

Análise espacial para biodiversidade

Felipe Sodré M. Barros





Geocast Brasil

<https://goo.gl/MS6jUH>

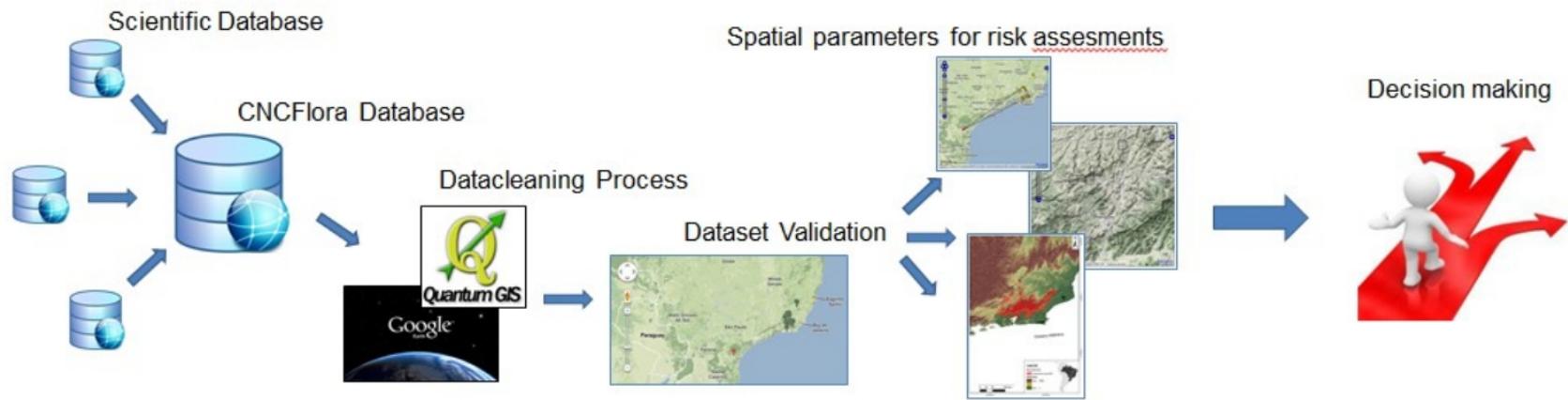




Motivação e contexto

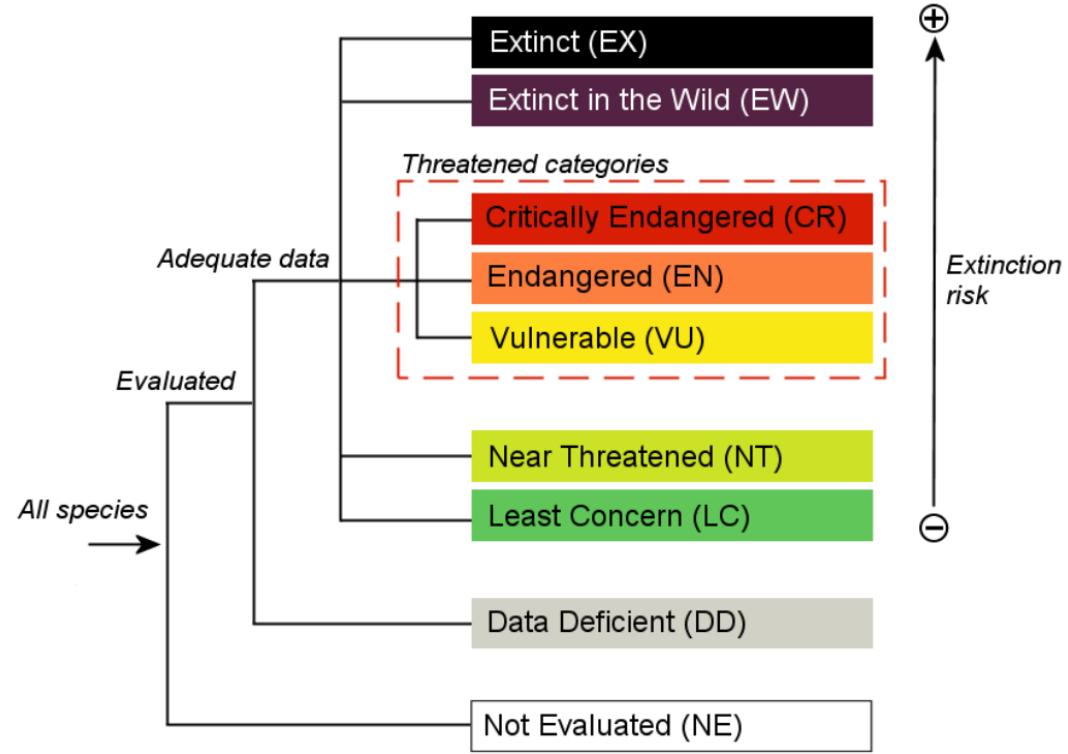


Motivação e contexto

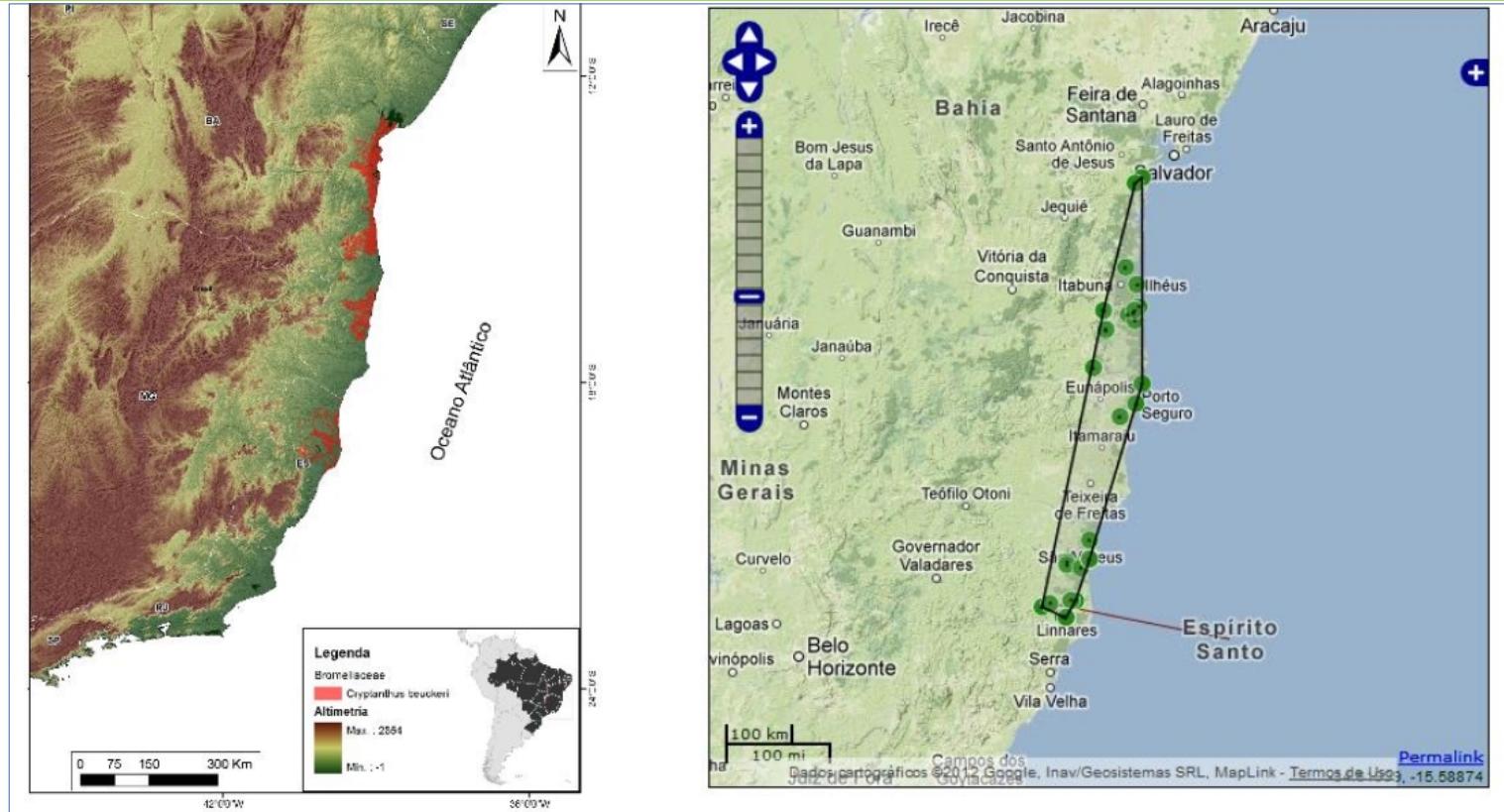




Motivação e contexto



Motivação e contexto



Objetivo

- Identificar análises espaciais que permitam inferir/estimar a incidencia de ameaças sobre as espécies de flora;





Estatística espacial

- **Definição:**
 - Análise exploratória;
 - Teste de hipótese;
- **Referência teórica:**
 - Primeira lei de Tobler;
