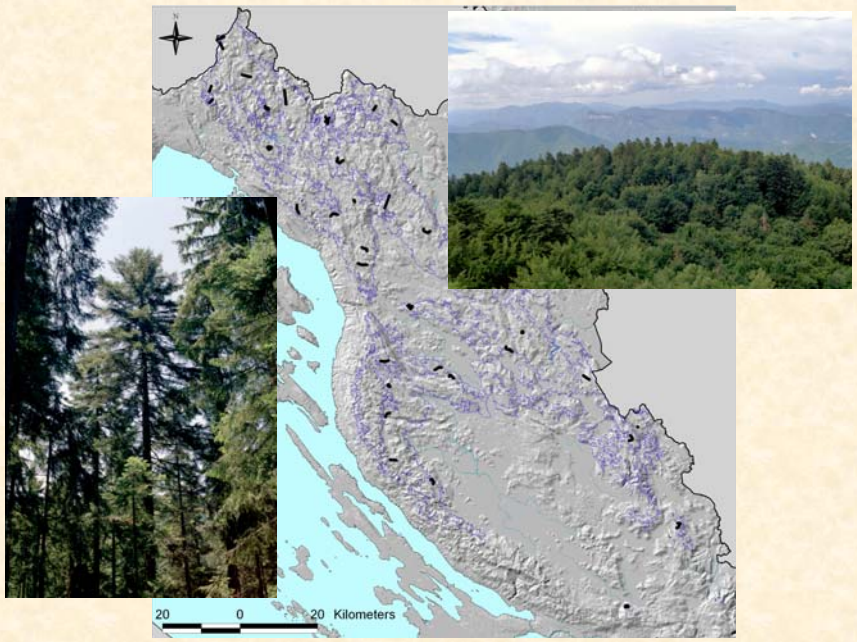
Omphalodo-Fagetum

Cilj istraživanja

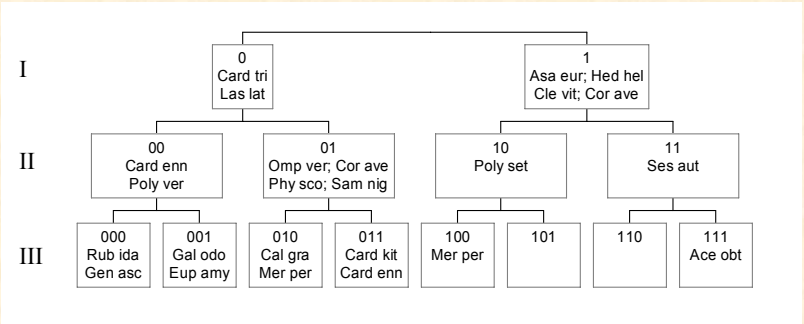
1. Analiza stanišnih uvjeta koji kvalitativno i kvantitativno određuju floristički sastav jelovih sastojina na vapnencu Gorskog kotara i Like

