Aplicable methods for non-detriment findings

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Research lines

Forest Ecophysiology

- Water relations
- Photosynthesis

Forest demography (early stages)

- Spatial analysis of seedling/sapling mortality
- Regeneration niche of young trees

Plant-soil functionality

- Shrubs
- Multifunctionality

Remote sensing & Ecophysiology

- Forest decline

Individual level

Community level

Selection criteria

- Quantitative aspects for DEnP
- Concrete & applicable to each specie and scenario
- Spatial & scale aspects
- Accessible computational tools, i. e., freeware

OUTLINE

Data acquisition (size & grain matter)

- Remote sampling
- Field sampling

Checking data quality

- Review quality assurance reports
- Calculate statistical quantities
- Graph the data

Analyzing data

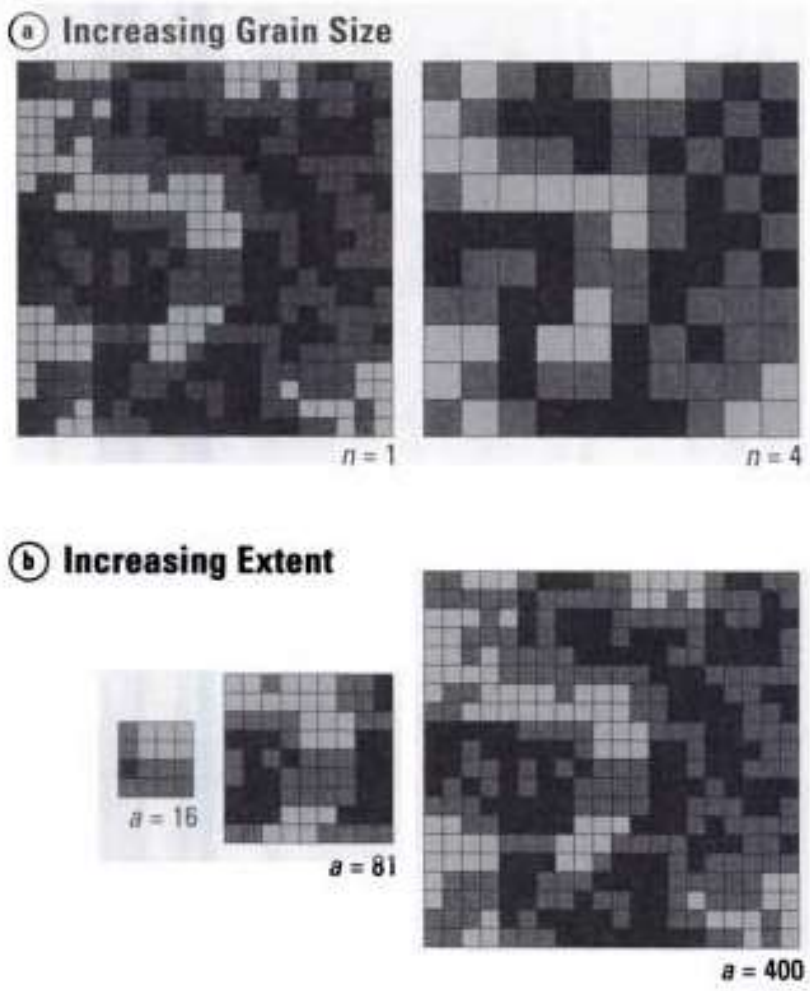
- Spatial analysis
  - SADIE
- Multivariate analysis
  - SAM

Data acquisition (size & grain matter)

FIGURE 2.2.

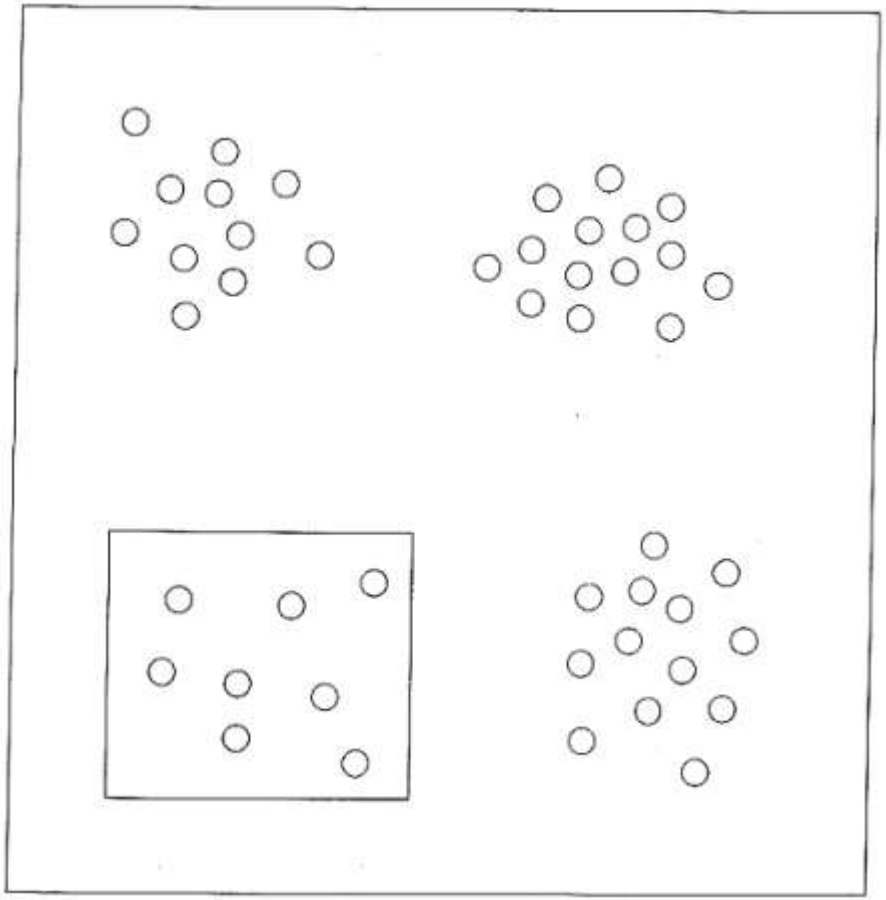
Schematic of two components of spatial scale: (a) grain and (b) extent. The number of cells aggregated to form the new data unit (i.e., new grain size) are indicated by *n*; total area, extent, is indicated by *a*.

MODIFIED FROM TURNER ET AL., 1989B.



