

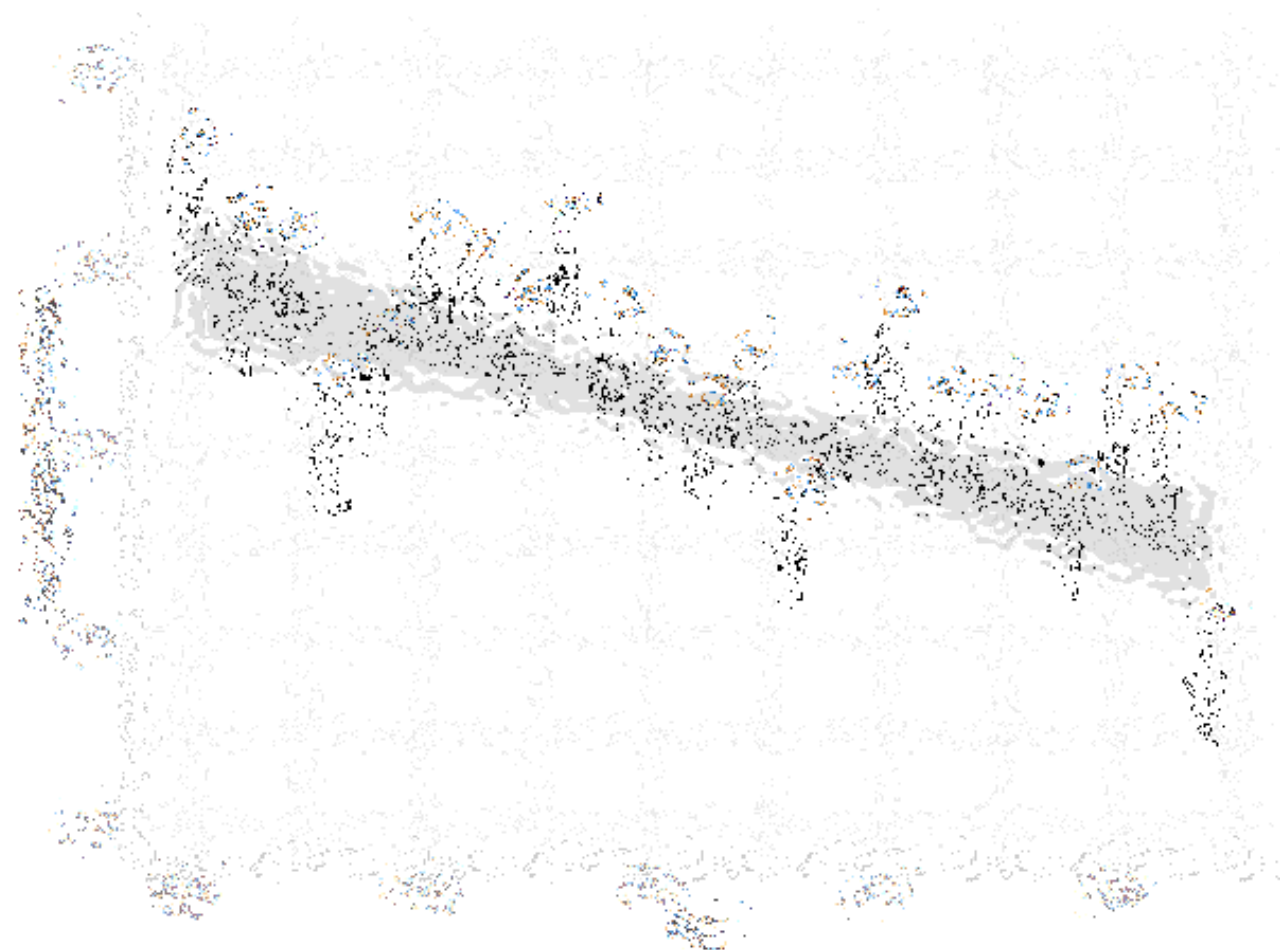
JOURNÉES TECHNIQUES VIPÈRES | MUROL, 5 & 6 MAI 2026

État des connaissances sur l'écologie des vipères en France

Michaël GUILLON (CN), Gaëtan Guiller,
& Olivier LOURDAIS (CEBC)



Contexte : déclin de la biodiversité



Vipère péliade

(données cumulées de 251 sites de suivi depuis 2000 en Angleterre, France, Belgique, Suisse, Pays-Bas, Allemagne)

Thomas Duchesne (PhD, Université de Liège), in prep.

