Identification spatiale continue des points chauds de diversité beta à l'aide de modèles de distribution d'espèces

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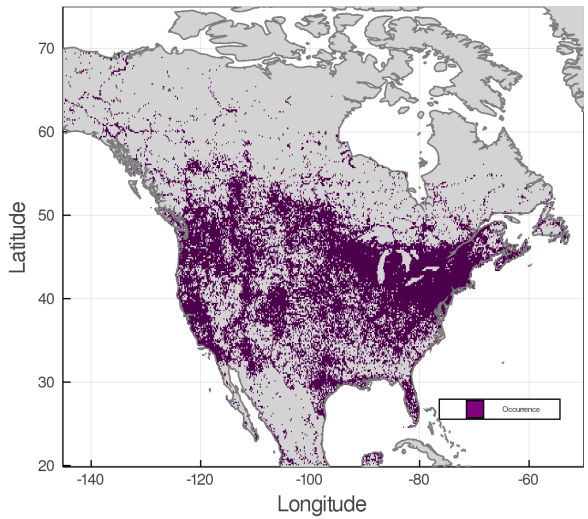
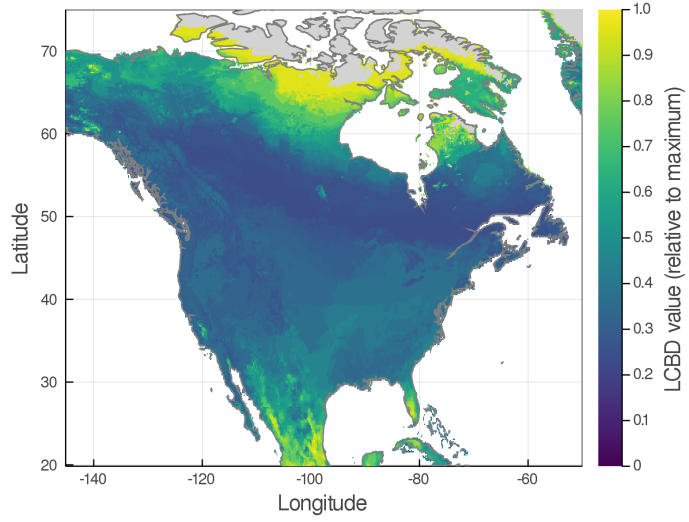
Objectif





- Points chauds de diversité bêta (LCBD)
- Modèles de distribution d'espèces (SDM)
- Identification spatiale continue

Ex 1: Identification discontinue des points chauds de diversité bêta

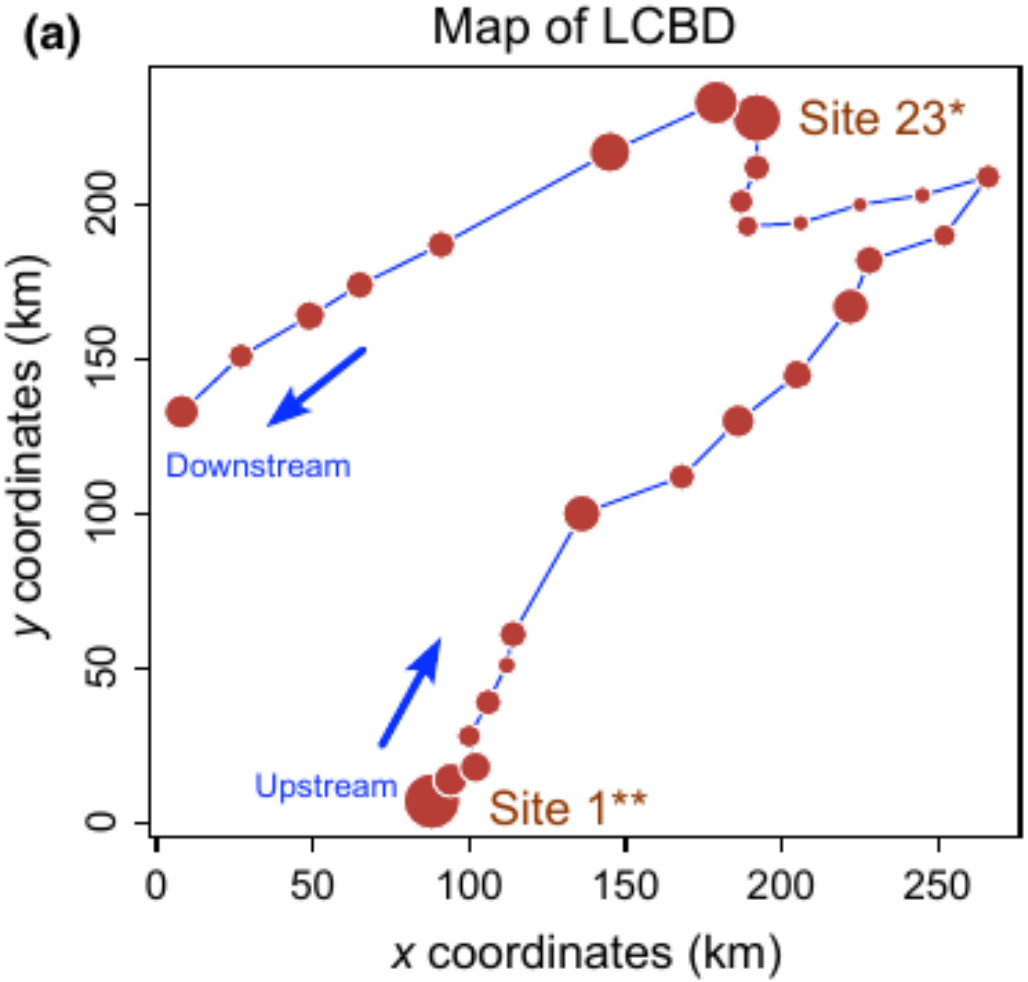


Figure: Exemple d'analyse des LCBD sur un cours d'eau (Legendre & De Caceres, 2013)

