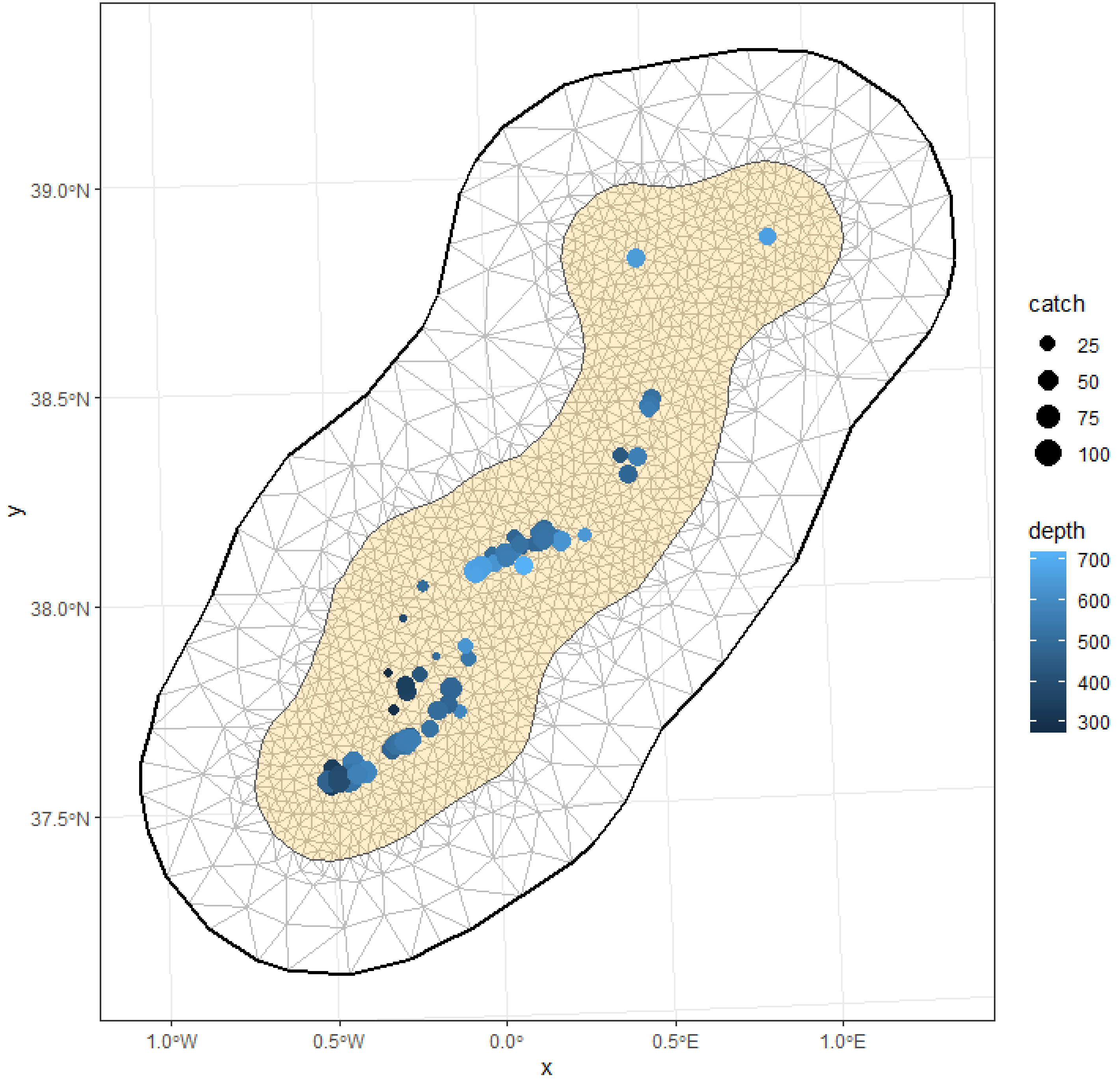
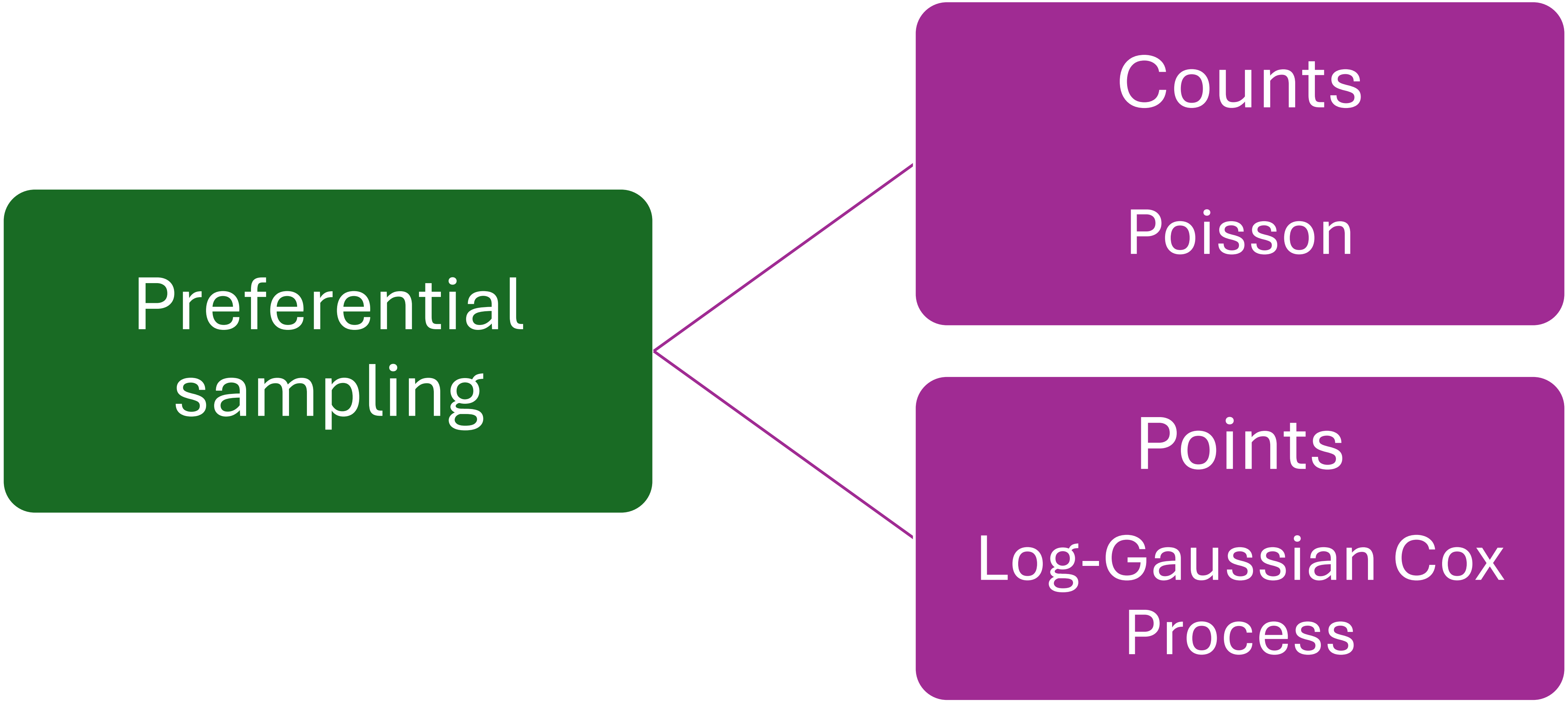
Hands on!