 - Hipótese nula → Distribuição espacial aleatória;



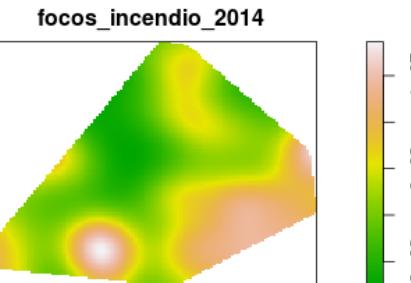
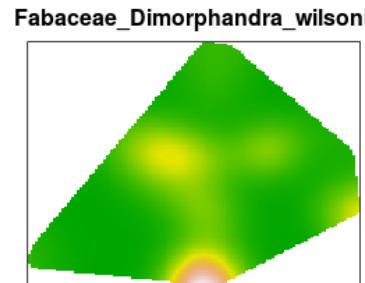
Estatística espacial

- Análises de Primeira ordem
 - Definição
 - Exemplo

Estatística espacial

- Análises de Primeira ordem
 - Definição
 - Exemplo

Densidade de *Dimorphandra wilsonii* e focos de incêndios 2014





Função K de Ripley

- Análise espacial de segunda ordem:
- Definição
- Permite identificar estrutura de distribuição espacial de processos pontuais



$f(k)$ RESPONDE

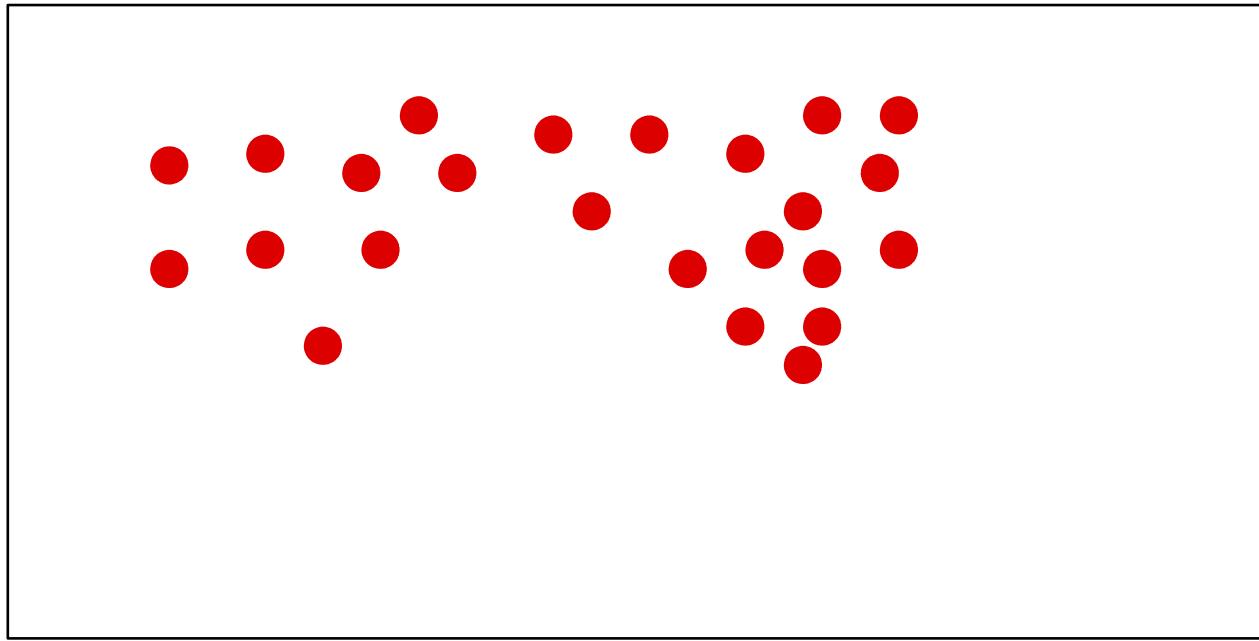
The blackboard behind the man contains the following mathematical content:

