

Applicable 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

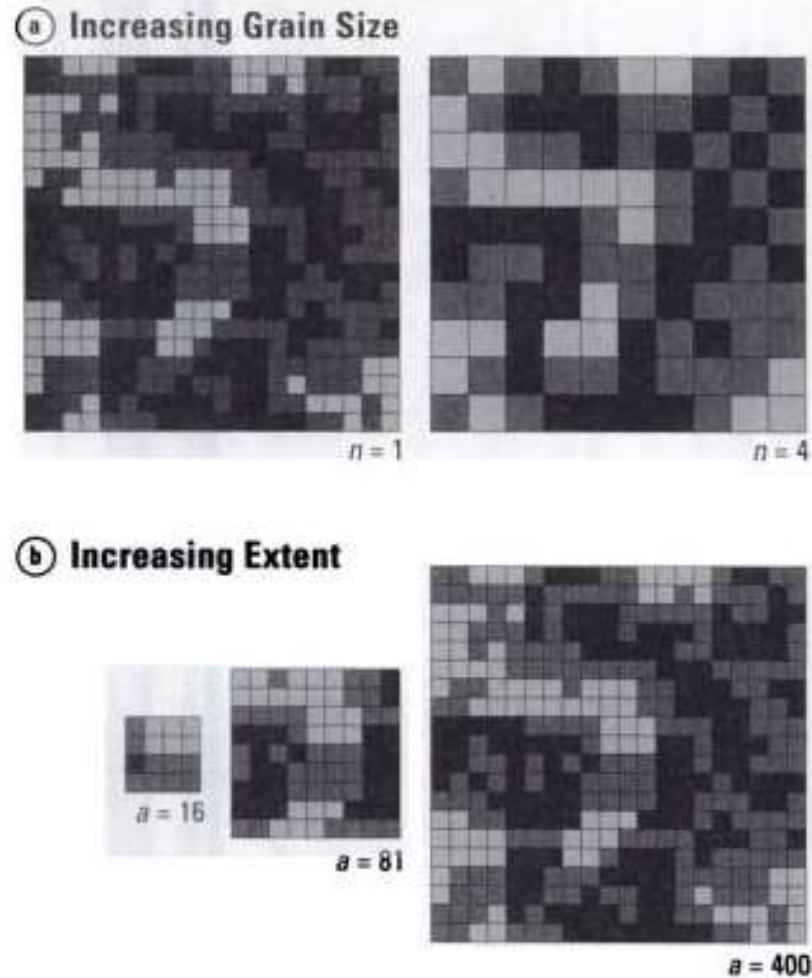
- Spatial analysis
 - SADIE
- Multivariate analysis
 - SAM

Data acquisition (size & grain matter)

FIGURE 2.2.

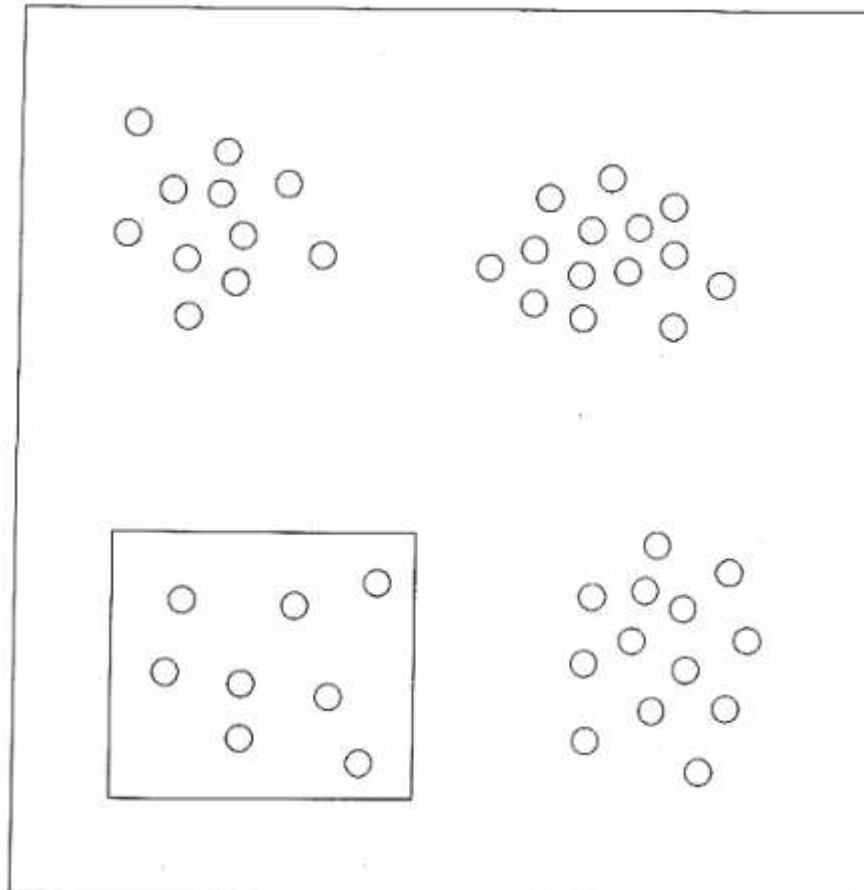
Schematic of two components of spatial scale: (a) grain and (b) extent. The number of cells aggregated to form the new data unit (i.e., new grain size) are indicated by n ; total area, or extent, is indicated by a .

MODIFIED FROM TURNER ET AL., 1989B.