A gentle introduction to inlabru




Preferential sampling
Counts
Poisson
Points
Log-Gaussian Cox Process

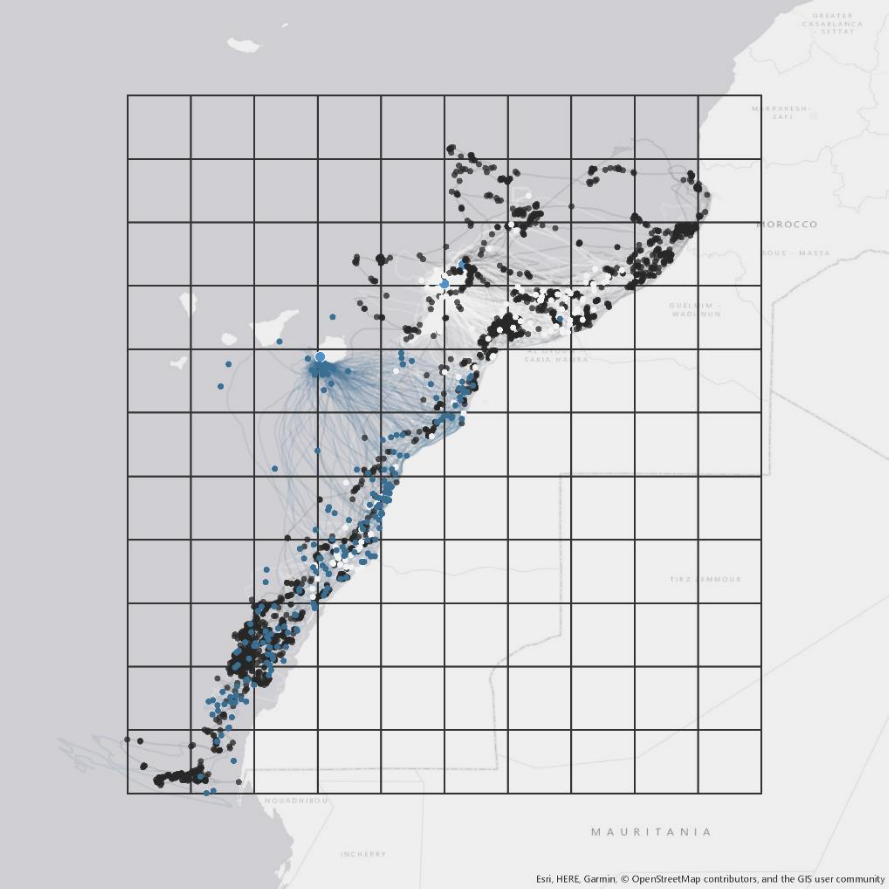
Points: Log-gaussian Cox Process

$$N(A) \sim \int_A \lambda(s)d(s)$$

$$log(\lambda(s)) = Z(s)$$

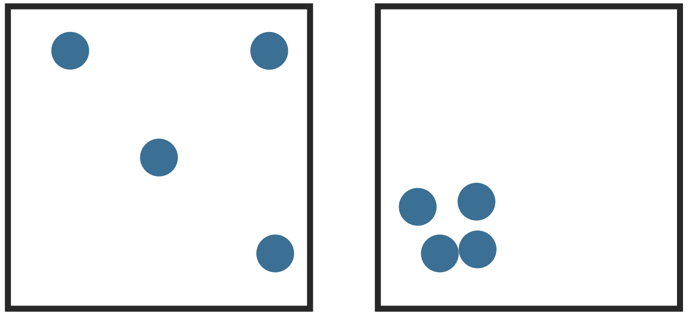
$$Z(s) = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + W(s)$$

