

Disentangling observation biases to monitor spatio-temporal shifts in species distributions

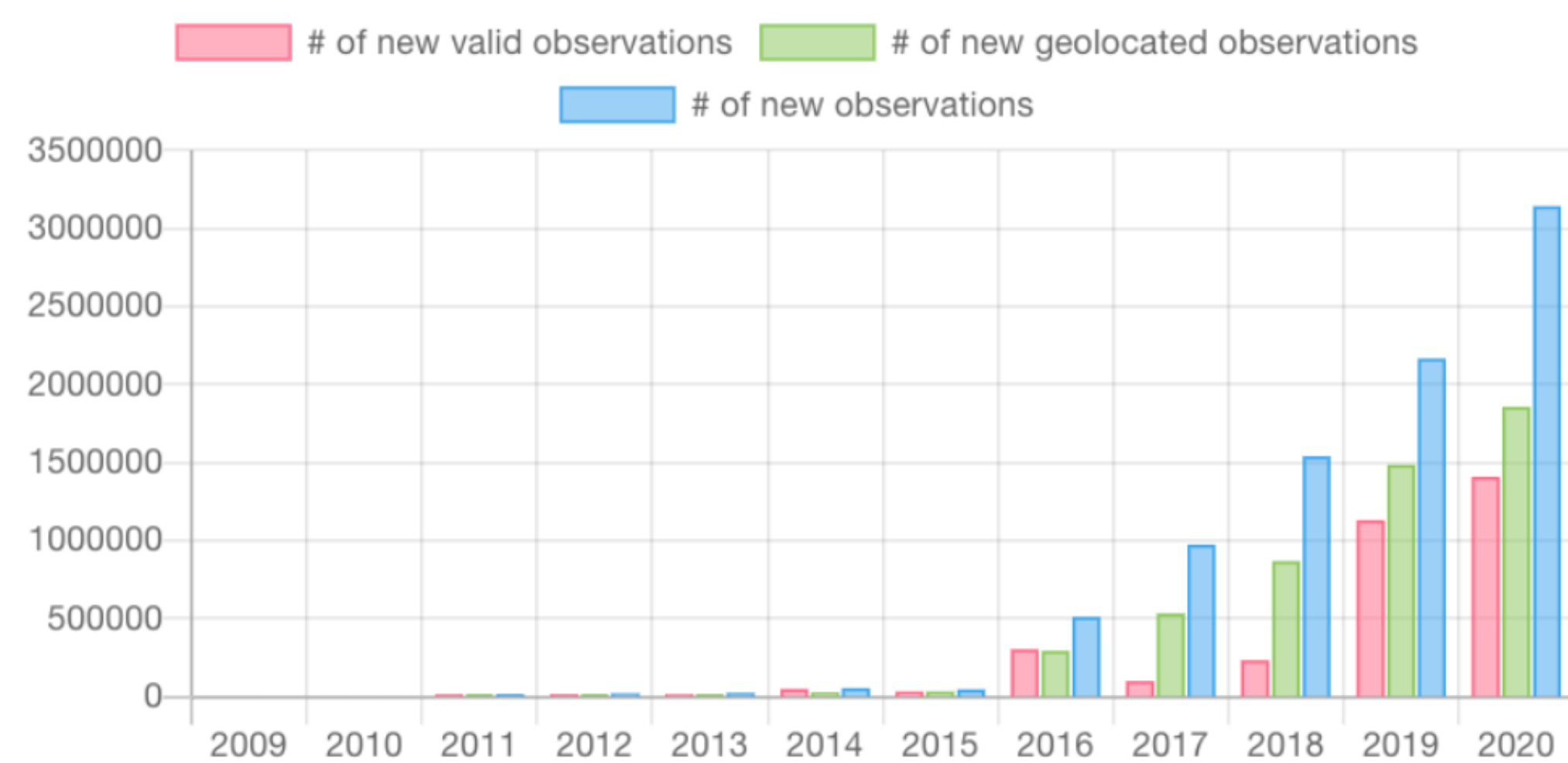
Diego Marcos, Christophe Botella, Alexis Joly, Pierre Alliez
Inria, France