- A diagram of a triangle with vertices at $(-bc, 0)$, $(0, h_1)$, and $(0, h_2)$. It shows angles α and β , and a point S on the base. A right-angled triangle is shown with hypotenuse h and angle φ_1 .
- Equation: $\sin x = \frac{\alpha v}{1-t^2}$ for $-1 < t < 1$.
- Equation: $4\cos \omega$.
- Equation: $(a-b)(c-d) = (a-c)(b-d)$.
- A graph of a periodic function $sh x \cdot ch x = \frac{1}{2} \sin 2x$ for $-1 < t < 1$.
- Equation: $\prod_{i=1}^n y_i \cdot \prod_{i=n+1}^m y_{n+i} = \prod_{i=1}^m y_i$.
- Equation: $\iiint d\sigma = d\tau$.
- Equation: $\iiint \rho(x, y, z) dV$.
- Equation: $x = \frac{1}{2}(\operatorname{ch} 2x - 1)$.
- Equation: $\operatorname{ch}^2 x = \frac{1}{2}(\operatorname{ch} 2x + 1)$.
- Equation: $\prod_{j=i}^{2x} \dots$.
- Equation: $\prod_{j=i}^{2x} \dots$.
- Equation: $0, t < \frac{\pi}{\omega}$.

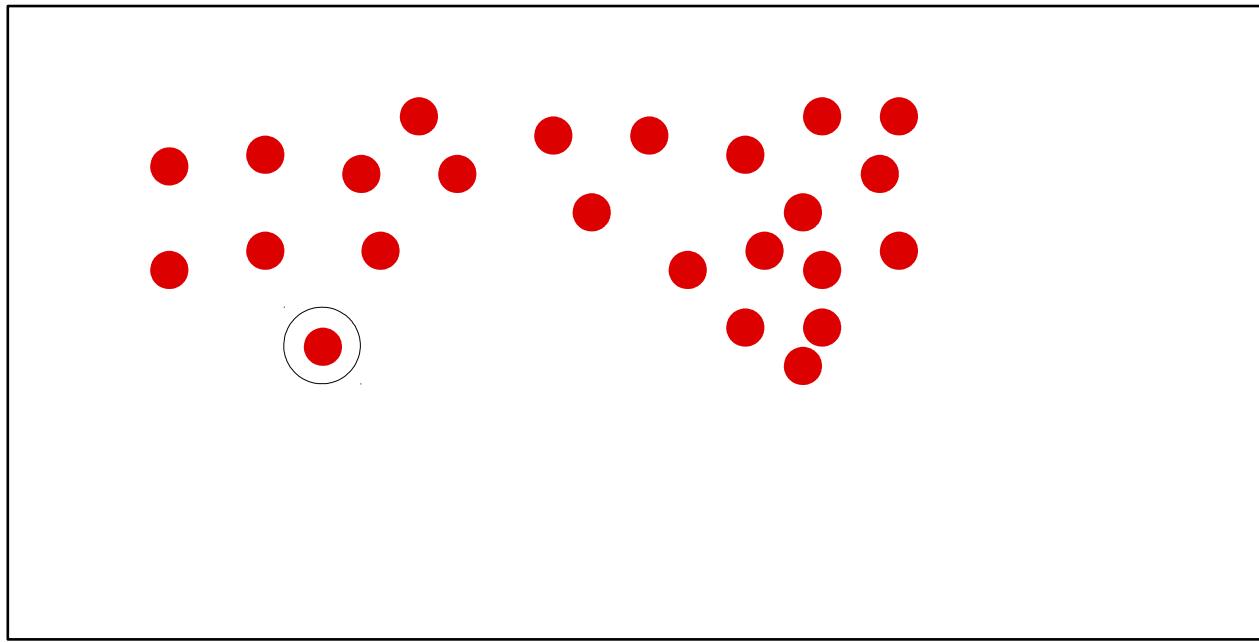
Análise espacial para biodiversidade?



