

Tr**IAS** ▶▶

Tracking **Invasive Alien Species**

Amy J.S. Davis, Tim Adriaens, Quentin Groom, Sonia Vanderhoeven, Damiano Oldoni, Peter Desmet, Lien Reyserhove and Diederik Strubbe.



INVASIVE SPECIES

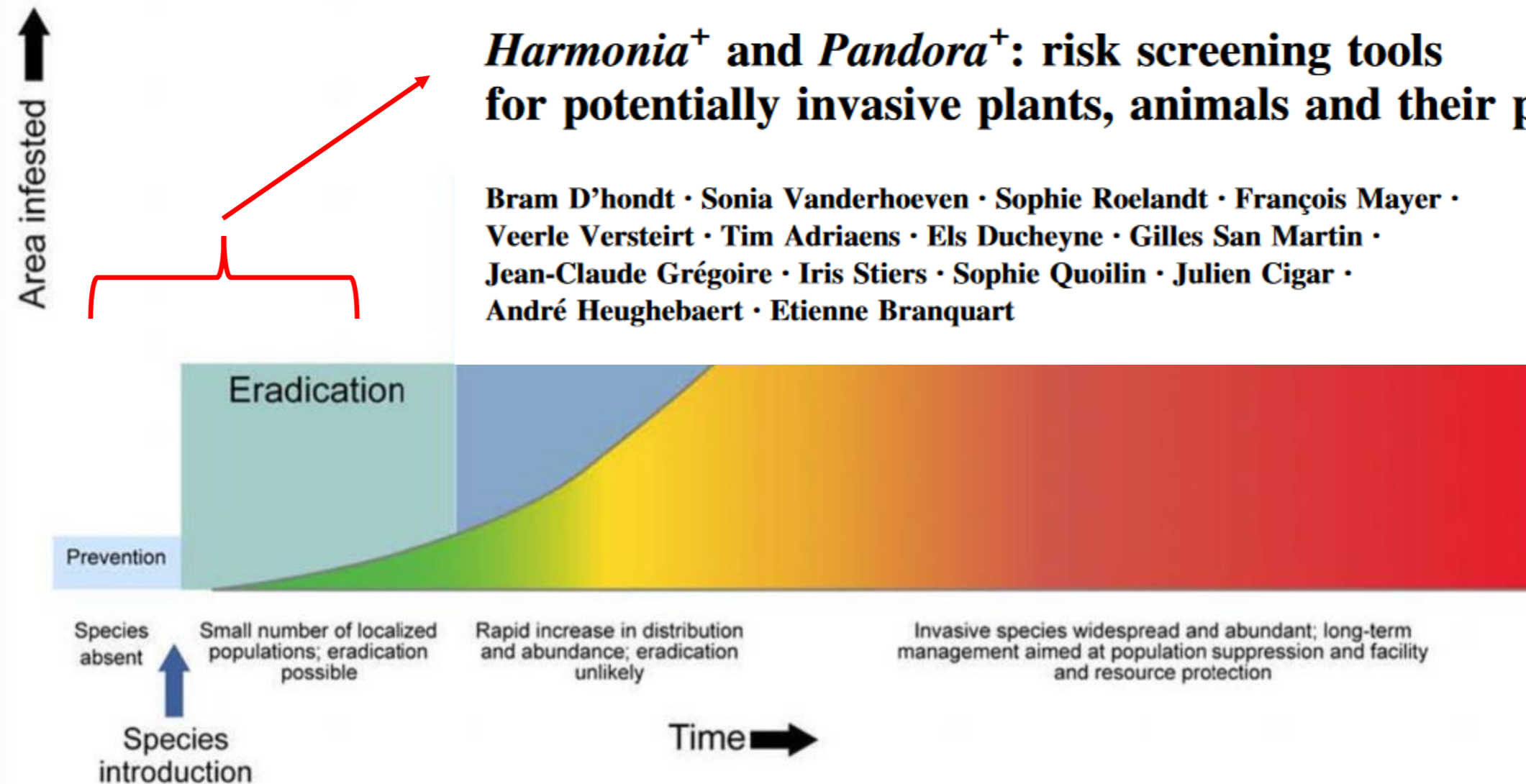
Biol Invasions (2015) 17:1869–1883
DOI 10.1007/s10530-015-0843-1



ORIGINAL PAPER

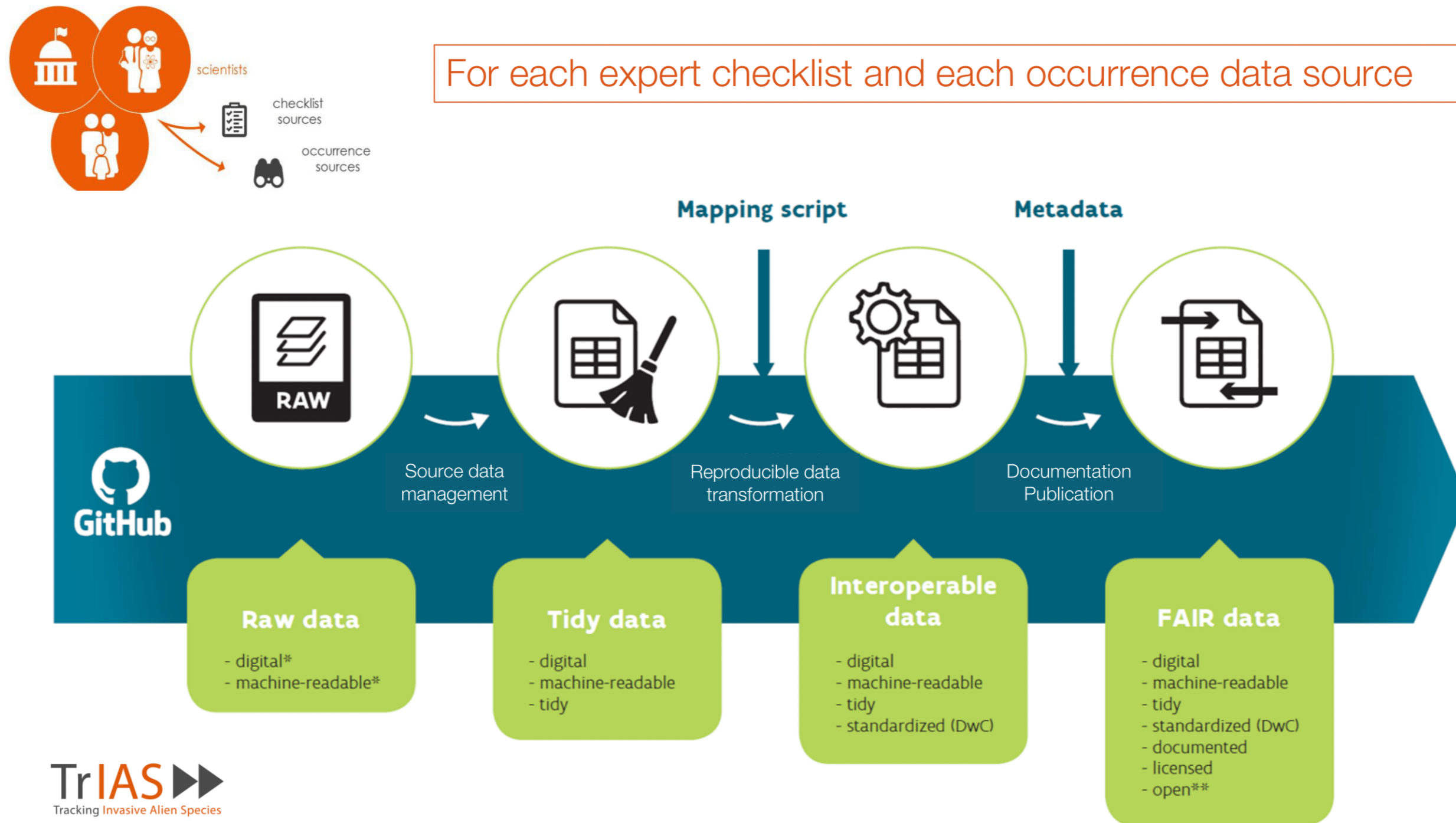
Harmonia⁺ and *Pandora*⁺: risk screening tools for potentially invasive plants, animals and their pathogens

Bram D'hondt · Sonia Vanderhoeven · Sophie Roelandt · François Mayer ·
Veerle Versteirt · Tim Adriaens · Els Ducheyne · Gilles San Martin ·
Jean-Claude Grégoire · Iris Stiers · Sophie Quoilin · Julien Cigar ·
André Heughebaert · Etienne Branquart



Sources: National Invasive Species Council; U.S. Department of Agriculture; National Park Service; U.S. Fish and Wildlife Service; Rodgers, L., South Florida Water Management District; Department of Primary Industries, State of Victoria, Australia; and GAO. | GAO-16-49

INVASIVE SPECIES



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Tracking Invasive Alien Species

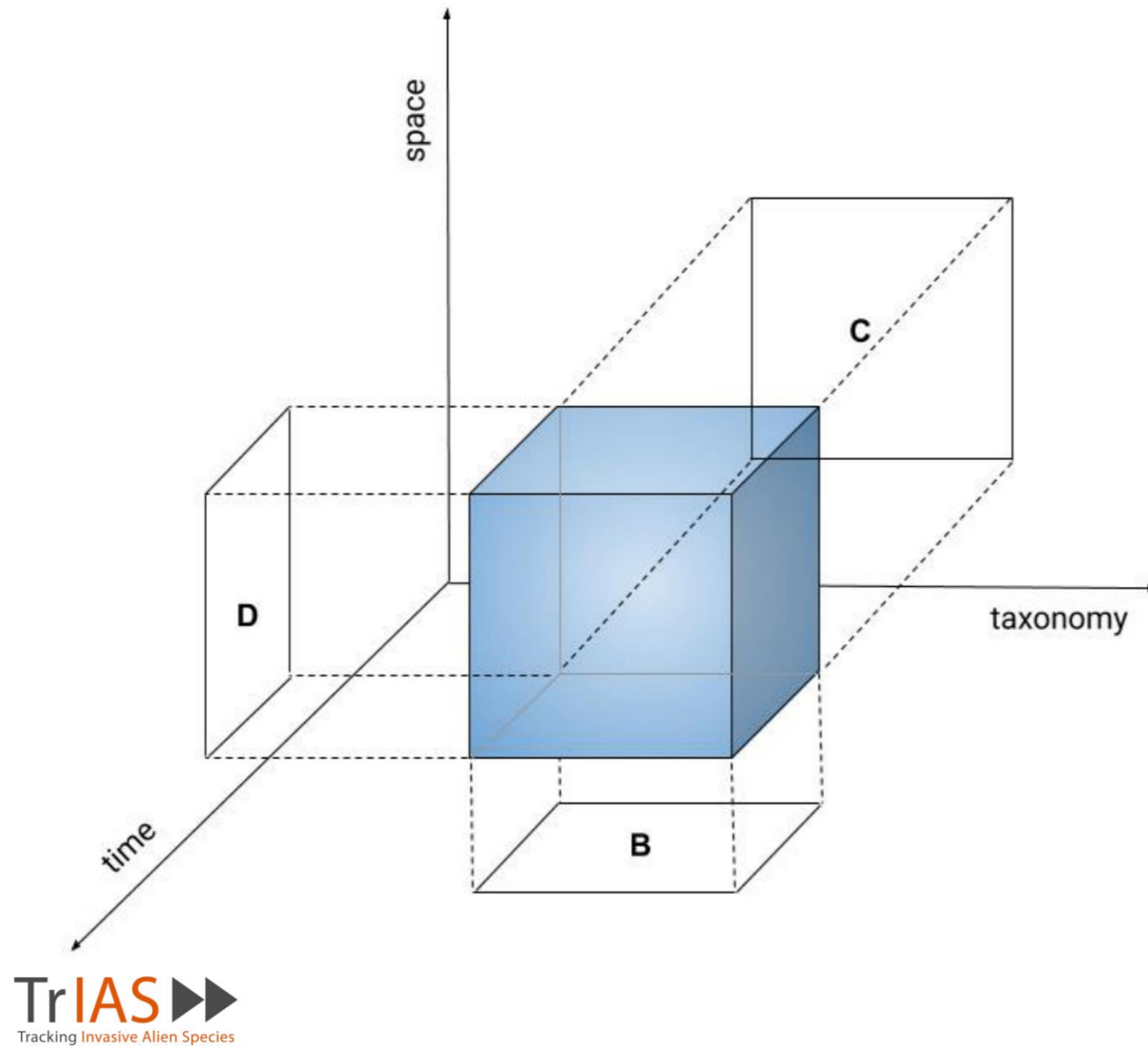
ALIEN
SPECIES
CHECKLIST

OCCURENCE
DATASET OF
ALIEN
SPECIES

EMERGING
SPECIES
IDENTIFICATION

RISK
ASSESSMENT
& MODELLING

INVASIVE SPECIES



►► Occurrence cube

Occurrence cubes: a new paradigm for aggregating species occurrence data

Damiano Oldoni, Quentin Groom, Tim Adriaens, Amy J.S. Davis, Lien Reyserhove, Diederik Strubbe, Sonia Vanderhoeven, Peter Desmet

bioRxiv 2020.03.23.983601;