Points: Log-gaussian Cox Process



Traditional SDM approach: grid

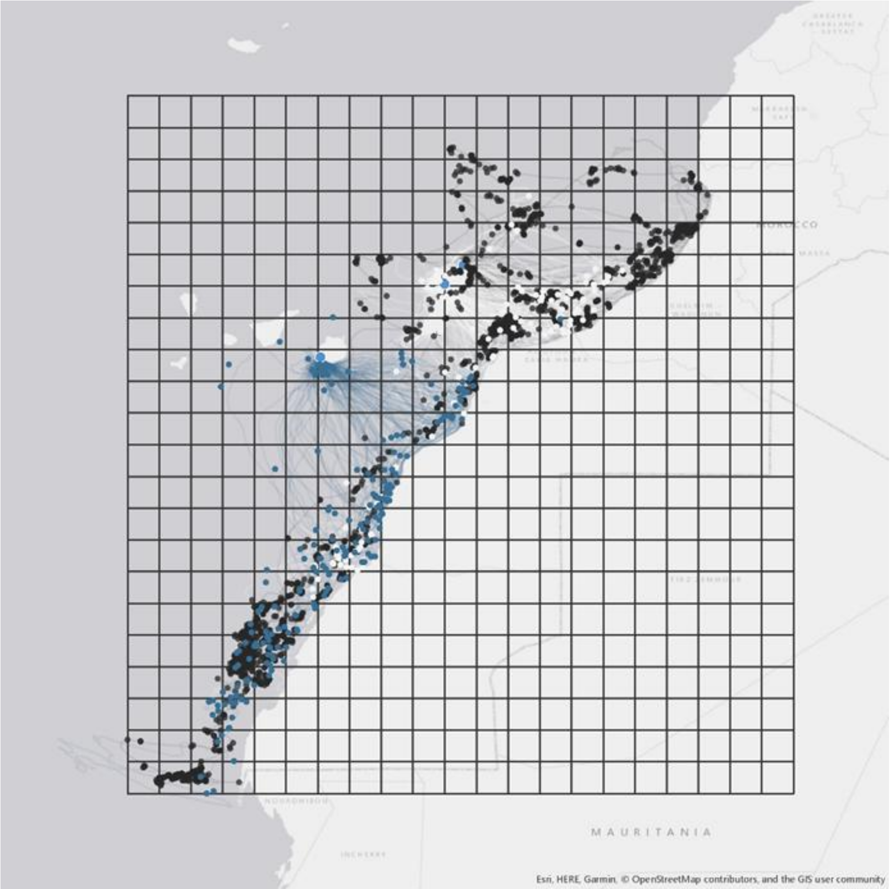
- Loss of information



- Scale dependent

- Spatial autocorrelation ignored

Points: Log-gaussian Cox Process



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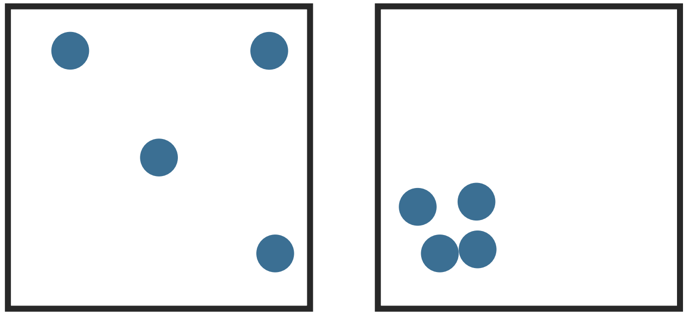

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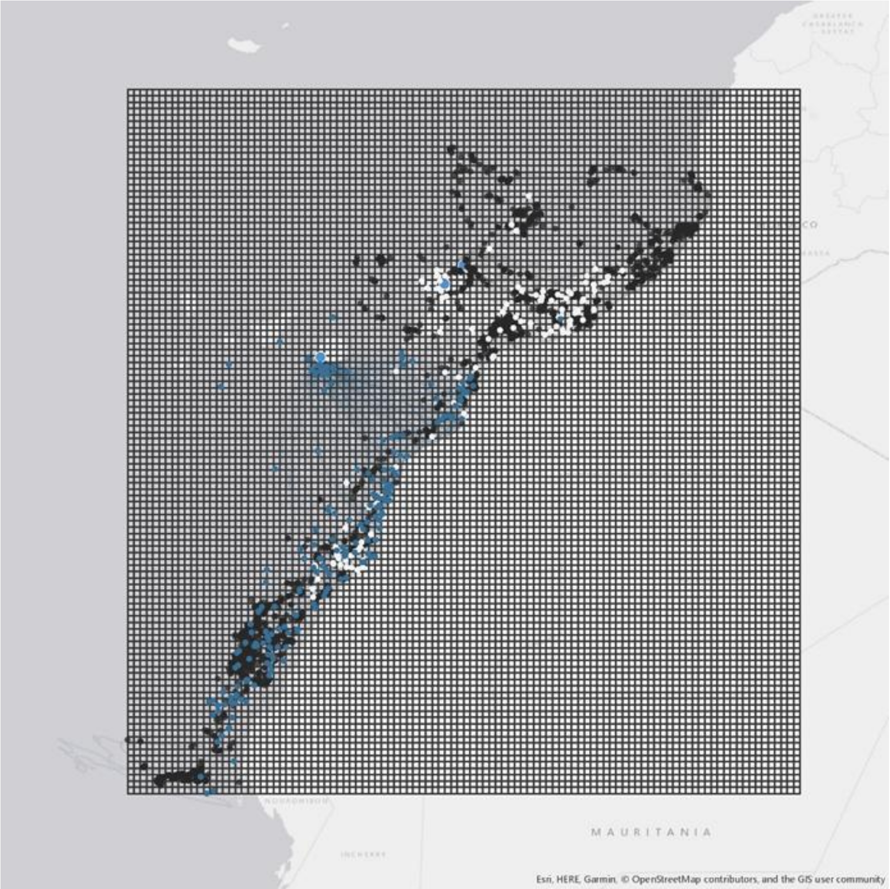

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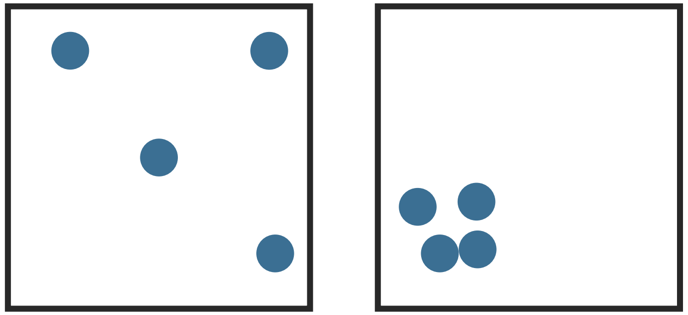