2. Raščlanjivanje široko shvaćene zajednice *Omphalodo-Fagetum* na temelju prikupljenih podataka

Istraživano područje - transekti

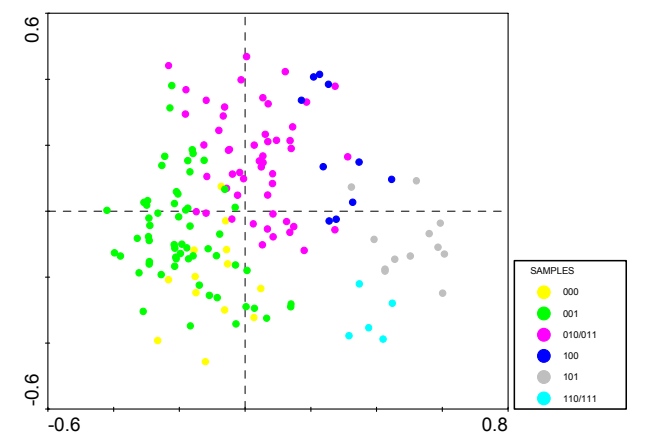


TWINSPAN analiza



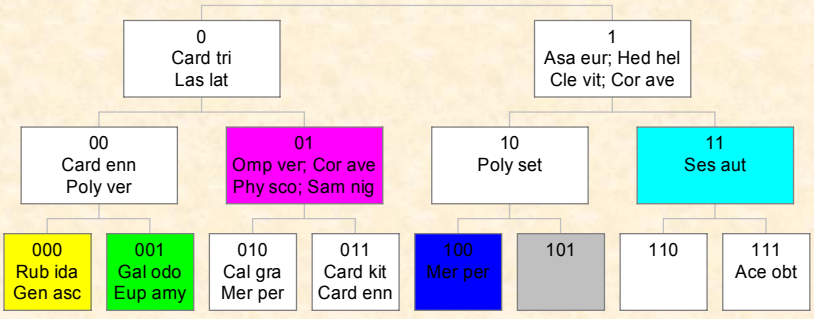
- analiza do treće razine
- prisutnost/odsutnost vrste kao kriterij za odabir indikatorskih vrsta

PCoA analiza



- korištena mjera različitosti: korijen komplementa Jaccard indeksa sličnosti

TWINSPAN analiza



- analizom snimki ploha odabrano 6 grupa ploha kombiniranjem druge i treće razine

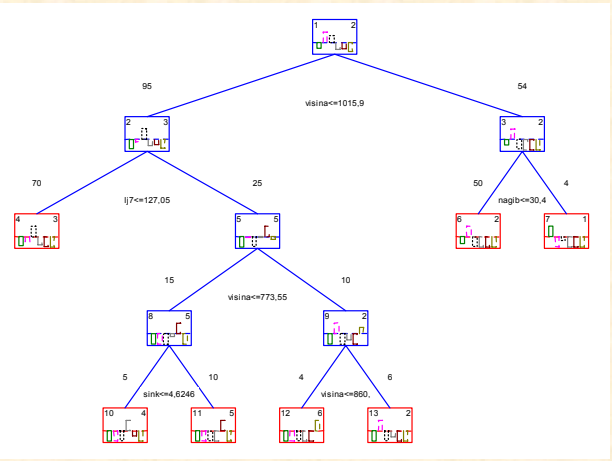
Sintetska tablica

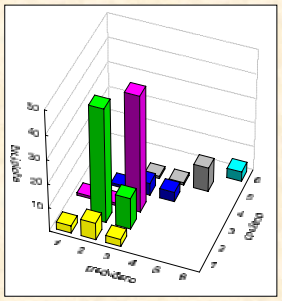
	subasocijacija	homogynetosum	galietosum	aceretosum	mercurialetosum	asaretosum	seslerietosum
	broj ploha / no. of plots	13	60	51	10	12	5
karak. vrste asocijacije							
OF	*Abies alba*	100	100	100	100	100	100
OF	*Cardamine trifolia*	100	65	90	50		
OF	*Omphalodes verna*	15	12	59	70	50	
OF	*Calamintha grandiflora*	15	22	51	10		40
OF	*Rhamnus fallax*	15	37	43	30	33	80
OF	*Aremonia agrimonioides*	38	73	84	70	100	80
karak. vrste subasocijacija							
VP	*Maianthemum bifolium*	38	23	4	10		
VP	*Picea abies*	69	23	33			
VP	*Vaccinium myrtilus*	46	13	3			
VP	*Valeriana tripteris*	54	3	2			20
VP	*Laserpitium latifolium*	62	88	51	20		20
AD	*Polygonatum verticillatum*	77	53	10		8	
FS	*Galium odoratum*	8	87	80	80	50	
FS	*Sanicula europaea*	15	62	76	100	100	60
AF	*Cardamine enneaphyllos*	54	87	33	50	17	
AF	*Daphne laureola*		18	53	60		
AF	*Scopolia carniolica*		2	33	30		
FS	*Ulmus glabra*	23	27	45	30		
FS	*Phyllitis scolopendrium*		2	43	50	75	
FS	*Arum maculatum*		5	25	30	8	
AF	*Cyclamen purpurascens*	23	22	25	70	33	80
AF	*Helleborus niger*		7	2	30		
AF	*Helleborus odorus*				20	33	
AF	*Epimedium alpinum*			4	50		
FS	*Mercurialis perrenis*	38	57	67	100		60
FS	*Asarum europaeum*	8	2	10	80	100	20
VP	*Luzula pilosa*	8	2	2		67	
QP	*Euonymus verrucosa*		2	2	30	42	40
QF	*Lonicera xylosteum*	54	30	39	50	100	100
VP	*Galium rotundifolium*		25	39	20	92	
QP	*Fraxinus ornus*		5	2	10	33	100
QP	*Ostrya carpinifolia*				10	67	100
QP	*Sesleria autumnalis*		10				100
QP	*Sorbus aria*	31	10	18	60	17	80
QP	*Convallaria majalis*		2				60
QP	*Quercus pubescens*						60