<https://doi.org/10.1101/2020.03.23.983601>

INVASIVE SPECIES

TrIAS ▶▶
Tracking Invasive Alien Species

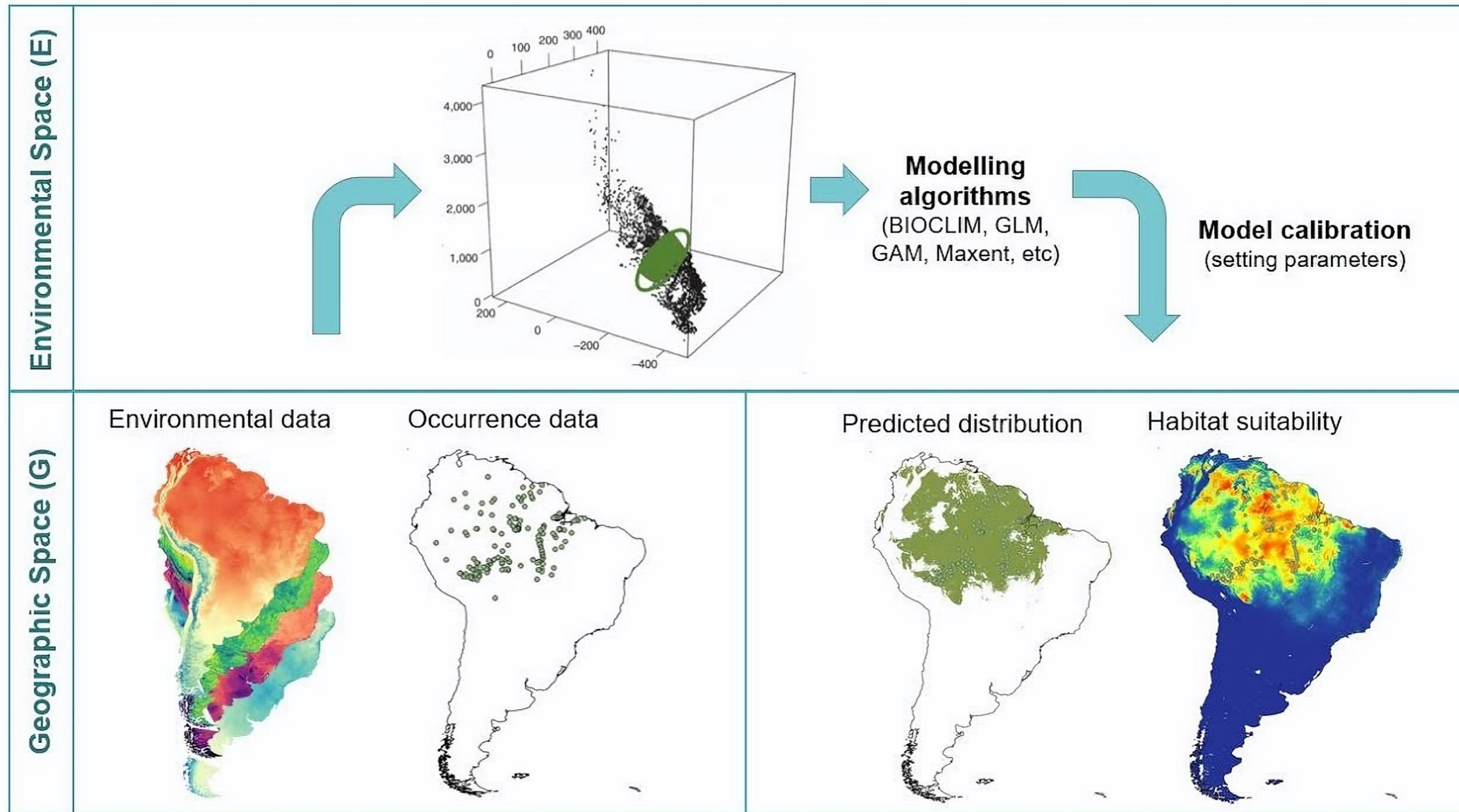
ALIEN
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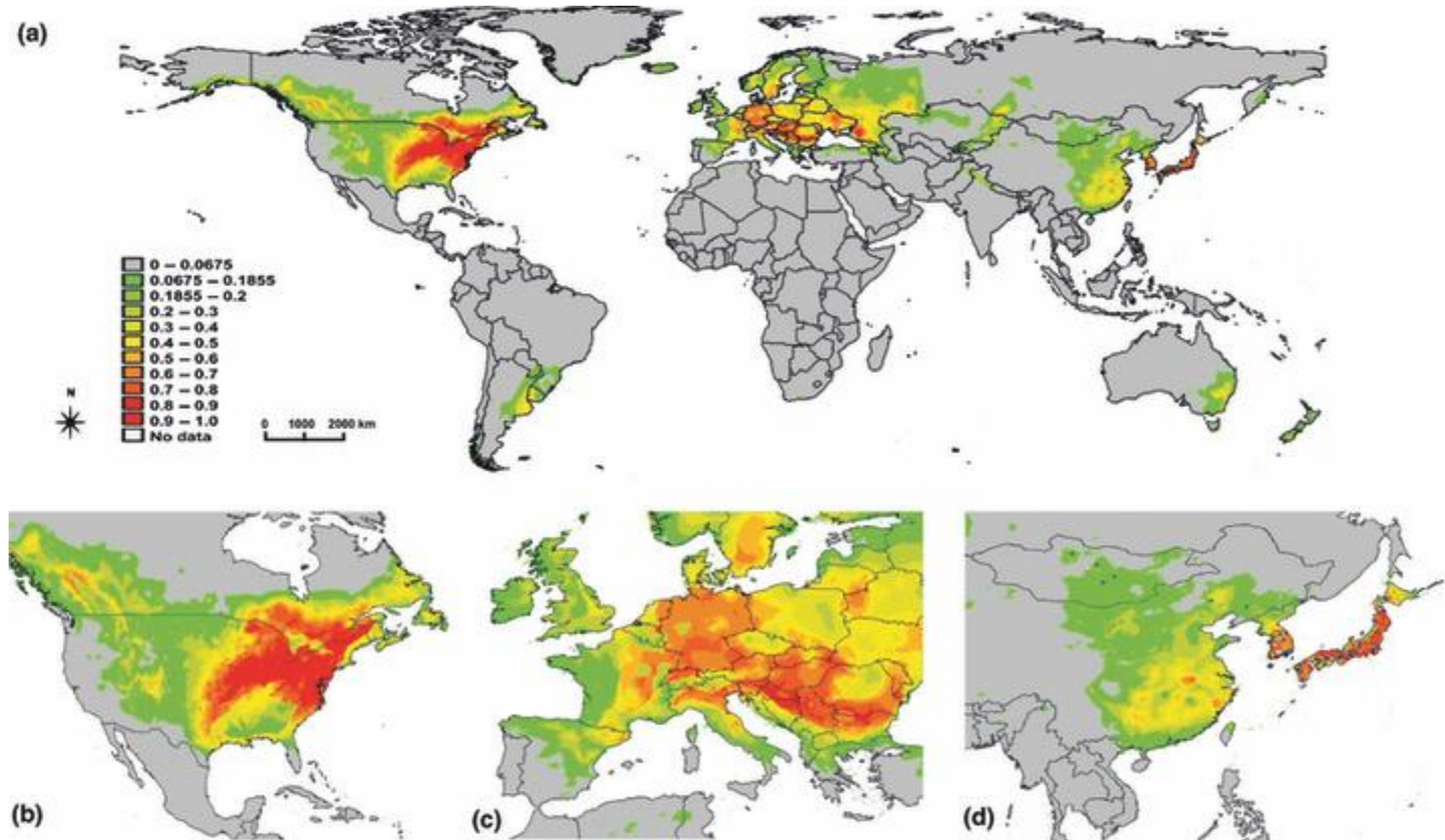
EMERGING
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IDENTIFICATION

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DISTRIBUTION MODELING



DISTRIBUTION MODELING



DISTRIBUTION MODELLING: LIMITED UPTAKE

Biological Conservation 199 (2016) 157–171



Contents lists available at ScienceDirect

Biological Conservation

journal homepage: www.elsevier.com/locate/bioc



Review

Conservation planners tend to ignore improved accuracy of modelled species distributions to focus on multiple threats and ecological processes



Ayesha I.T. Tulloch ^{a,j,*}, Patricia Sutcliffe ^b, Ilona Naujokaitis-Lewis ^{c,l}, Reid Tingley ^d, Lluís Brotons ^{e,k},
Katia Maria P.M.B. Ferraz ^f, Hugh Possingham ^{b,g}, Antoine Guisan ^{h,i}, Jonathan R. Rhodes ^a

CAB Reviews 2019 14, No. 020

Species distribution models (SDM): applications, benefits and challenges in invasive species management