Data acquisition (size & grain matter)

- Inference is determined by observational scale

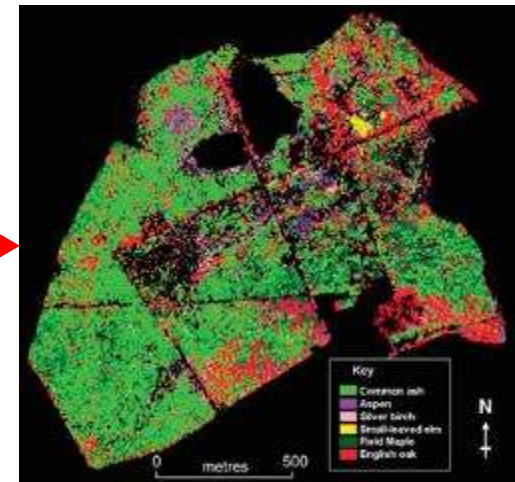


Remote sensing: species distribution area, forest fragmentation, area time-series

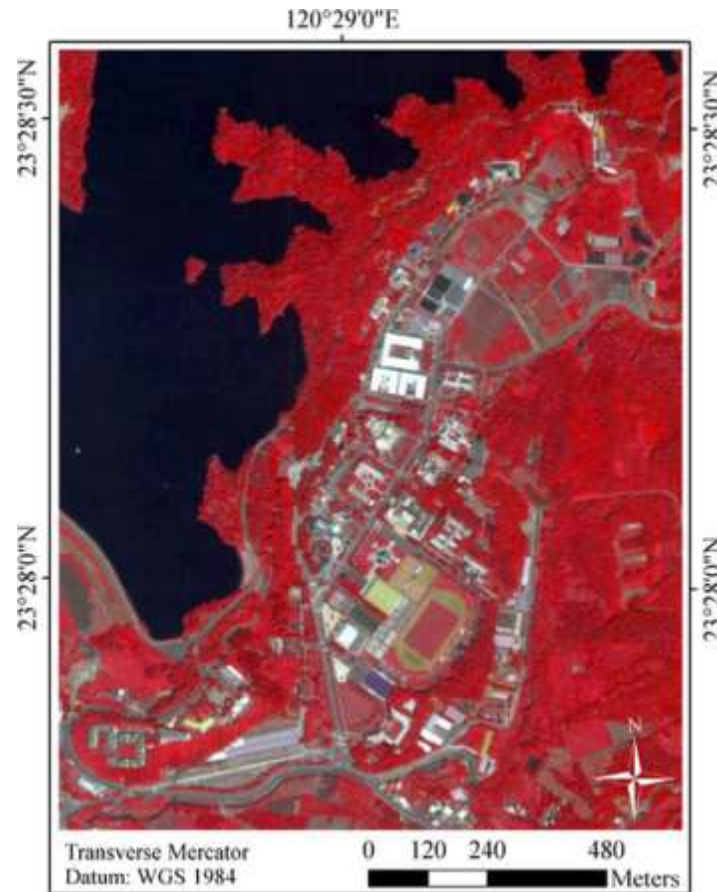
Mapping tree species in temperate deciduous woodland using time-series multi-spectral data



\$/€



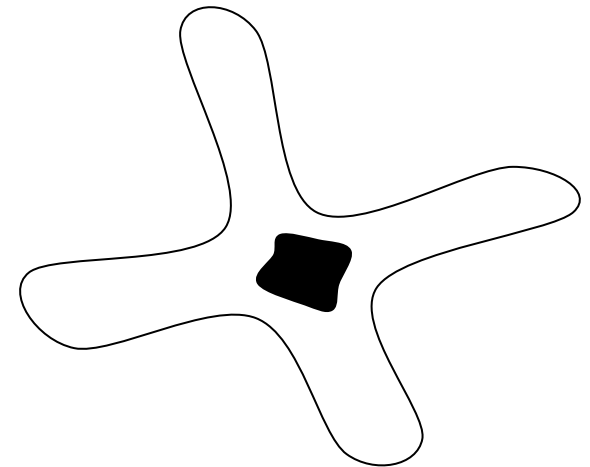
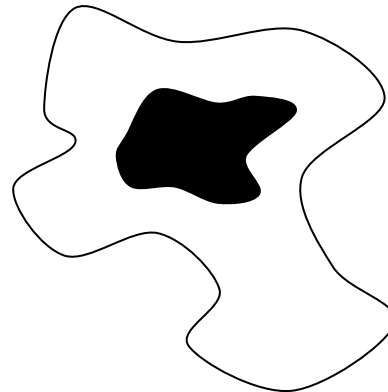
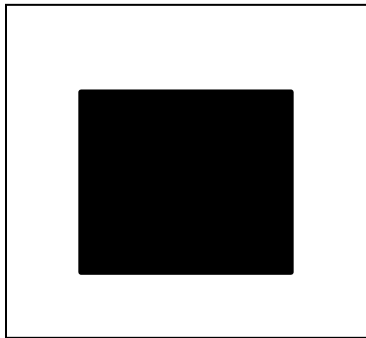
Remote sensing: species distribution area, forest fragmentation, area time-series