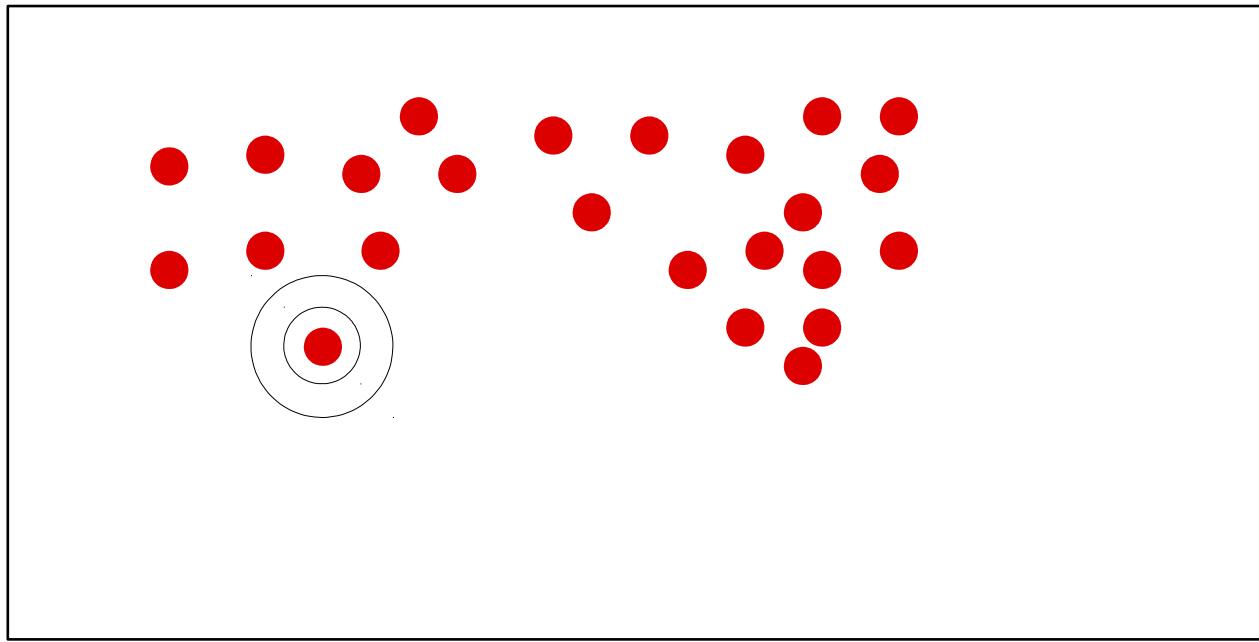
Função K de Ripley



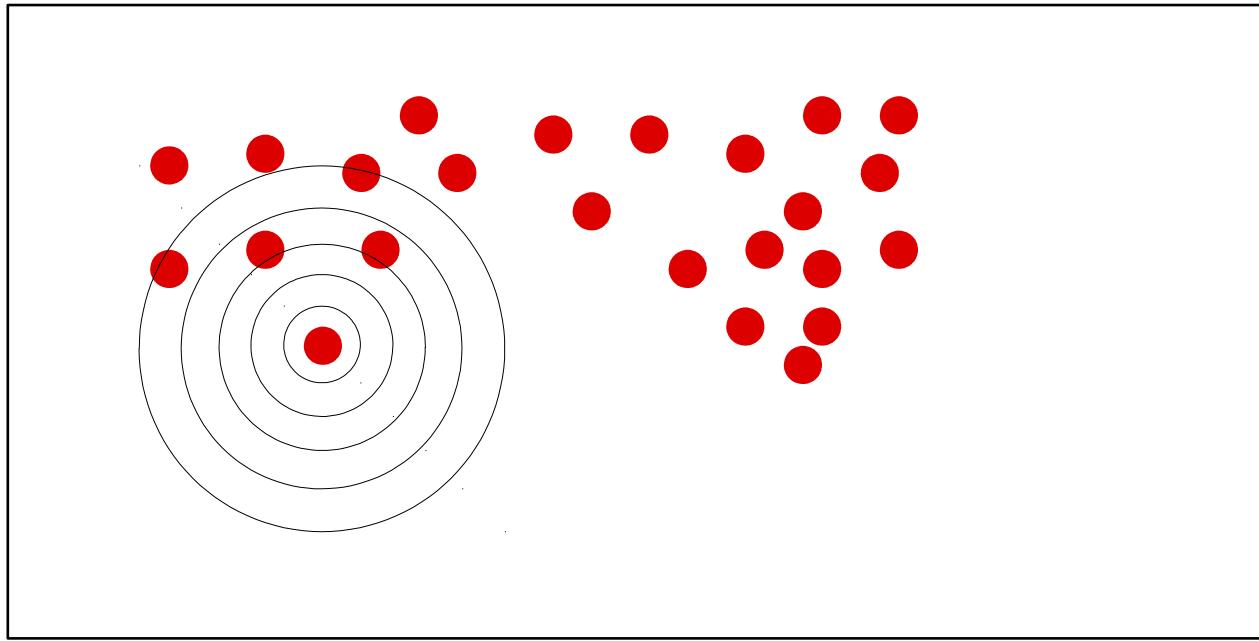
Função K de Ripley



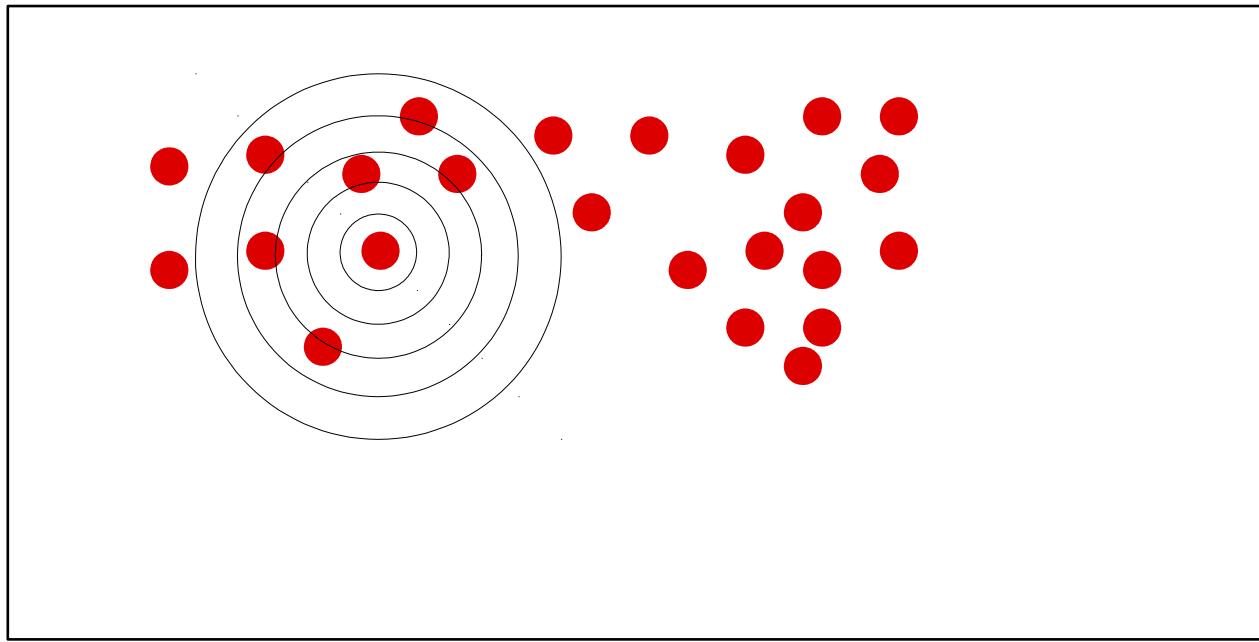
Função K de Ripley



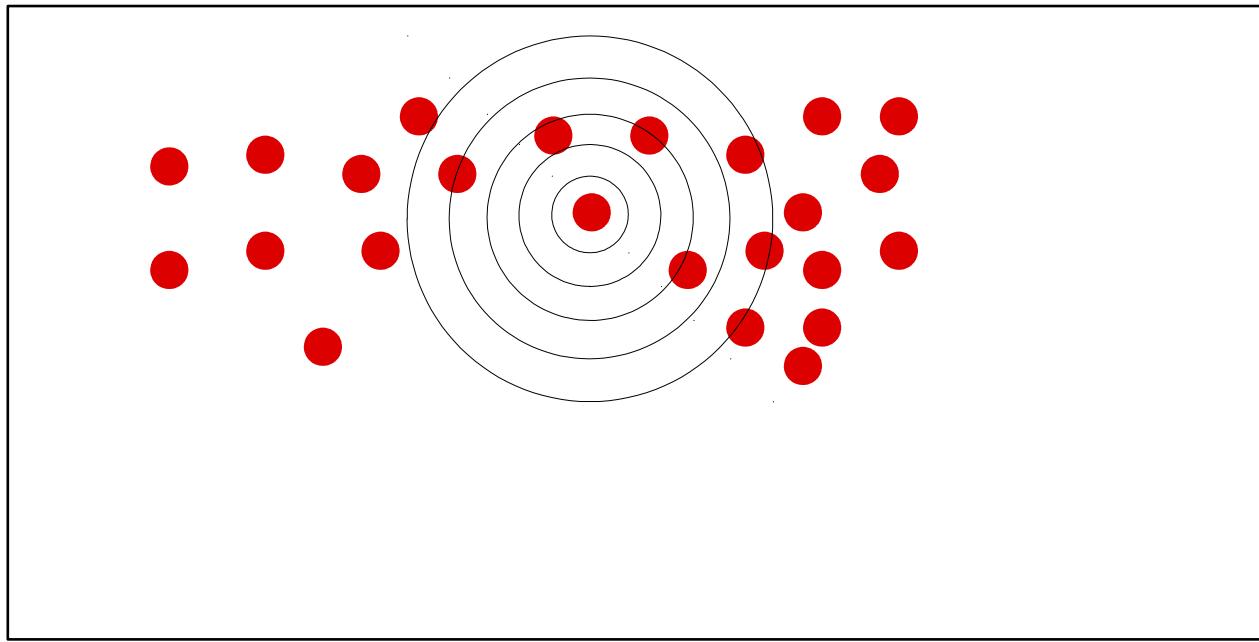
Função K de Ripley



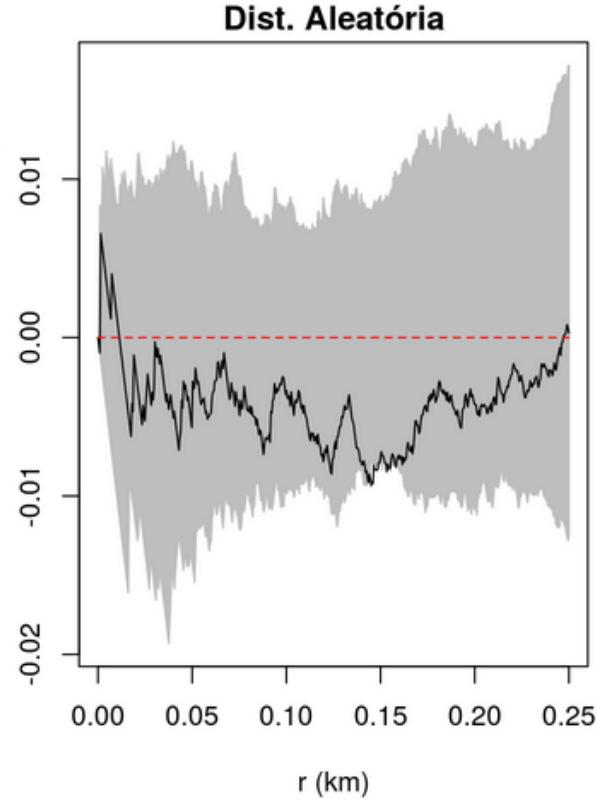
Função K de Ripley



Função K de Ripley