Ex 2: Identification discontinue des points chauds de diversité bêta

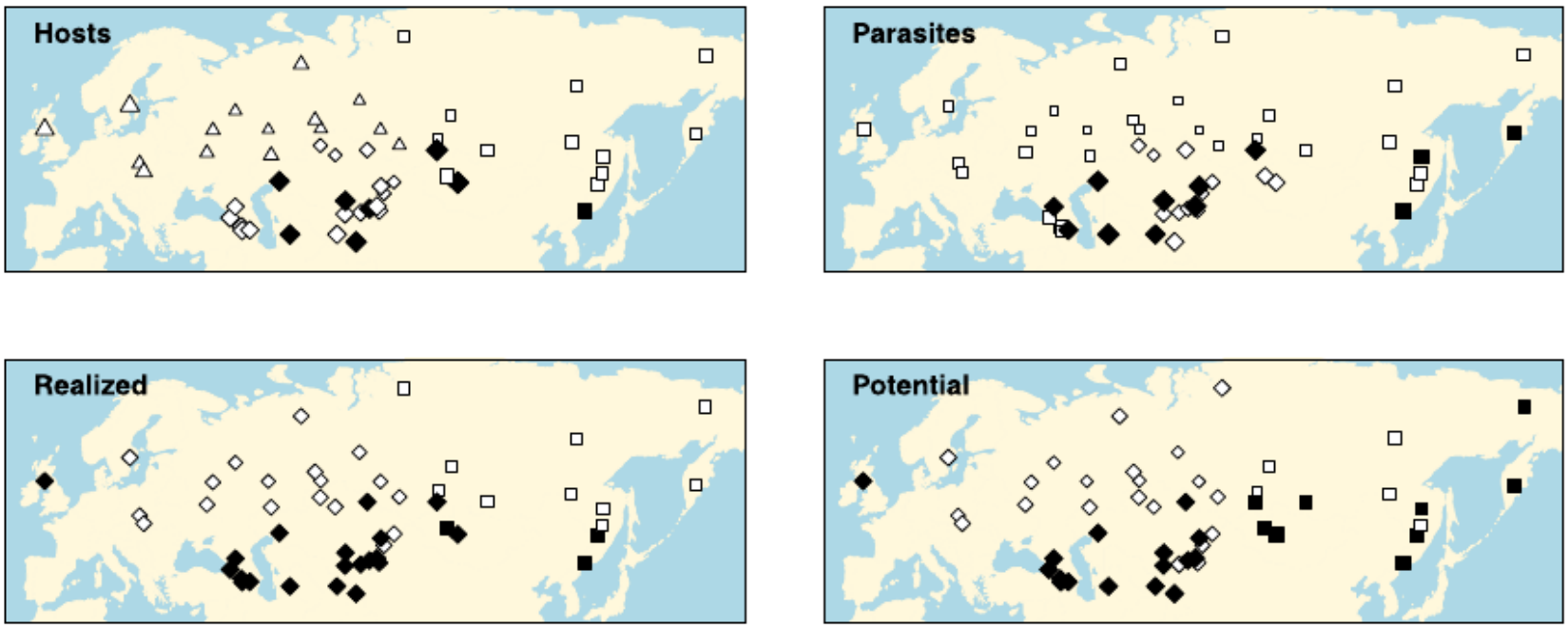
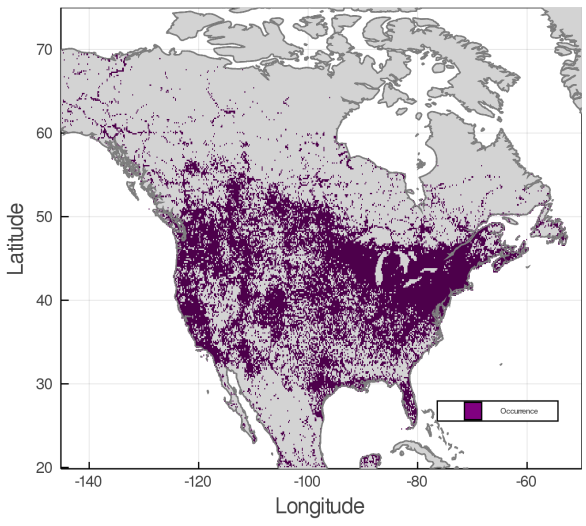
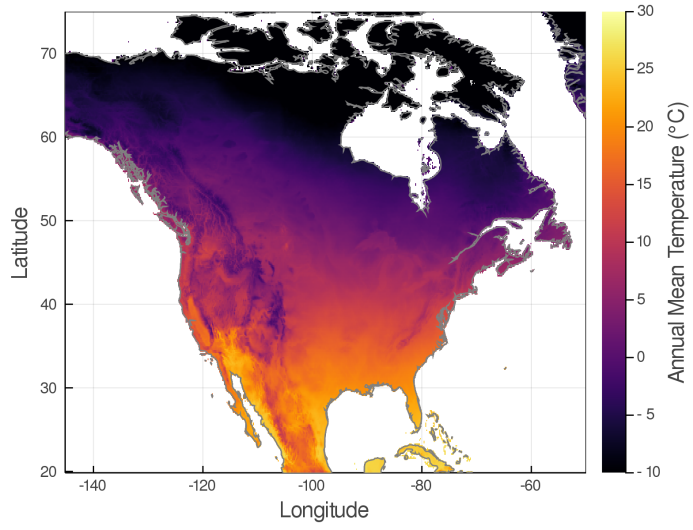