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

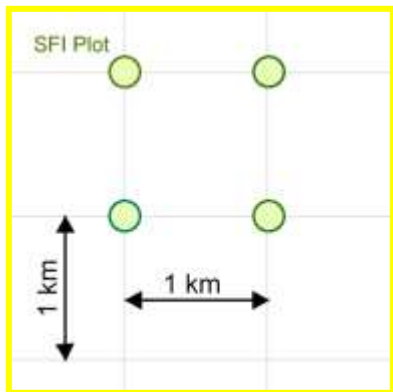
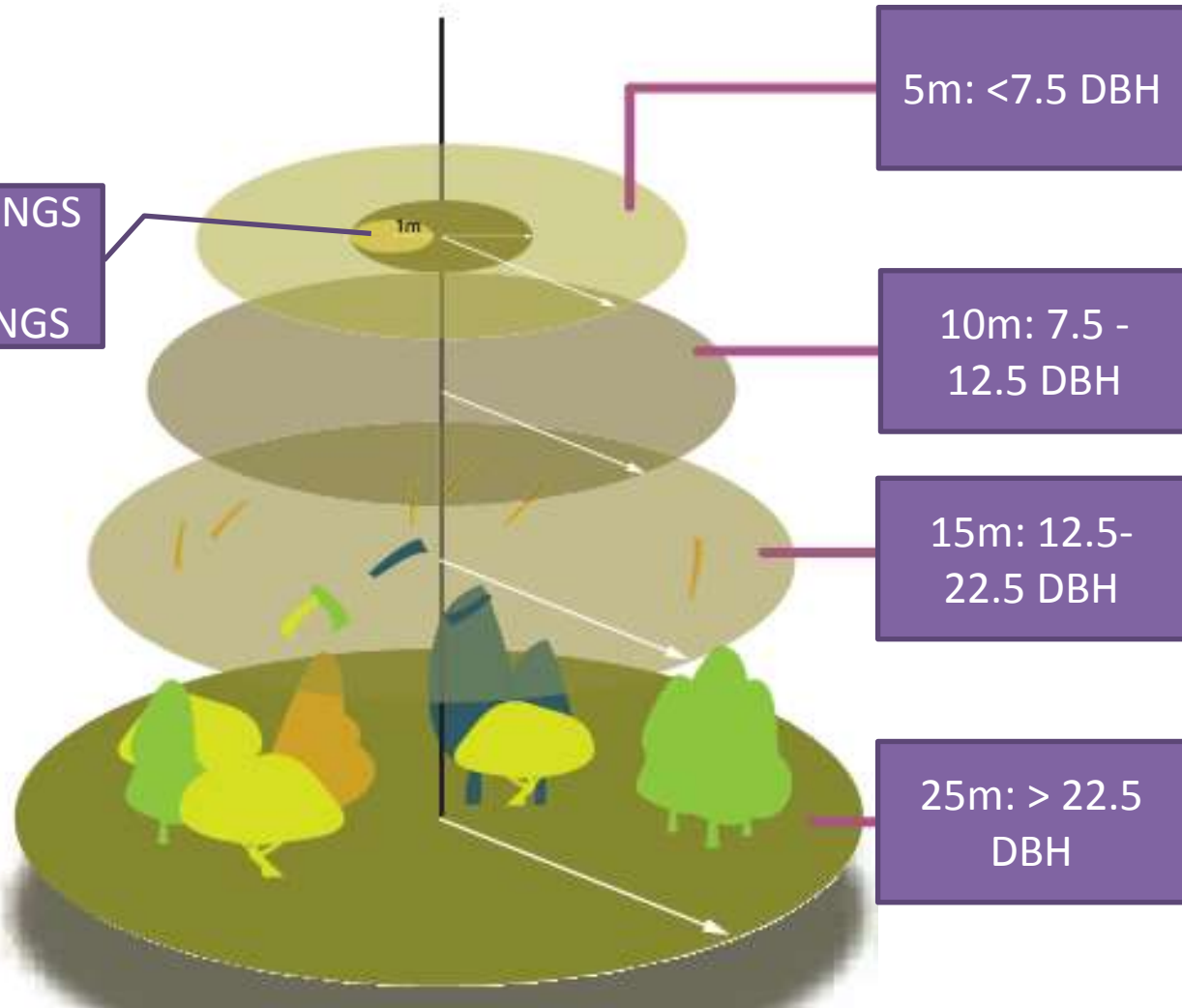
Higher shape complexity = higher regeneration and diversity



Field sampling: permanent plots & variable radius



SEEDLINGS
&
SAPLINGS



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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

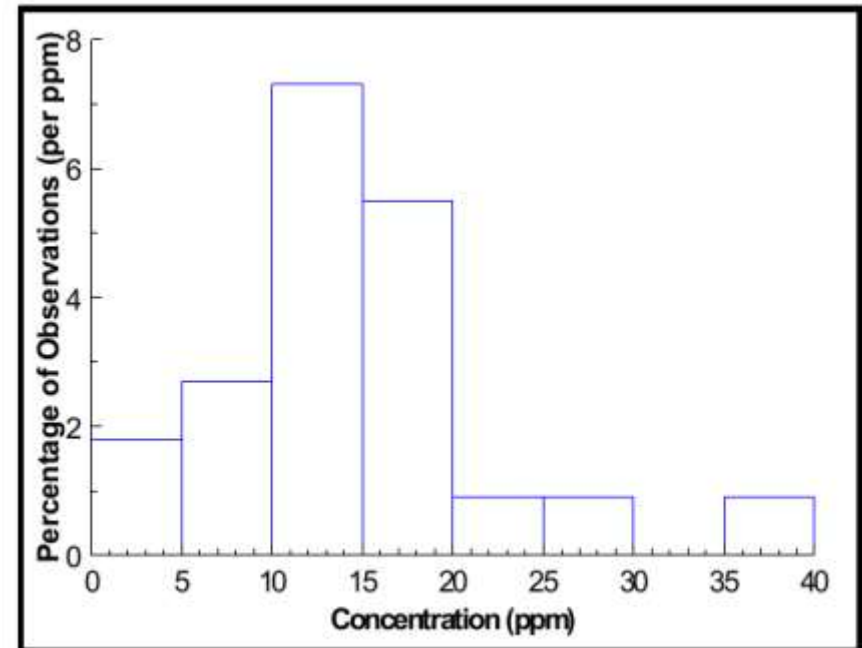
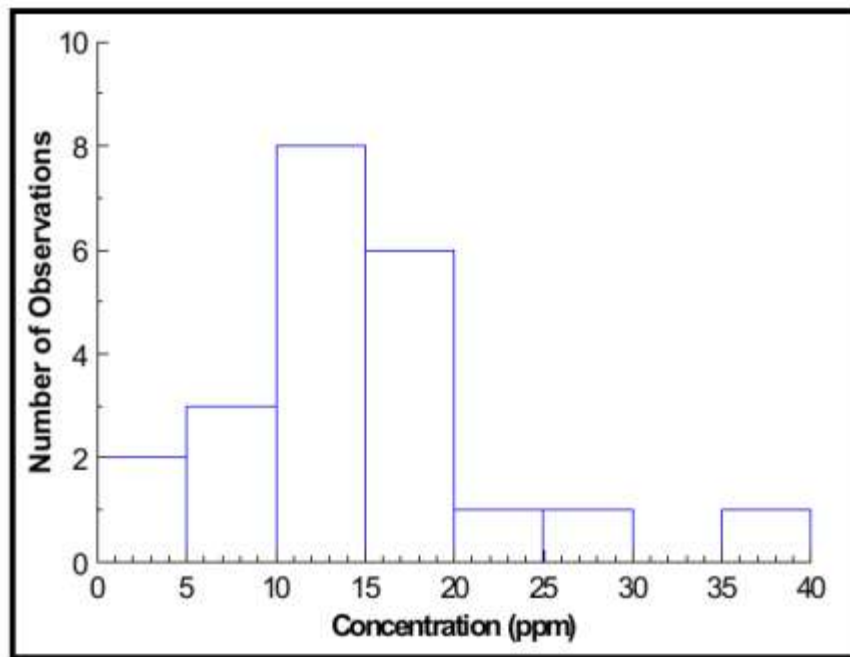
2. Calculate Basic Statistical Quantities