Ilan Havinga
Wageningen University, The Netherlands

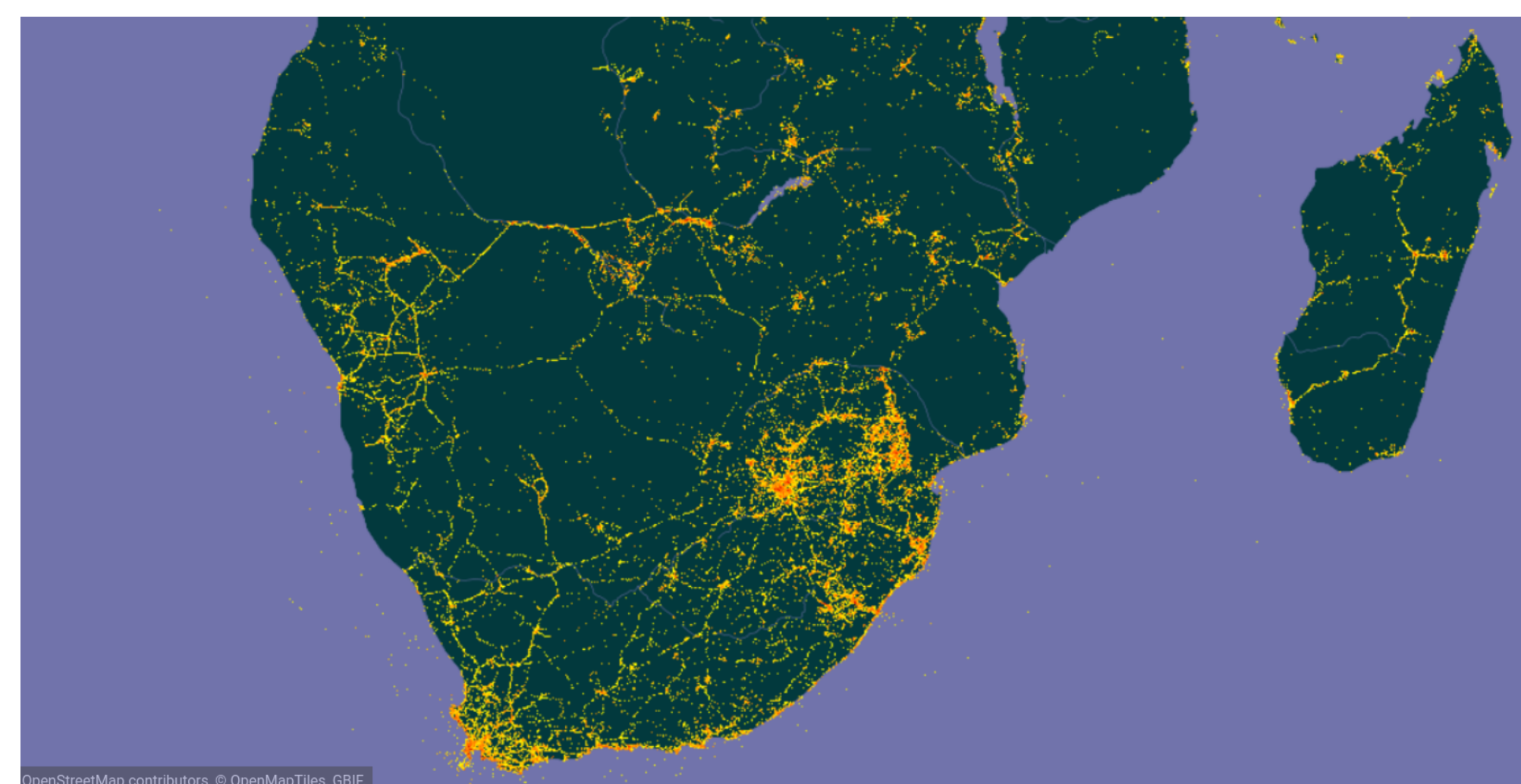