Reptiles decline in farmland

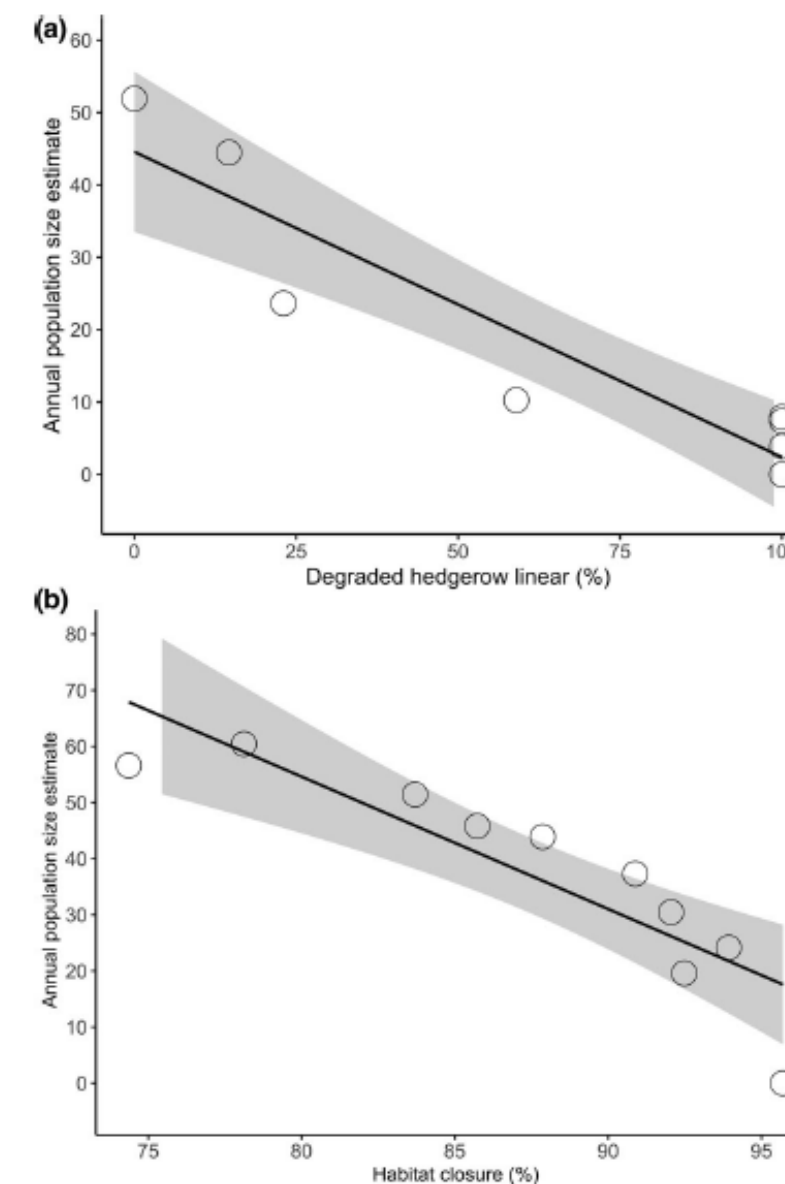
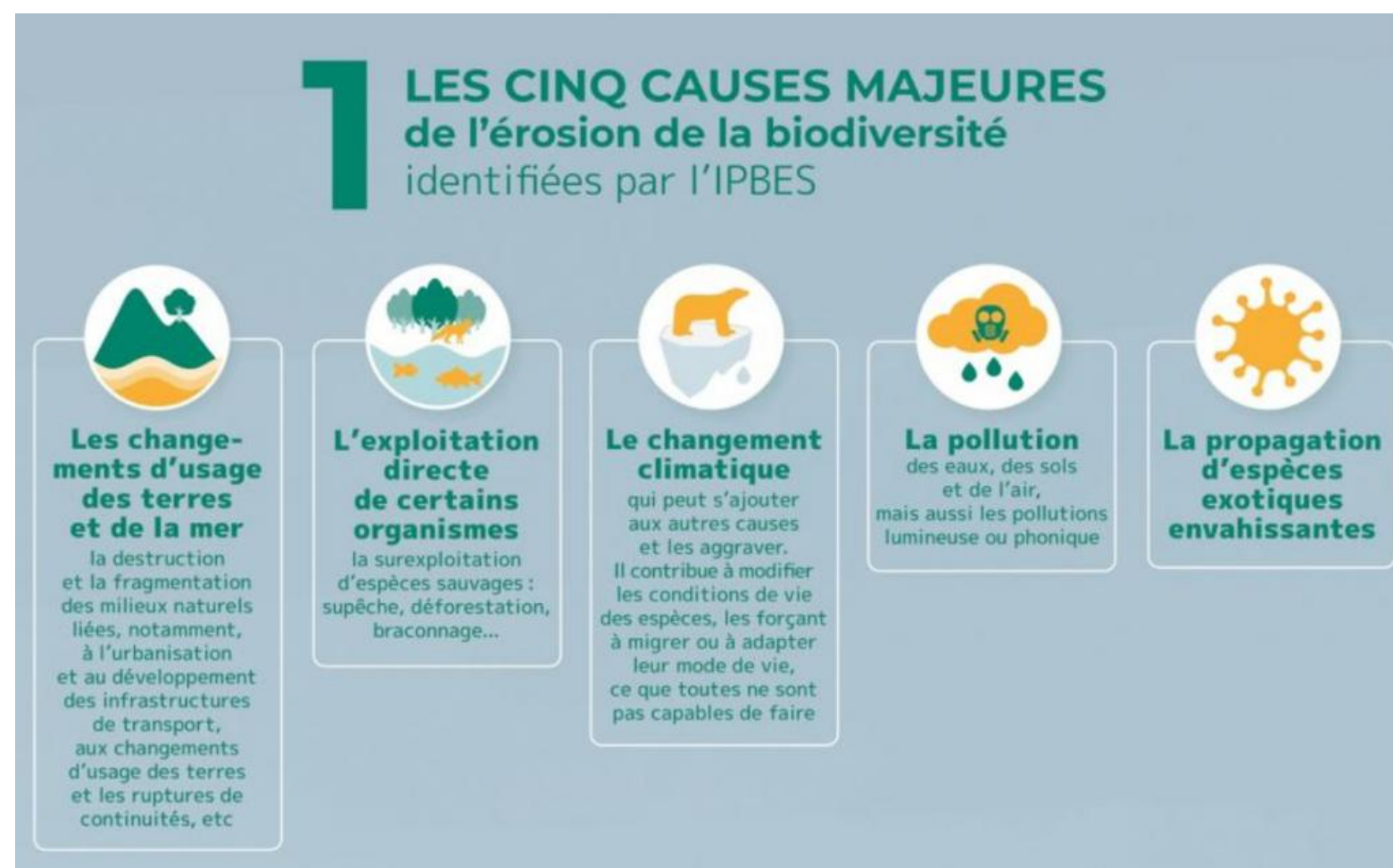


Figure 7 Relationship between annual population size estimates and percent of hedgerows managed by shrub grinder for Haie. (a) Relationship between annual population size estimates and percent of habitat closure for Lande (b).