- 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

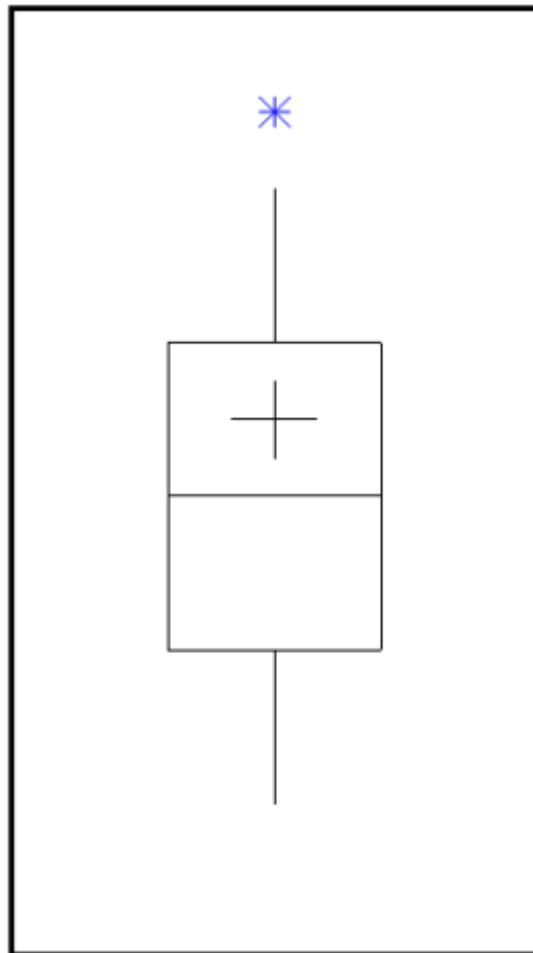
3. Graphical representation of data
 - Histogram/Frequency Plots