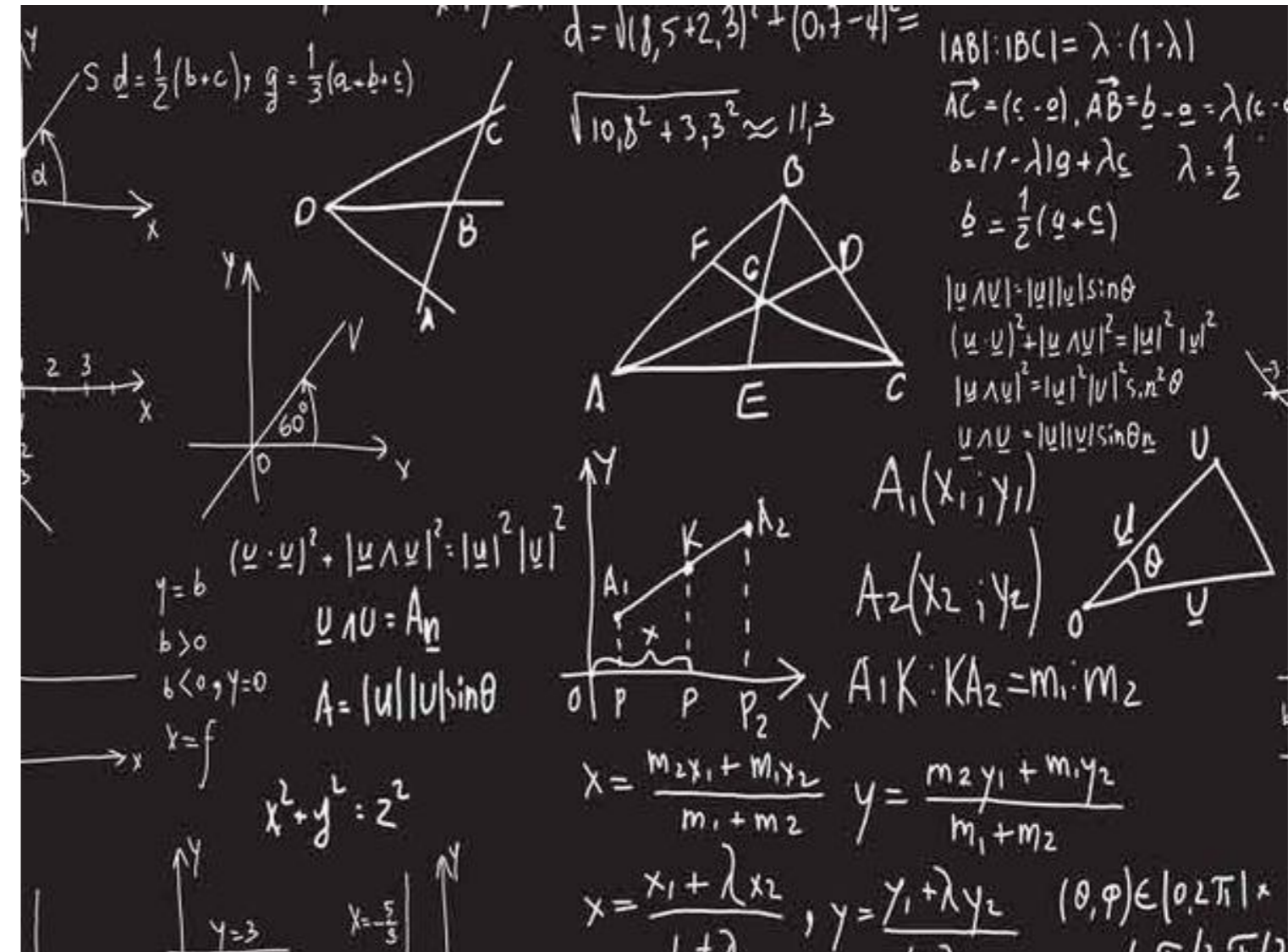
Vivek Srivastava, Valentine Lafond and Verena C. Griess*

Address: Department of Forest Resources Management, Faculty of Forestry, University of British Columbia, Forest Sciences Centre, 2424 Main Mall, Vancouver, British Columbia V6T1Z4, Canada.

VS: 0000-0001-7299-6693, VCG: 0000-0002-3856-3736.

DISTRIBUTION MODELLING: LIMITED UPTAKE

- Predictive accuracy
- Uncertainty
- Transparency
- Reproducibility
- Easy of interpretation