Guiller et al., 2022

Contexte : déclin de la biodiversité



Reptiles decline in farmland

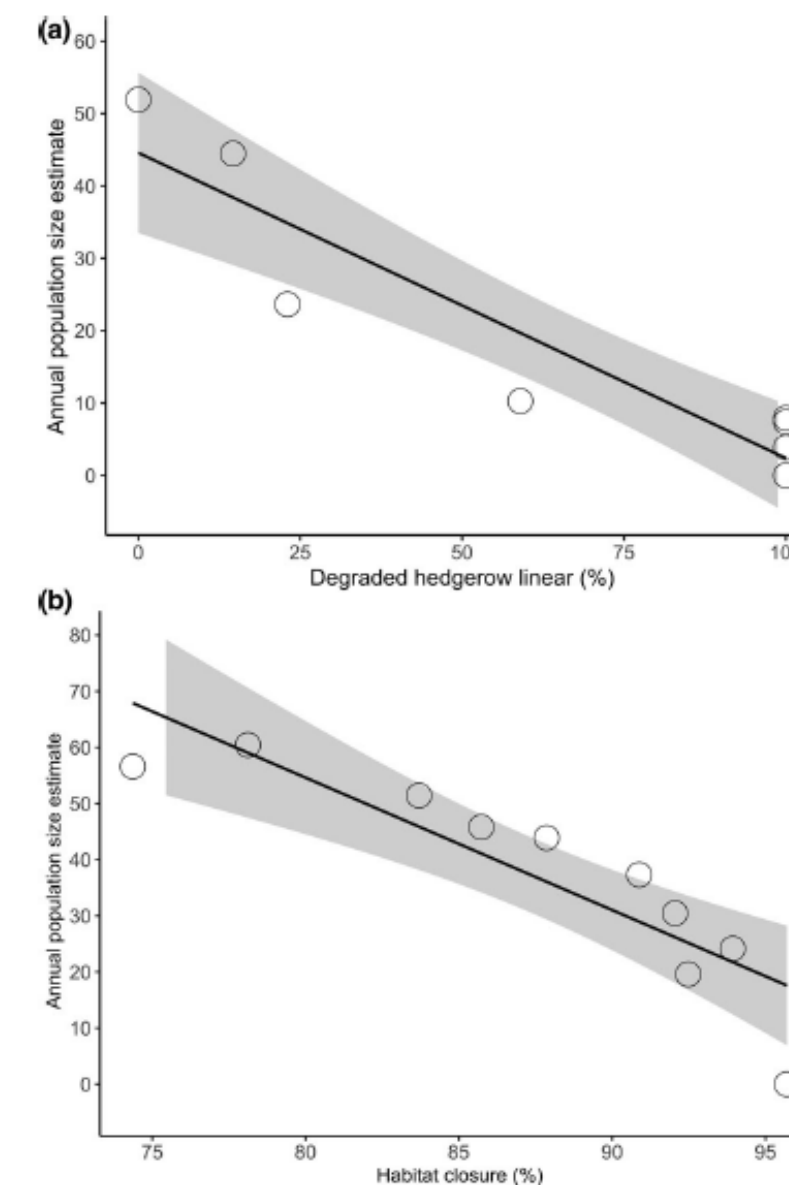
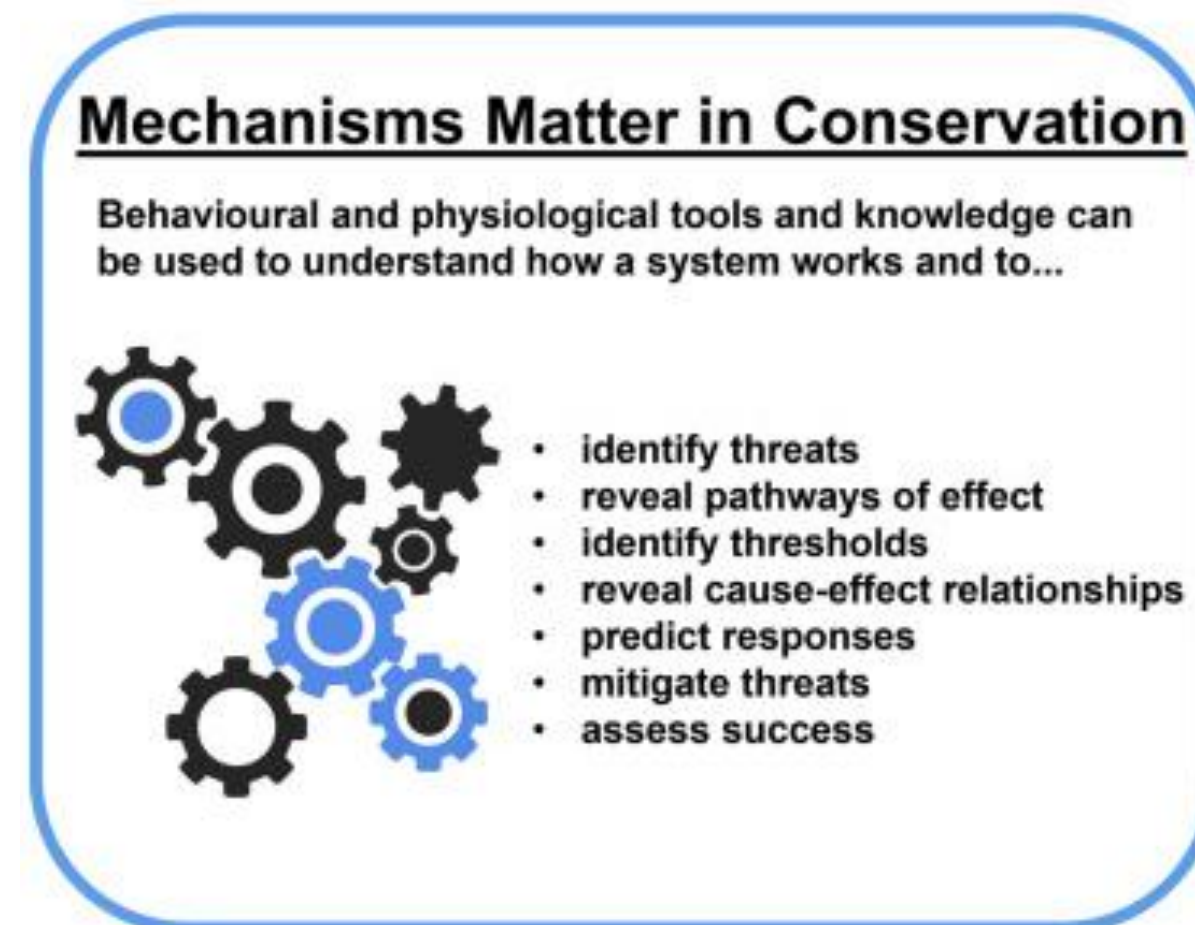
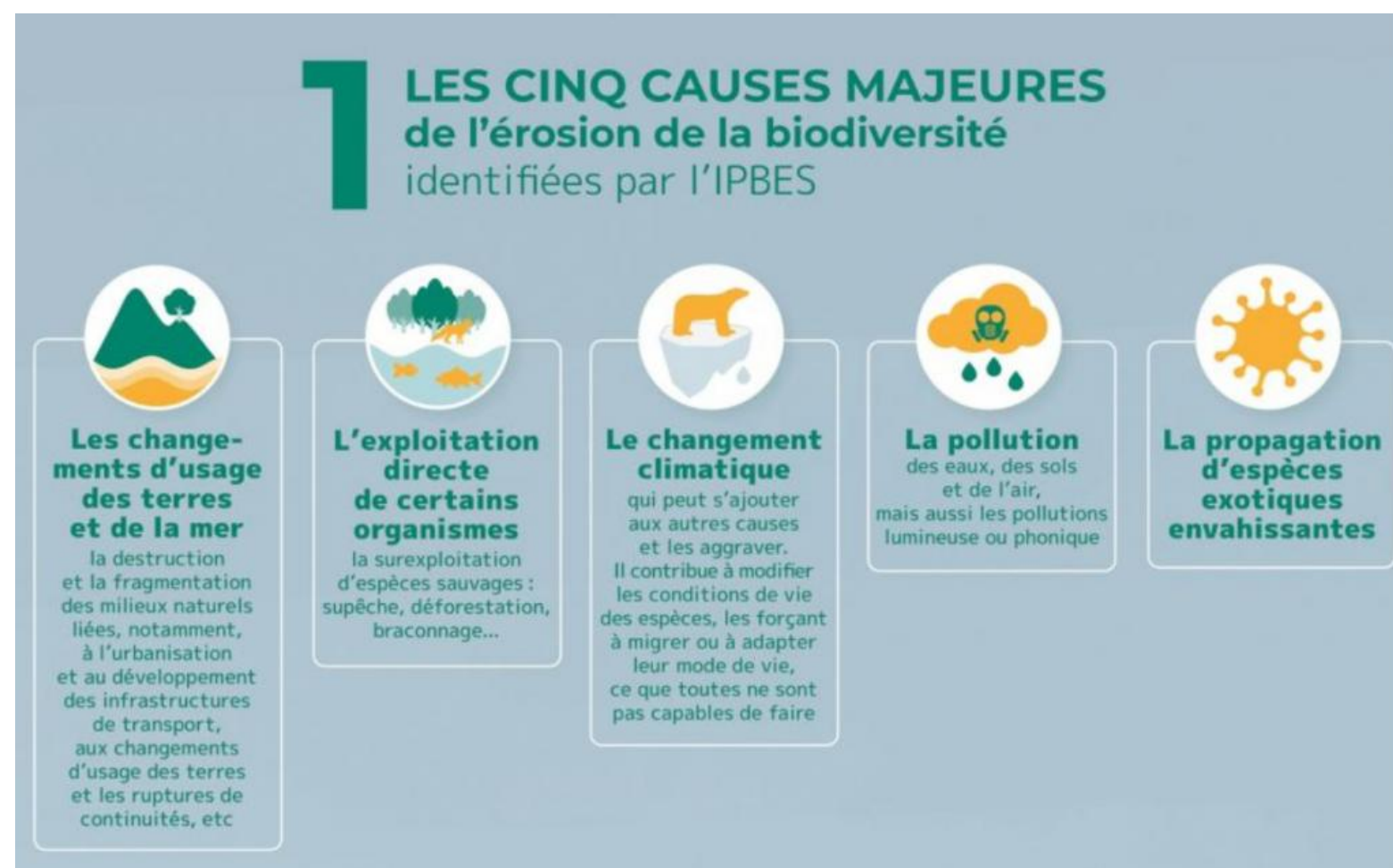