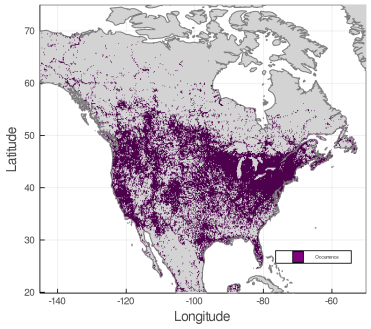
Figure: Exemple d'analyse des LCBD à échelle spatiale étendue (Poisot et al., 2017)

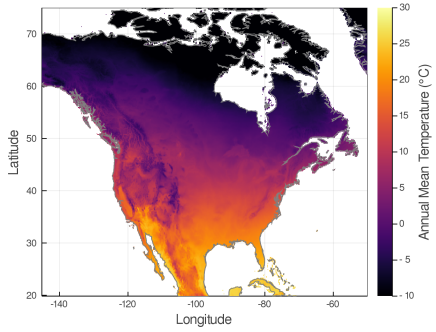
Données disponibles

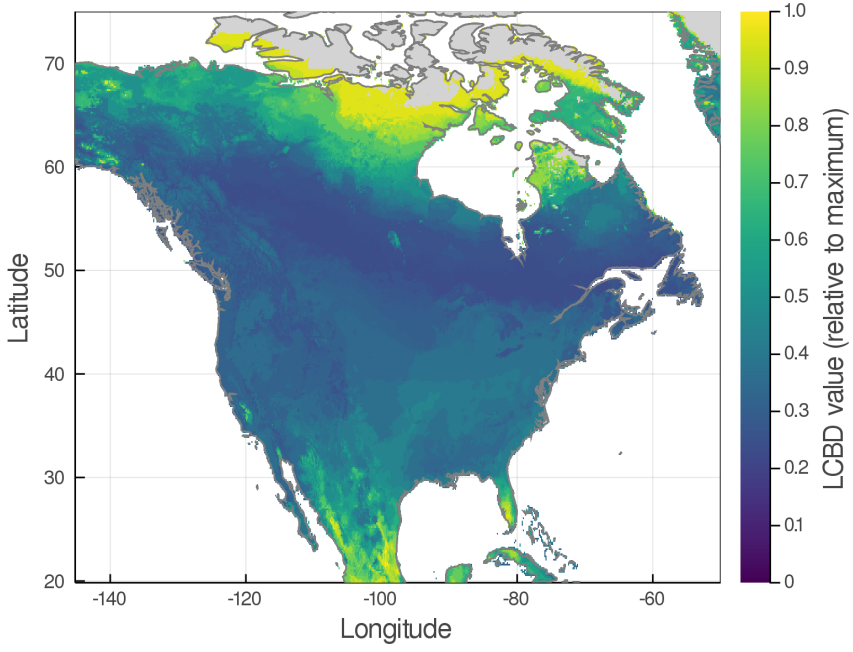




Objectif


Latitude
Longitude
70
60
50
40
30
20
-140
-120
-100
-80
-60


Latitude
Longitude
Annual Mean Temperature (°C)
30
25
20
15
10
5
0
-5
-10


Latitude
Longitude
LCBD value (relative to maximum)
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0

Données - eBird

- Variables base : espèce, latitude, longitude, date, checklist complète, compte

heightobs	species	latitude	longitude	observationDate	allSpeciesReported	observationCount
1	Setophaga_townsendi	35.32	-120.84	2007-03-17	1	1
2	Geothlypis_trichas	35.32	-120.84	1994-11-06	1	4
3	Oreothlypis_celata	58.35	-134.59	2008-07-22	1	2
4	Setophaga_coronata	58.35	-134.59	2008-07-22	1	1
5	Setophaga_coronata	49.10	-123.17	1979-10-16	1	8
6	Setophaga_coronata	37.90	-75.37	2004-11-23	1	82

- Données échantillonnage: type échantillonnage, durée, distance, nombre d'observateurs

height	protocolType	durationMinutes	effortDistanceKm	numberObservers
1	Area	60		15
2	Historical	30		1
3	Traveling	50	2.09	1
4	Traveling	50	2.09	1
5	Incidental			1
6	Traveling	105	2.58	5

Données - eBird

Country	Observations	Checklists	Species	Species per checklist (mean)	Species per checklist (median)	Species per checklist (maximum)
US	19 206 453	7 840 526	56	2.450	2.0	34
CA	3 360 650	1 115 625	45	3.012	2.0	31
MX	407 227	147 599	61	2.759	2.0	21
Total	22 974 330	9 103 750	63	2.523	2.0	34

Données - WorldClim

heightVariable	Description
1	Annual Mean Temperature
2	Mean Diurnal Range (Mean of monthly (max temp - min temp))
3	Isothermality (BIO2/BIO7) (* 100)
4	Temperature Seasonality (standard deviation *100)
5	Max Temperature of Warmest Month
6	Min Temperature of Coldest Month
7	Temperature Annual Range (BIO5-BIO6)
8	Mean Temperature of Wettest Quarter
9	Mean Temperature of Driest Quarter
10	Mean Temperature of Warmest Quarter
11	Mean Temperature of Coldest Quarter
12	Annual Precipitation
13	Precipitation of Wettest Month
14	Precipitation of Driest Month
15	Precipitation Seasonality (Coefficient of Variation)
16	Precipitation of Wettest Quarter
17	Precipitation of Driest Quarter
18	Precipitation of Warmest Quarter
19	Precipitation of Coldest Quarter