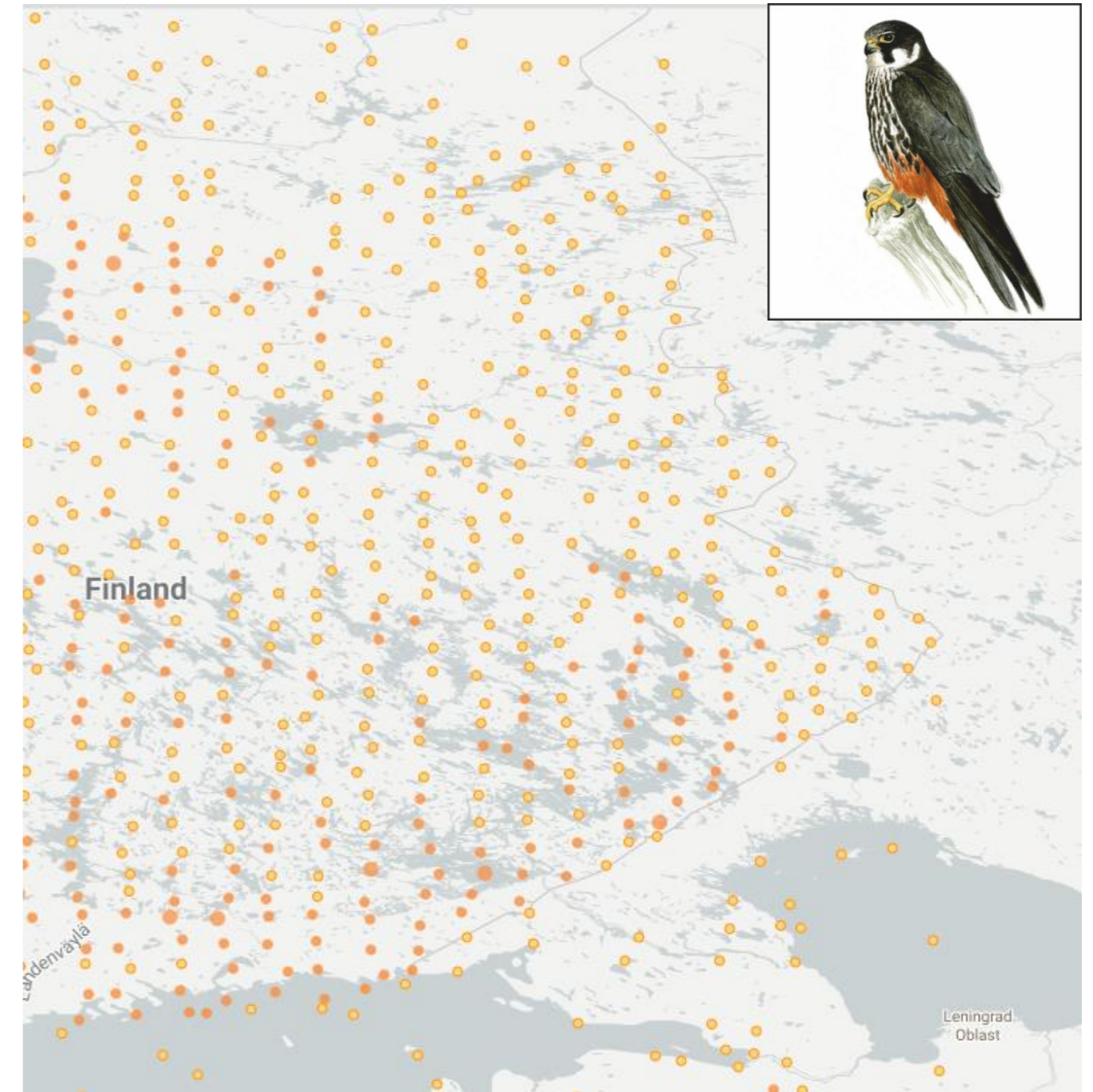


TRIAS SDM WORKFLOW



PREDICTIVE ACCURACY

(spatial) sampling bias

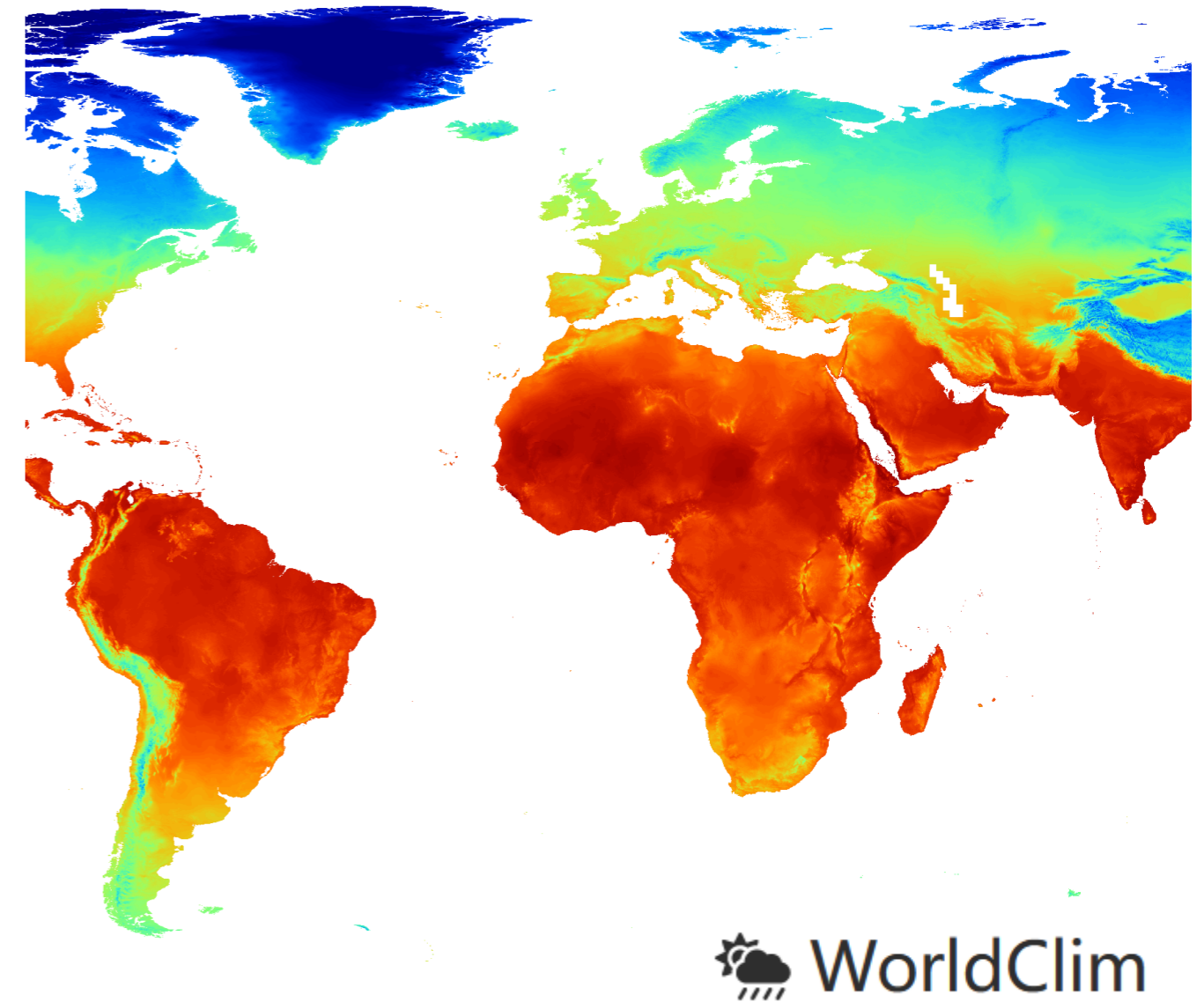


PREDICTIVE ACCURACY

(spatial) sampling bias

(correlated) predictor variables

climate



PREDICTIVE ACCURACY

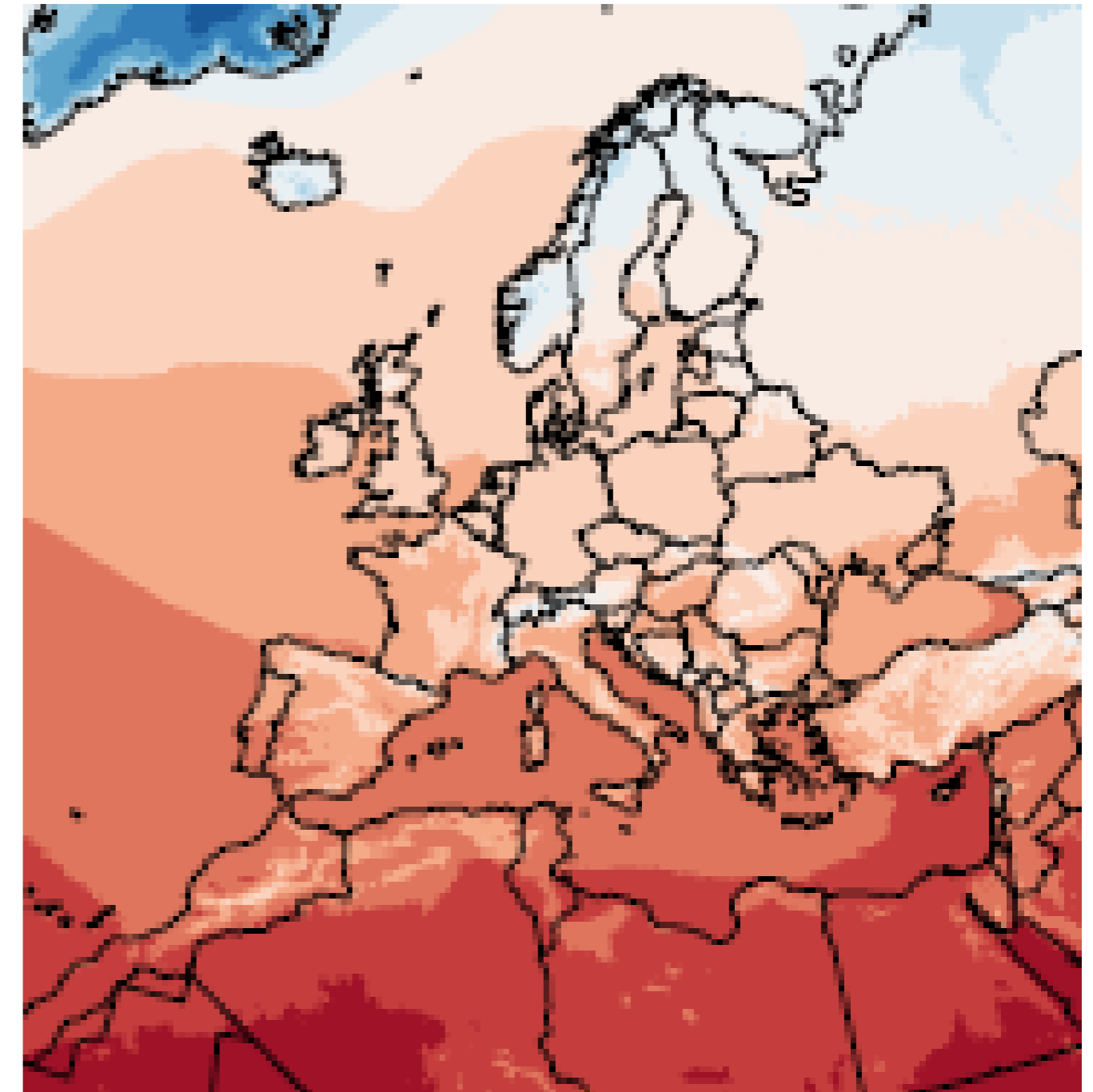
(spatial) sampling bias

(correlated) predictor variables

climate



The screenshot shows the Zenodo interface for a dataset. At the top, there is a blue header with the Zenodo logo, a search bar, and links for 'Upload' and 'Communities'. Below the header, the date 'April 30, 2020' is displayed on the left, and 'Dataset' and 'Open Access' tags are on the right. The main title of the dataset is 'High-resolution future climate data for species distribution models in Europe'. Below the title, the project leader(s) are listed as 'De Troch, Rozemien; Termonia, Piet; Van Schaeybroeck, Bert', and the project member(s) are 'Groom, Quentin; Strubbe, Diederik; Davis, Amy; Desmet, Peter'.

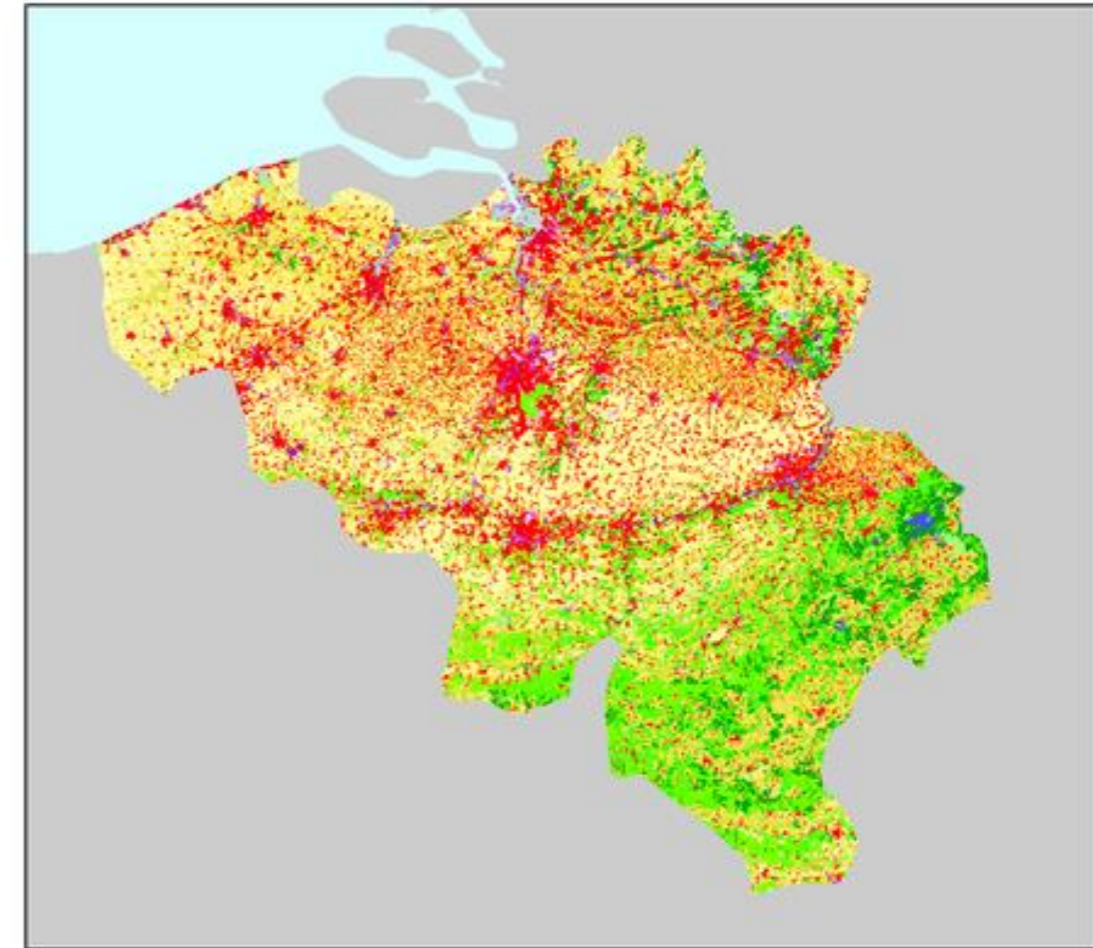


PREDICTIVE ACCURACY

(spatial) sampling bias

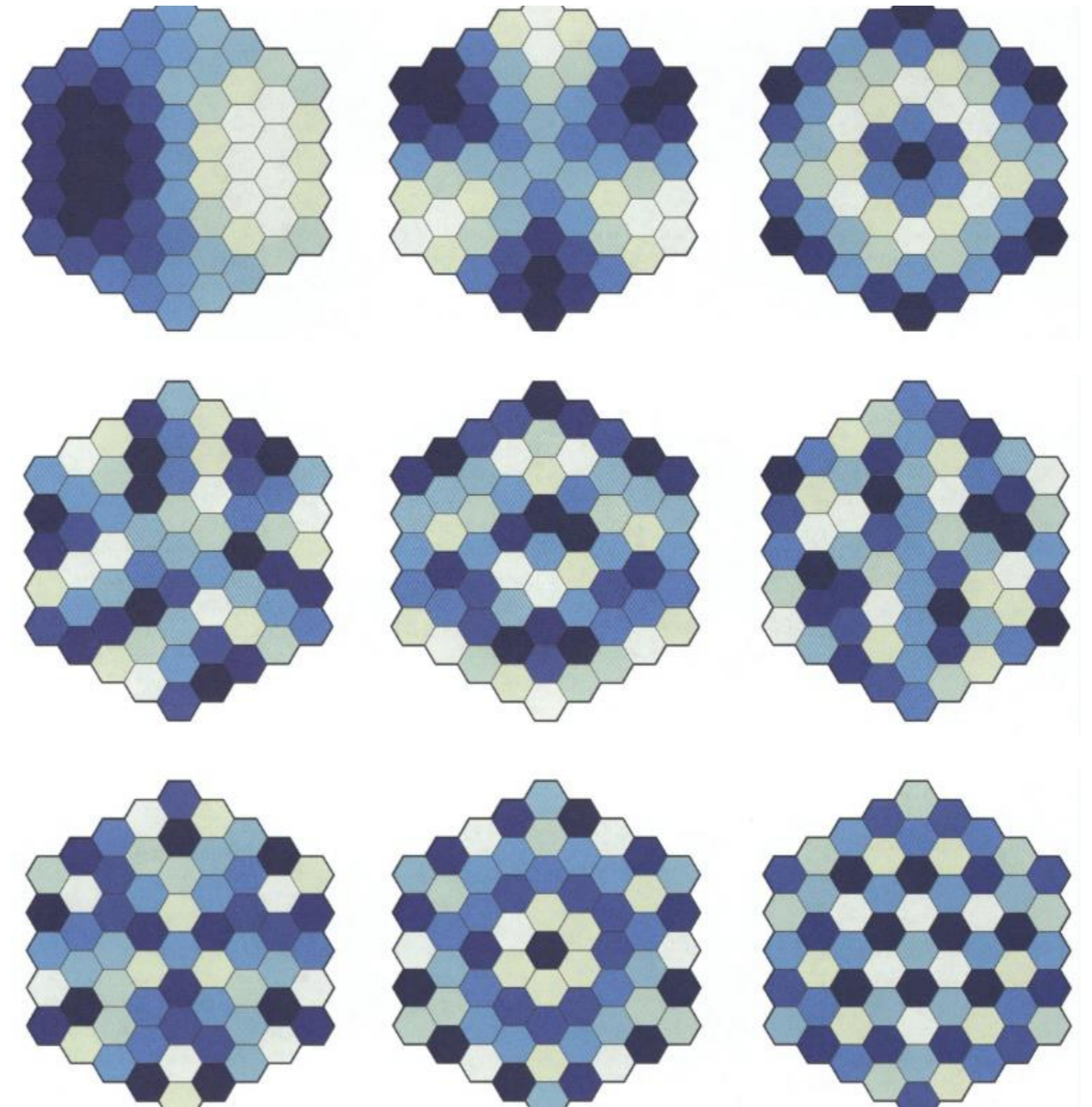
(correlated) predictor variables

climate & habitat



PREDICTIVE ACCURACY

(spatial) sampling bias
(correlated) predictor variables
climate & habitat
spatial autocorrelation