Checking data quality

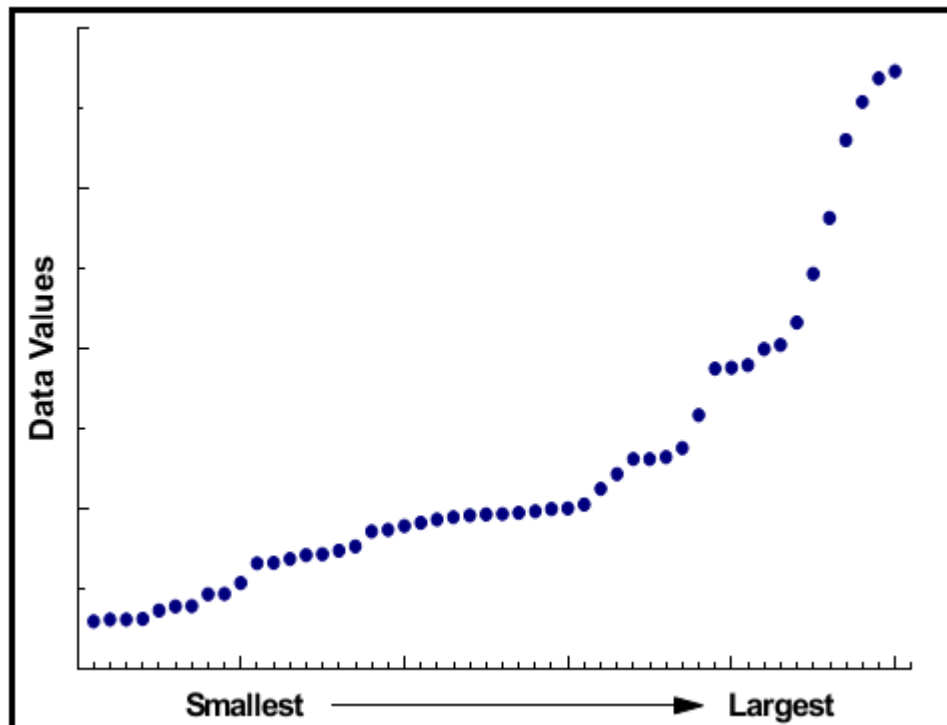
3. Graphical representation of data

- Box- and-Whiskers Plot



Checking data quality

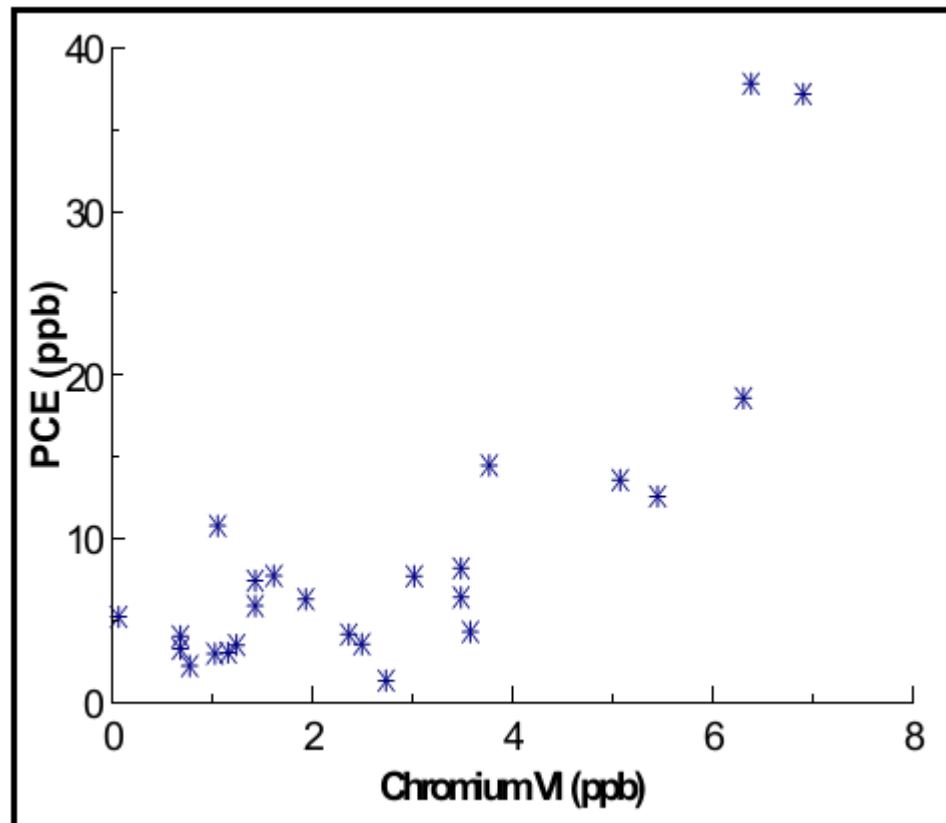
3. Graphical representation of data
 - Ranked Data Plot



Checking data quality

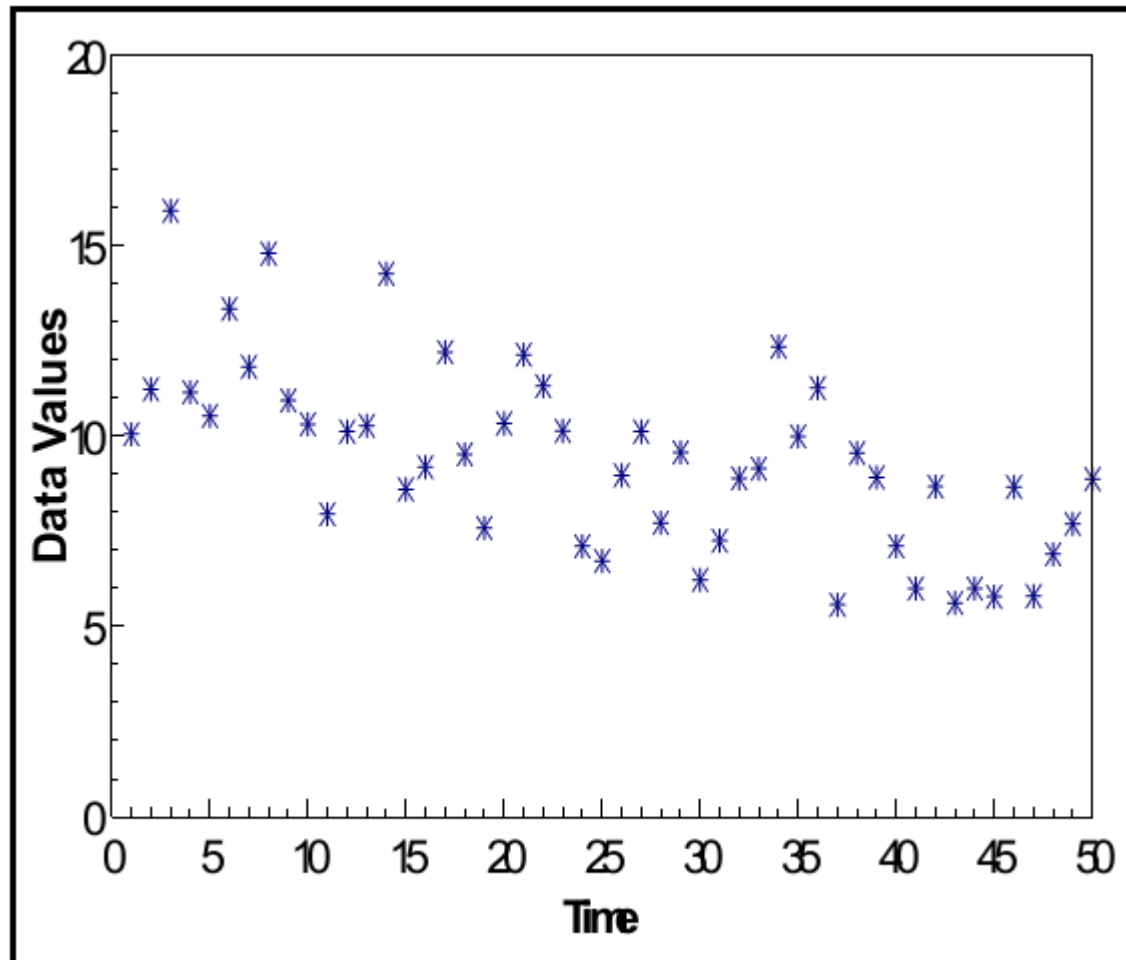
3. Graphical representation of data

- Scatterplots (Two a-priori paired variables)