BIOCLIM

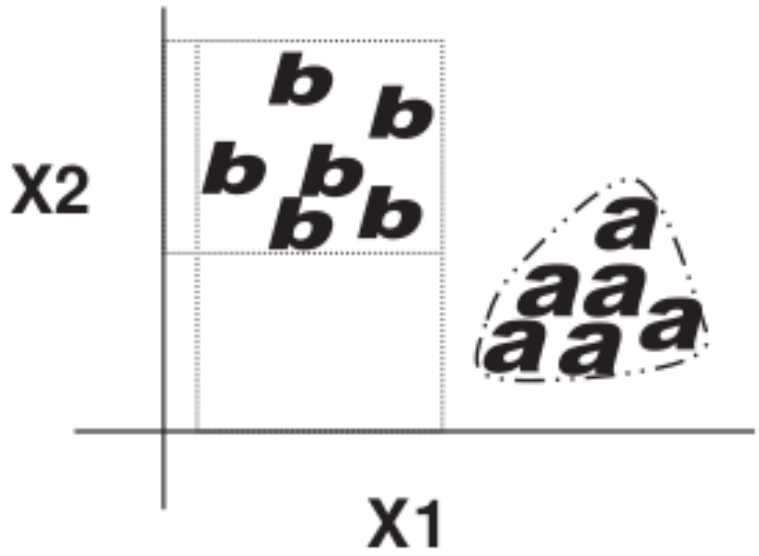


Fig. 8.1. Graphical representation of environmental envelopes shown for two environmental variables, X1 and X2. The b's represent observations of Species B, enclosed by a box whose boundaries are defined by the maximum and minimum values of X1 and X2 where Species B is observed. This is the boxcar or parallelepiped classifier used in BIOCLIM (typically the box is defined that encompasses 95% of the observations; see text). In contrast, the a's, representing observations of Species A, are encompassed in a minimum bounding box or convex hull, a simple example of the approach used in HABITAT (see text).

Ex: Paruline jaune - Données brutes

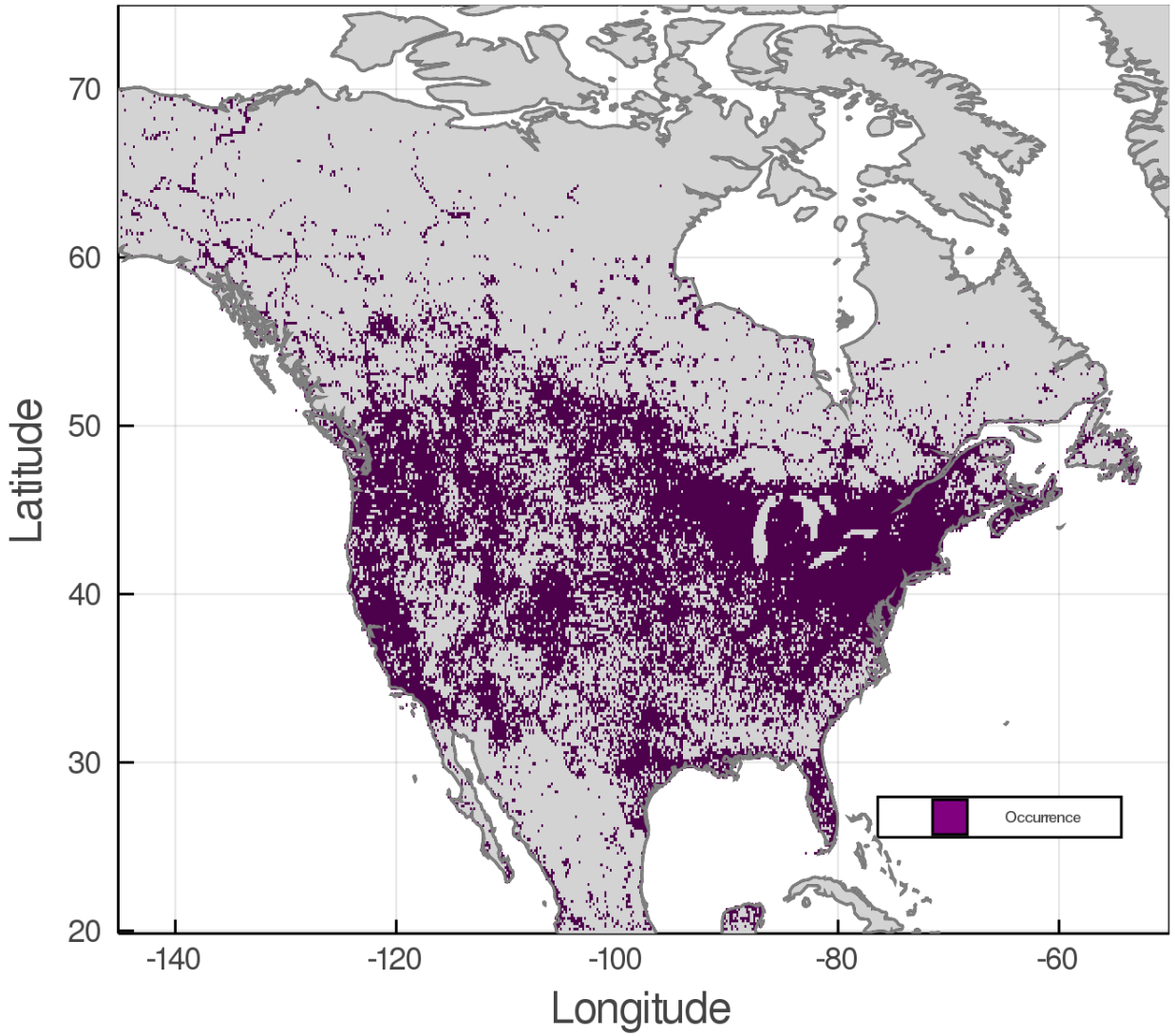


Figure: Distribution des observations de la Paruline jaune (présence-absence par site)