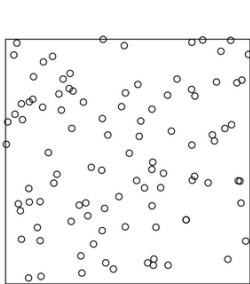


Função K de Ripley

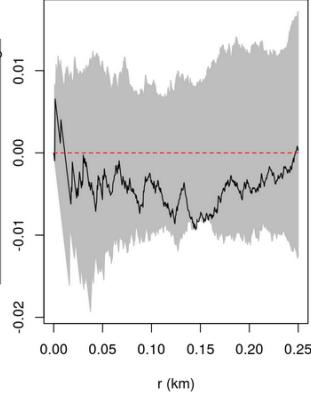


Função K de Ripley

Dist. Aleatória

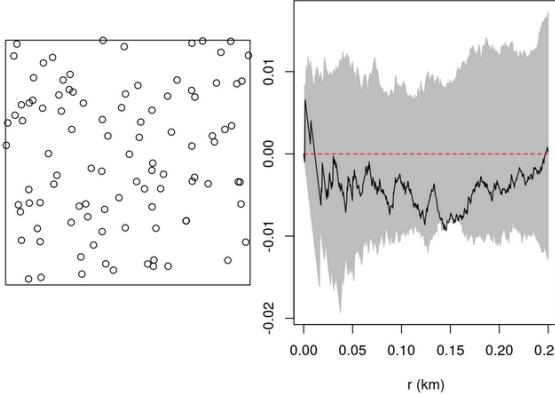


Dist. Aleatória



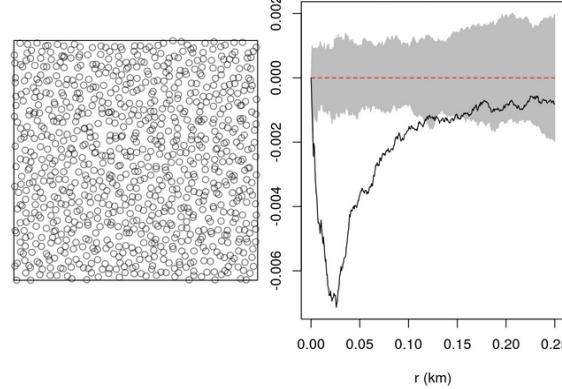
Função K de Ripley

Dist. Aleatória



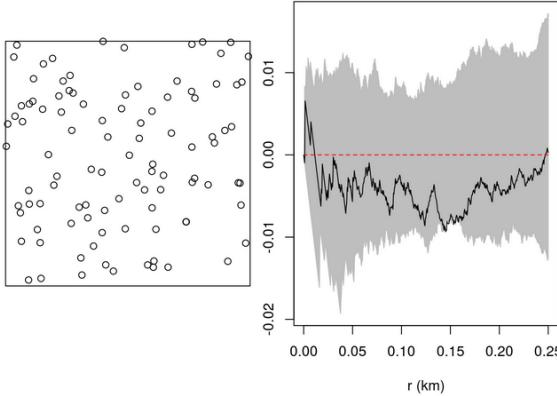
Dist. Aleatória

Dist. Regular