Figure 7 Relationship between annual population size estimates and percent of hedgerows managed by shrub grinder for Haie. (a) Relationship between annual population size estimates and percent of habitat closure for Lande (b).

Guiller et al., 2022

Contexte : déclin de la biodiversité



Cooke et al., 2023

Changement climatique

Changement d'usage des terres

Pollutions

Dérangement / destruction d'individus

Changement d'usage des terres

EEE

Climat

Microclimat

Adaptations physiologiques et comportementales

Température corporelle
Métabolisme / Osmolalité
Performances (digestion, locomotion)

Activité, phénologie
Croissance, reprod., survie

Persistence
Répartition

Biogéographie

Ecophysiologie

Ecologie

Biogéographie

Écologie générale

- **Faible besoin énergétique**

Chasse à l'affût, faibles déplacements

Faible fréquence d'alimentation et de reproduction

Reproduction sur réserves

- **Écologie thermique**

T_{pref} variable suivant le statut biologique/espèce

T_{pref} gestation ~33°C

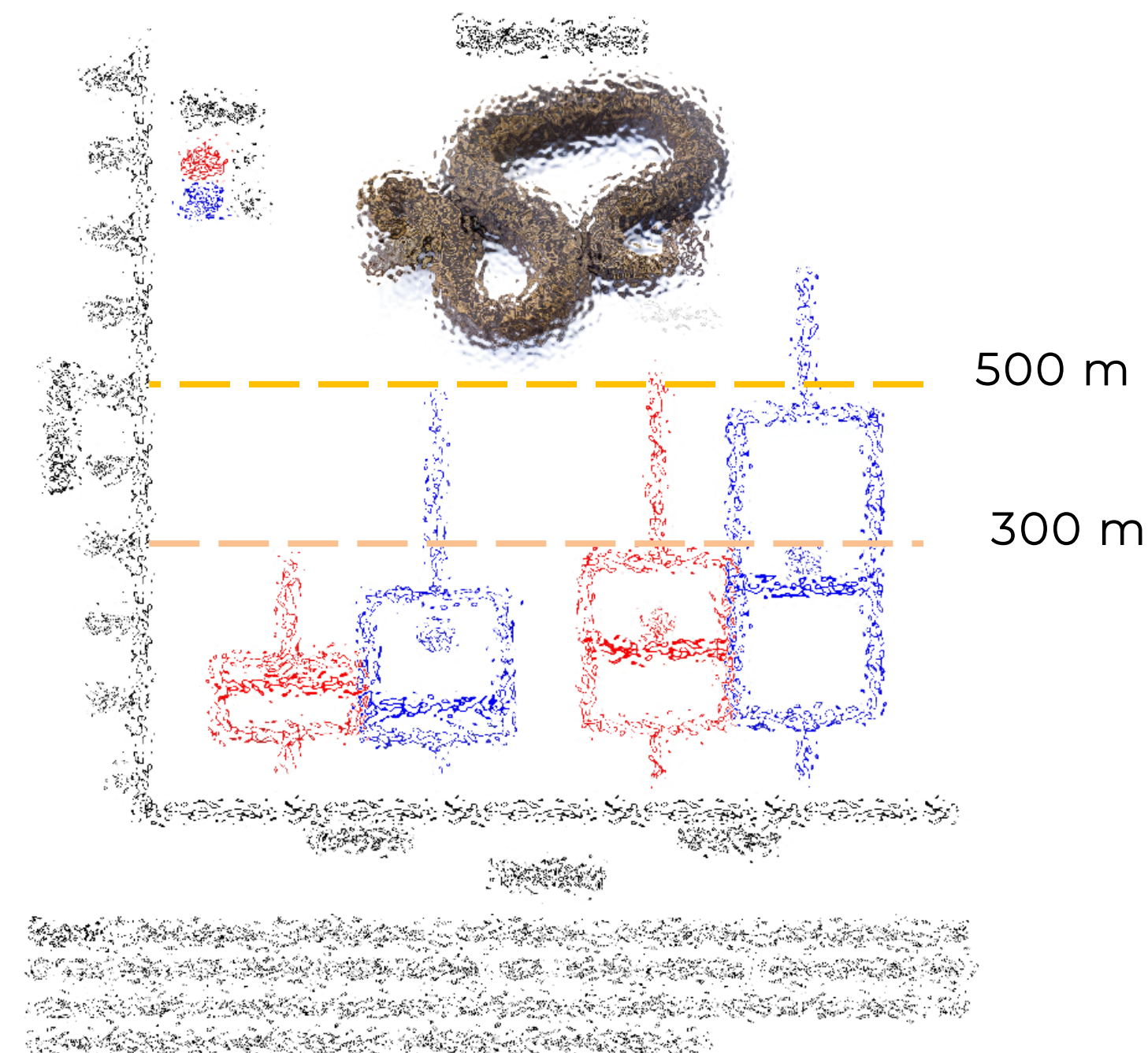
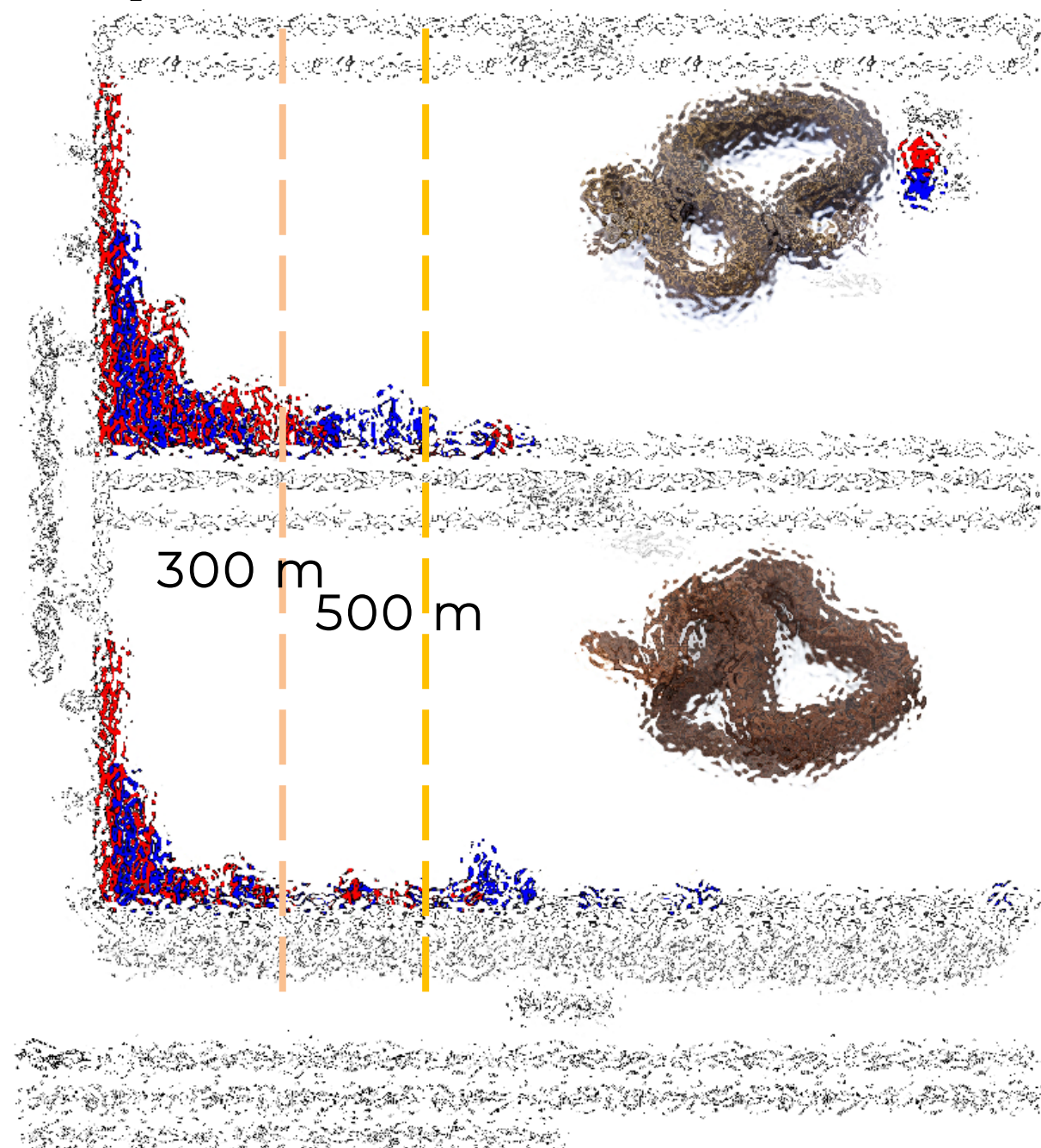
Thermorégulation active mais performance variable