PREDICTIVE ACCURACY

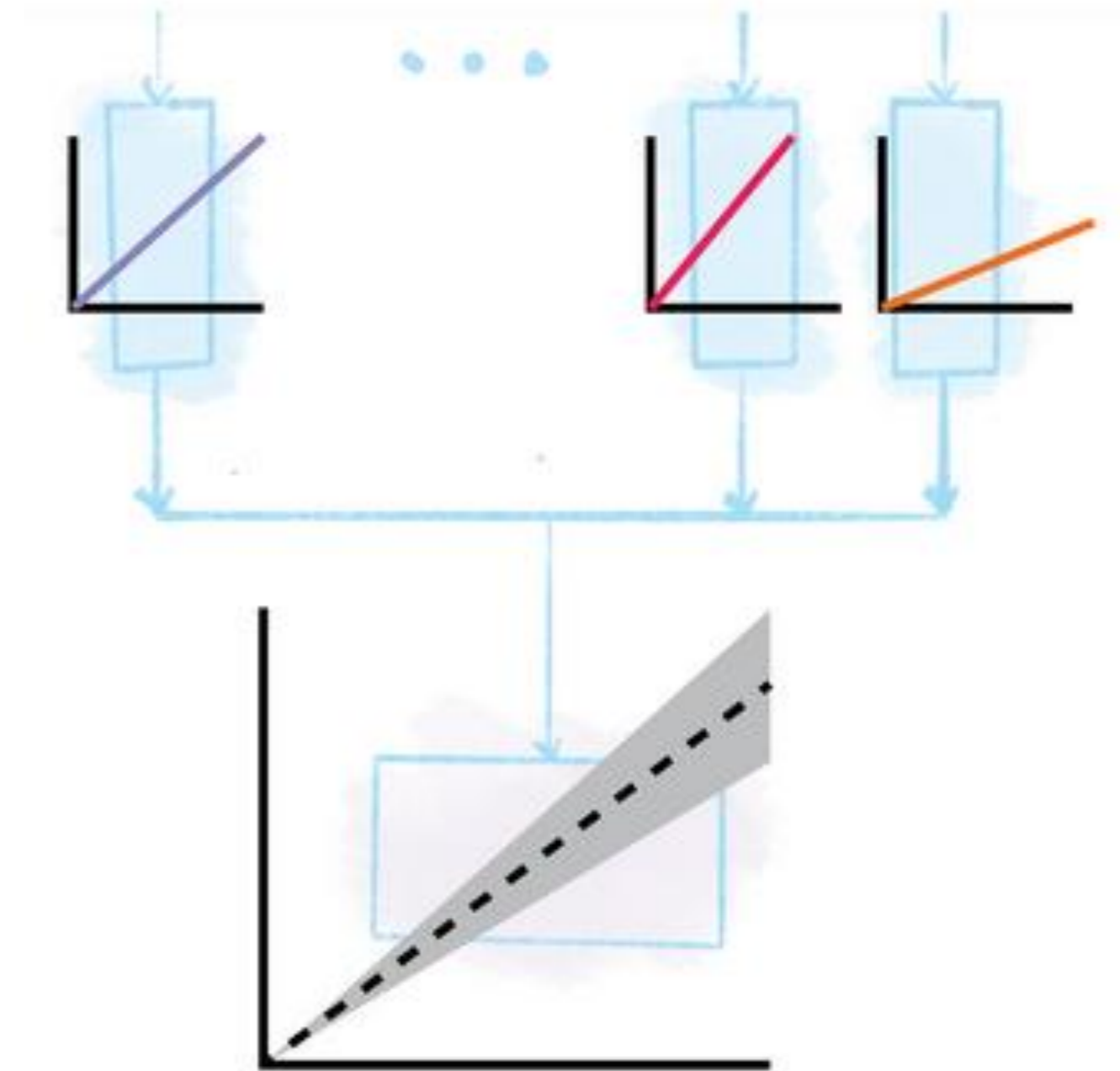
(spatial) sampling bias

(correlated) predictor variables

climate & habitat

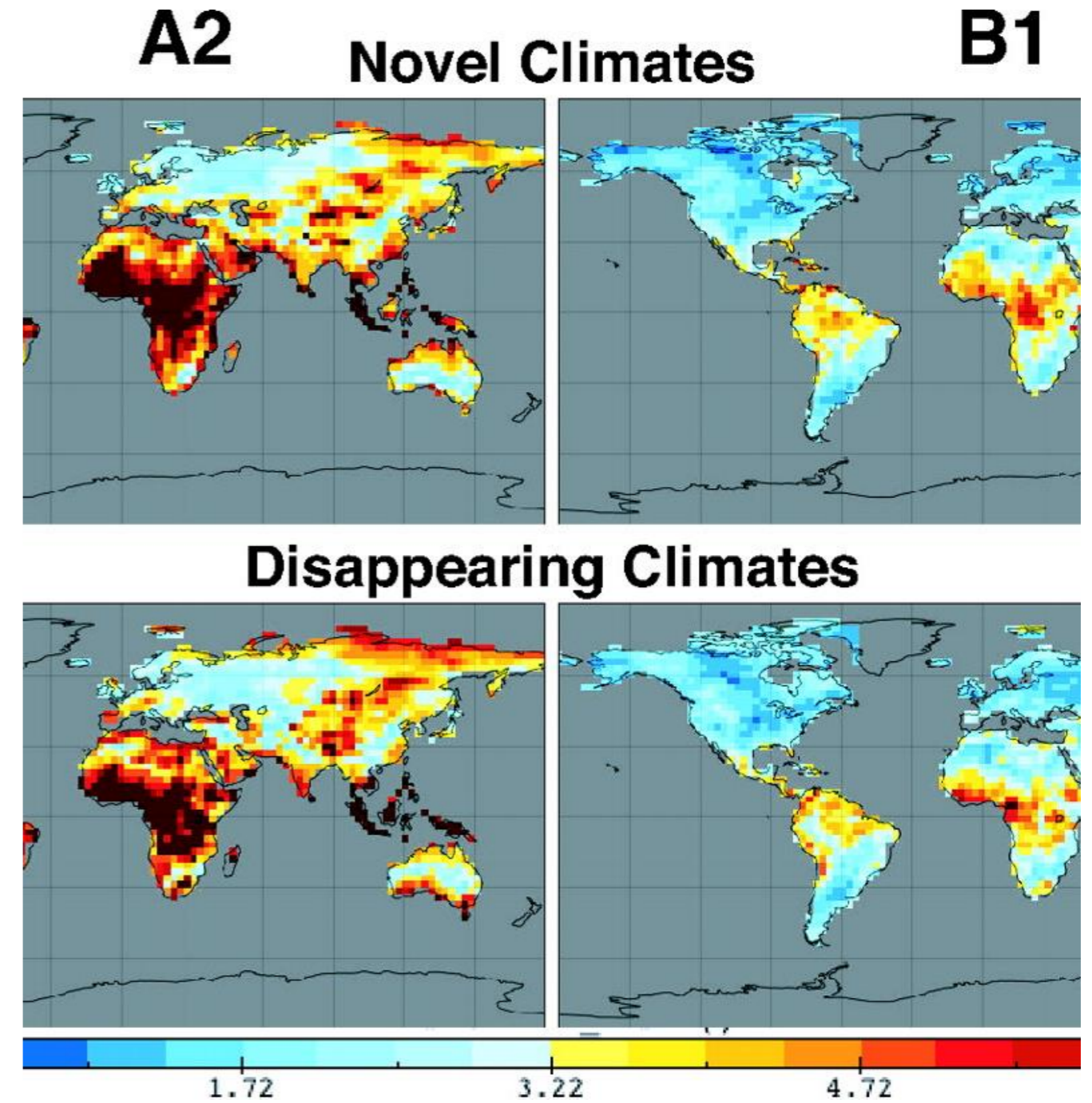
spatial autocorrelation

ensemble modeling



UNCERTAINTY

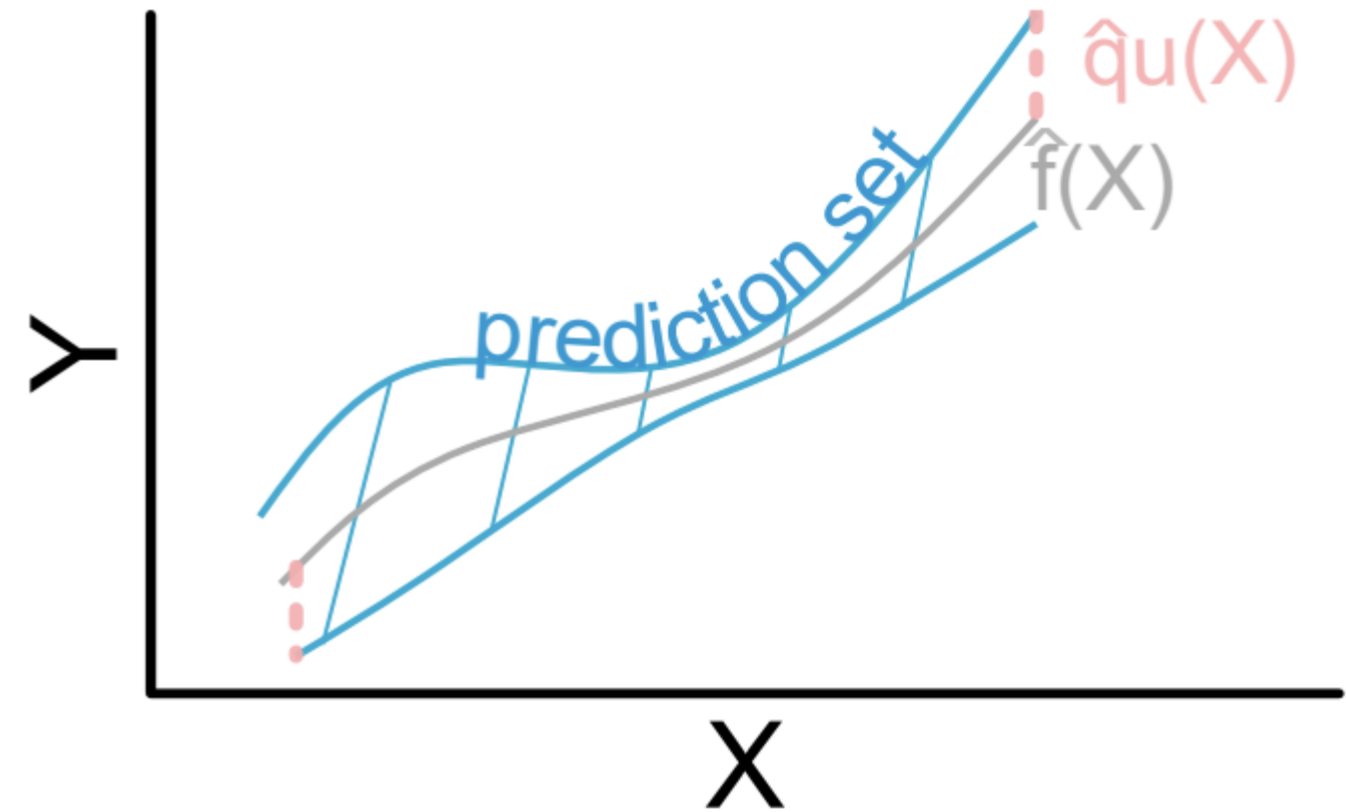
novel conditions



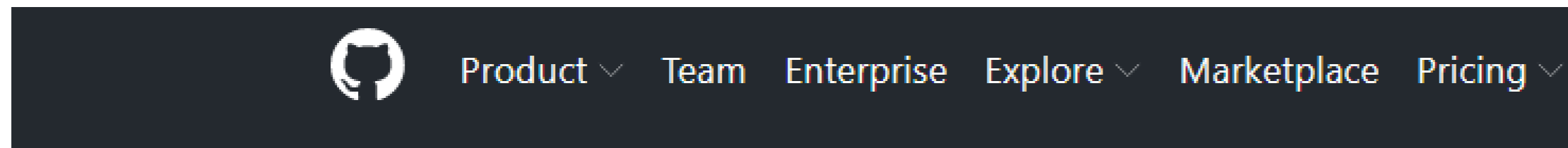
UNCERTAINTY


novel conditions

↳ 'conformal prediction'



TRANSPARANCY & REPRODUCIBILITY





Tracking Invasive Alien Species (TrIAS)