- broj uz vrstu označava udio ploha pojedine subasocijacije na kojoj se vrsta nalazi

Visinska distribucija subasocijacija

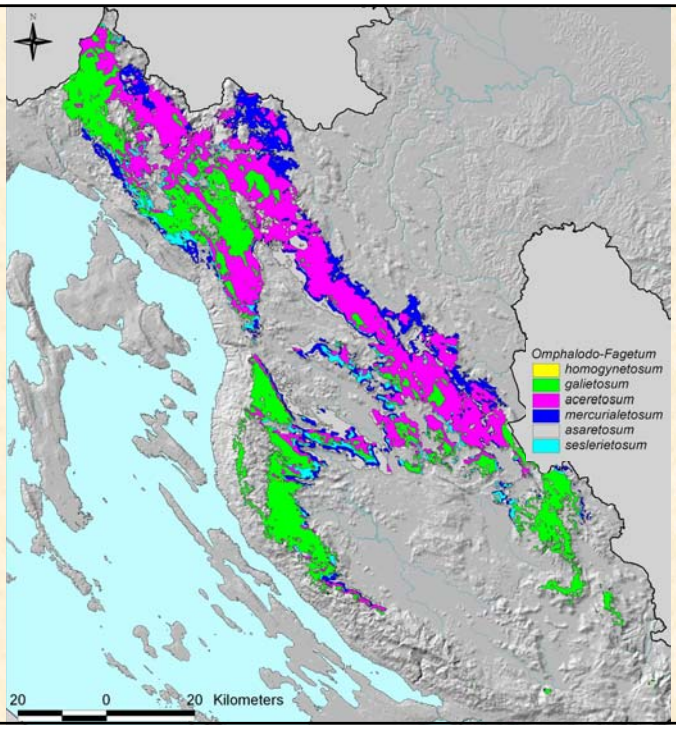
CT prediktivni model subasocijacija



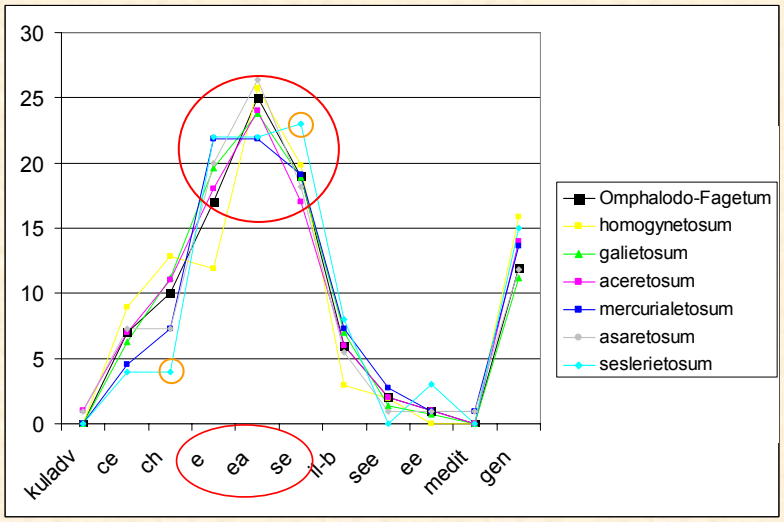


Dobiveno podudaranje:
homogynetosum (K = 0,33) - slabo
mercurialetosum (K = 0,52) - srednje
galietosum (K = 0,72) i
aceretosum (K = 0,73) – vrlo dobro
asaretosum (K = 0,9) - odlično
seslerietosum (K = 1) - savršeno

Podudaranje za ukupni uzorak vrlo dobro (K = 0,71).