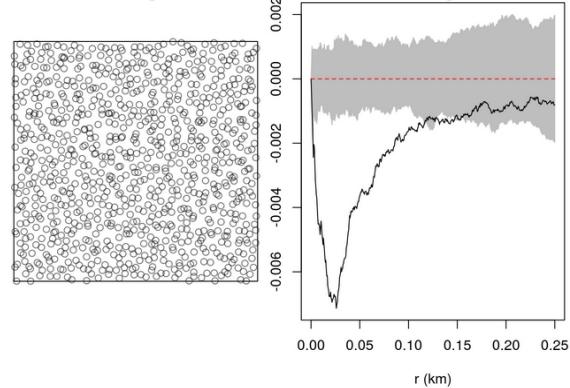
Função K de Ripley

Dist. Aleatória



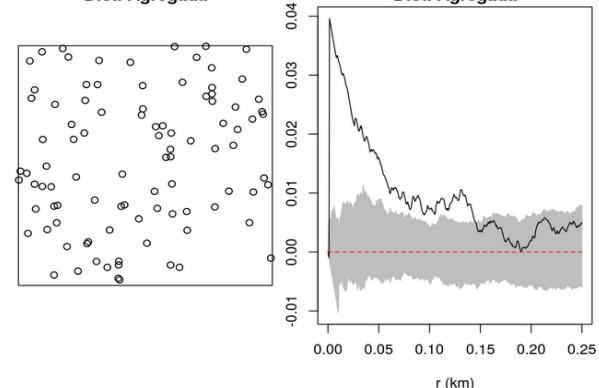
Dist. Aleatória

Dist. Regular



Dist. Regular

Dist. Agregada



Dist. Agregada

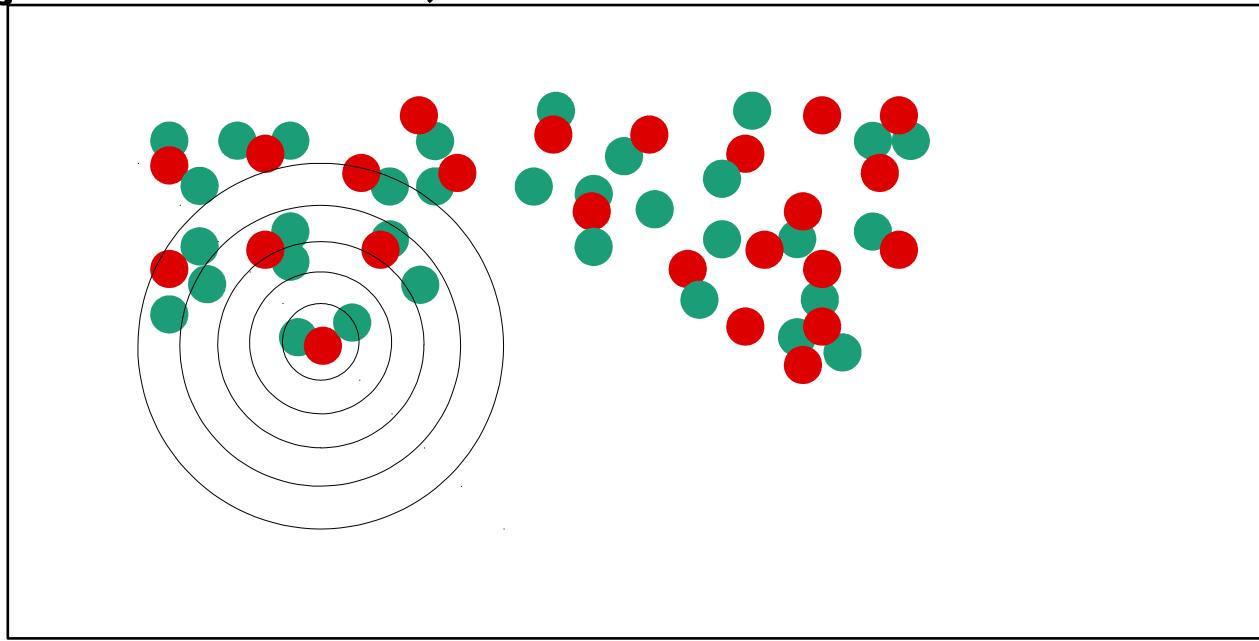


Função K de Ripley

- Análise espacial de segunda ordem
 - Mas e o meu objetivo?
 - Função bi-variada;