Ex: Paruline jaune - SDM avec seuil

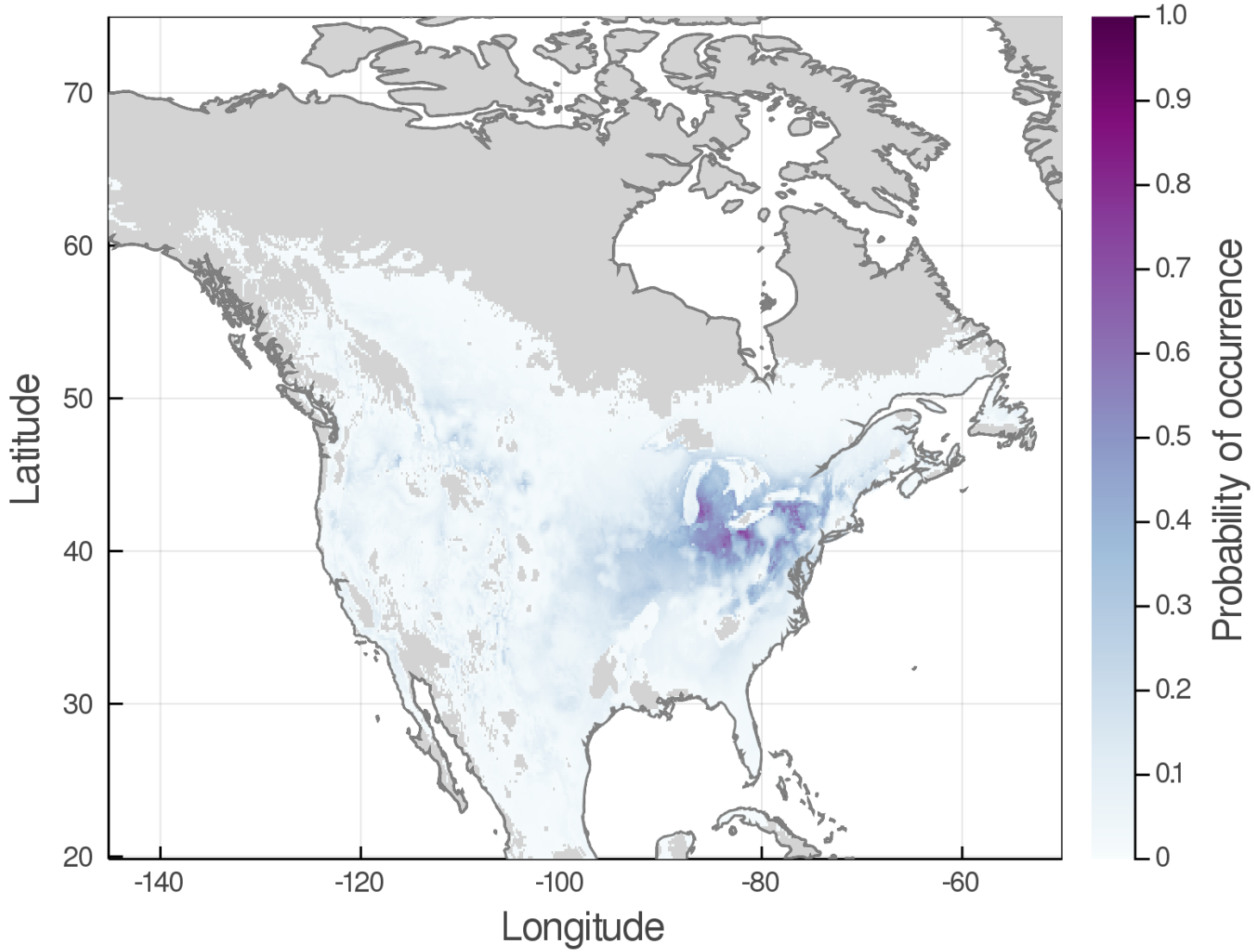


Figure: Sortie du