Data acquisition (size & grain matter)

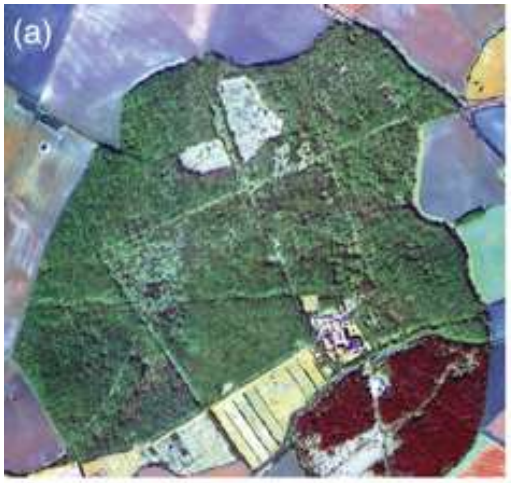
- Inference is determined by observational scale



Dale 1999

Remote sensing: species distribution area, forest fragmentation, area time-series

Mapping tree species in temperate deciduous woodland using time-series multi-spectral data



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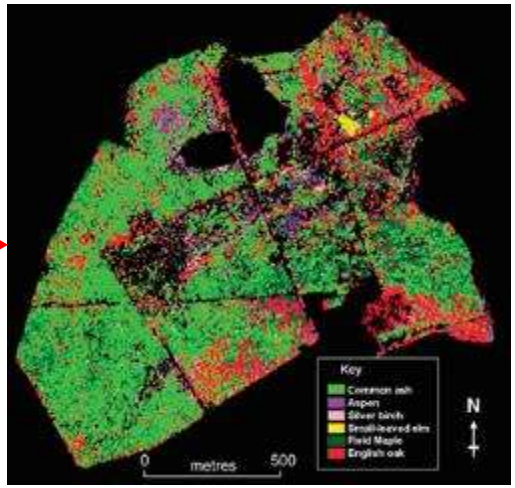
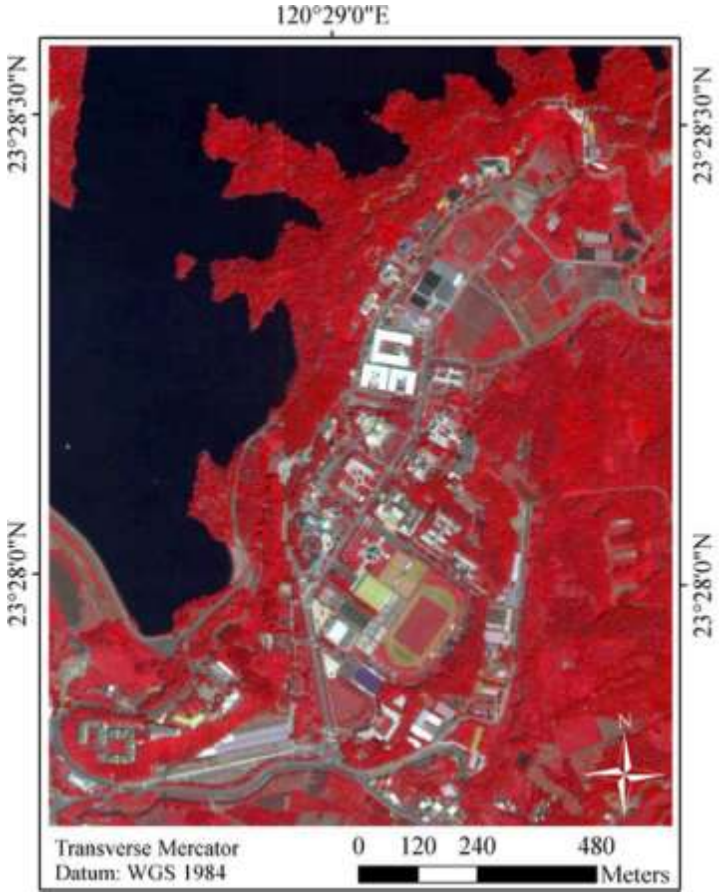


Applied Vegetation Science
Volume 13, Issue 1, pages 86-99, 4 SEP 2009 DOI: 10.1111/j.1654-109X.2009.01053.x
http://onlinelibrary.wiley.com/doi/10.1111/j.1654-109X.2009.01053.x/full#f4

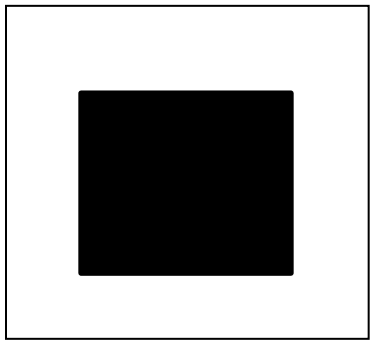
Remote sensing: species distribution area, forest fragmentation, area time-series

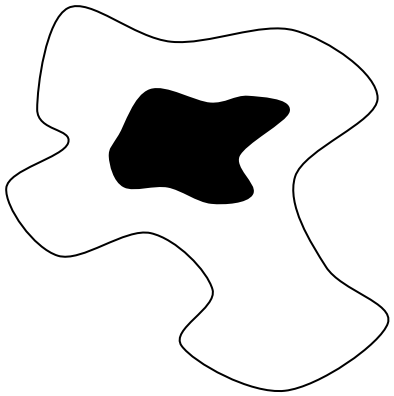


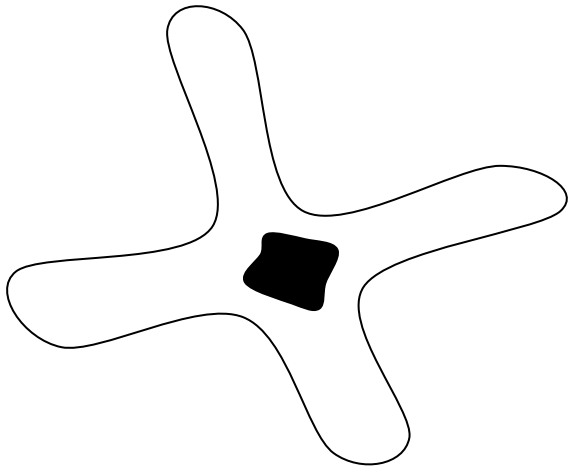
Lin C, Popescu SC, Thomson G, Tsogt K, Chang CI (2015) Classification of Tree Species in Overstorey Canopy of Subtropical Forest Using QuickBird Images. PLoS ONE 10(5): e0125554. doi:10.1371/journal.pone.0125554
http://127.0.0.1:8081/plosone/article?id=info:doi/10.1371/journal.pone.0125554

Remote sensing & small scale: **indirect method**

Higher shape complexity = higher regeneration and diversity







ELSEVIER

GfÖ

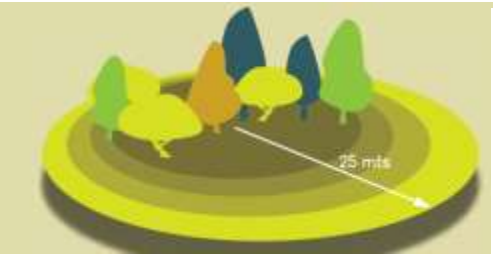
Basic and Applied Ecology

Is spatial structure the key to promote plant diversity in Mediterranean forest plantations?