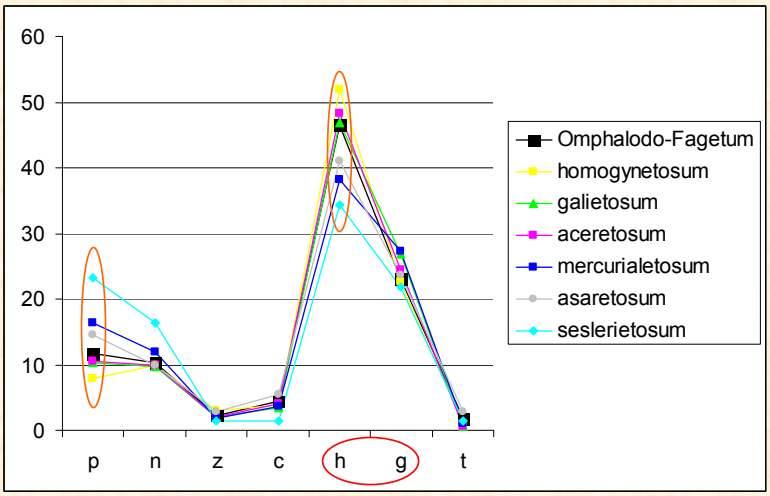
Florni elementi



-prevladavaju euroazijski, južnoeuropski i europski florni elementi

-*seslerietosum* manje cirkum-holarktičkih, a više južnoeuropskih vrsta

Životni oblici

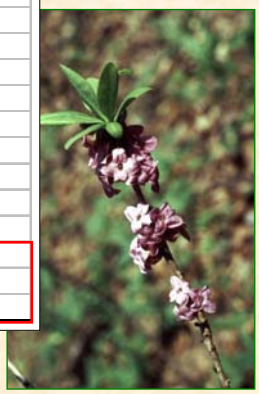


- prevladavaju hemikriptofiti i geofiti

- povećanje fanerofita i smanjivanje hemikriptofita prema termofilnijim subasocijacijama

Vrste iz Crvene knjige

vrsta	status
Veratrum album L.	DD
Lycopodium annotinum L.	LC
Cephalanthera damasonium (Mill.) Druce	NT
Cephalanthera longifolia (L.) Fritsch	NT
Cyclamen purpurascens Mill.	NT
Daphne laureola L.	NT
Daphne mezereum L.	NT
Gentiana asclepiadea L.	NT
Peltaria alliacea Jacq.	NT
Ruscus hypoglossum L.	NT
Ilex aquifolium L.	VU
Lilium martagon L.	VU
Platanthera bifolia (L.) Rich.	VU



Broj vaskularnih biljnih vrsta

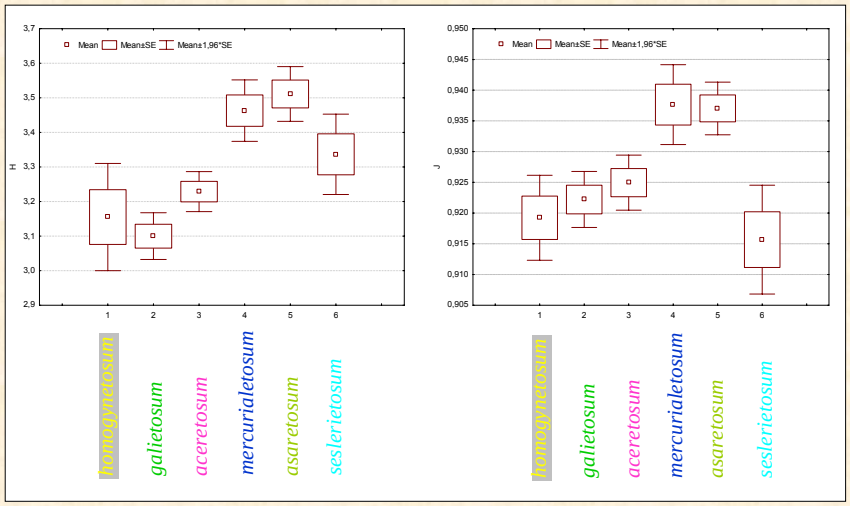
sintakson	N	x	median	min	max	Perc. 10%	Perc. 90%	s.d.
ass. *Omp.-Fag.*	151	33,2	33	8	53	25	43	7,5
homogynetosum	13	32,1	33	17	48	22	44	8,8
galietosum	60	*29,7*	31	8	43	22	38	6,4
aceretosum	51	33,4	33	17	48	27	41	6,2
mercurialetosum	10	40,5	43	33	53	35	49	5,7
asaretosum	12	**42,8**	44	31	50	36	49	5,6
seslerietosum	5	38,4	39	34	43	34	43	4,3