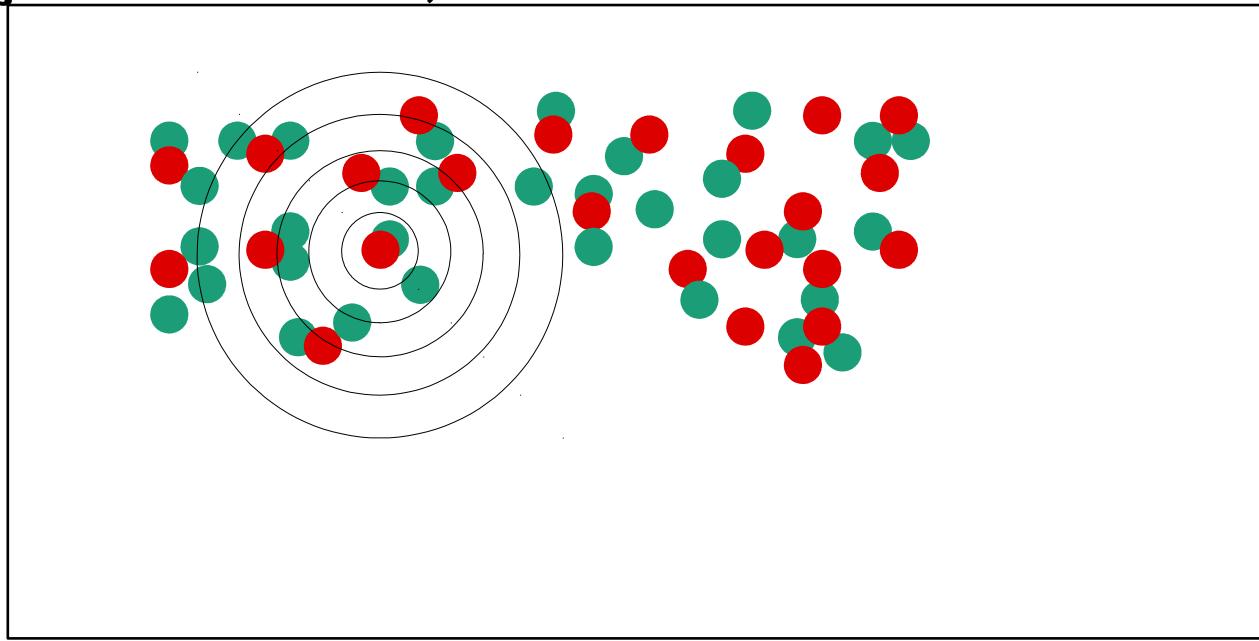
Função K de Ripley

Função bi-variada;



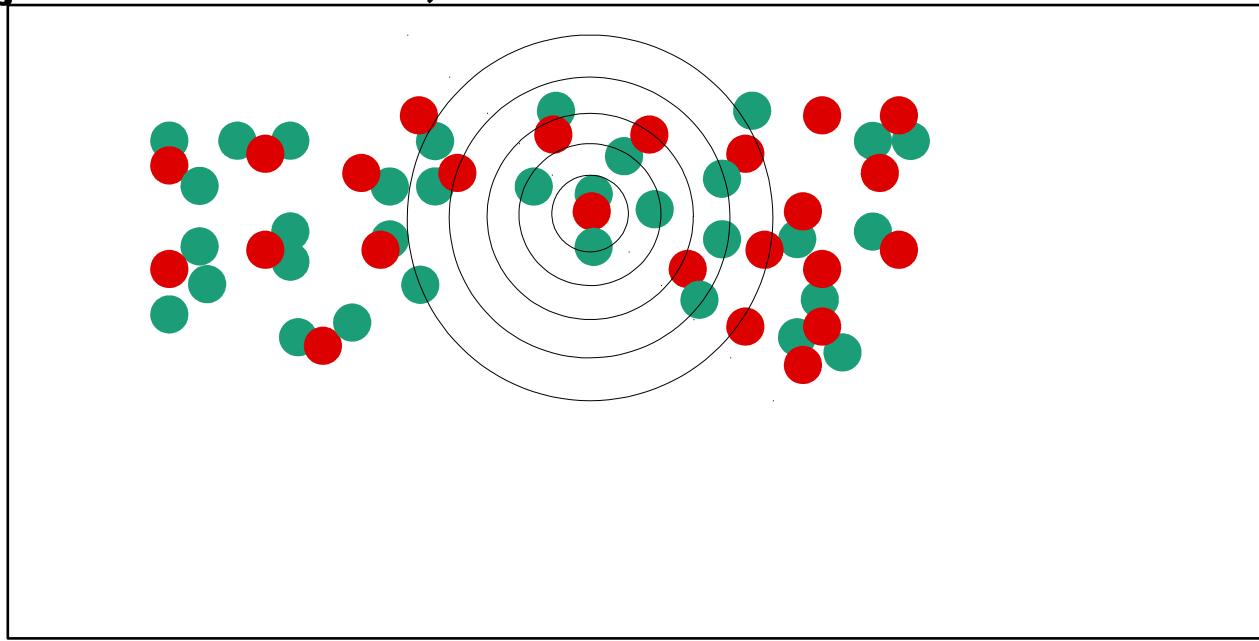
Função K de Ripley

Função bi-variada;