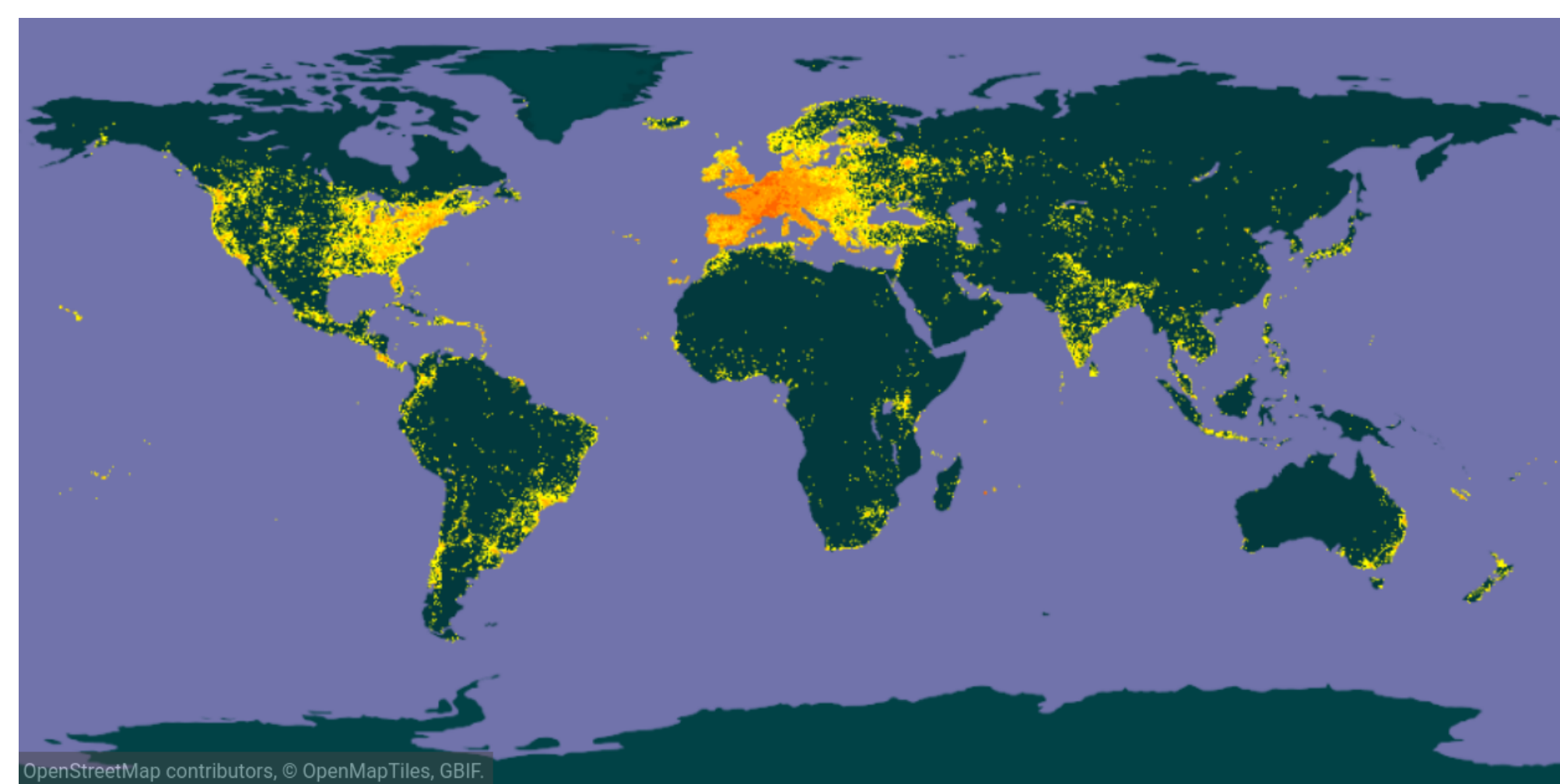
Cassio F. Dantas, Dino Ienco
INRAE, France