**Économie des coûts de maintenance
Avec des performances optimales**

Ecologie

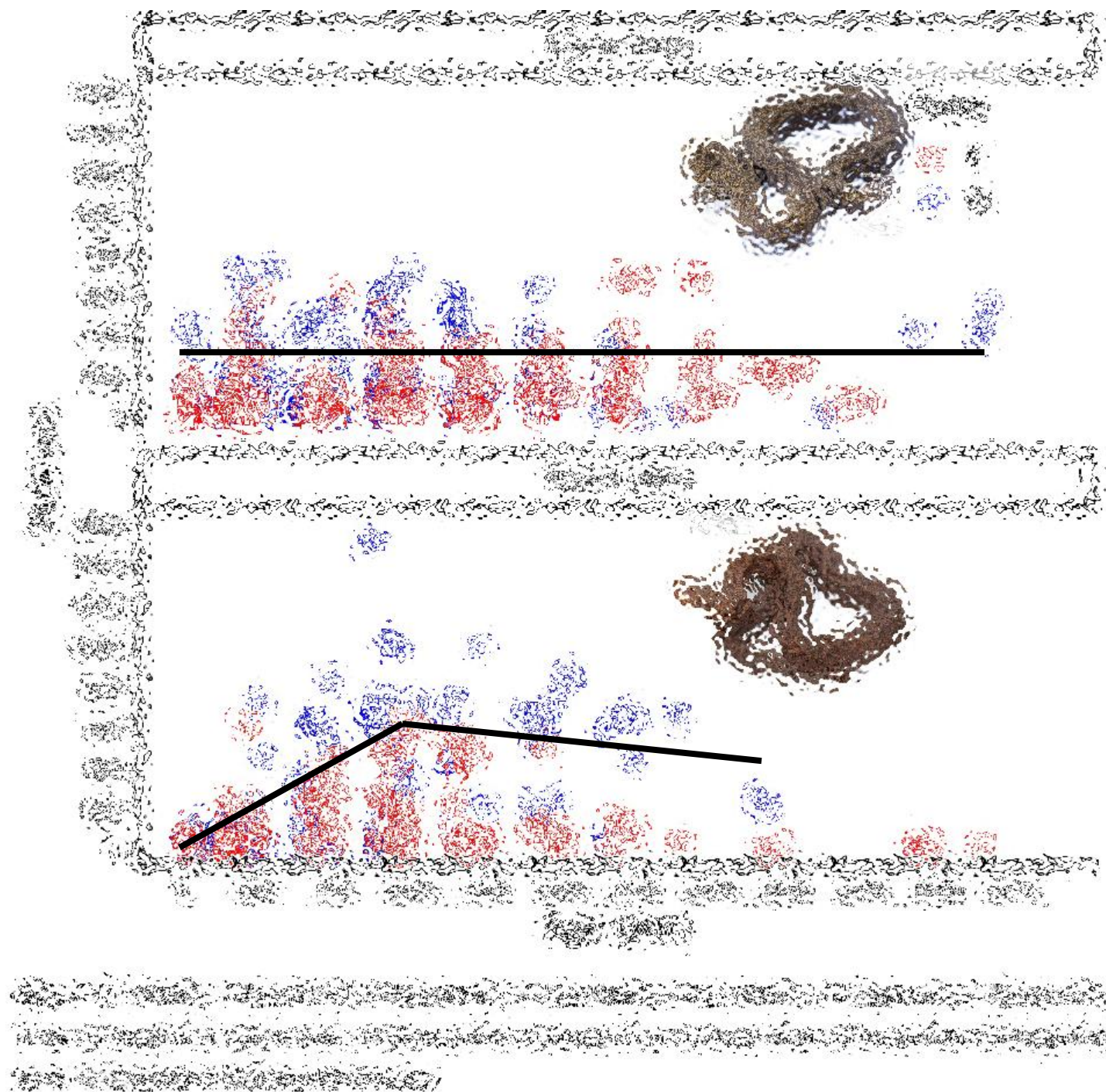
- **Philopatrie : Domaines vitaux / Capacités de déplacement**