P. González-Moreno[a,b,*], J.L. Quero[b,c], L. Poorter[b], F.J. Bonet[a], R. Zamora[d]

[a]Laboratorio de Ecología, Centro Andaluz de Medio Ambiente (iEcolab-CEAMA), Granada 18006, Spain
[b]Forest Ecology and Forest Management Group, Centre for Ecosystem Studies, Wageningen University, PO Box 47, Wageningen 6700 AA, The Netherlands
[c]Área de Biodiversidad y Conservación, Departamento de Biología y Geología, Universidad Rey Juan Carlos, Móstoles 28933, Spain
[d]Departamento de Ecología, Facultad de Ciencias, Universidad de Granada, Granada 18071, Spain

Field sampling: permanent plots & variable radius



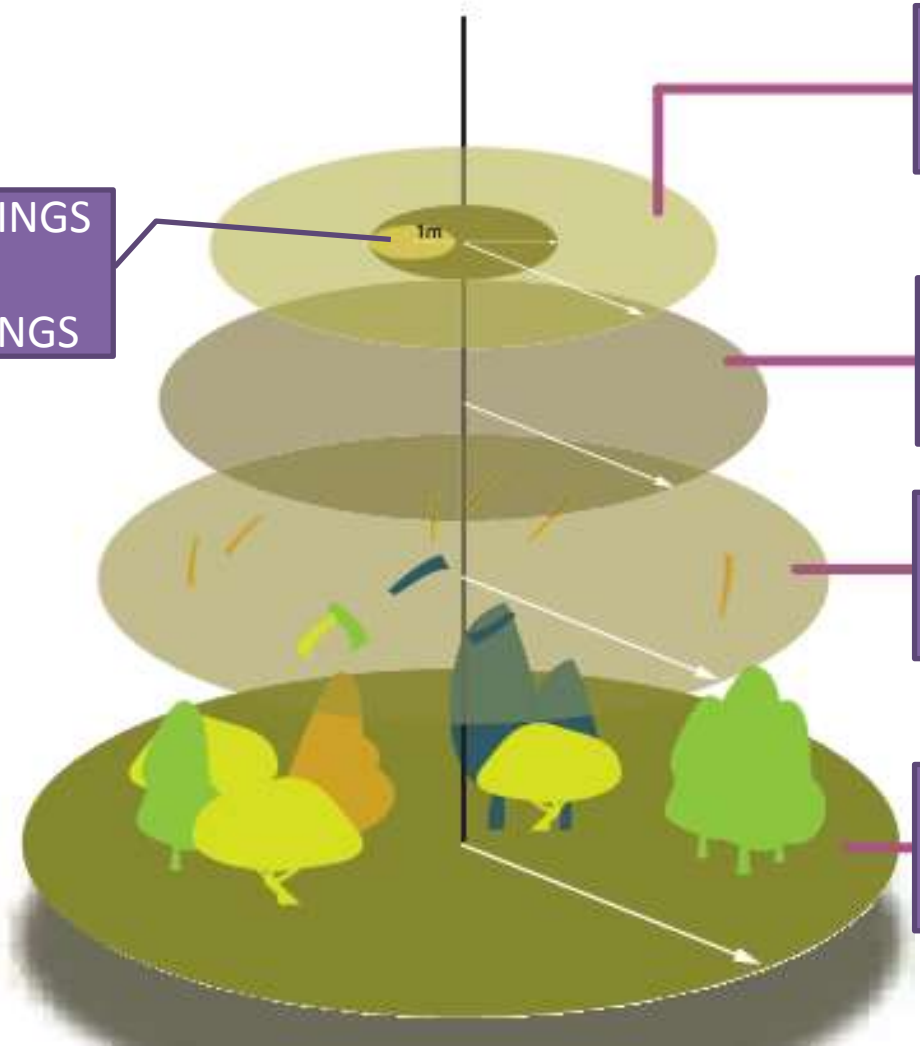
SEEDLINGS & SAPLINGS

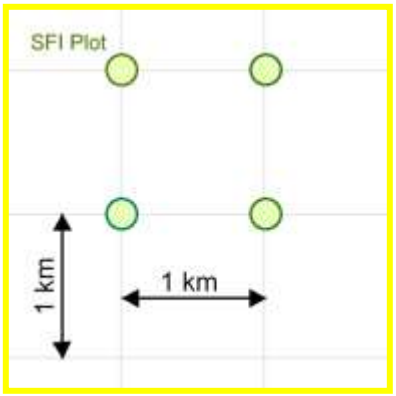
5m: <7.5 DBH

10m: 7.5 - 12.5 DBH

15m: 12.5-22.5 DBH

25m: > 22.5 DBH





OUTLINE

Data acquisition (size & grain matter)

- Remote sampling
- Field sampling

Checking data quality

- Review quality assurance reports
- Calculate statistical quantities
- Graph the data

Analyzing data

- Spatial analysis
  - SADIE
- Multivariate analysis
  - SAM

Checking data quality

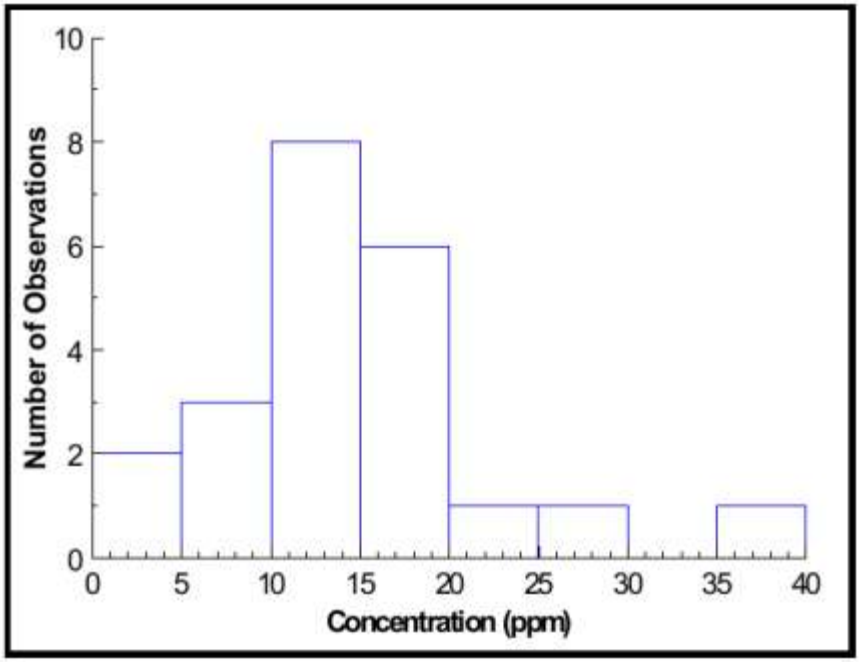
1. Review quality assurance reports
    - Data verification and validation reports that document the sample collection, handling, analysis, data reduction, and reporting procedures used
    - Quality control reports from field stations that document measurement system performance