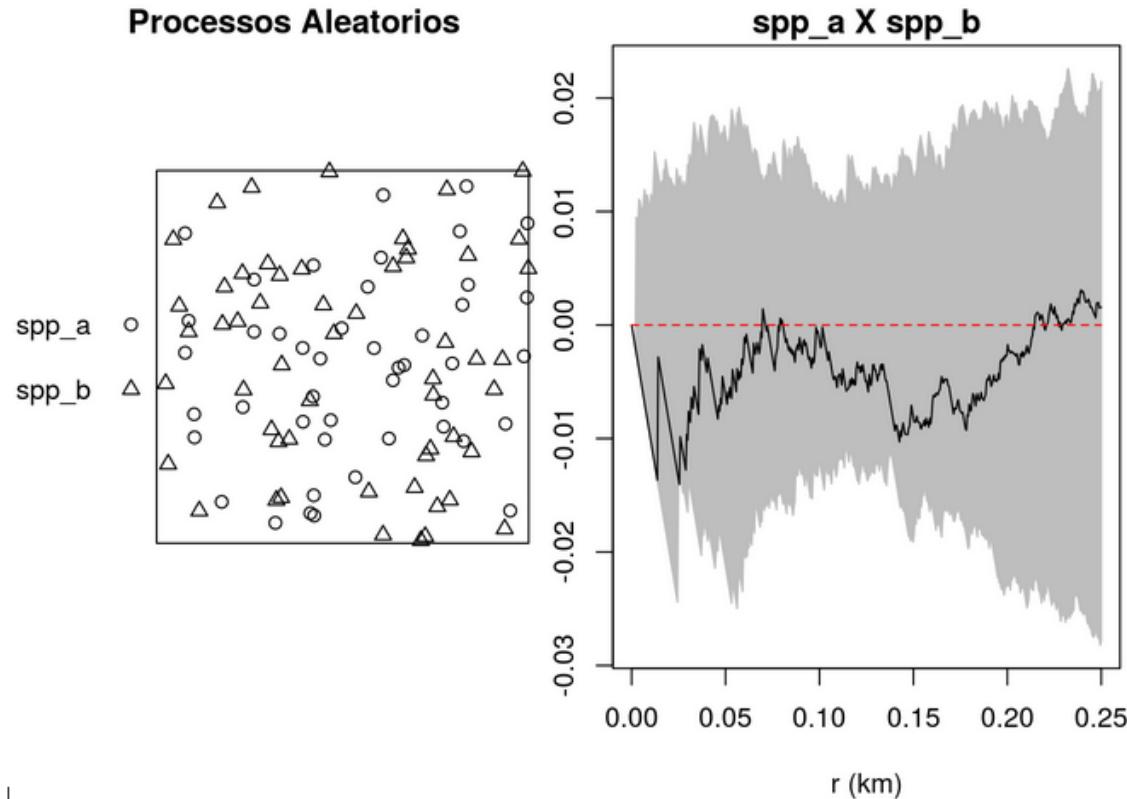


Função K de Ripley

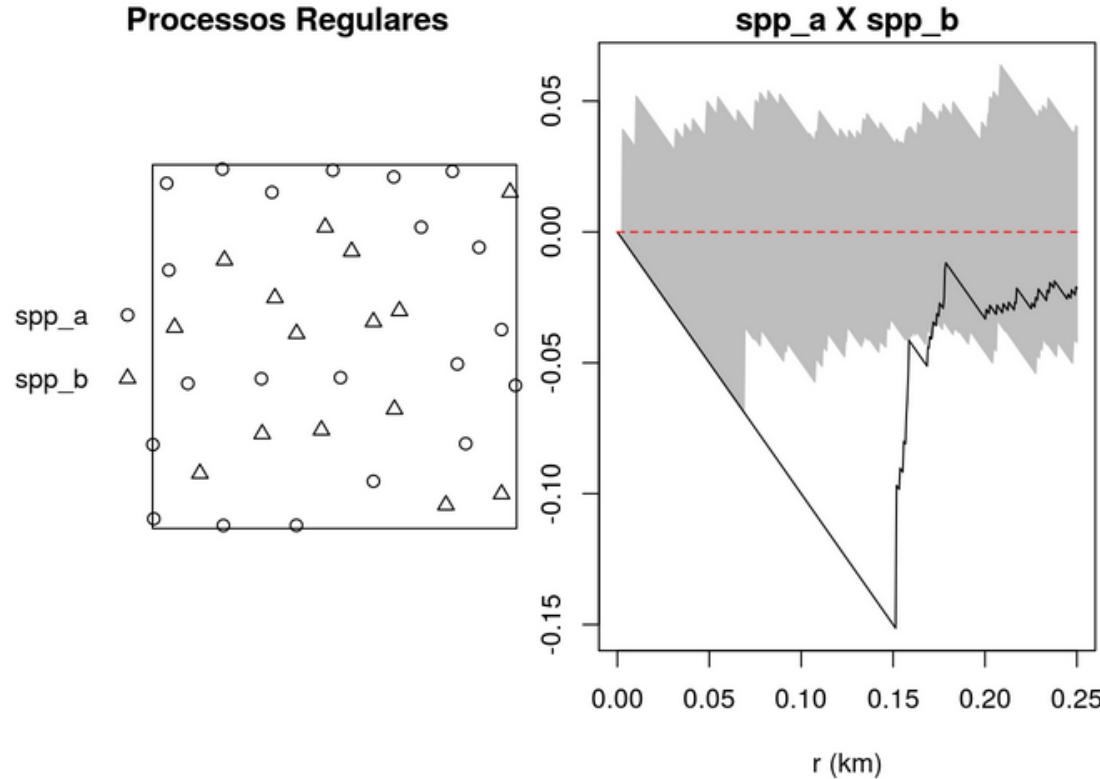
Função bi-variada;



Função K de Ripley bivariada

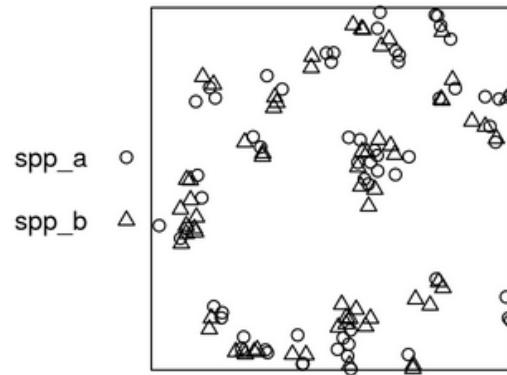


Função K de Ripley bivariada

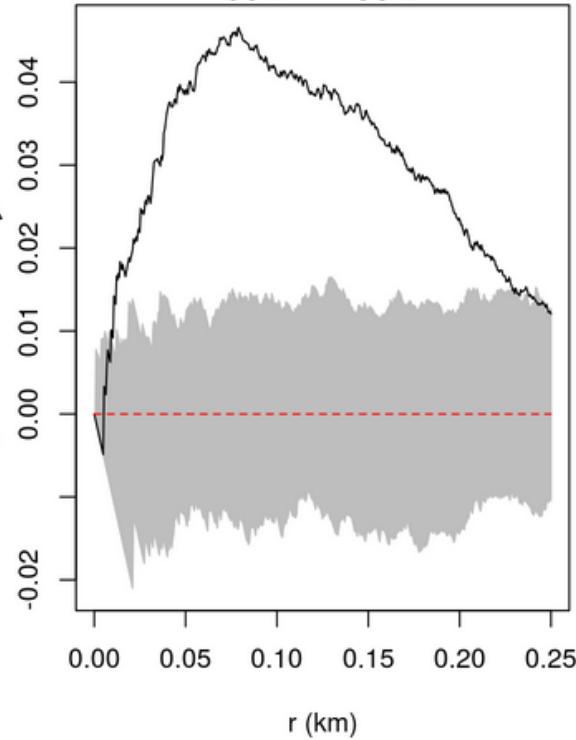


Função K de Ripley bivariada

Processos Aglomerados



spp_a X spp_b





Função K de Ripley

- Análise espacial de segunda ordem
 - Mas e o meu objetivo?
 - Função bi-variada;
 - Exemplo
 - Pontos positivos/negativos
 - Outras aplicações que não sejam biodiversidade



Tutorial de análise espacial no R

<https://goo.gl/dJmQ6i>





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Análise espacial para biodiversidade

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