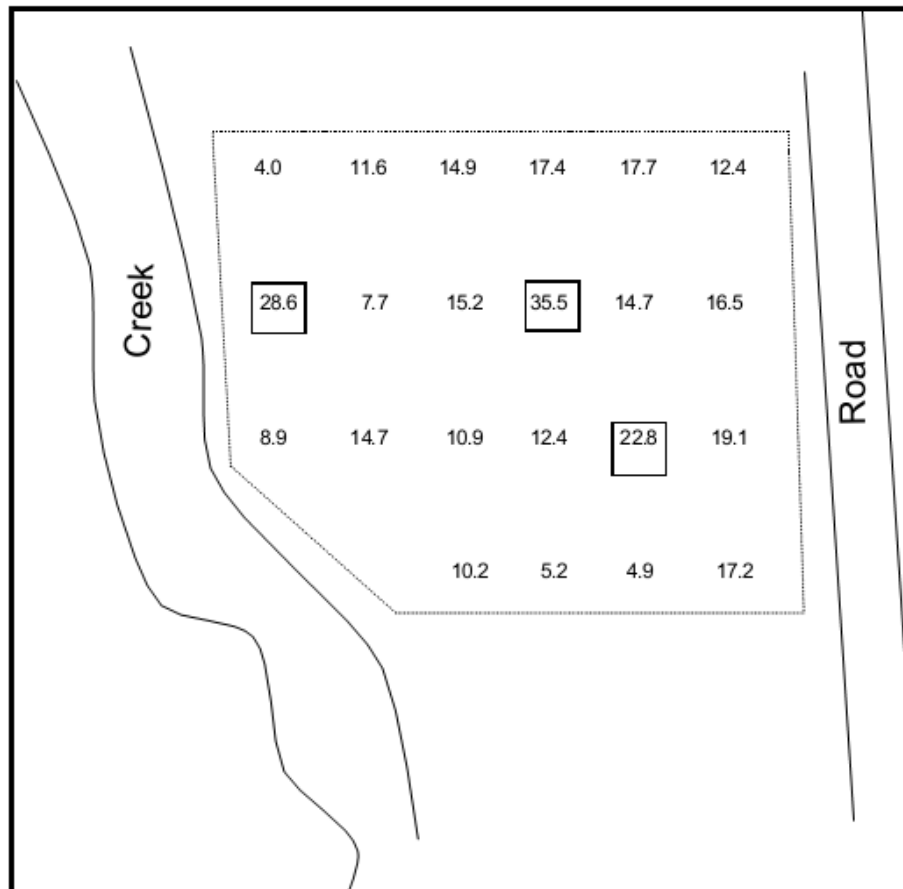
Checking data quality

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



Checking data quality

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



OUTLINE

Data acquisition (size & grain matter)

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- Field sampling

Checking data quality

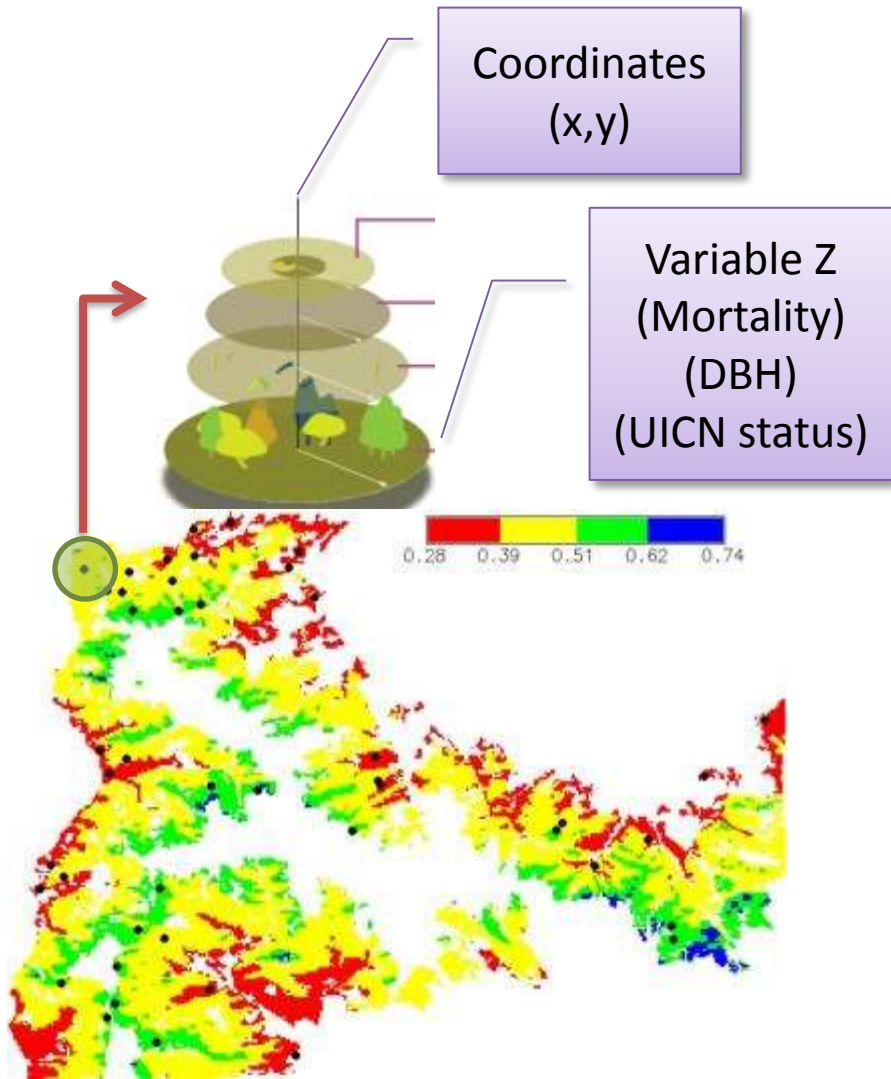
- Review quality assurance reports
- Calculate statistical quantities
- Graph the data