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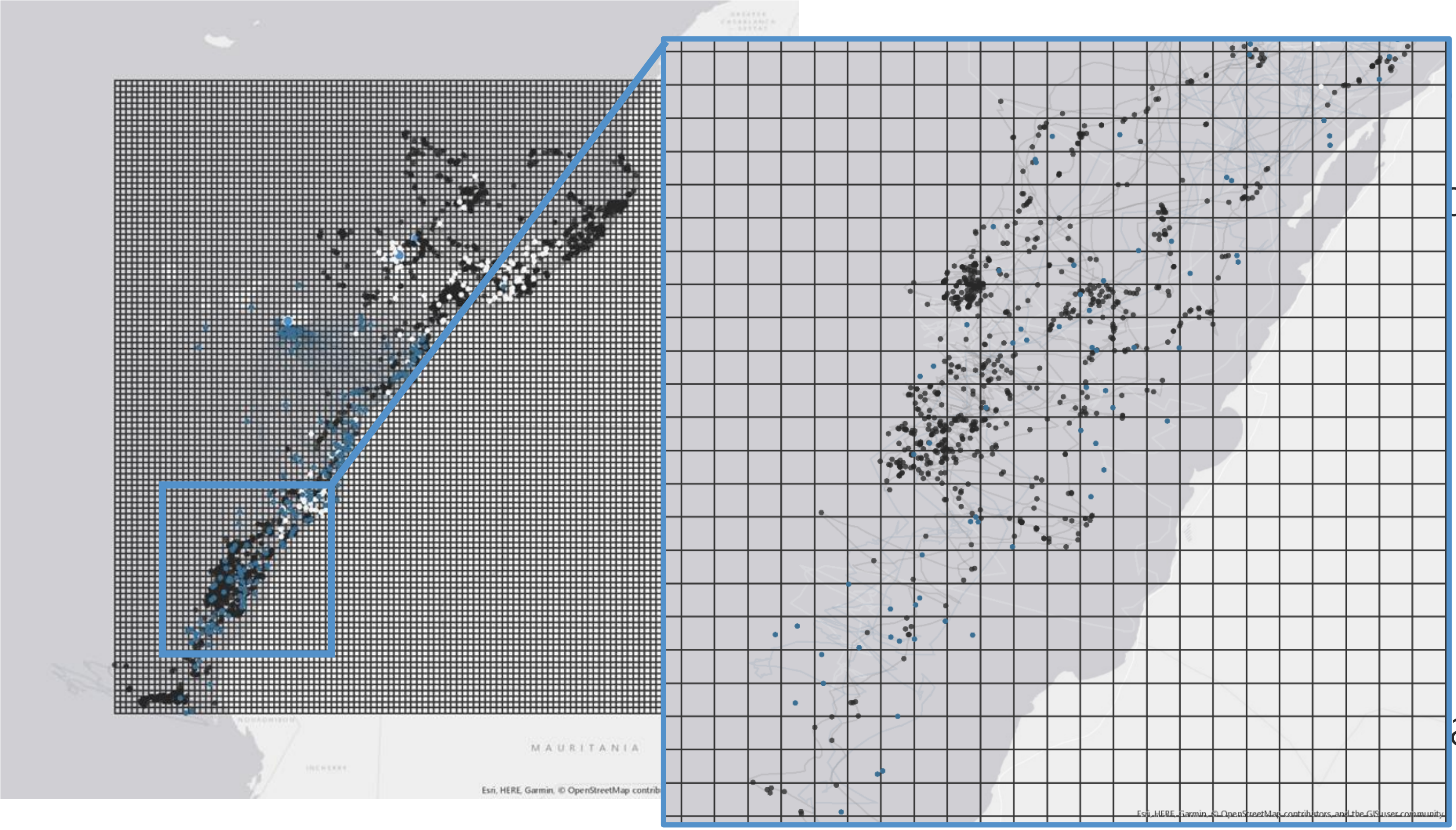
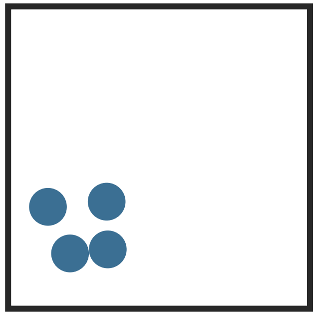
Points: Log-gaussian Cox Process



proach: grid

on



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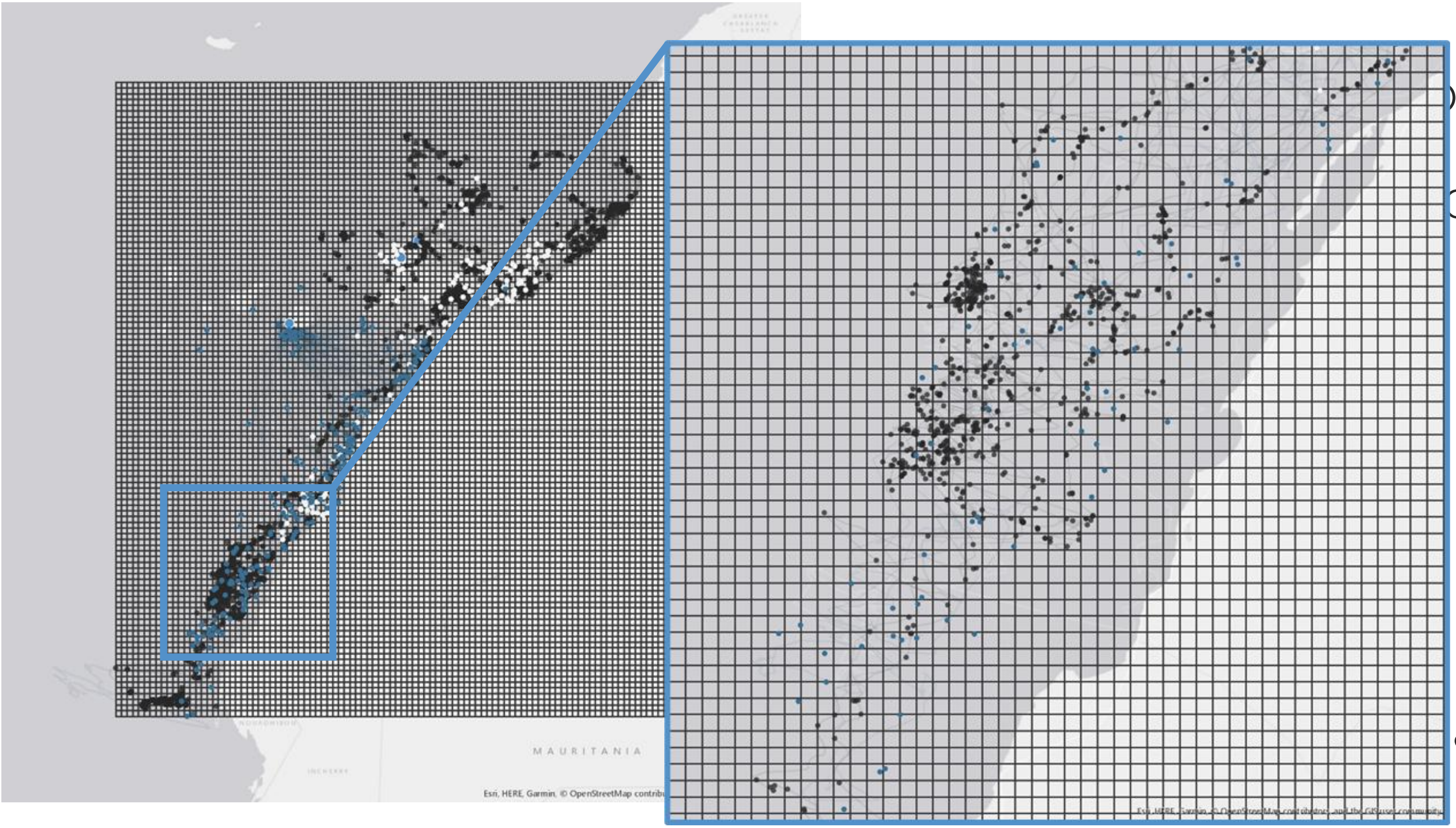
Points: Log-gaussian Cox Process