N – broj ploha; x – aritmetička sredina

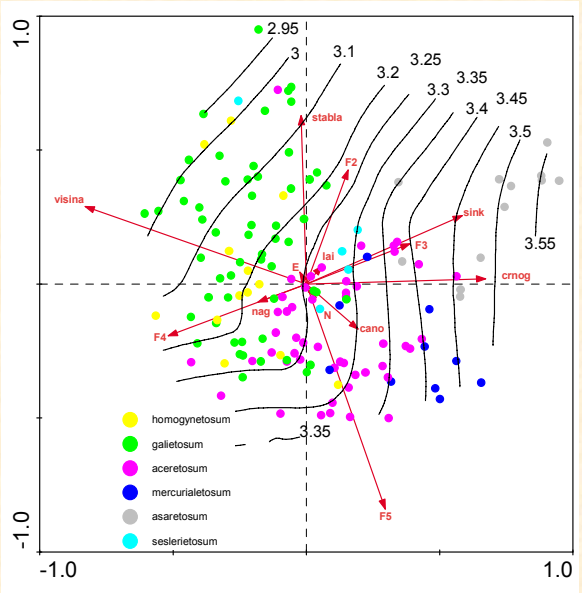
- *asaretosum* i *mercurialetosum* imaju zabilježen najveći, a *galietosum* najmanji broj vrsta

Shannon-Wiener

Jednolikost



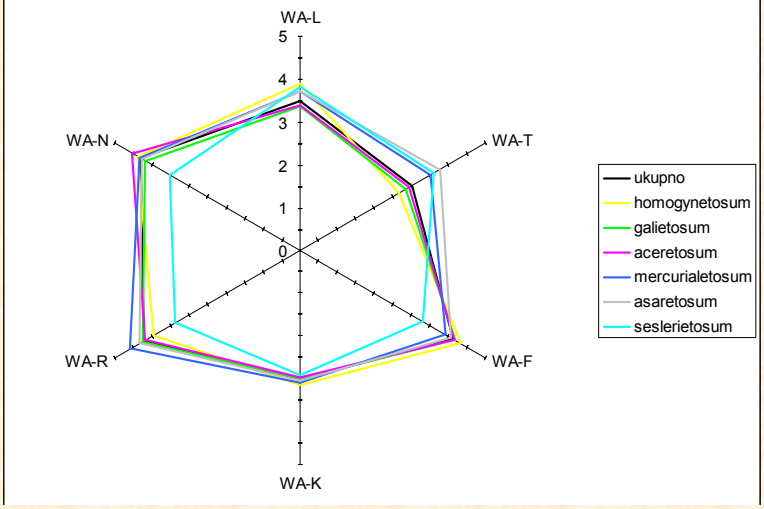
RDA analiza



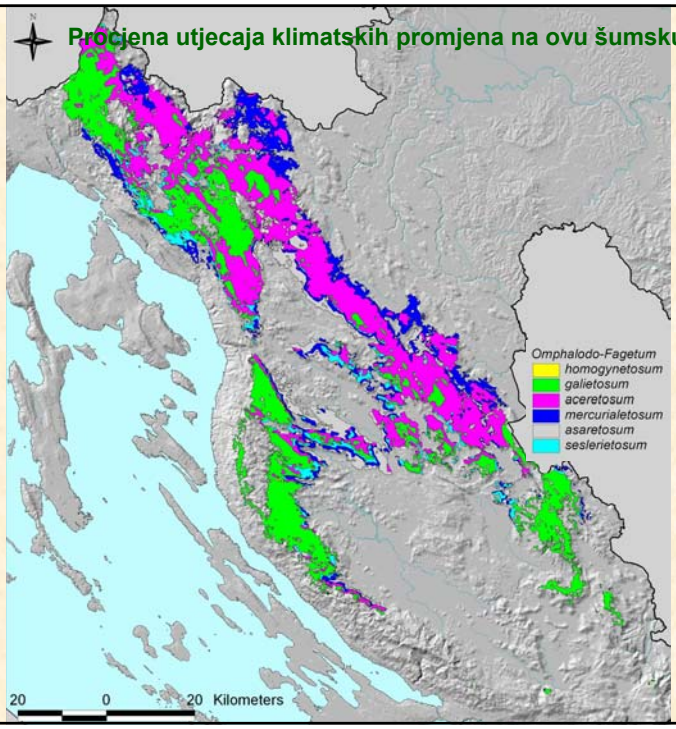
- visina
- količina oborina
- količina dozračene sunčeve energije
- količina raspoloživog svjetla u prizemnom sloju