Building an open data-driven framework to support policy on invasive species

📍 Belgium <http://trias-project.be>

🏠 Overview 📁 Repositories 26 📦 Packages 👤 People 3

trias-risk-map

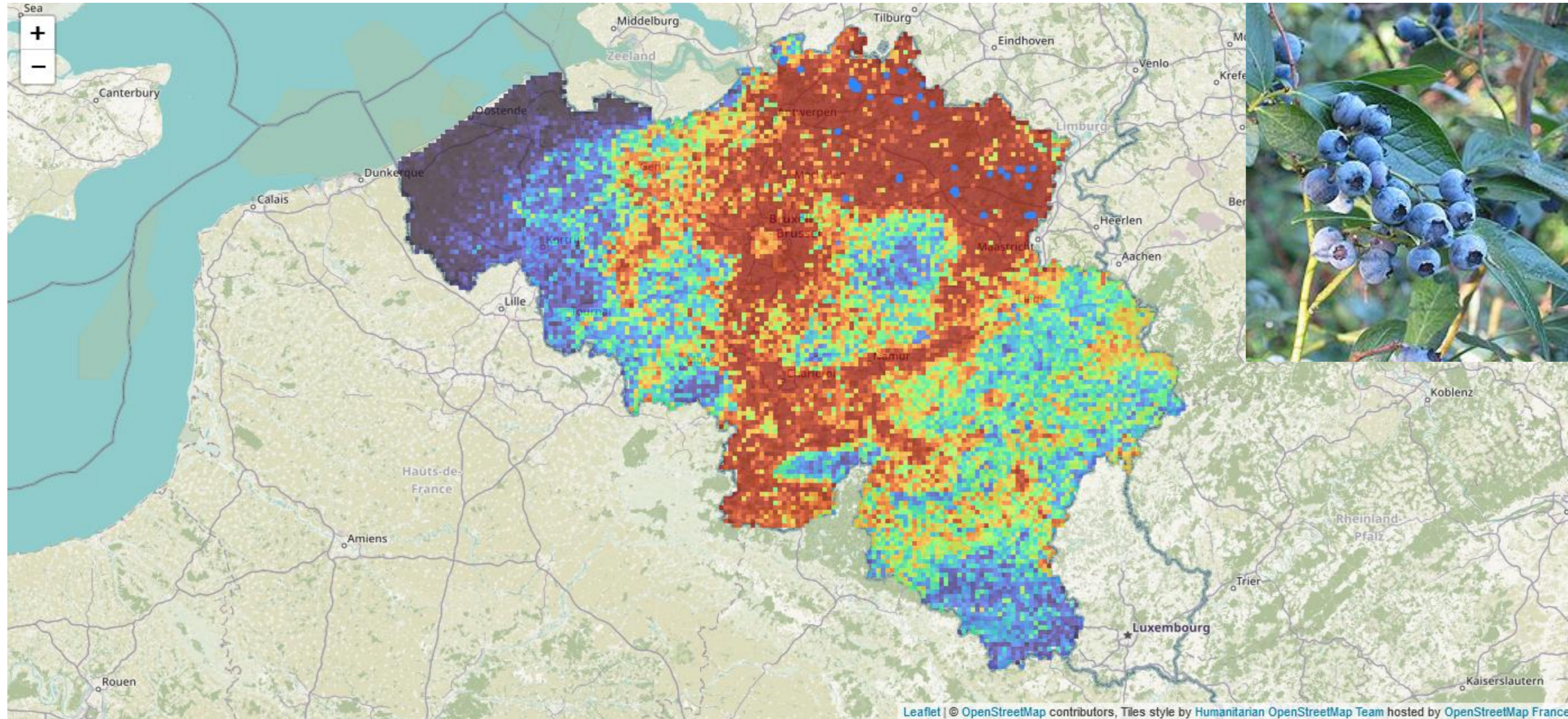
Small Vue-based tool to show risk maps (modelled data from GeoTiff files, and occurrences from), without any server-side component.

Installation and deployment

- trias** Public
R package with functions for TrIAS
📦 R ⭐ 2 📄 MIT 🍴 1 🔄 9 📦 0 Updated 11 days ago
- risk-maps** Public
Web application to browse risk maps
📦 Vue ⭐ 0 📄 MIT 🍴 1 🔄 1 📦 5 Updated 24 days ago
- checklist-recipe** Public template
Template repository for standardizing thematic species checklist data to Darwin Core using R
⭐ 18 📄 MIT 🍴 12 🔄 1 📦 0 Updated on 14 Apr
- occ-cube** Public
Occurrence cube for countries
⭐ 1 📄 MIT 🍴 0 🔄 3 📦 0 Updated on 9 Mar
- occ-cube-alien** Public
Occurrence cubes for non-native taxa in Belgium and Europe
⭐ 1 📄 MIT 🍴 1 🔄 5 📦 0 Updated on 9 Mar