SDM avec seuil pour la Paruline jaune

Ex: Paruline jaune - SDM sans seuil

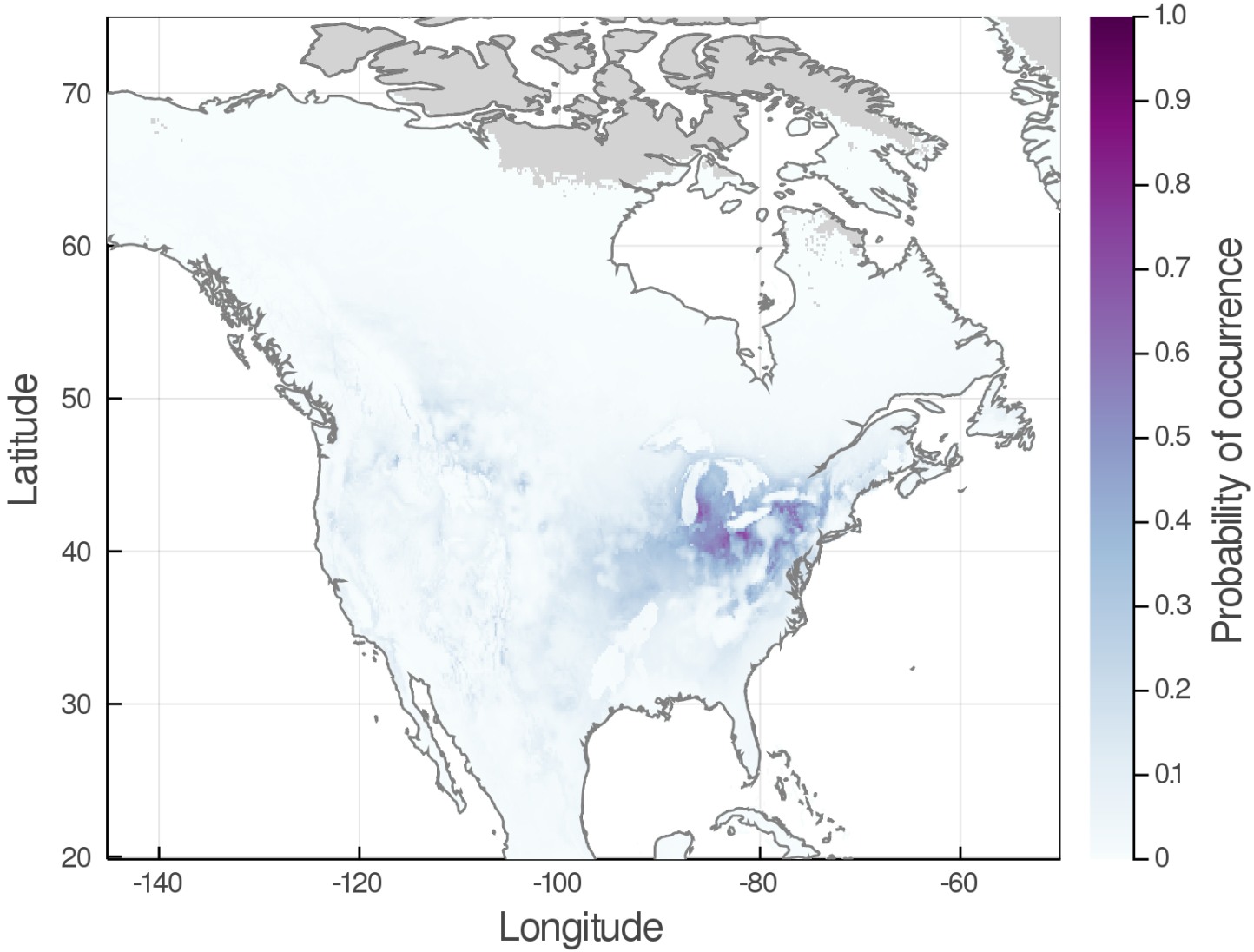