Ekogram

°Y¤	r¤	r²¤	t¤	p¤	a¤	b¤
WA-T¤	0,370	0,137	4,865	0,000003	1,954	0,168
Diek-T¤	0,382	0,146	5,050	0,000001	2,068	0,163
HOF-T¤	0,446	0,199	6,081	0,000000	1,767	0,188



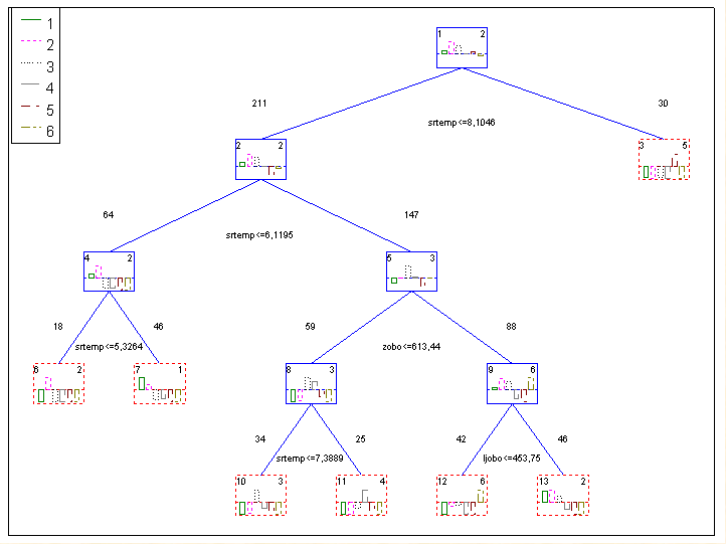
Procjena utjecaja klimatskih promjena na ovu šumsku zajednicu



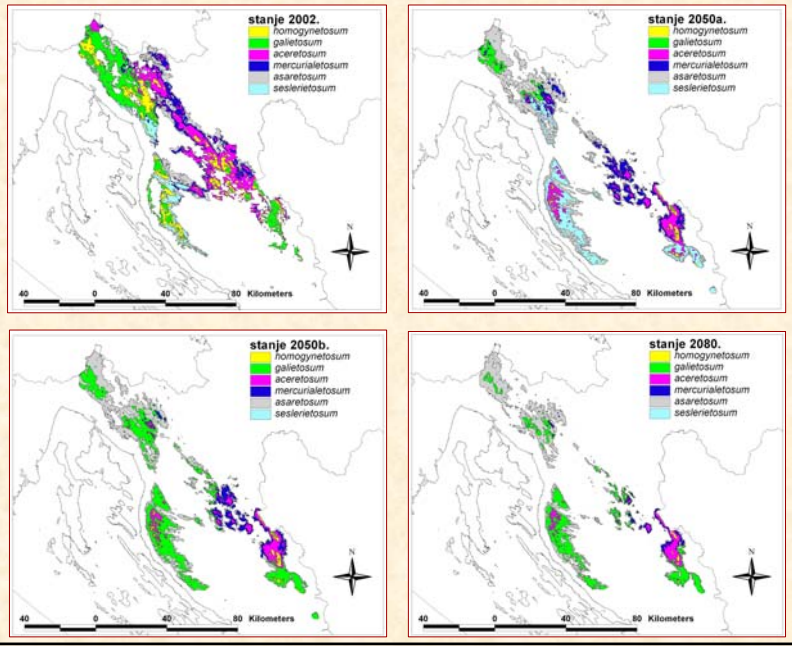
Scenariji klimatskih promjena

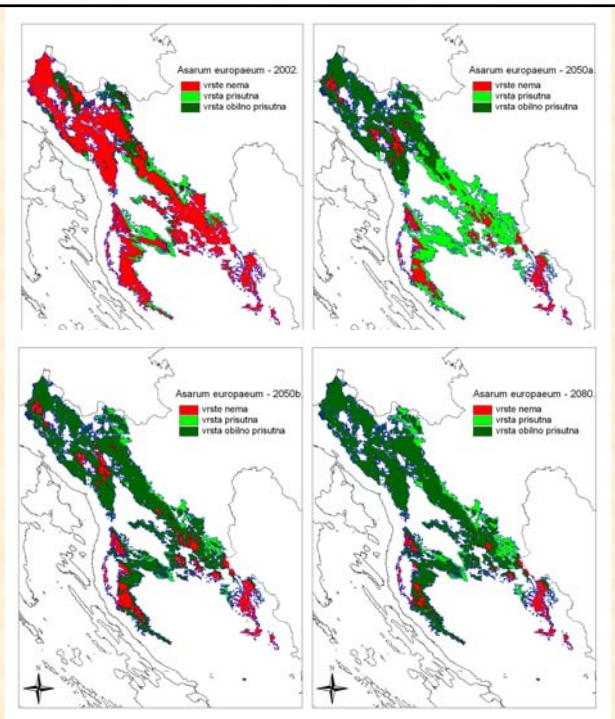
Parametar/god.	**2050a**	**2050b**	**2080**
srednja temp. ICCP-SRESA1	+ 1,8 ºC	+ 1,8 ºC	+ 2,3 ºC
Zimske oborine	+ 5%	+ 10%	+ 15%
Ljetne oborine	- 5%	- 10%	- 15%