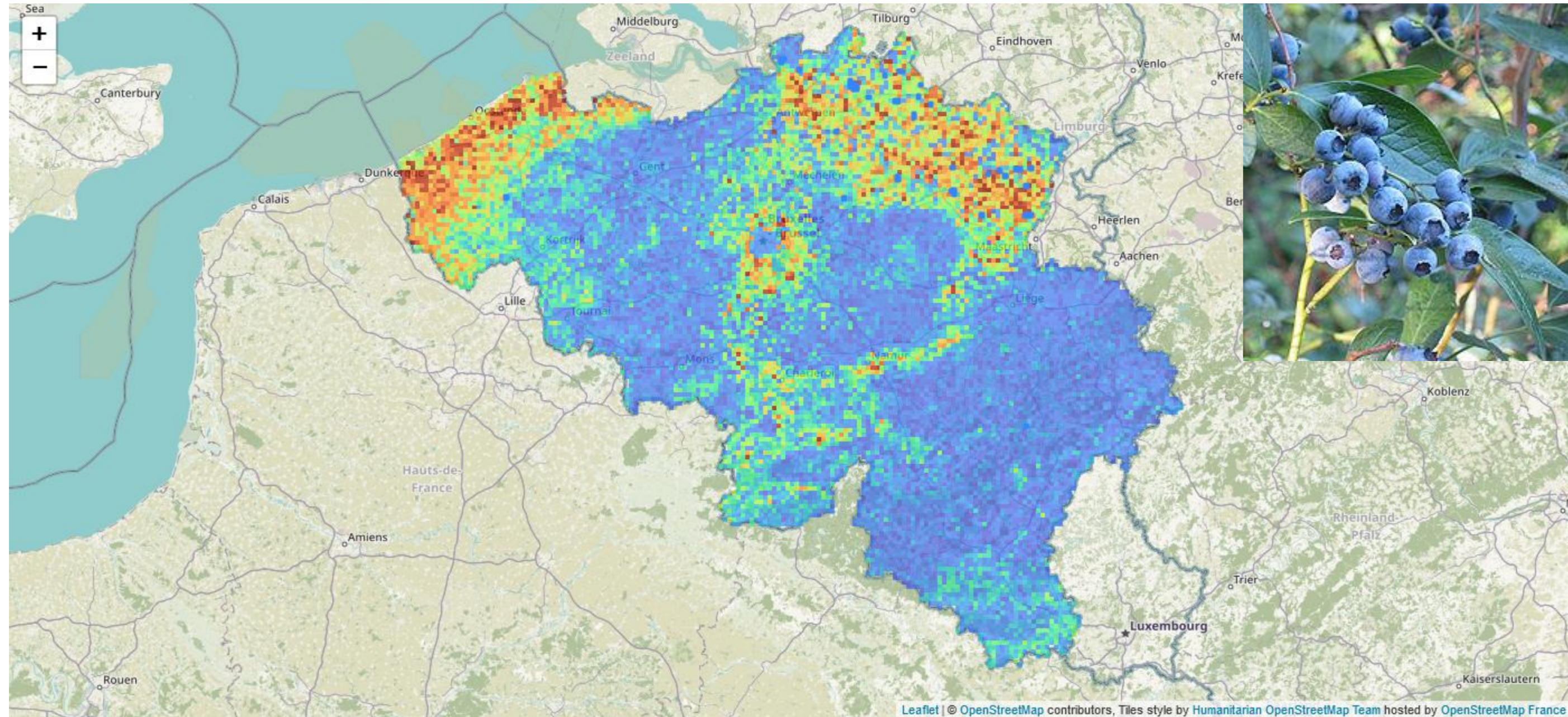
EASY OF INTERPRETATION: RISK

Vaccinium corymbosum



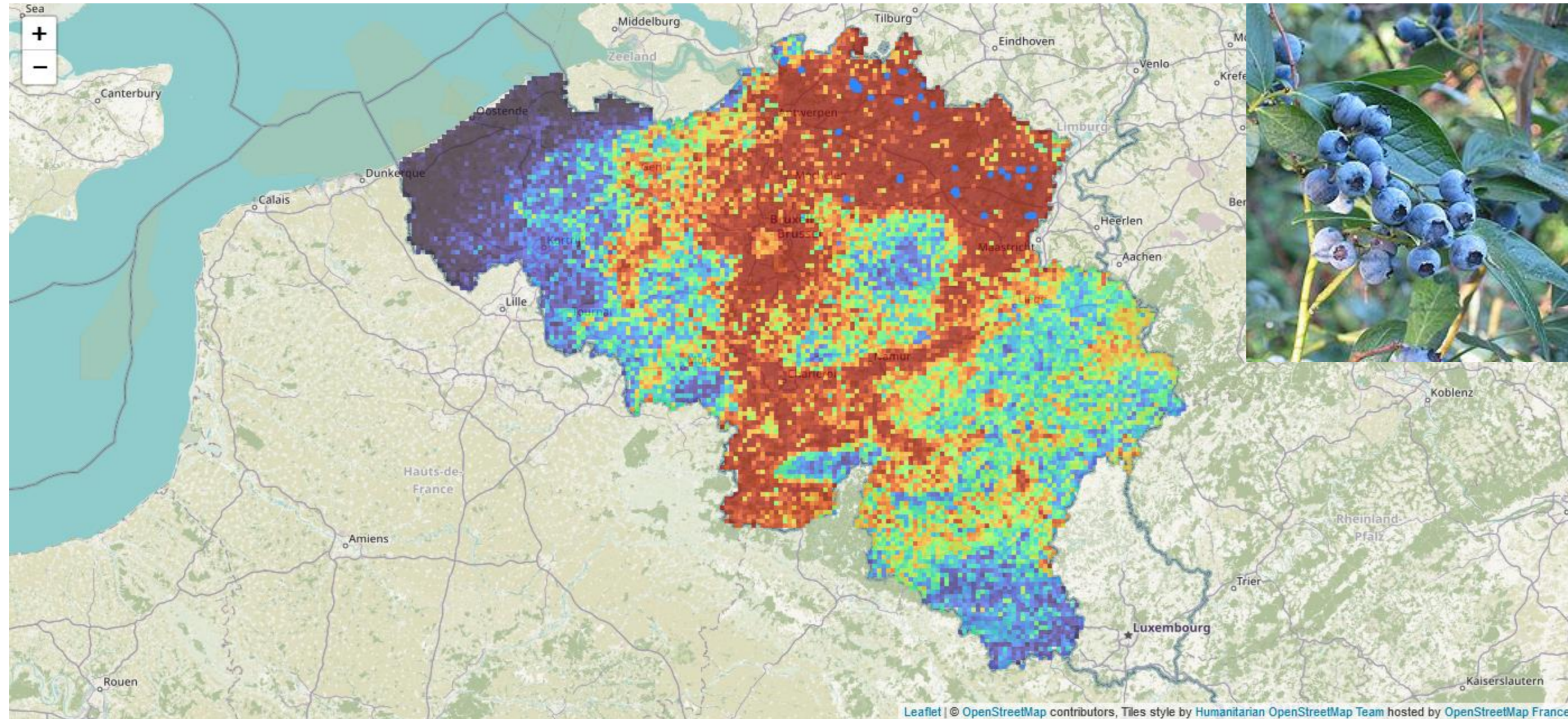
EASY OF INTERPRETATION: CONFIDENCE

Vaccinium corymbosum



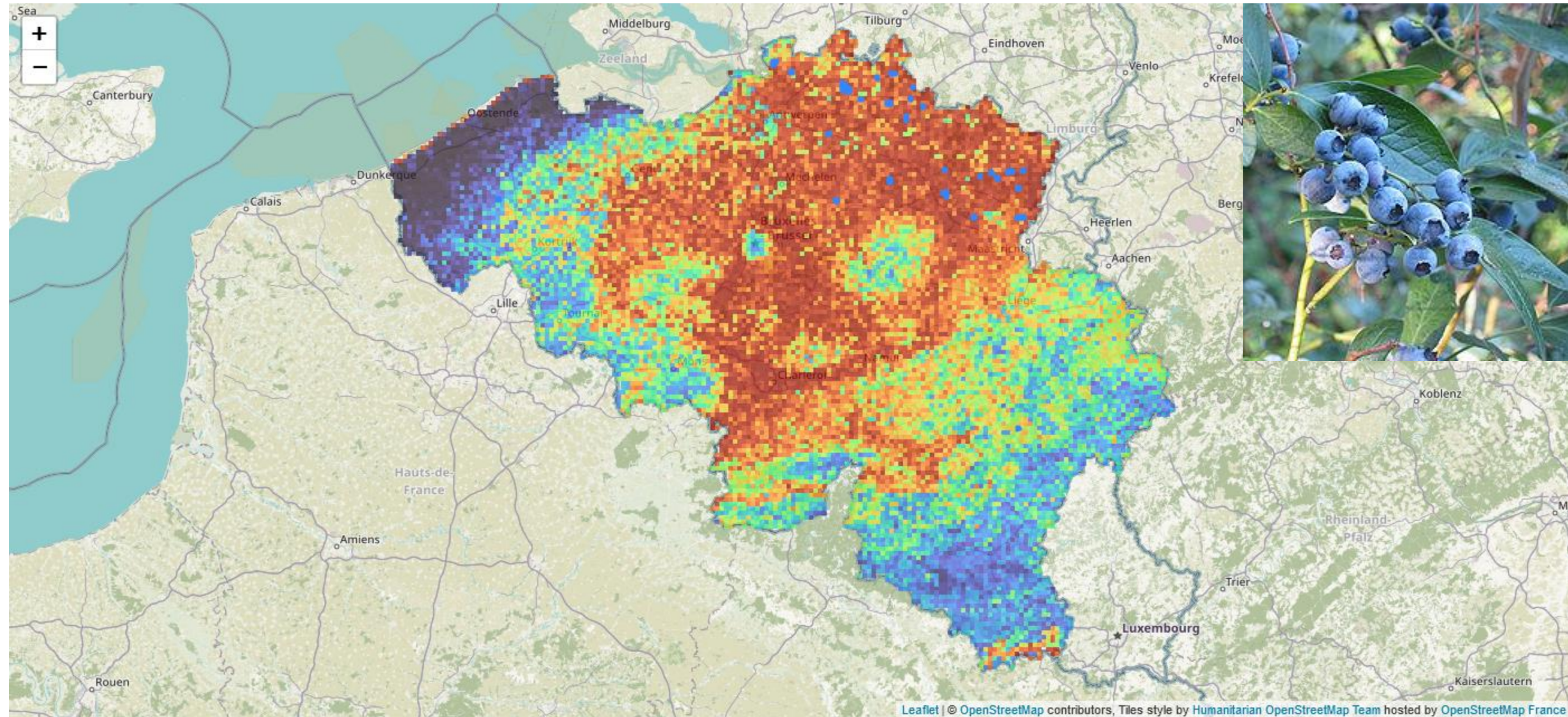
EASY OF INTERPRETATION: RISK

Vaccinium corymbosum



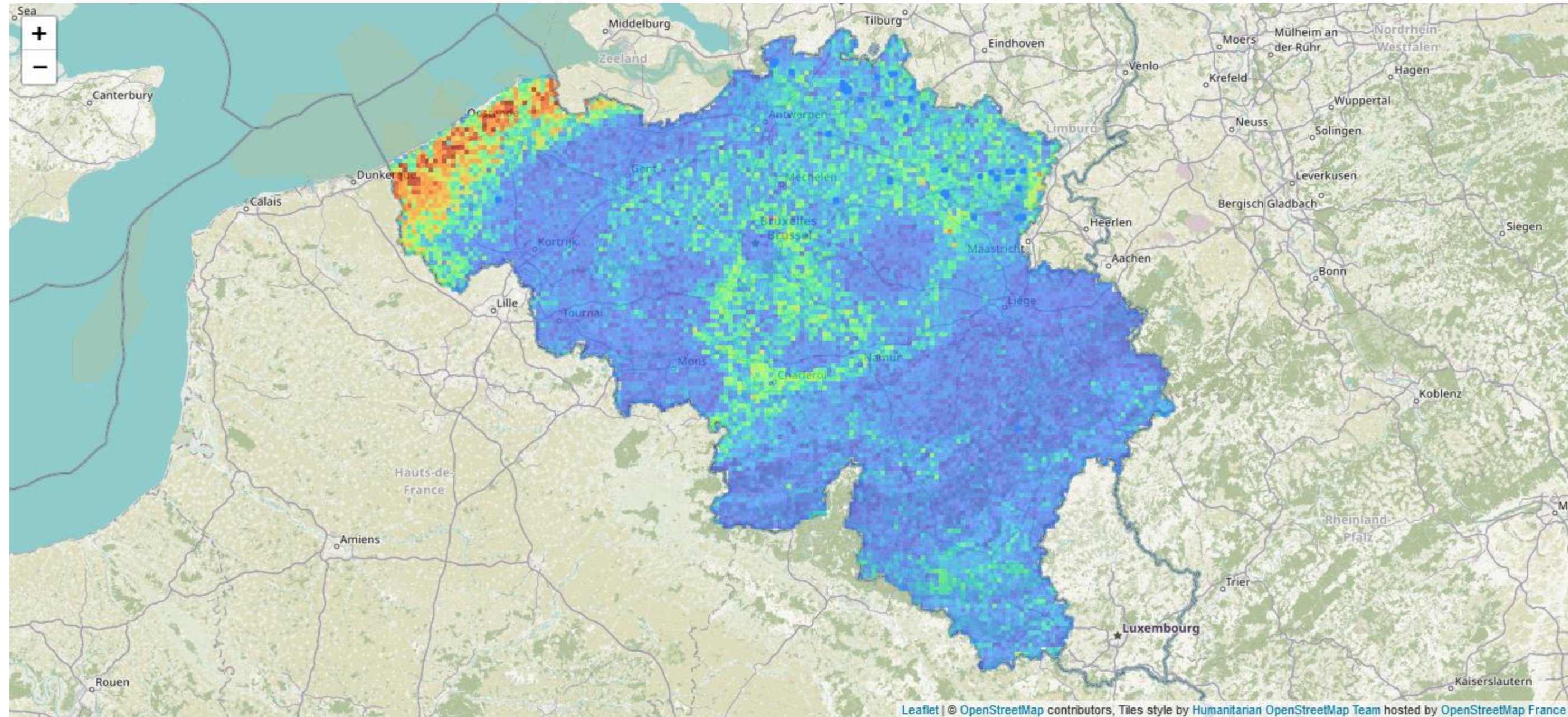
EASY OF INTERPRETATION: FUTURE RISK

Vaccinium corymbosum

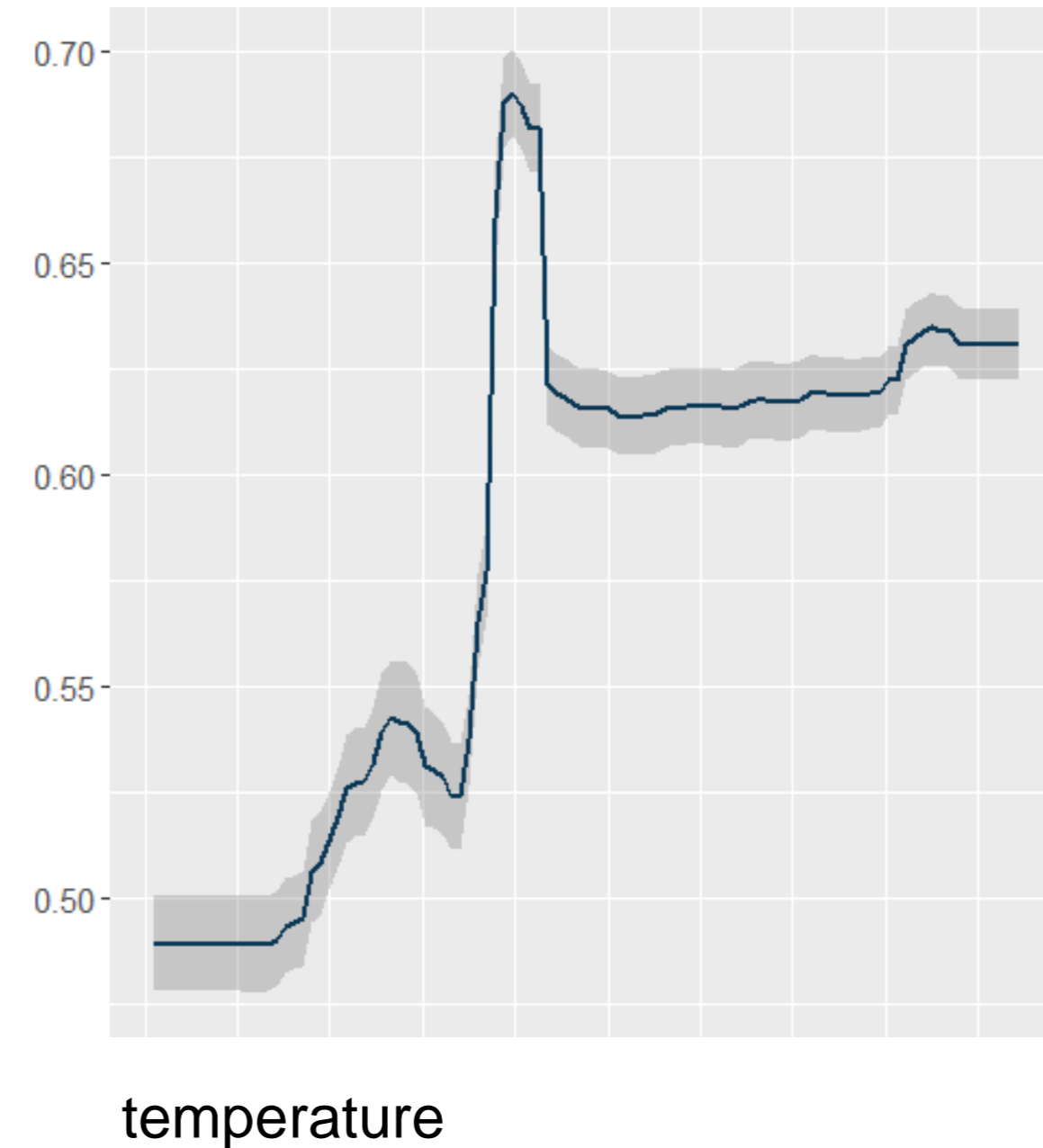
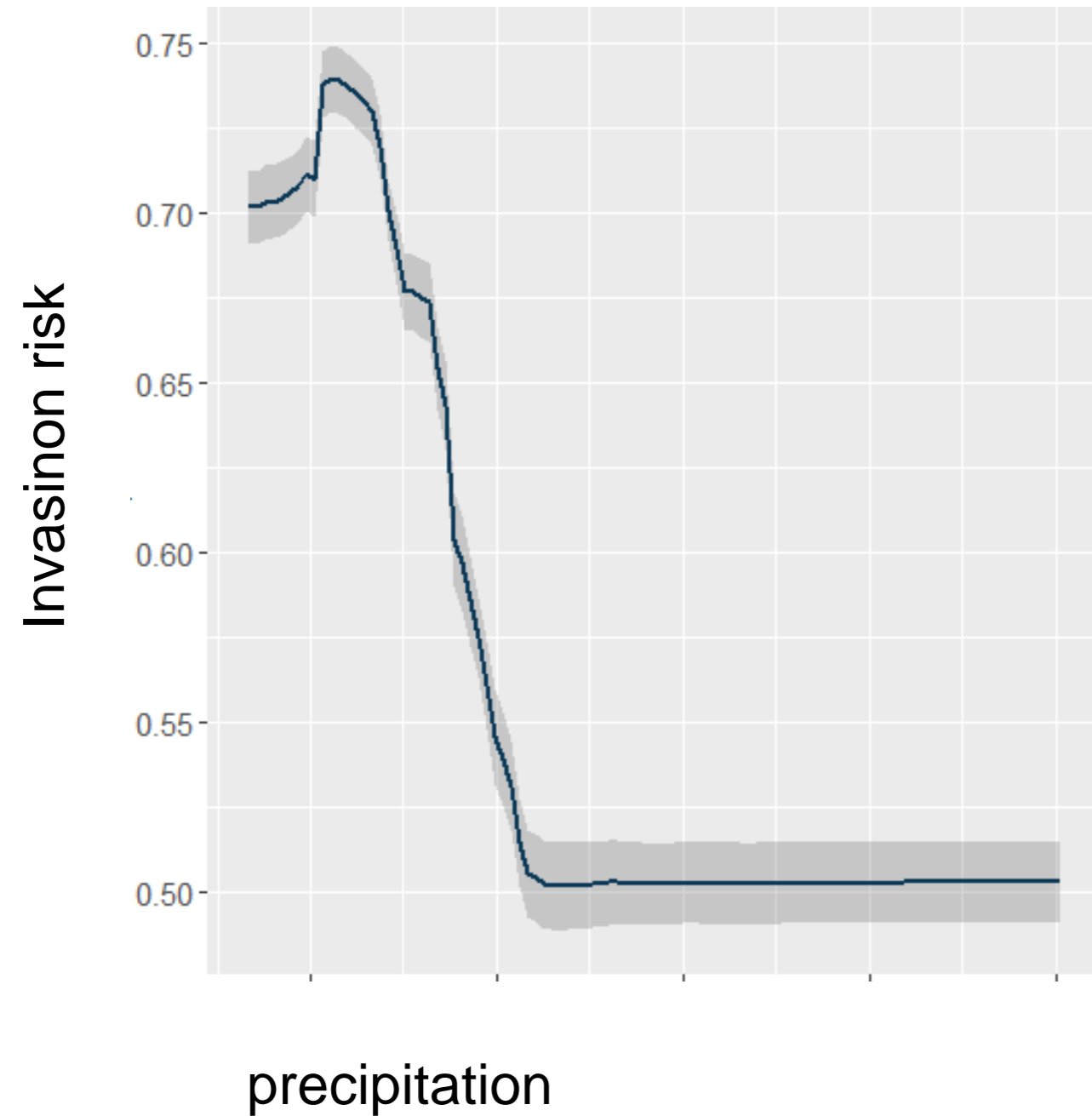