Motivation

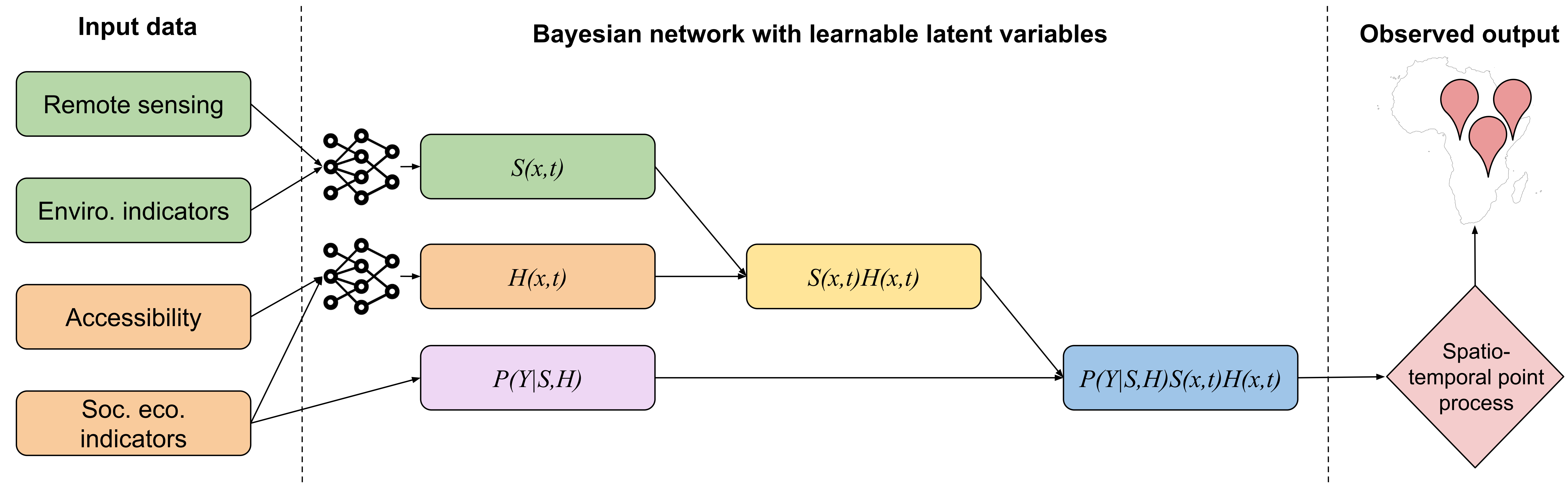
Wildlife observation platforms, such as Pl@ntNet, are increasing in popularity, providing valuable data for biodiversity monitoring.



But observations often capture more about human behaviour than about biodiversity trends.



Modelling the whole observation process



$$\lambda(x, t) = \underbrace{S(x, t)}_{\text{Species}} \underbrace{H(x, t)}_{\text{Human observer}} \underbrace{R(x, t)}_{\text{Reporting}}$$

$R(x, t) = P(Y|S(x, t), H(x, t))$

Observation **Encounter** **Reporting**

Modeled as a neural network with environmental variables as inputs Modeled as a neural network with accessibility variables as inputs

Loss function

$$-\log(P(Y)) = \int_D \int_T \lambda(x, t) dt dx - \sum_i \log(\lambda(x_i, t_i))$$

Interested?
Come work on this with us!
We are looking for a port-doc