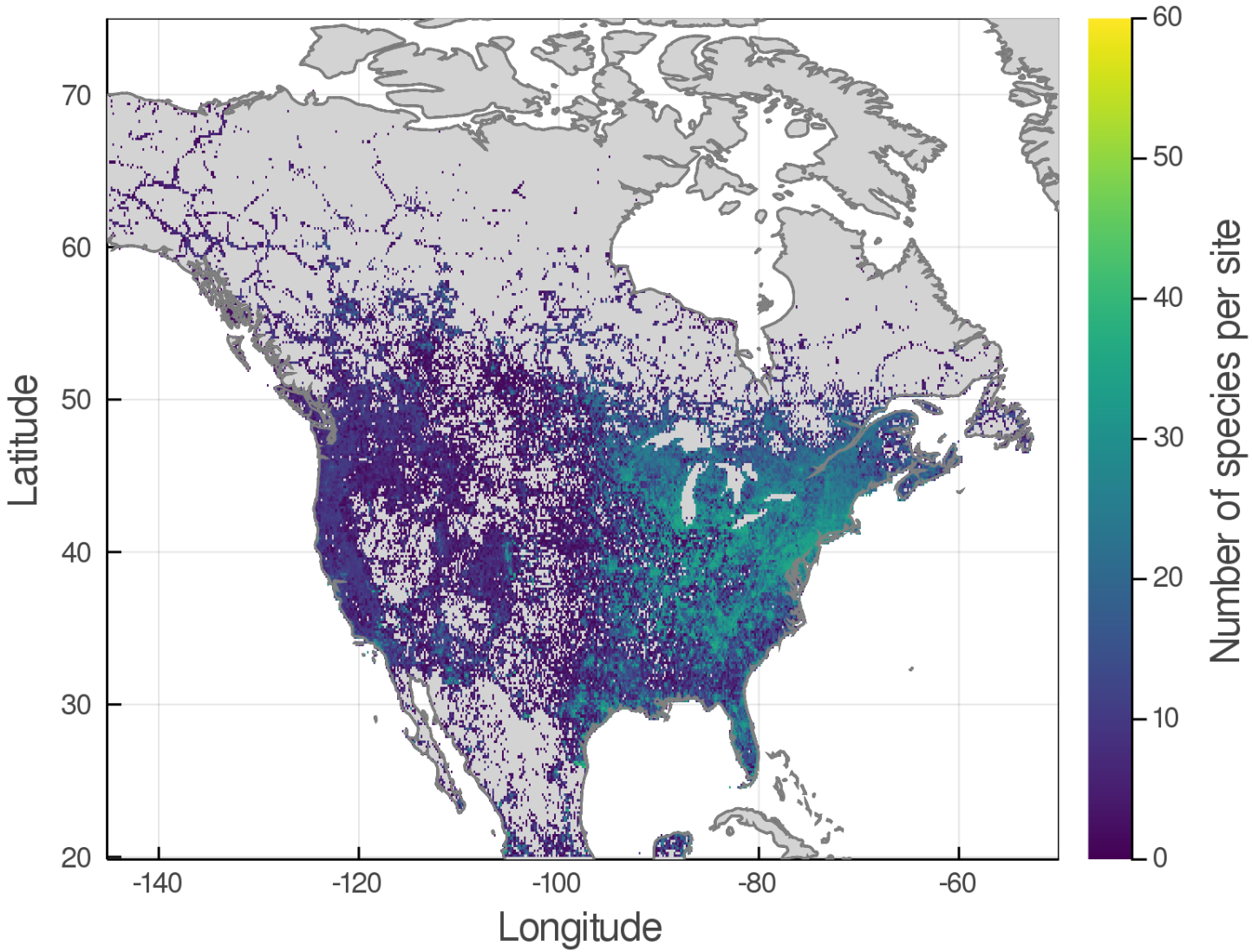
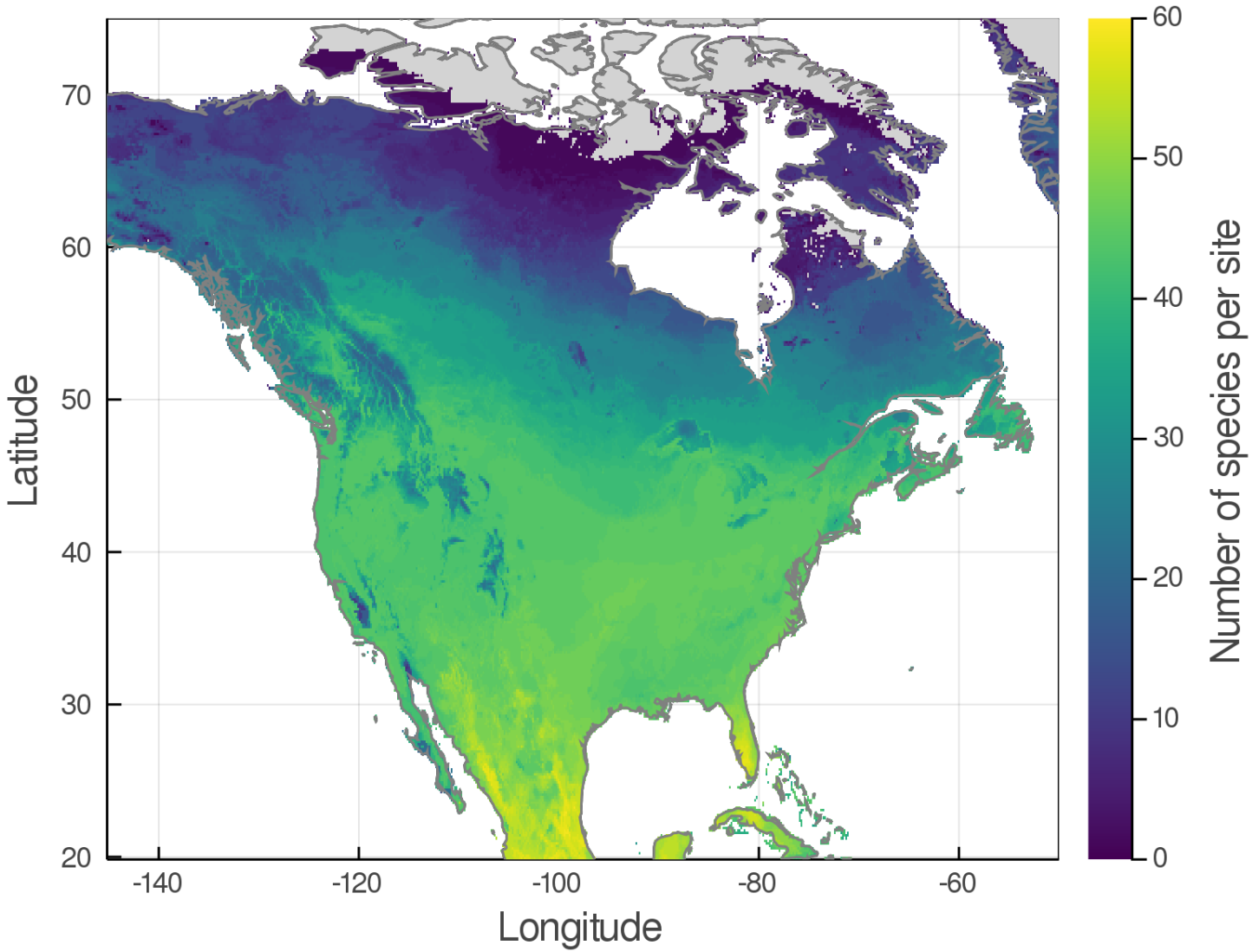