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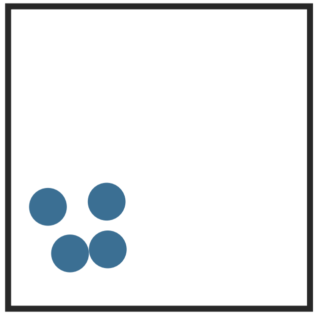

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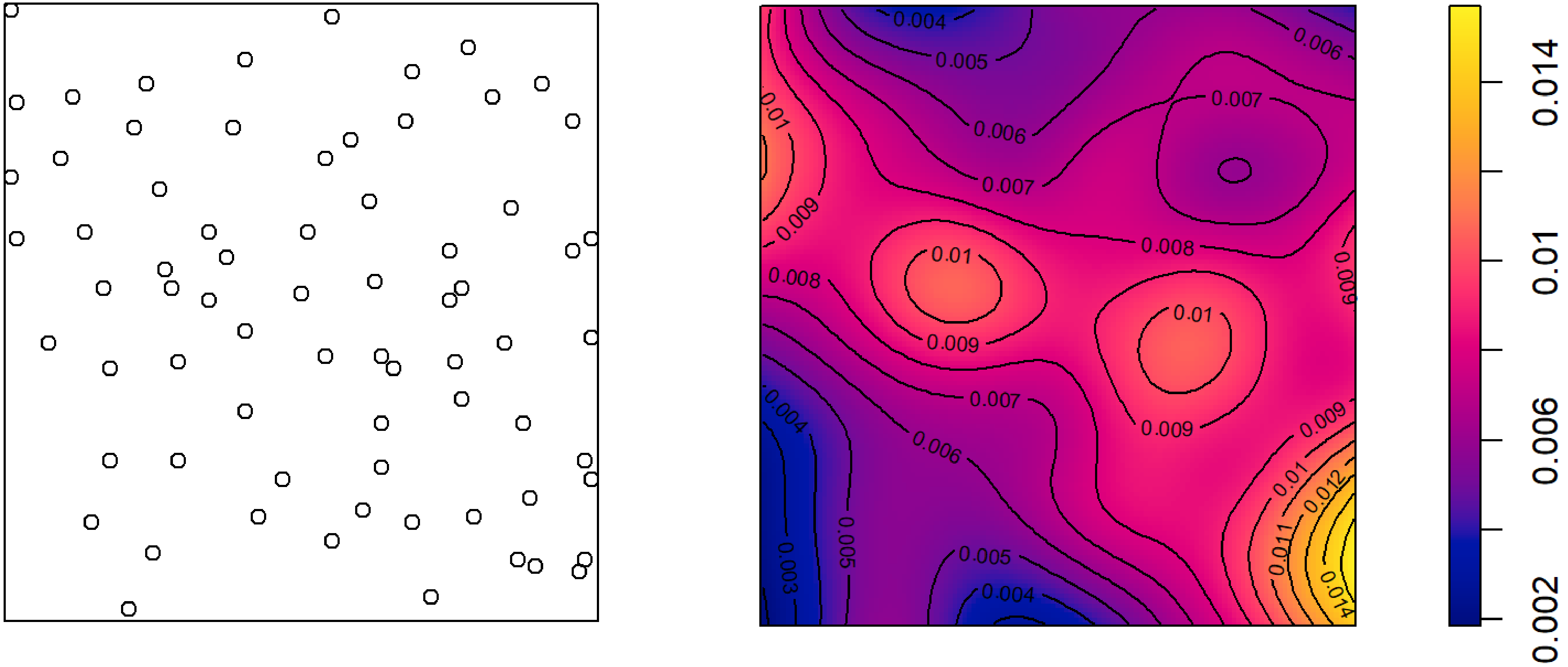

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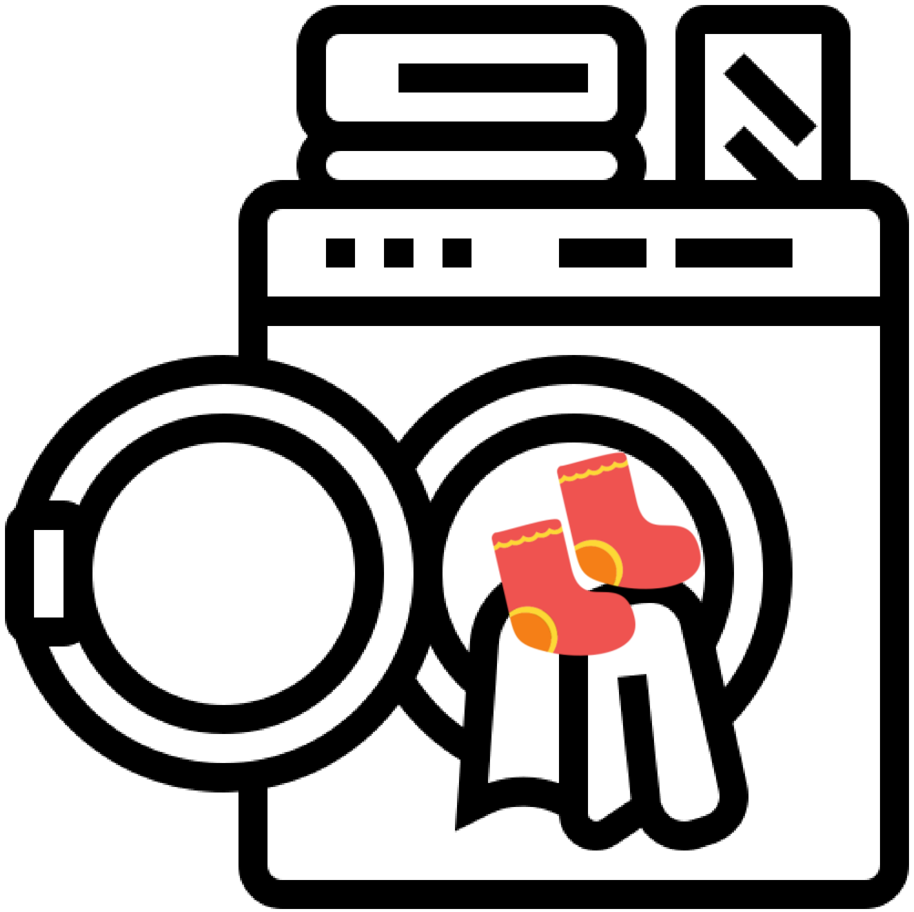
Points: Log-gaussian Cox Process

- Go to R script 1.1_basic_example.R…

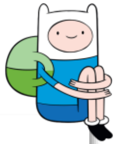
… and don’t panic

INLA and inlabru: do I need to understand it?