EASY OF INTERPRETATION: CONFIDENCE

Vaccinium corymbosum



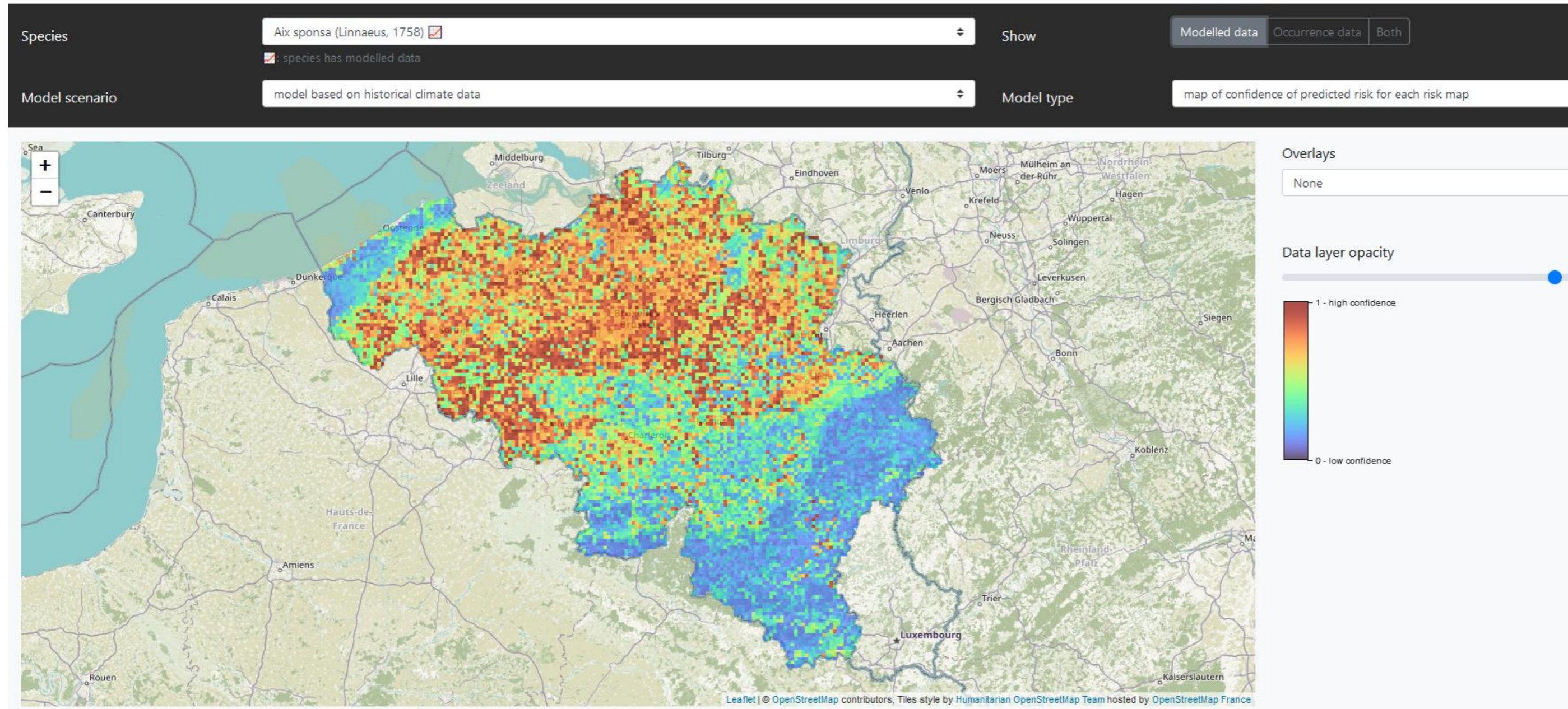
EASY OF INTERPRETATION: RESPONSES



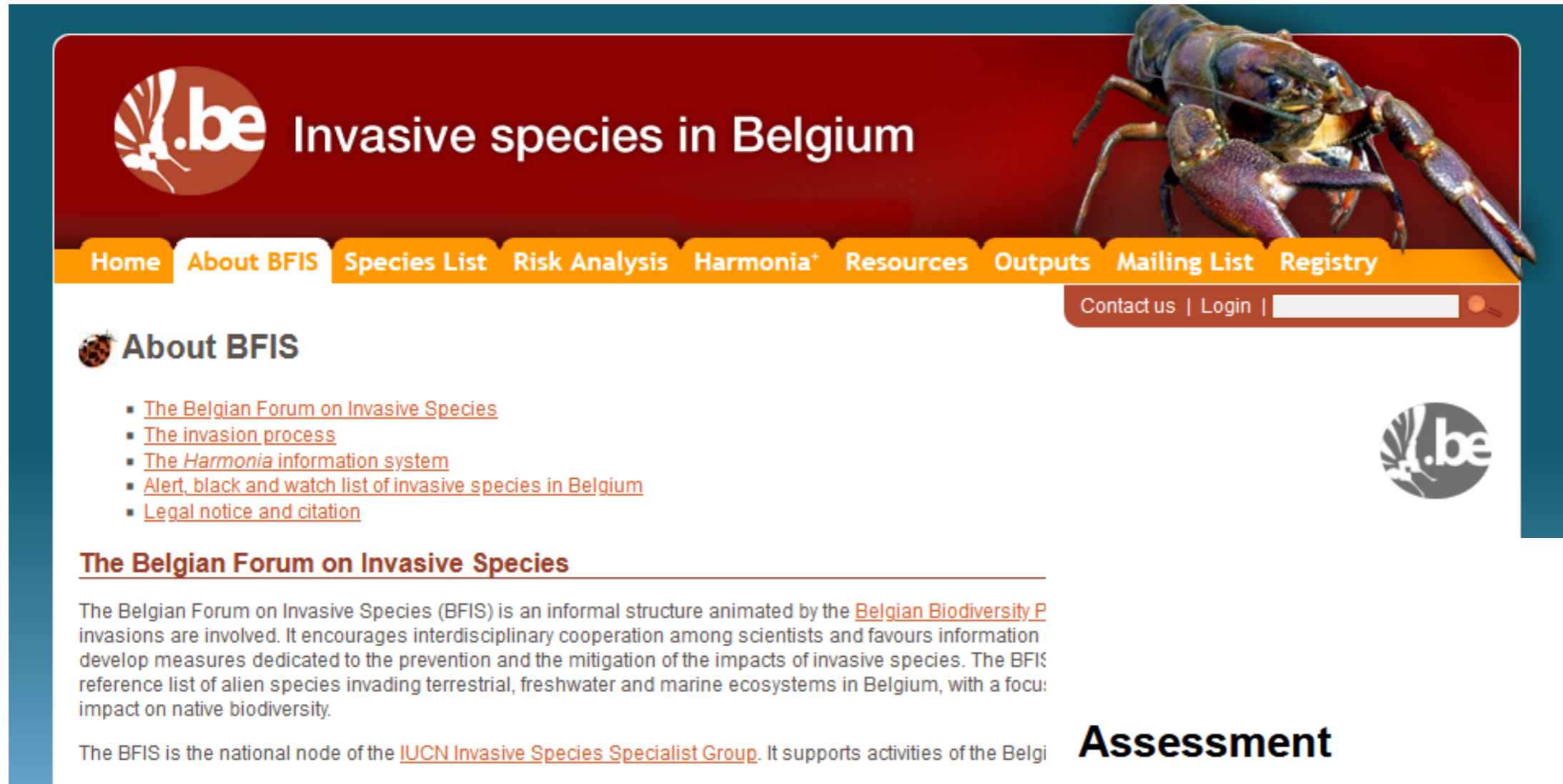
RISK ASSESSMENTS



These maps are unlikely to be precise predictions of current or future species distributions, but are nevertheless a guide to scientists conducting risk assessments. They help us by indicating which areas might be most vulnerable to invasion, and whether climate change is likely to cause greater or lesser establishment of the species.



RISK ASSESSMENTS



About BFIS

- [The Belgian Forum on Invasive Species](#)
- [The invasion process](#)
- [The Harmonia information system](#)
- [Alert, black and watch list of invasive species in Belgium](#)
- [Legal notice and citation](#)

The Belgian Forum on Invasive Species

The Belgian Forum on Invasive Species (BFIS) is an informal structure animated by the [Belgian Biodiversity P](#) invasions are involved. It encourages interdisciplinary cooperation among scientists and favours information develop measures dedicated to the prevention and the mitigation of the impacts of invasive species. The BFIS reference list of alien species invading terrestrial, freshwater and marine ecosystems in Belgium, with a focus: impact on native biodiversity.

The BFIS is the national node of the [IUCN Invasive Species Specialist Group](#). It supports activities of the Belgi

Assessment

context

a01. Provide the name(s) of the assessors: Fleur Petersen

a02. Provide the name of the organism under assessment: Myiopsitta monachus (Boddaert, 1783)

Comments: i.e. monniksparkiet (nl), muisparkiet (nl), torresparkiet (nl), monk parakeet (en), Quaker parrot (en)

a03. Define the area under assessment: Belgium

a04. The Organism is: alien to, and established within The Area's wild

Comments: The Monk parakeet (*Myiopsitta monachus*), native to southern South America, was introduced to Belgium in the late 1970s and a first breeding couple was observed in Brussels in 1979 (Weiserbs, 2008a). Nowadays, the population size is estimated at 200-250 individuals (Weiserbs et al., 2016, Postigo et al., 2019)

a05. This assessment is considering potential impacts within the following domains: (an)other domain, the human (health) domain, the domesticated animal domain, the cultivated plant domain, the environmental domain

Comments: All domains are under consideration for this assessment.

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doctor-assistant

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