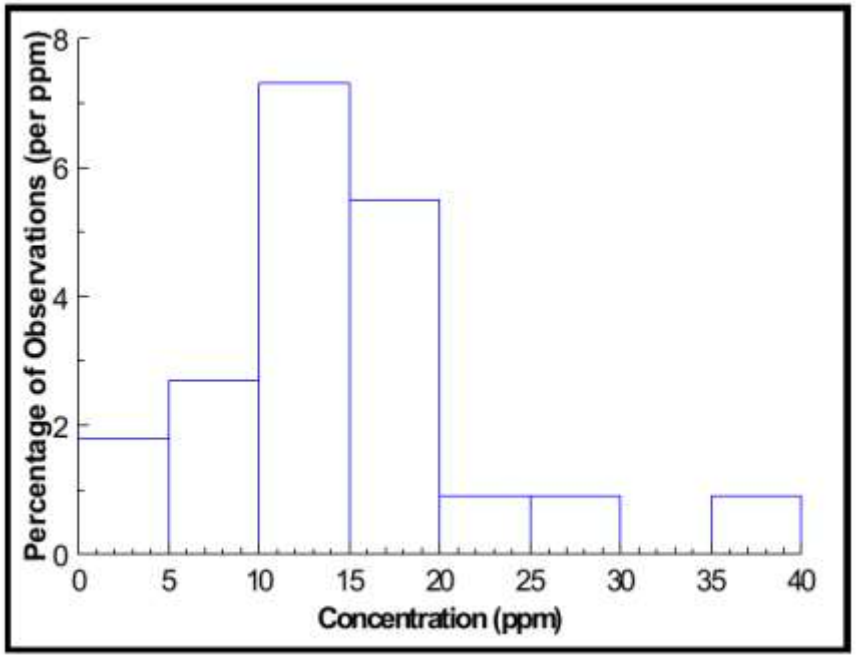
Checking data quality

2. Calculate Basic Statistical Quantities
   - Measures of central tendency
     - ✓ Mean
     - ✓ Median
     - ✓ Mode
   - Measures of relative standing
     - ✓ Percentiles
     - ✓ Quantiles
   - Measures of Dispersion
     - ✓ Range
     - ✓ Variance and Standard Deviation
     - ✓ Coefficient of Variation
     - ✓ Interquartile Range
   - Measures of Association
     - ✓ Pearson's Correlation Coefficient
     - ✓ Spearman's Rank Correlation Coefficient

Checking data quality

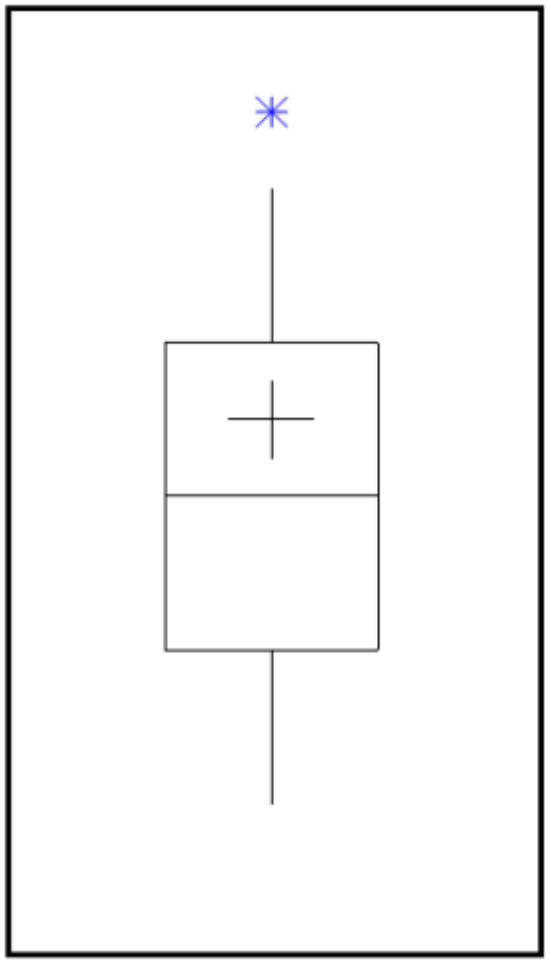
3. Graphical representation of data
    - Histogram/Frequency Plots