Inlabru

INLA



Finn Lindgren

a Virginia Morera Pujol,R-inla discussion group

Hi,

personally, when I'm not specifically speaking about the implementation details, I would simply write the continuous formulation of the model, i.e.

\log \lambda(s) = \eta(s),
{y_i} ~ Poisson process with intensity \lambda(s) on s\in\Omega

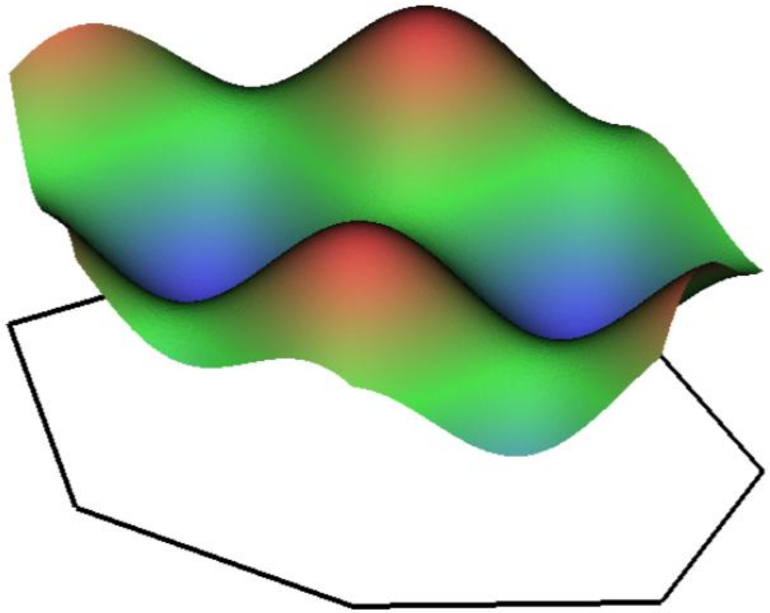
where \eta(s) is the linear predictor evaluated at some location s, and mention that the integral \int \lambda(s) ds in the likelihood is (with default settings) implemented using a trapezoidal integration scheme based on the triangulation mesh used to define the spde model. But if I really needed to write the approximation explicitly, I'd write that

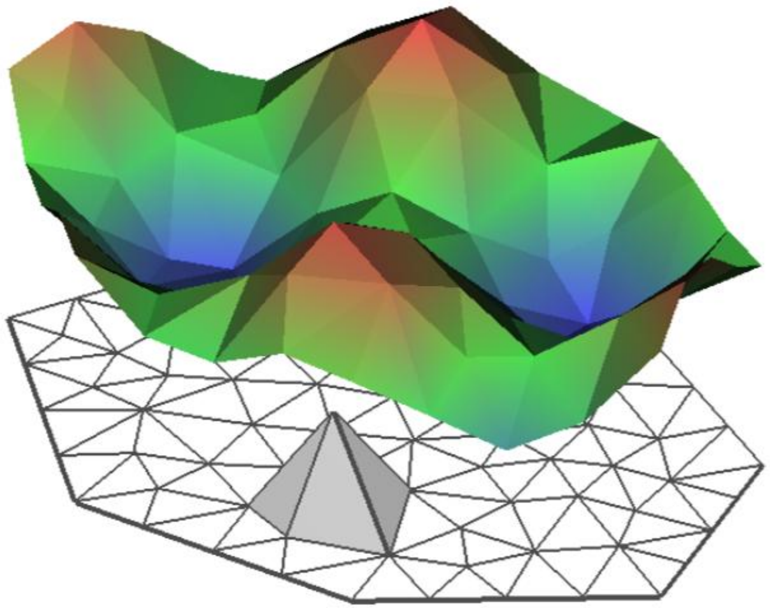
\int_\Omega \lambda(s) ds \approx \sum_{j=1}^J w_j \exp(\eta(s_j)),
where \{(s_j,w_j),j=1,...,J\} is the aforementioned triangular trapezoidal integration scheme.

This is a basic numerical integration scheme for a sufficiently smooth function.

Prof. Finn Lindgren
University of Edinburgh

The mesh: what does it really do?





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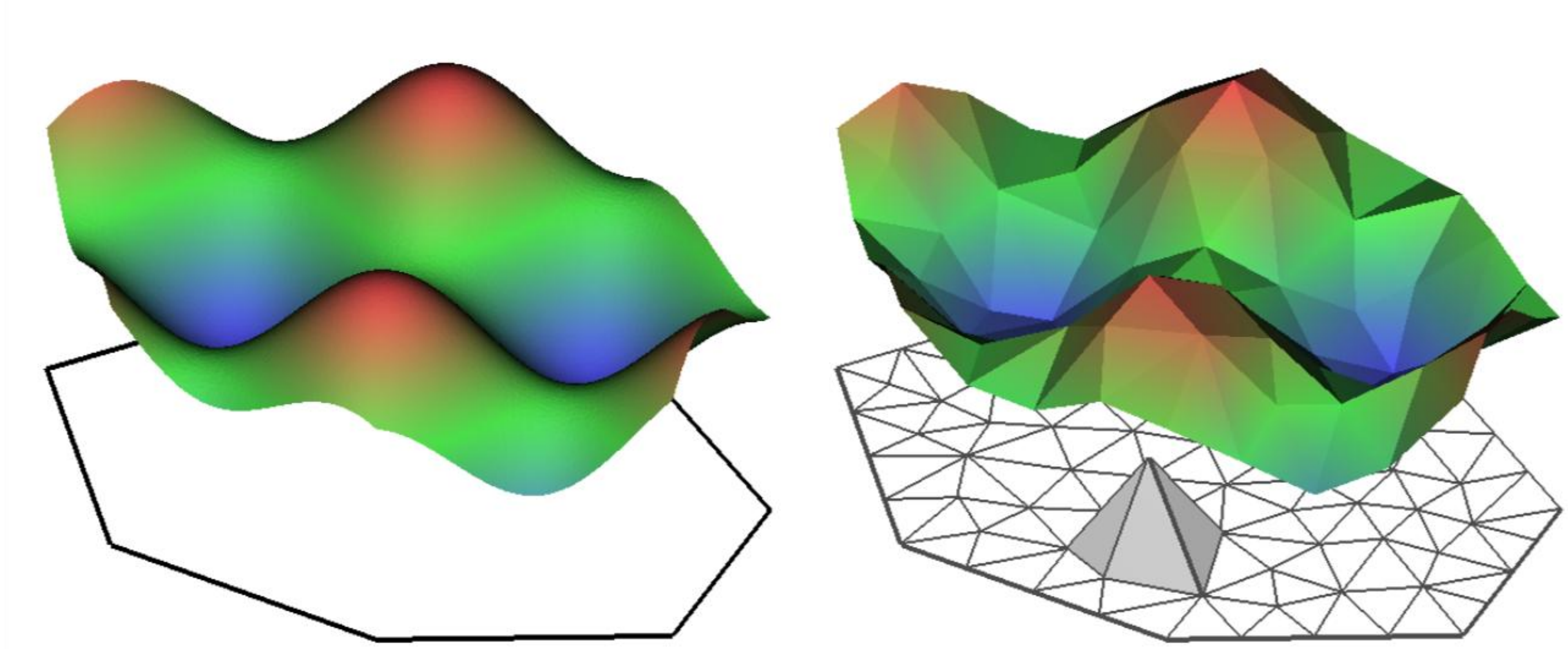