Analyzing data

- Spatial analysis
 - SADIE
- Multivariate analysis
 - SAM

Analyzing data

Spatially explicit data



Spatially explicit data: Bloc de notas

Archivo Edición Formato Ver Ayuda

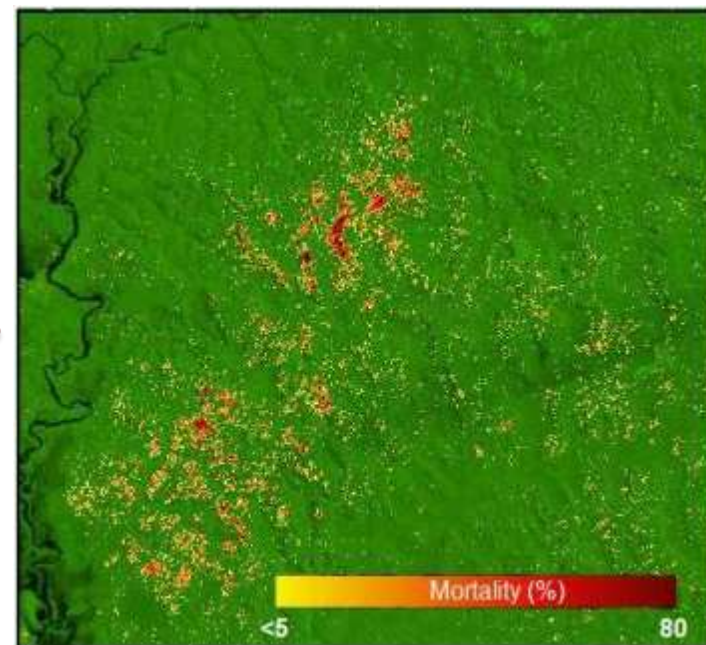
X	Y	Z
1	1	0
13	1	1
3	2	1
12	2	0
0	3	1
14	3	1
20	3	1
1	4	0
4	4	1
7	4	1
13	4	1
19	4	0
0	5	0
6	5	1
12	5	0
15	5	1
18	5	1
21	5	1
24	5	1
30	5	0
14	6	1
17	6	1
26	6	0
29	6	0
1	7	1
7	7	0
19	7	1

Analyzing data

Spatially explicit data

Spatially explicit data: Bloc de notas

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3	2	1
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0	3	1
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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

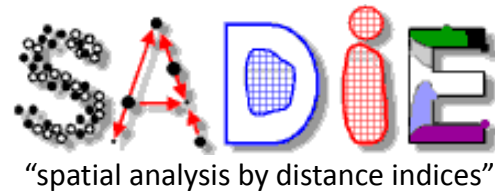


Analyzing data

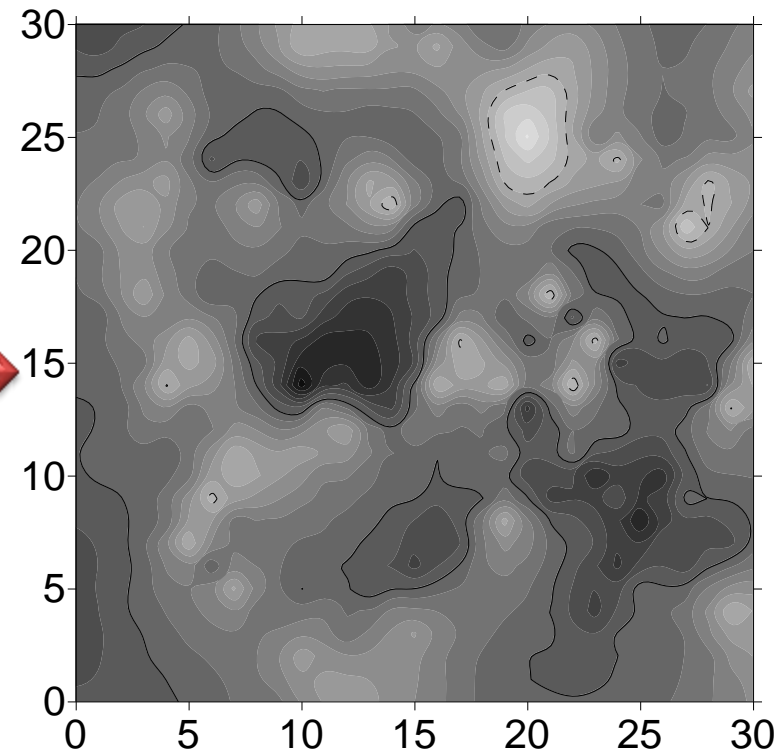
Spatially explicit data

Spatially explicit data: Bloc de notas

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1	1	0
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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
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19	7	1



Based on **statistical test**



Analyzing data

Spatially explicit data

SOFTWARE SadieShell (FREE)

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



SADIE Reheated

Home
SADIE Shell
N_AShell
Red-Blue Batch
Association Batch
SadCore.dll
SadAssoc.dll
SADIE Utilities
SADIE Explained
Older Versions
Contact Me

To understand SADIE analysis, you should visit [Joe Perry's SADIE page](#). There is a good introduction and there are references to download.

There is also an annotated, online SADIE tutorial, called [SADIE2008](#). You could also download a somewhat less dynamic [pdf of the tutorial](#).

For an overview of the new SADIE analysis programs, view the printable manuals for [SADIE Shell](#) and [N_AShell](#).

SADIE

SADIE is a system for spatial analysis of ecological data and especially of data in the form of counts at spatially-referenced locations.

SADIE is an acronym for Spatial Analysis by Distance Indices.

One of the main features of SADIE analysis is that it produces local indices of clustering or association. Therefore, the contribution of each sampling point to overall spatial pattern or association is known. The indices themselves can be interpreted and plotted as contour maps so the spatial pattern or association can be visualized clearly.

The original software for SADIE analysis was written by Prof. Joe N. Perry and consisted of `rbrelv13.exe` (1999) and `n_a.exe` (2001), along with other software tools, methods and macros for more specialized situations. This software ran either from the console (command-line) or within statistical analysis packages.

SADIEShell

In 2001, I created SADIEShell, which placed `rbrelv13.exe`, and later, `n_a.exe` within a graphical user interface (GUI), although the programs still ran behind the scenes in console mode.

While Joe and I continued to use SADIE, we also continued to modify and improve the software and code new tools on an as-needed basis.

SADIE Reheated

Finally, I have gotten around to some major revisions and tidying up of `rbrelv13.exe`, `n_a.exe` and SADIEShell.