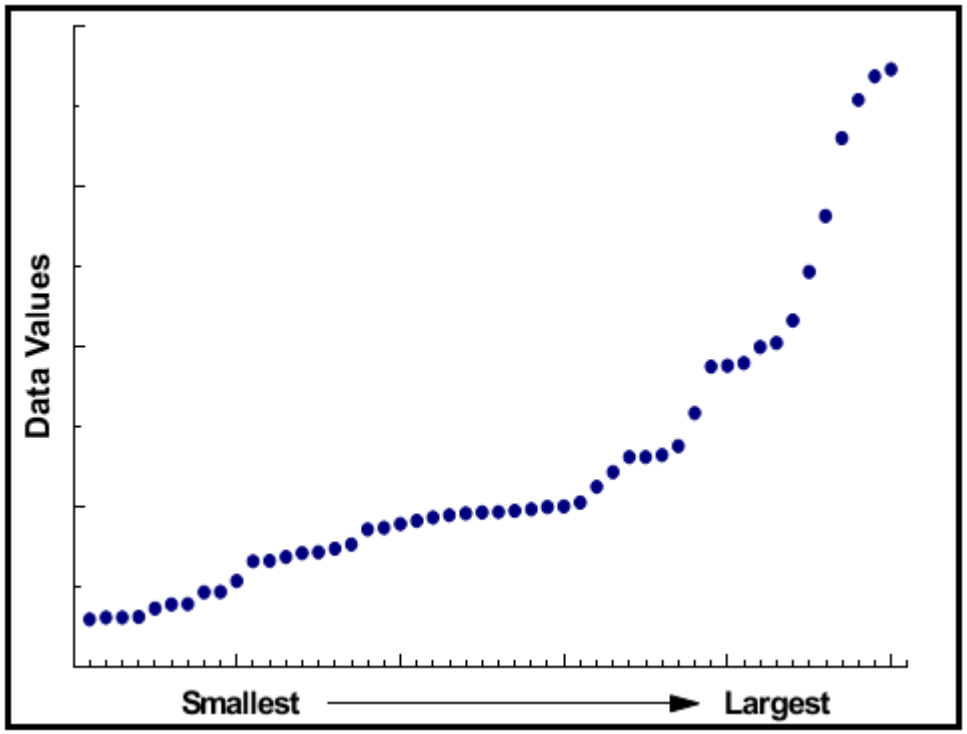
Checking data quality

3. Graphical representation of data
    - Box- and-Whiskers Plot



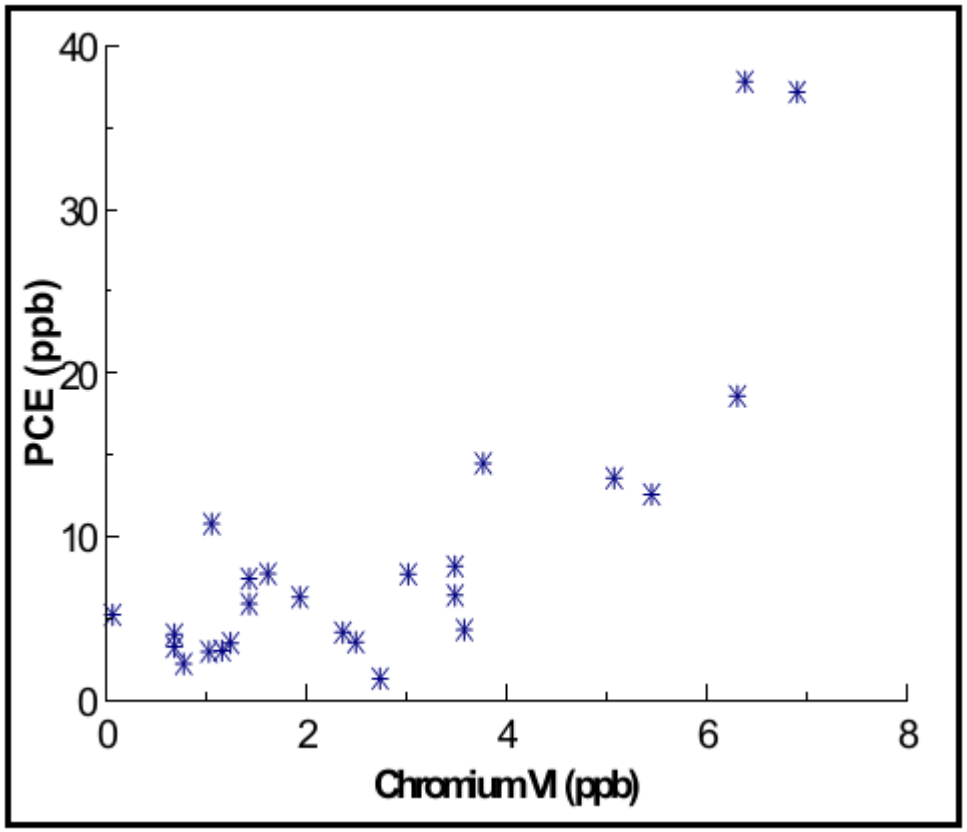
Checking data quality

3. Graphical representation of data
    - Ranked Data Plot



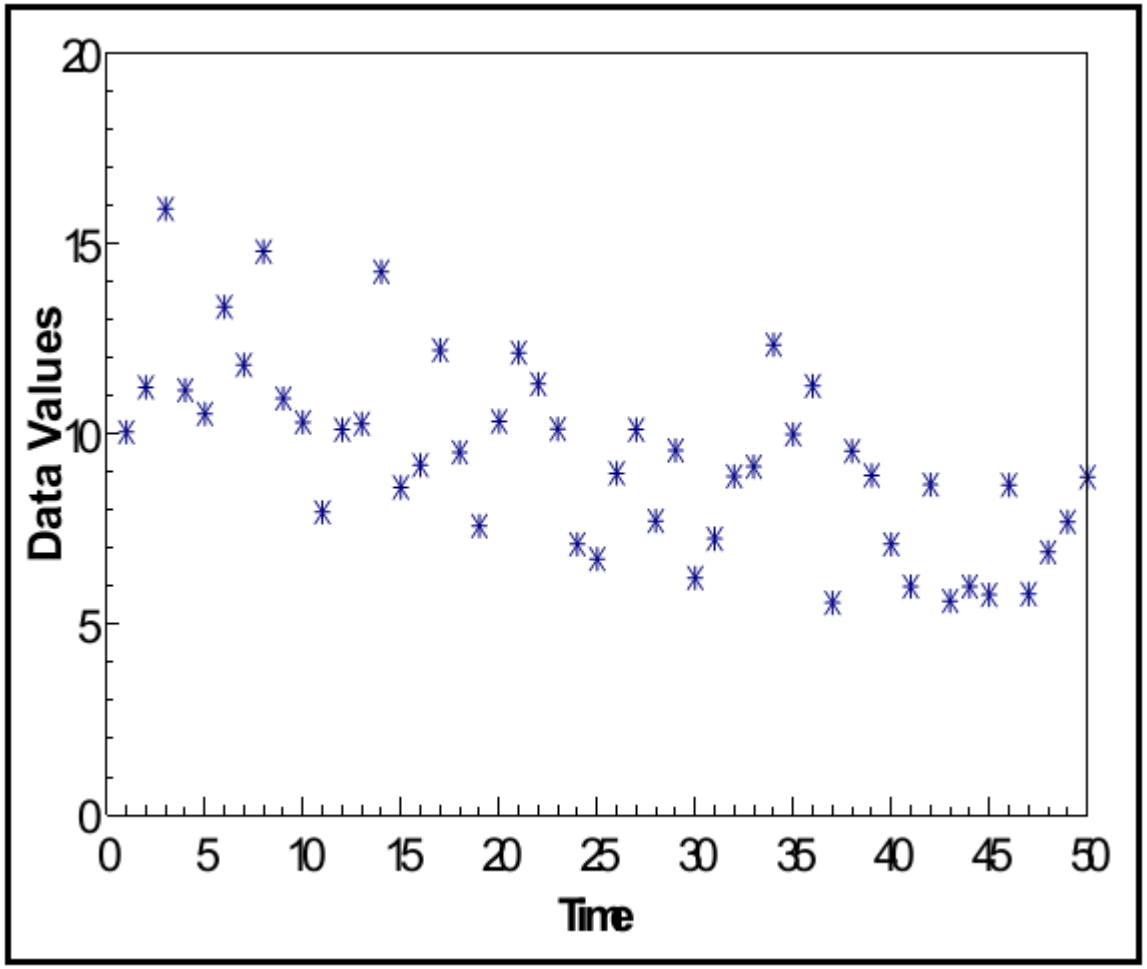
Checking data quality

3. Graphical representation of data
    - Scatterplots (Two a-priori paired variables)



Checking data quality

3. Graphical representation of data
    - Time Plot (Temporal Data)



Checking data quality

3. Graphical representation of data
    - Posting Plots (Spatial Data)

OUTLINE