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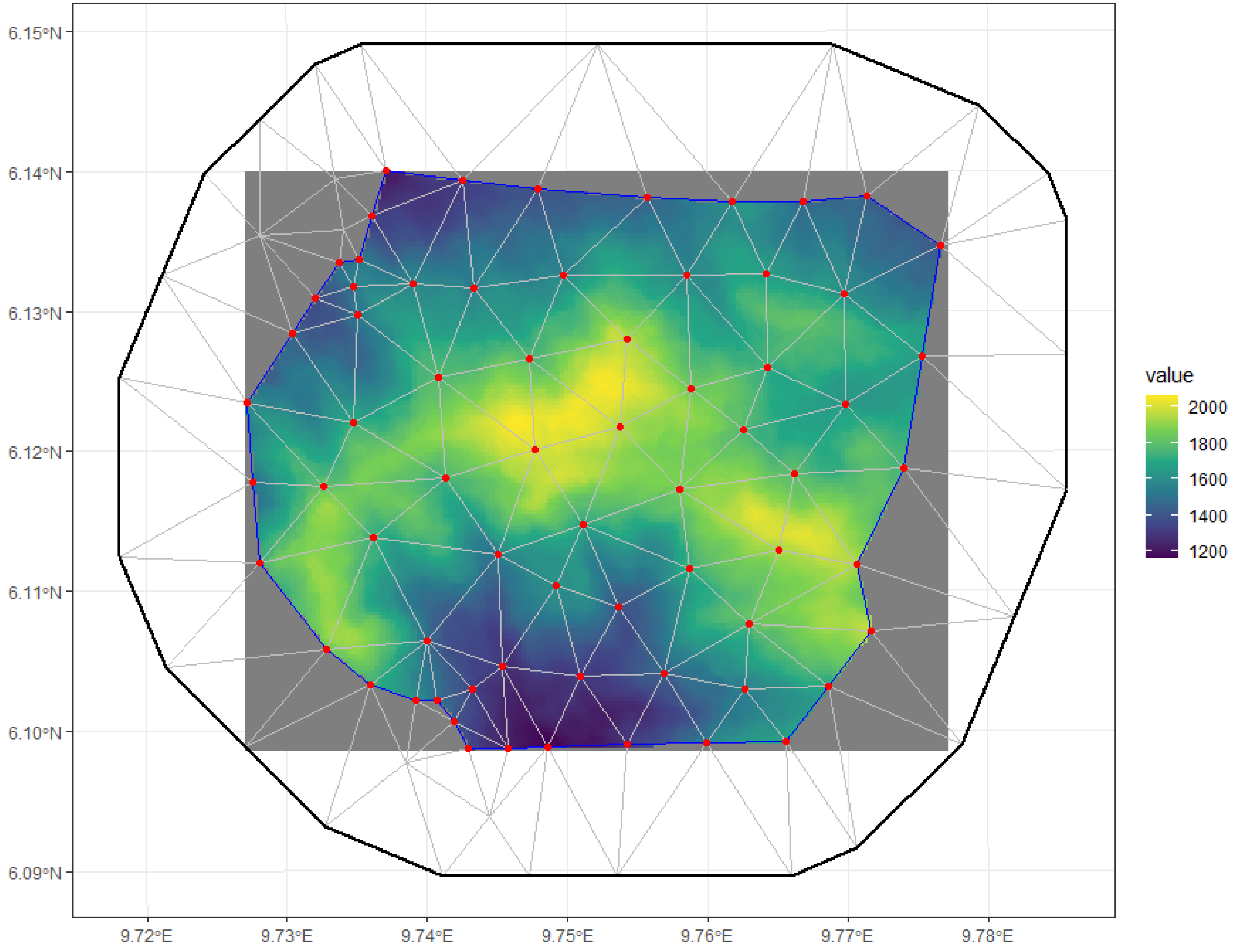