Guiller et al., soumis

Ecologie

- **Philopatrie : Dispersions naissance / reproduction**



Guiller et al. soumis

Ecophysiologie

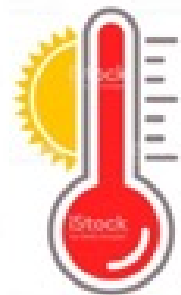
Thermo-hydrorégulation



Obtenir et allouer de l'énergie



Obtenir et allouer de l'eau



Maintenir la température corporelle

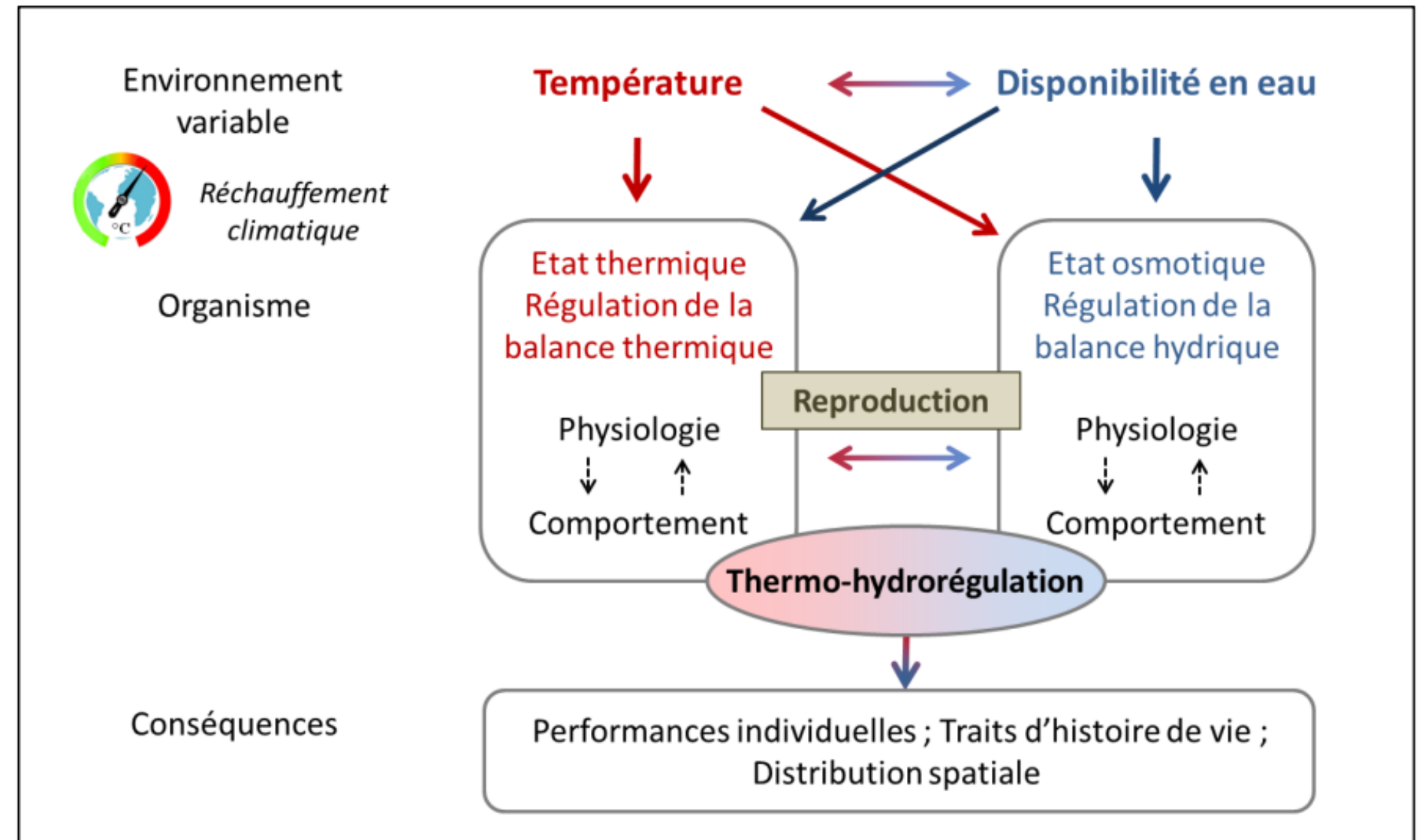
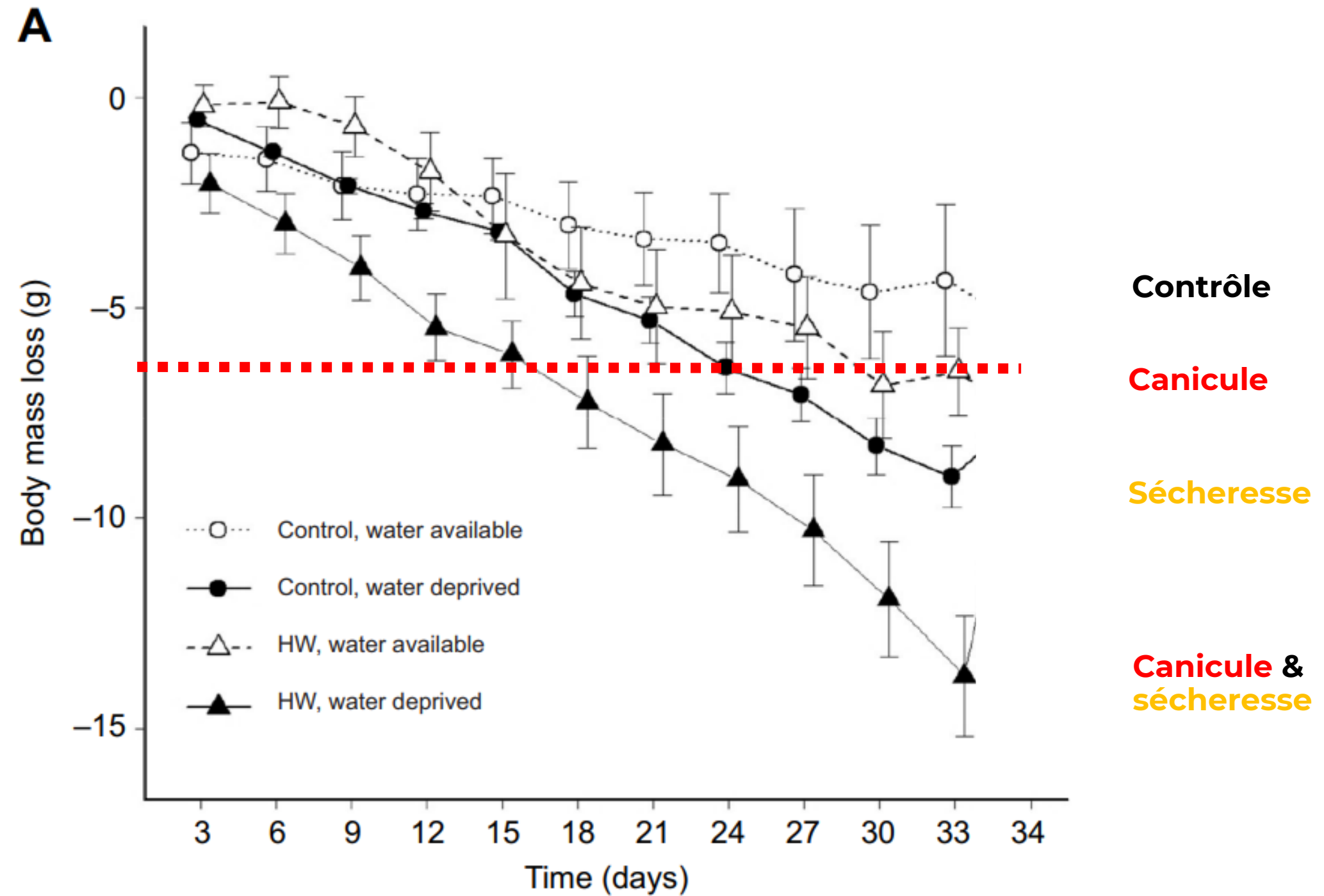


Figure 12: Cadre conceptuel de la thermo-hydrorégulation. Cette représentation illustre les interactions entre la régulation des balances thermique et hydrique à l'échelle de l'organisme. Modifié d'après Olivier Lourdais.