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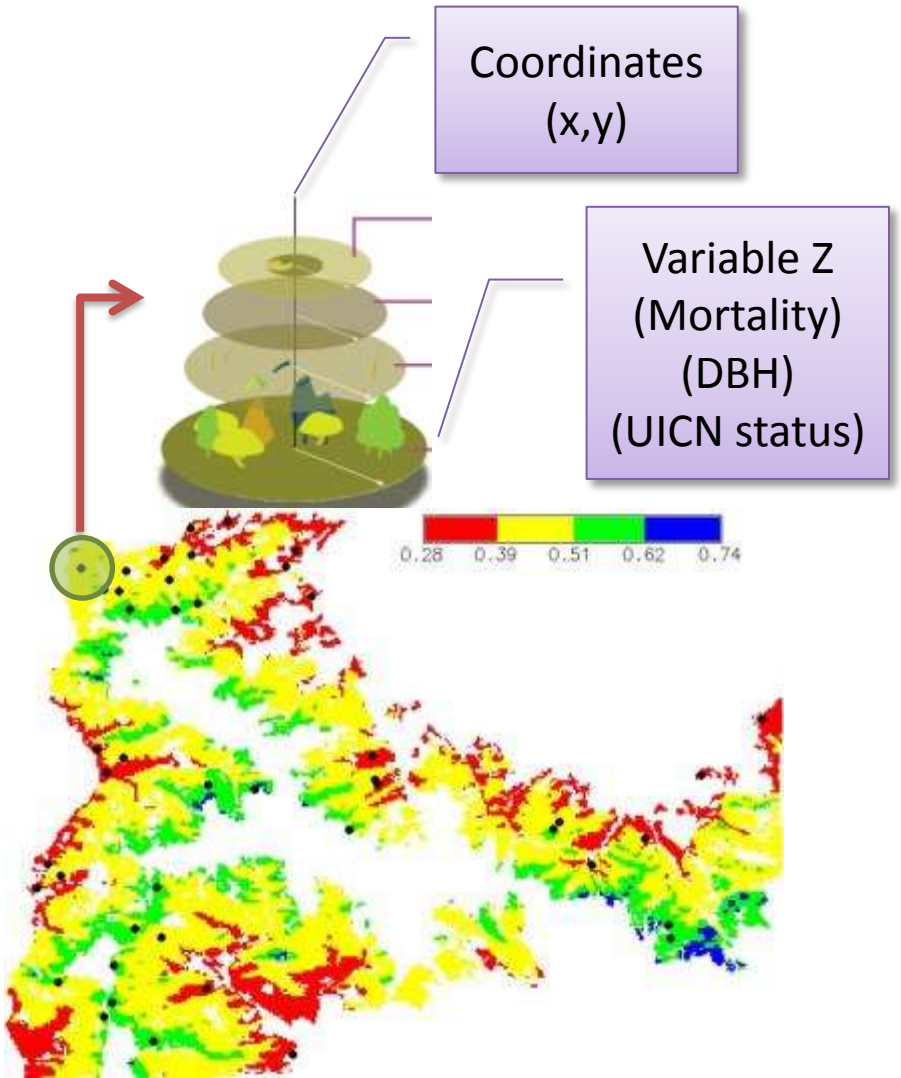
Analyzing data

Spatially explicit data



Spatially explicit data: Bloc de notas

Archivo Edición Formato Ver Ayuda

X	Y	Z
1	1	0
13	1	1
3	2	1
12	2	0
0	3	1
14	3	1
20	3	1
1	4	0
4	4	1
7	4	1
13	4	1
19	4	0
0	5	0
6	5	1
12	5	0
15	5	1
18	5	1
21	5	1
24	5	1
30	5	0
14	6	1
17	6	1
26	6	0
29	6	0
1	7	1
7	7	0
19	7	1

Analyzing data

Spatially explicit data

Spatially explicit data: Bloc de notas

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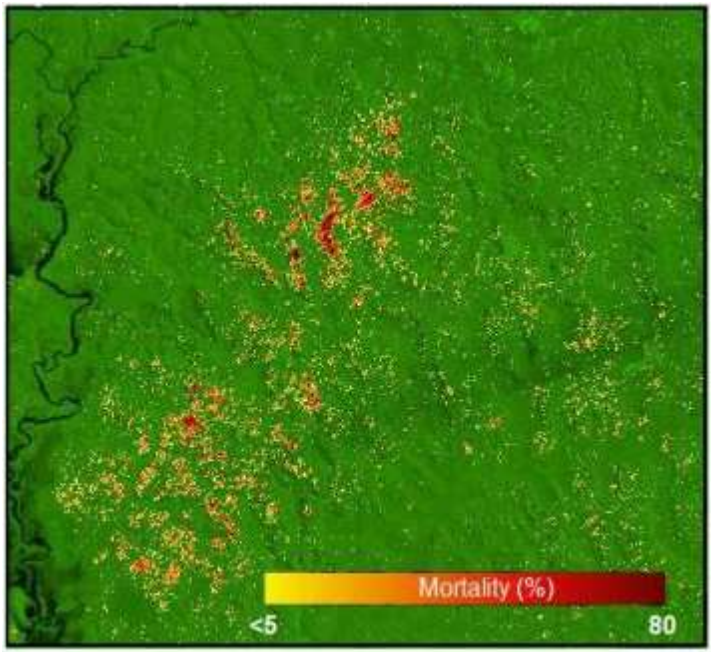
13	4	1
19	4	0
0	5	0
6	5	1
12	5	0
15	5	1
18	5	1
21	5	1
24	5	1
30	5	0
14	6	1
17	6	1
26	6	0
29	6	0
1	7	1
7	7	0
19	7	1