Figure: Sortie du SDM pour la Paruline jaune

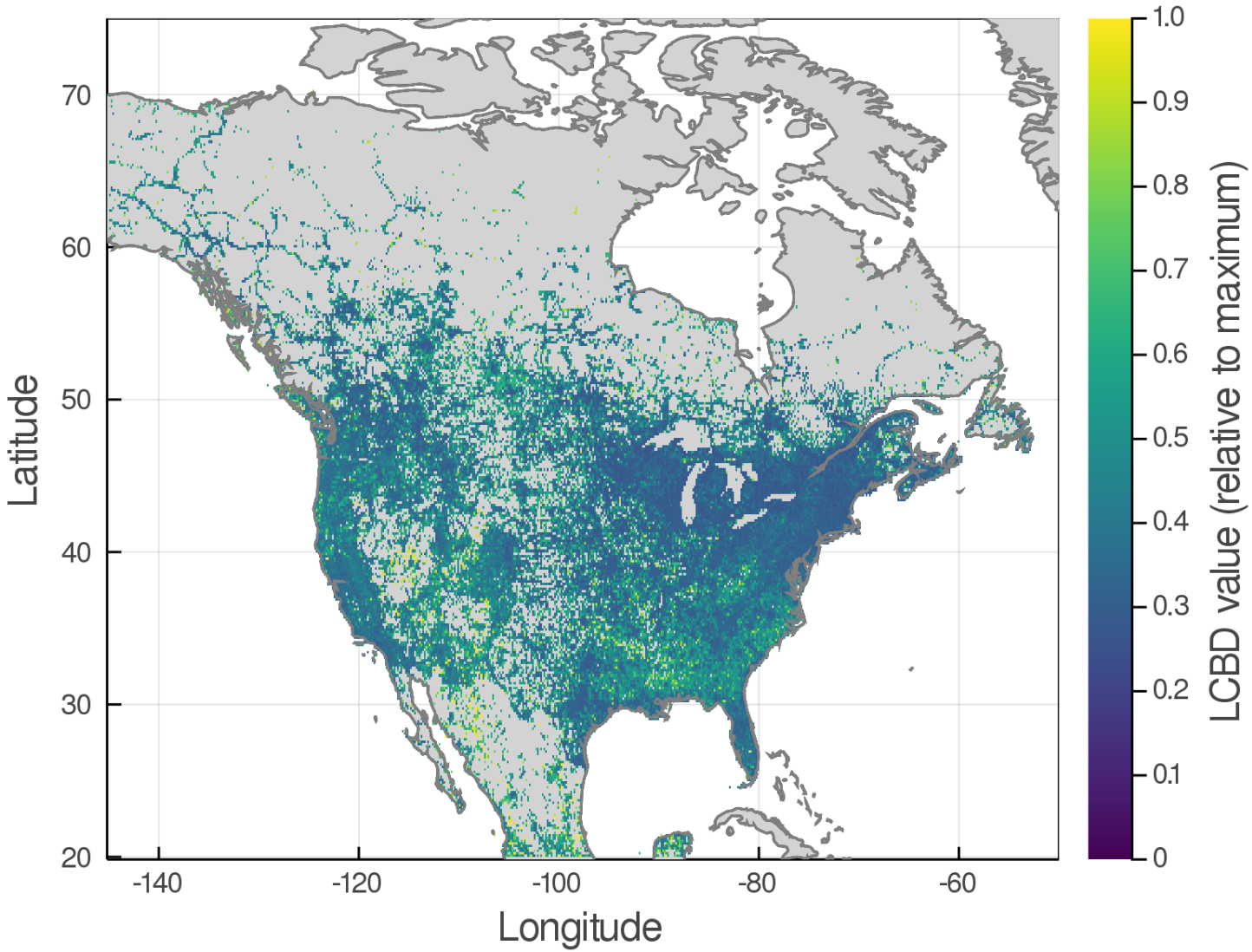
Richesse spécifique - Données brutes



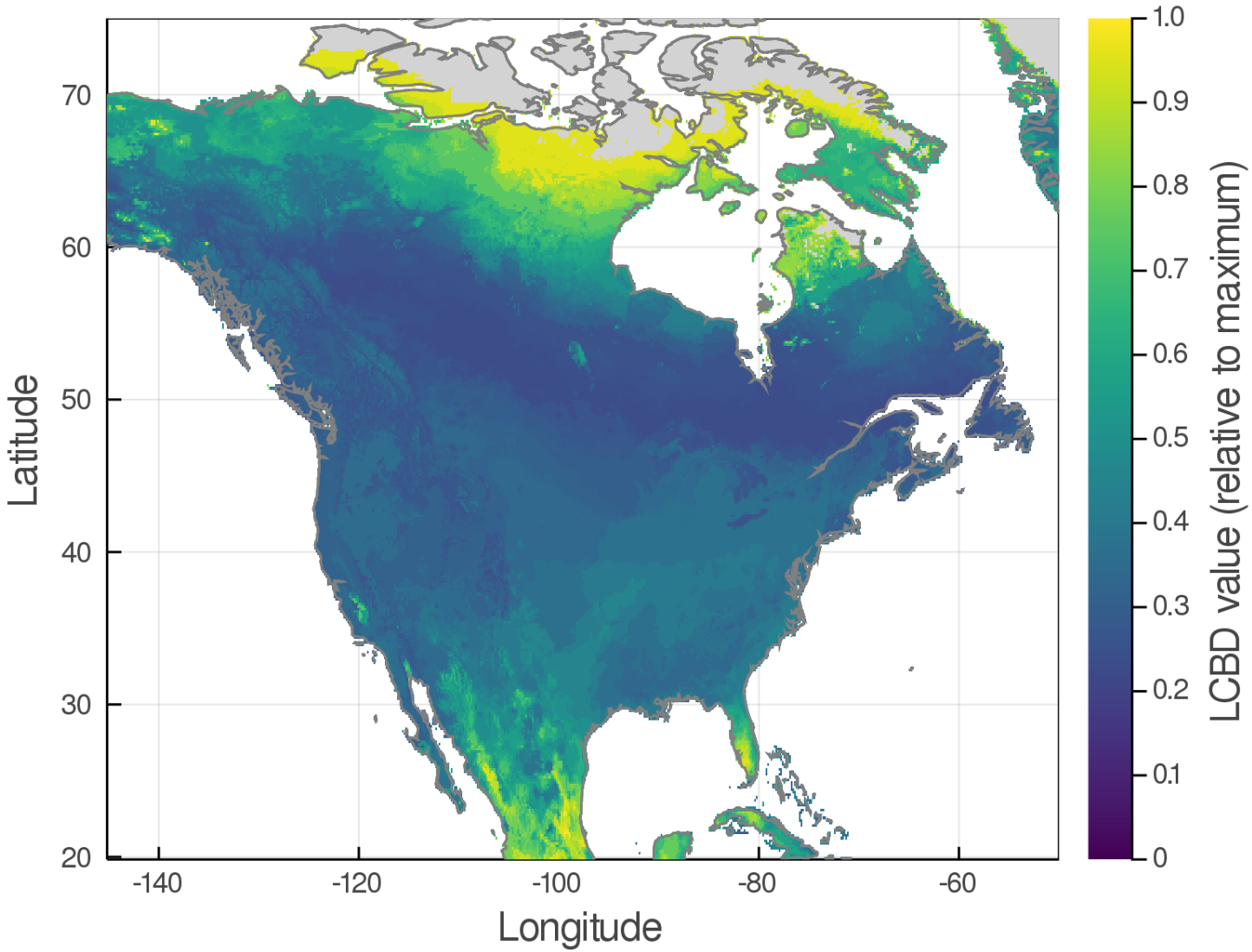
Richesse spécifique - SDM



LCBD - Données brutes (transformation de Hellinger)



LCBD - SDM (aucune transformation)



Relation LCBD-richesse spécifique