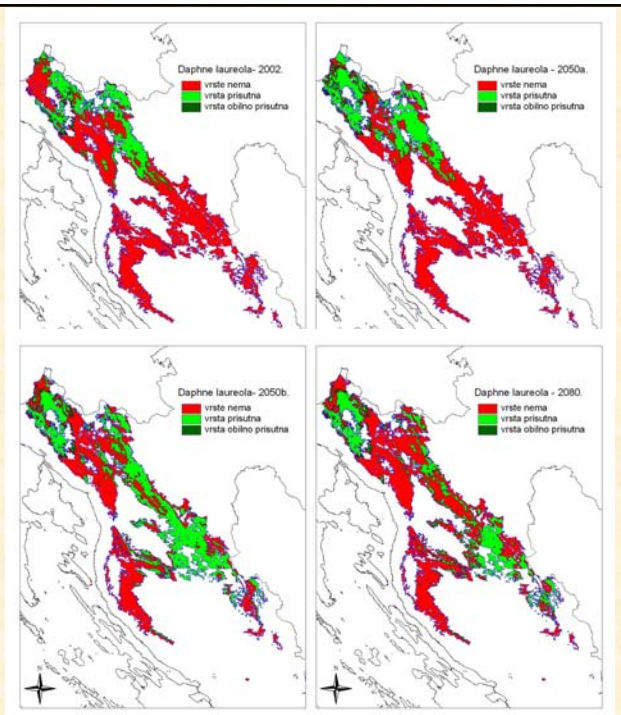
CT prediktivni model subasocijacija



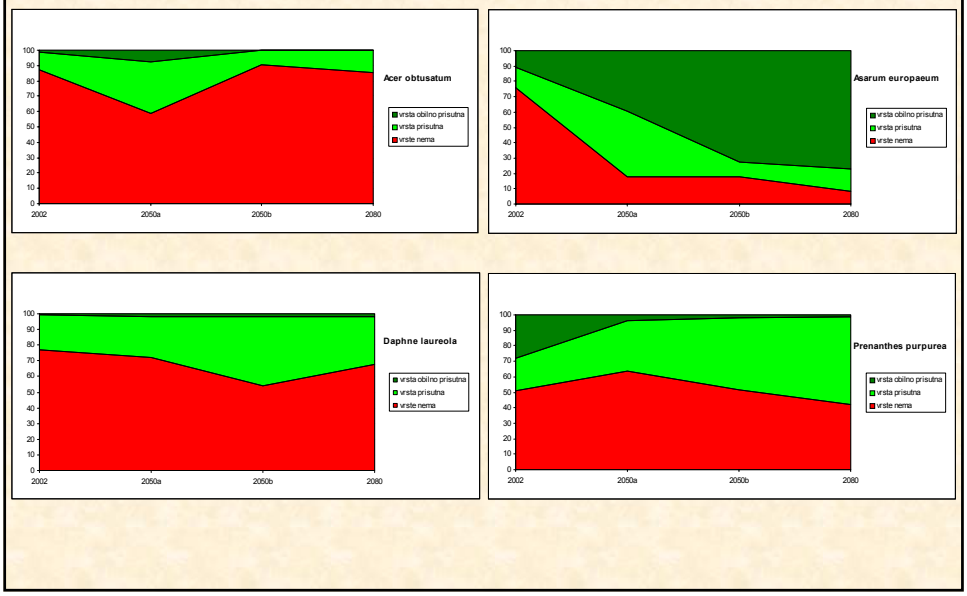
Predviđene promjene u rasprostranjenosti







Smjer promjena abundancija biljnih vrsta



... ima toga još puno (na diplomskom studiju)