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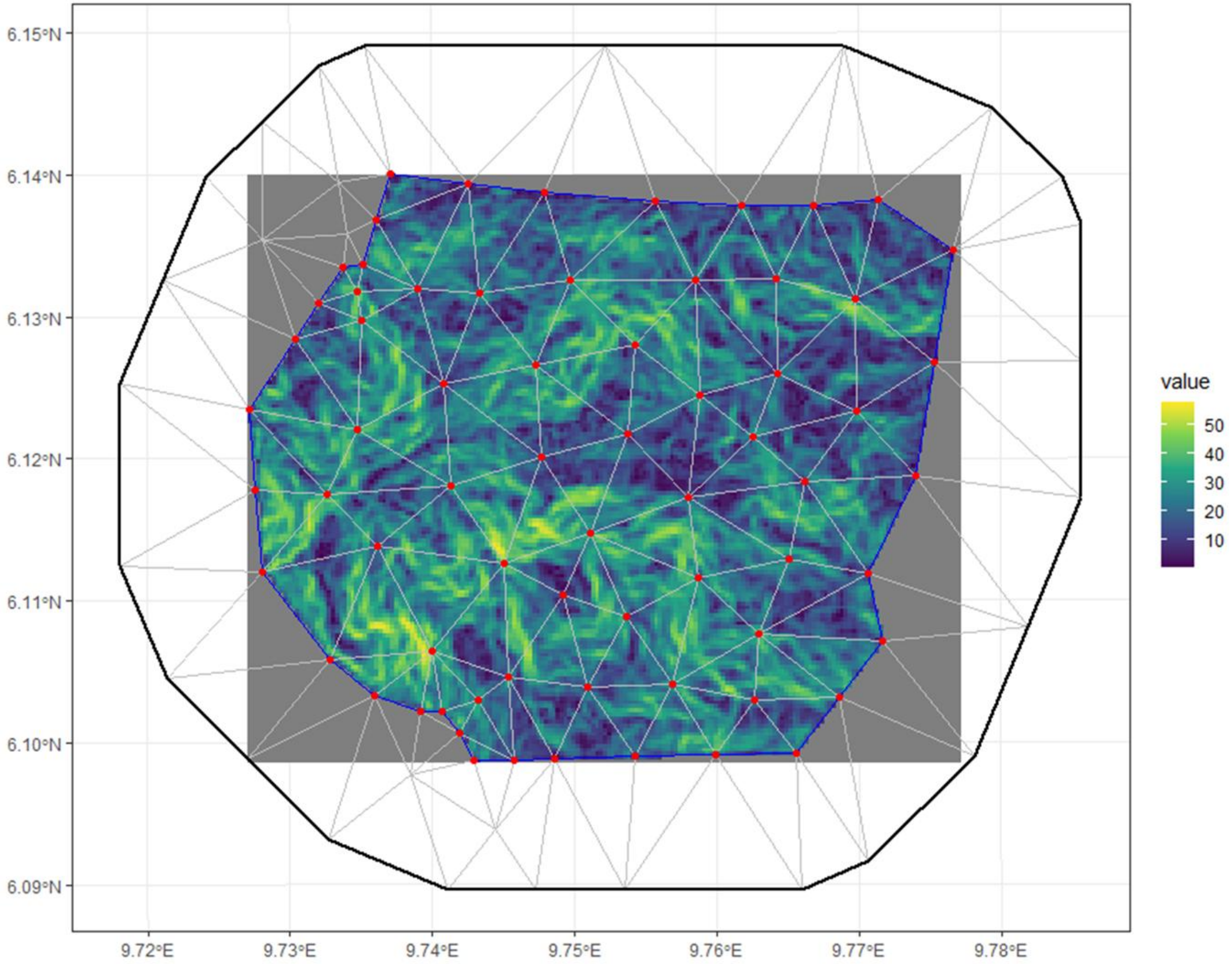
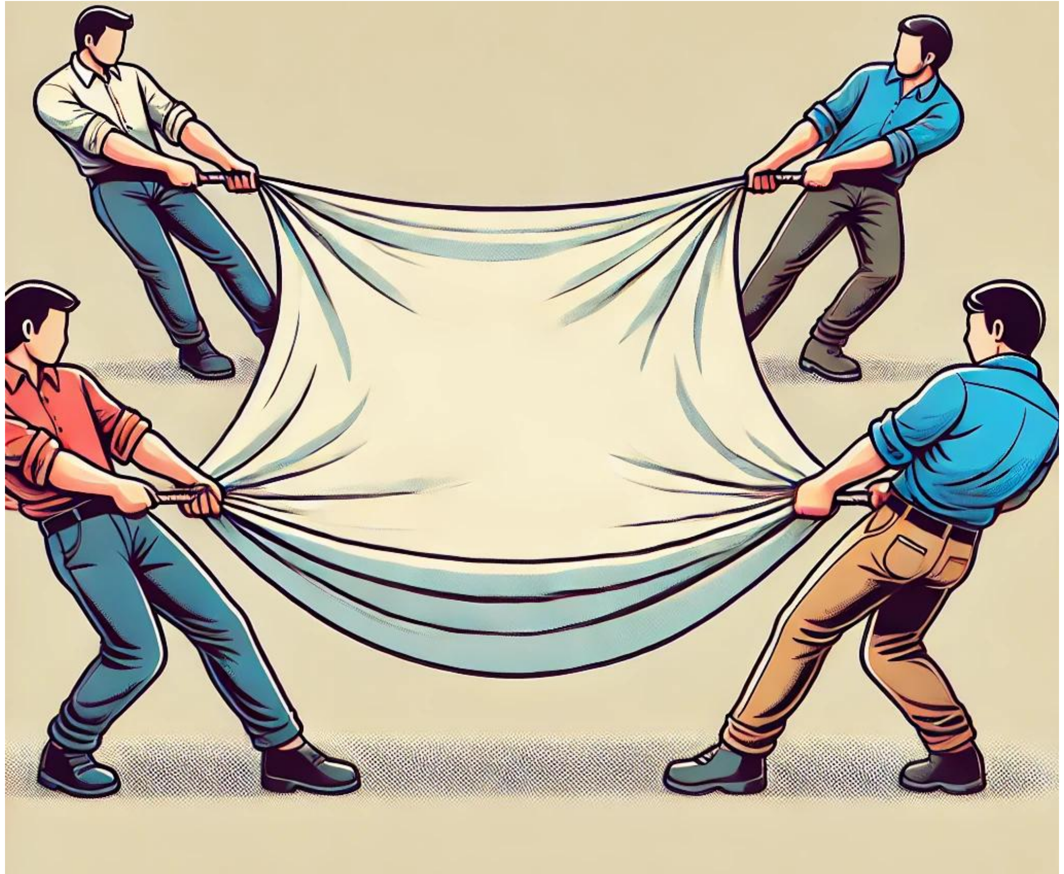
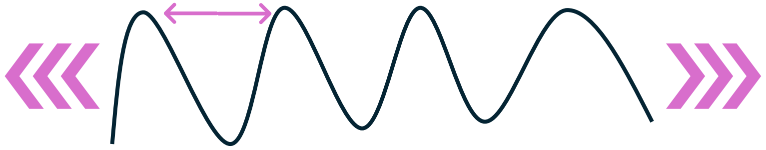


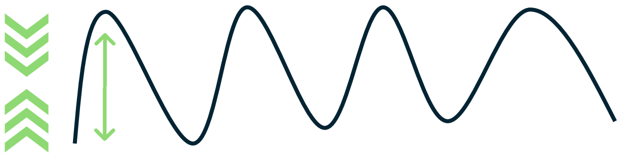
PC priors: inference's best friend



Range



Variance



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