Analyzing data

Spatially explicit data

Spatially explicit data: Bloc de notas

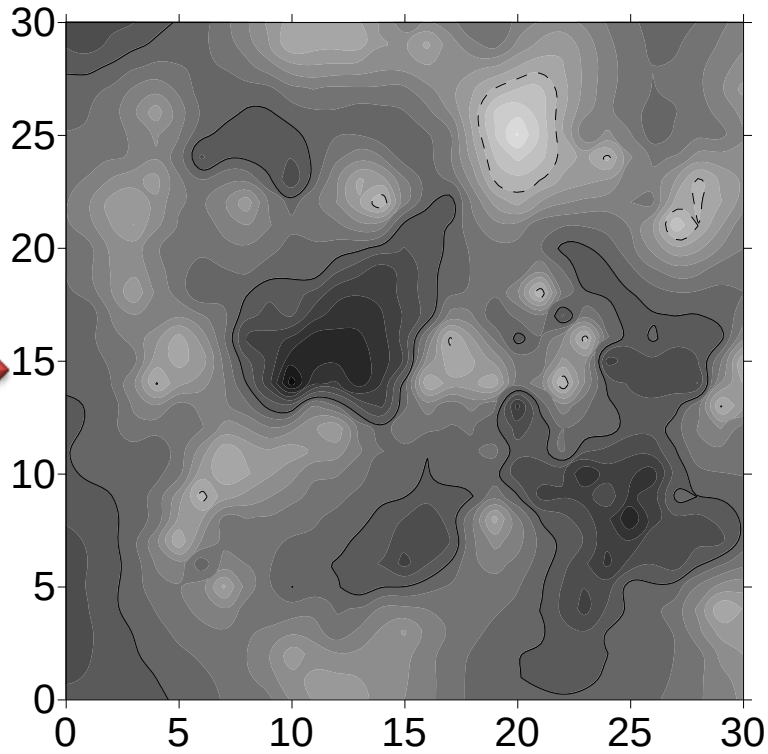
Archivo Edición Formato Ver Ayuda

X	Y	Z
1	1	0
13	1	1
3	2	1
12	2	0
0	3	1
14	3	1
20	3	1
1	4	0
4	4	1
7	4	1
13	4	1
19	4	0
0	5	0
6	5	1
12	5	0
15	5	1
18	5	1
21	5	1
24	5	1
30	5	0
14	6	1
17	6	1
26	6	0
29	6	0
1	7	1
7	7	0
19	7	1

SADIE

"spatial analysis by distance indices"

Based on statistical test

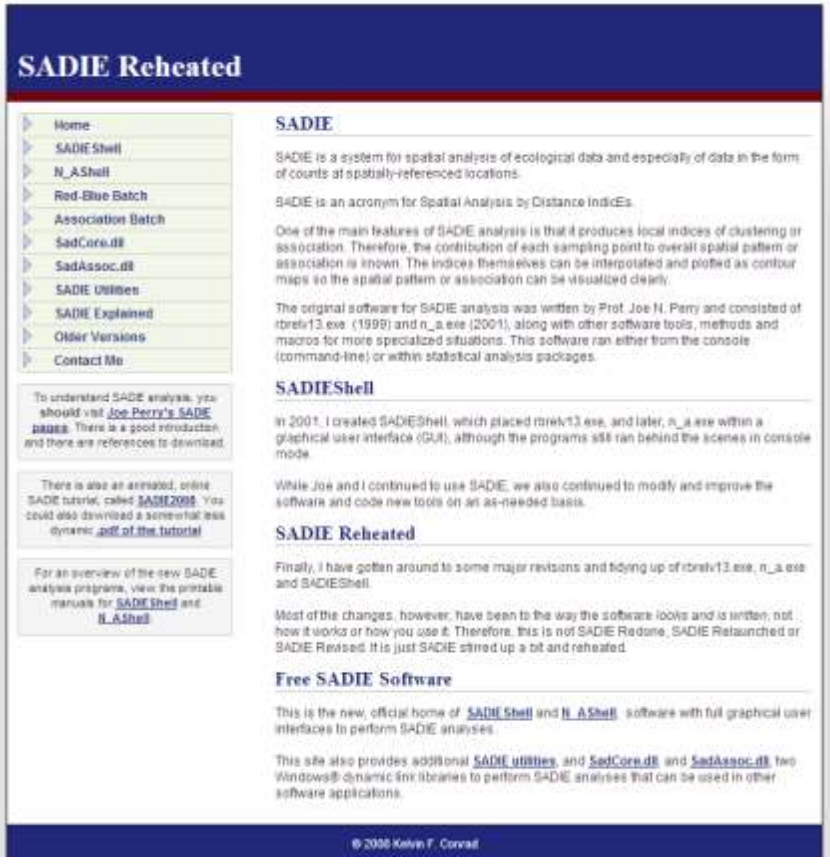


Analyzing data

Spatially explicit data

SOFTWARE SadieShell (FREE)

- http://home.cogeco.ca/~sadiespatial/index.html



Analyzing data

Multivariate analysis

Diversity	Soil texture	Slope	AMT	RAI	MTMAX	MTMIN	LAT	LON	ELE
7.78	72.858	1.1	7.3	217	14.2	0.5	-41.808	-69.676	1,214
9.08	90.254	0.6	7.9	375	14.4	1.4	-41.238	-70.424	1,067
6.67	79.423	5.7	7.2	568	13.3	1.0	-41.107	-70.891	1,134
2.17	67.180	1.1	7.1	685	13.2	1.1	-41.004	-71.059	1,128
6.82	64.605	0.6	7.4	284	14.2	0.7	-41.253	-70.081	1,198
9.14	77.675	0.6	7.8	416	14.3	1.4	-41.034	-70.525	1,072
7.59	78.254	0.5	15.0	363	22.3	7.8	-38.991	-63.934	110
7.97	81.299	0.5	15.1	342	22.7	7.5	-38.840	-64.495	138
9.83	83.525	0.5	15.2	320	23.1	7.4	-38.764	-65.073	157
10.95	66.684	0.5	15.2	313	23.3	7.1	-38.700	-66.183	243
9.31	85.676	0.5	14.7	275	23.1	6.4	-37.671	-67.233	366
10.64	56.756	0.5	14.4	194	22.7	6.2	-37.550	-68.050	481
8.31	72.214	1.5	18.6	243	25.8	11.3	-31.551	-67.425	556
7.46	71.524	1.0	19.2	355	26.0	12.5	-31.356	-66.820	521
4.22	84.691	1.0	18.8	267	26.0	11.7	-31.488	-67.281	528
1.78	91.172	1.0	17.7	130	25.5	9.9	-31.704	-68.152	586
4.02	80.159	1.0	19.5	324	26.4	12.7	-31.391	-66.970	439
2.87	81.746	1.5	17.7	179	25.3	10.1	-31.719	-67.837	636