Most of the changes, however, have been to the way the software looks and is written, not how it works or how you use it. Therefore, this is not SADIE Redone, SADIE Re-launched or SADIE Revised. It is just SADIE stirred up a bit and reheated.

Free SADIE Software

This is the new, official home of [SADIE Shell](#) and [N_AShell](#), software with full graphical user interfaces to perform SADIE analyses.

This site also provides additional [SADIE utilities](#), and [SadCore.dll](#) and [SadAssoc.dll](#), two Windows® dynamic link libraries to perform SADIE analyses that can be used in other software applications.

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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.

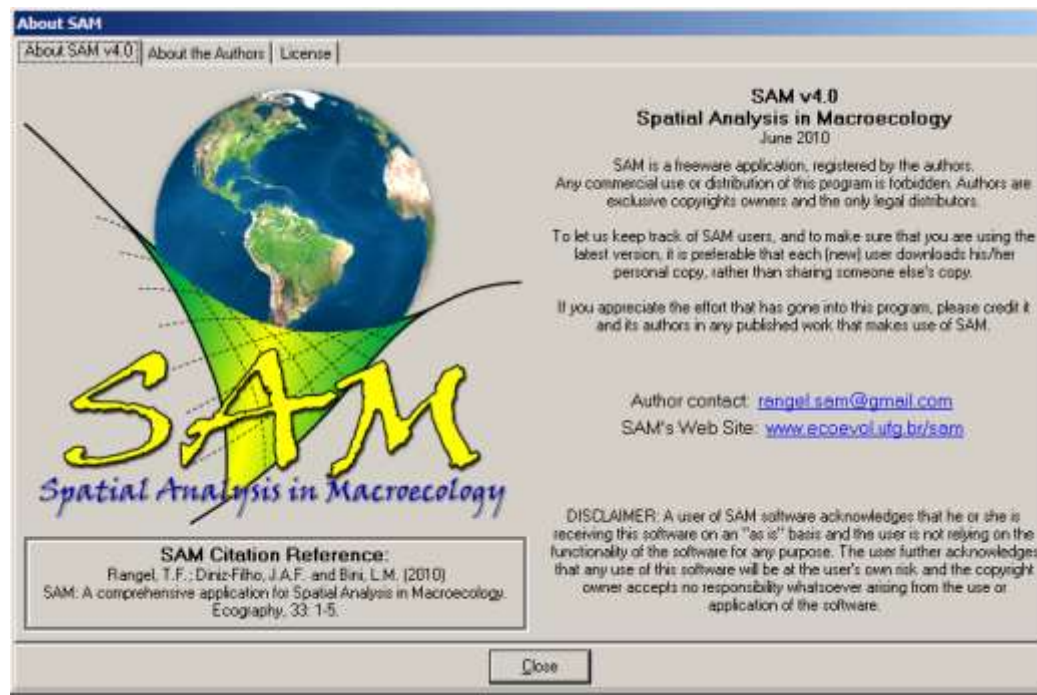
BA
1.05
2.50
0.58
0.38
5.30
2.25
2.92
5.46
4.95
0.86
0.79
2.42
2.11
2.44
2.86
3.55

Analyzing data

Multivariate analysis

SOFTWARE SAM (FREE)

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



About SAM

About SAM v4.0 | About the Authors | License

SAM v4.0
Spatial Analysis in Macroecology
June 2010

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If you appreciate the effort that has gone into this program, please credit it and its authors in any published work that makes use of SAM.

Author contact: rengel.sam@gmail.com
SAM's Web Site: www.ecoevol.ufg.br/sam/

SAM Citation Reference:
Rangel, T.F.; Diriz-Filho, J.A.F. and Bini, L.M. (2010)
SAM: A comprehensive application for Spatial Analysis in Macroecology.
Ecography, 33: 1-5.

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Close

Analyzing data

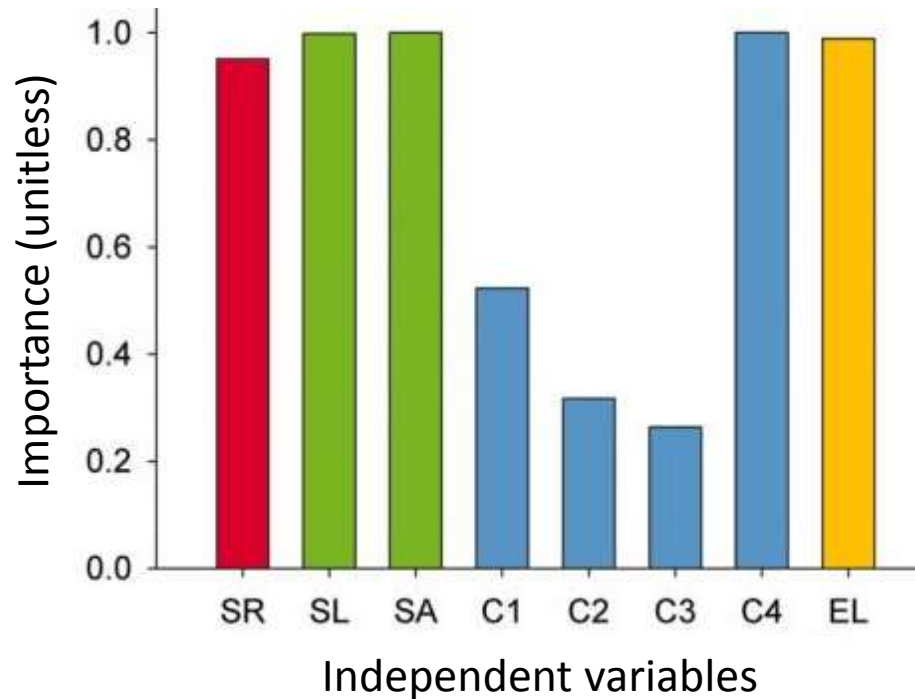
Multivariate analysis

Species richness	Abiotic		Climatic				Geographic			R^2	AIC _c	Δ AIC _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. The 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:

jose.quero@uco.es

<http://orcid.org/0000-0001-5553-506X>

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