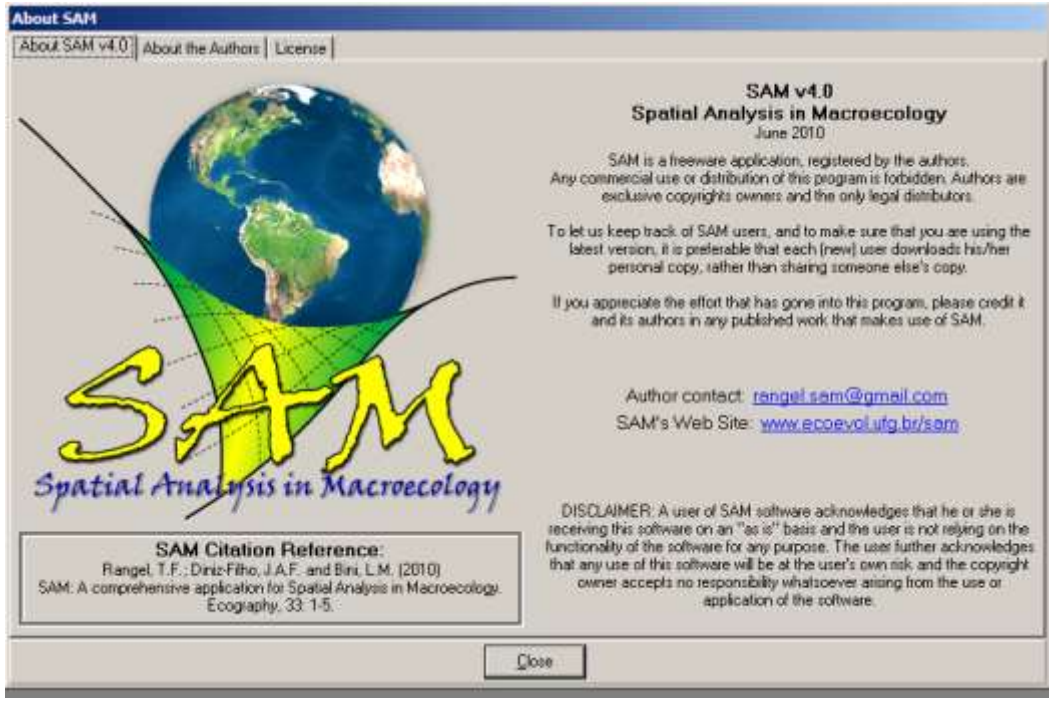
VS.

BA
1.05
2.50
0.58
0.38
5.30
2.25
2.92
5.46
4.95
0.86
0.79
2.42
2.11
2.44
2.86
3.55

Multivariate analysis

SOFTWARE SAM (FREE)

- http://www.ecoevol.ufg.br/sam/



Analyzing data

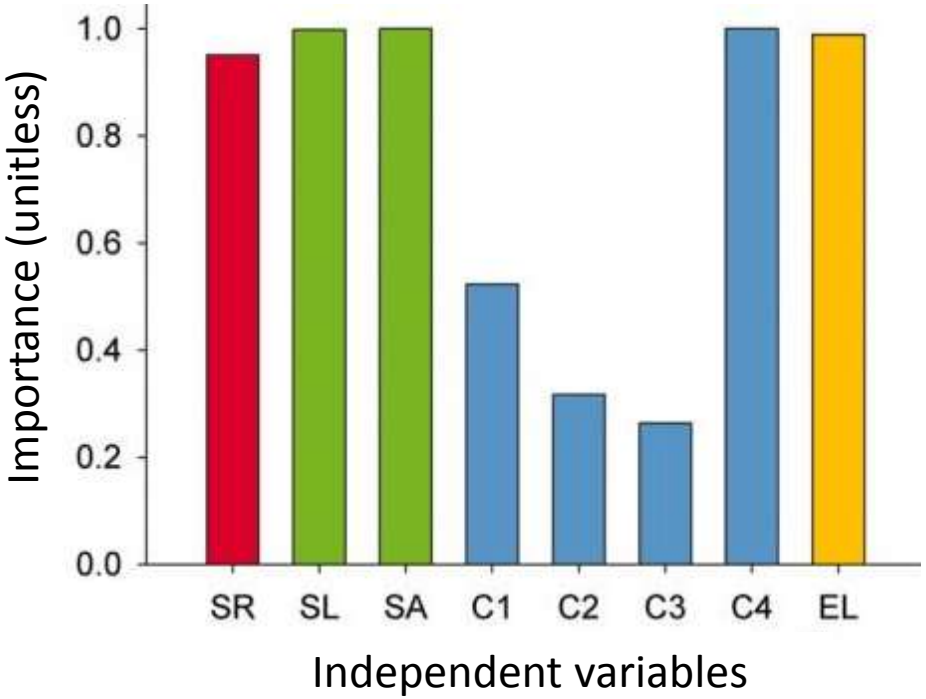
Multivariate analysis

Species richness	Abiotic		Climatic				Geographic			R^2	AIC_c	ΔAIC_c	w_i
	SL	SA	C1	C2	C3	C4	LA	LO	EL				
■	■	■	■		■	■	■	■	■	0.564	282.750	0	0.217
■	■	■	■			■	■	■	■	0.559	283.226	0.475	0.171
■	■	■				■	■	■	■	0.554	283.595	0.845	0.143
■	■	■	■	■			■	■	■	0.558	283.862	1.111	0.125
■	■	■	■	■	■	■	■	■	■	0.565	284.502	1.751	0.091
■	■	■	■		■		■	■	■	0.556	284.637	1.887	0.085
■	■	■		■	■	■	■	■	■	0.561	284.677	1.927	0.083
■	■	■	■	■		■	■	■	■	0.560	285.035	2.285	0.069

Best-fitting regression models of basal area. Ranked according to AIC_c value. AIC_c measures the relative goodness of fit of a given model; the lower its value, the more likely it is that this model is correct. Unshaded cells indicate variables that were not included in a particular model. The first and third models of the table are the best and most parsimonious models

Analyzing data

Multivariate analysis



Relative importance of predictor variables in models of basal area. he height of each bar is the sum of the Akaike weights of all models that included the predictor of interest

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Thanks for your attention!

I would like to help AMAP so please keep in touch:

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https://scholar.google.es/citations?user=5jr0LrYAAAAJ&hl=es