Ecophysiologie

Thermo-hydrorégulation

V. aspis



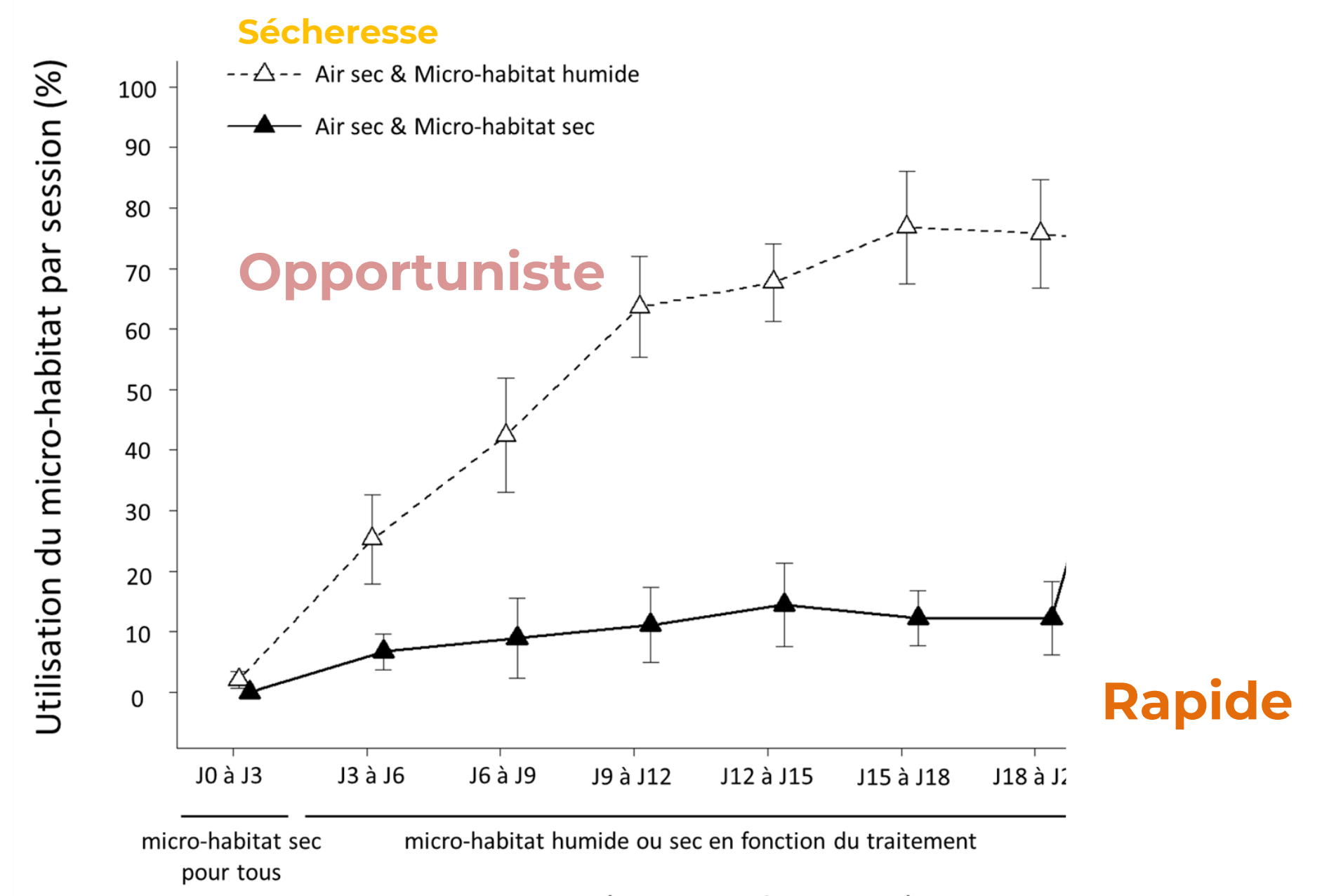
Dezetter et al. 2021, 2022

Ecophysiologie

Atténuation comportementale

V. aspis

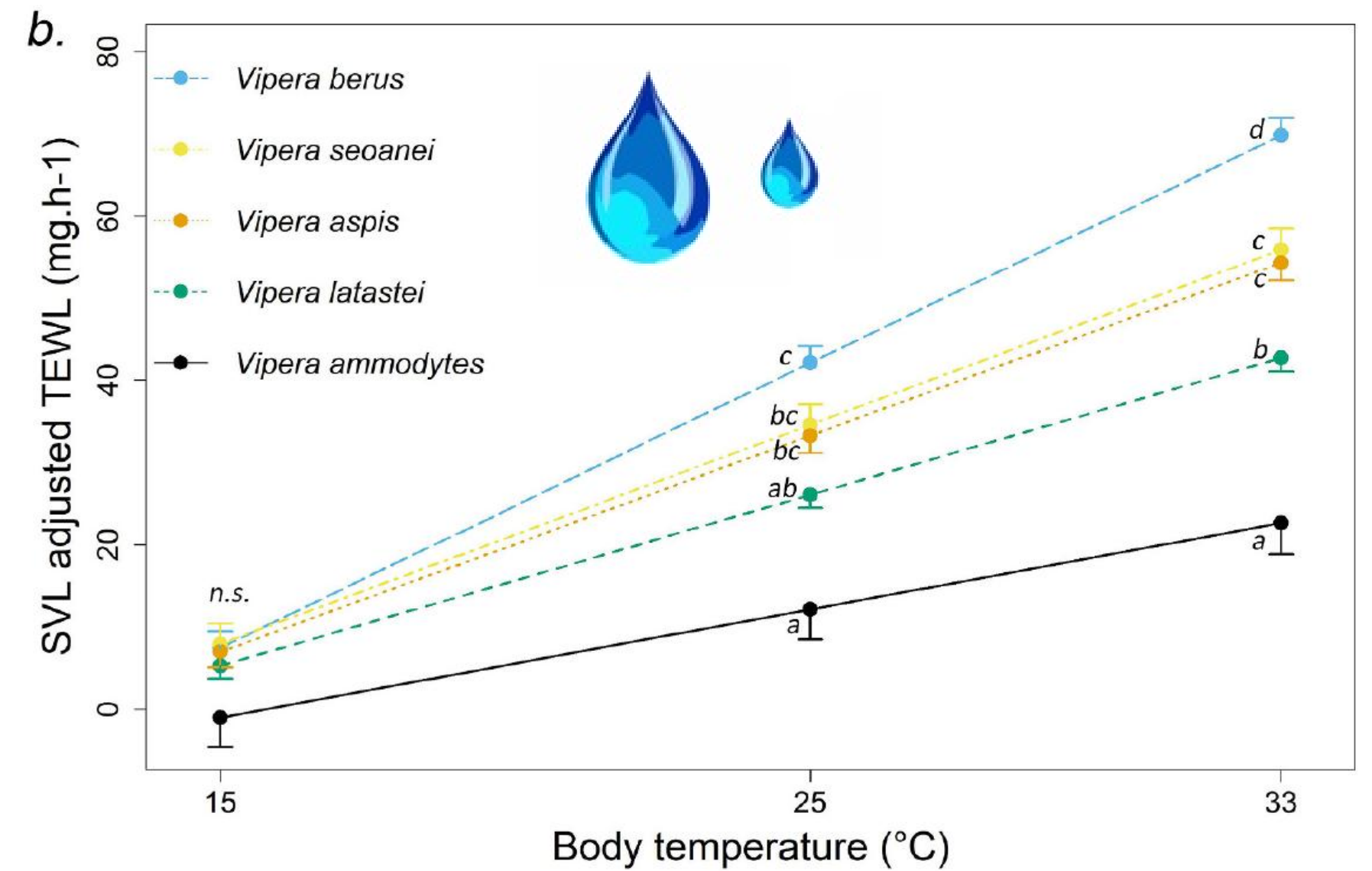
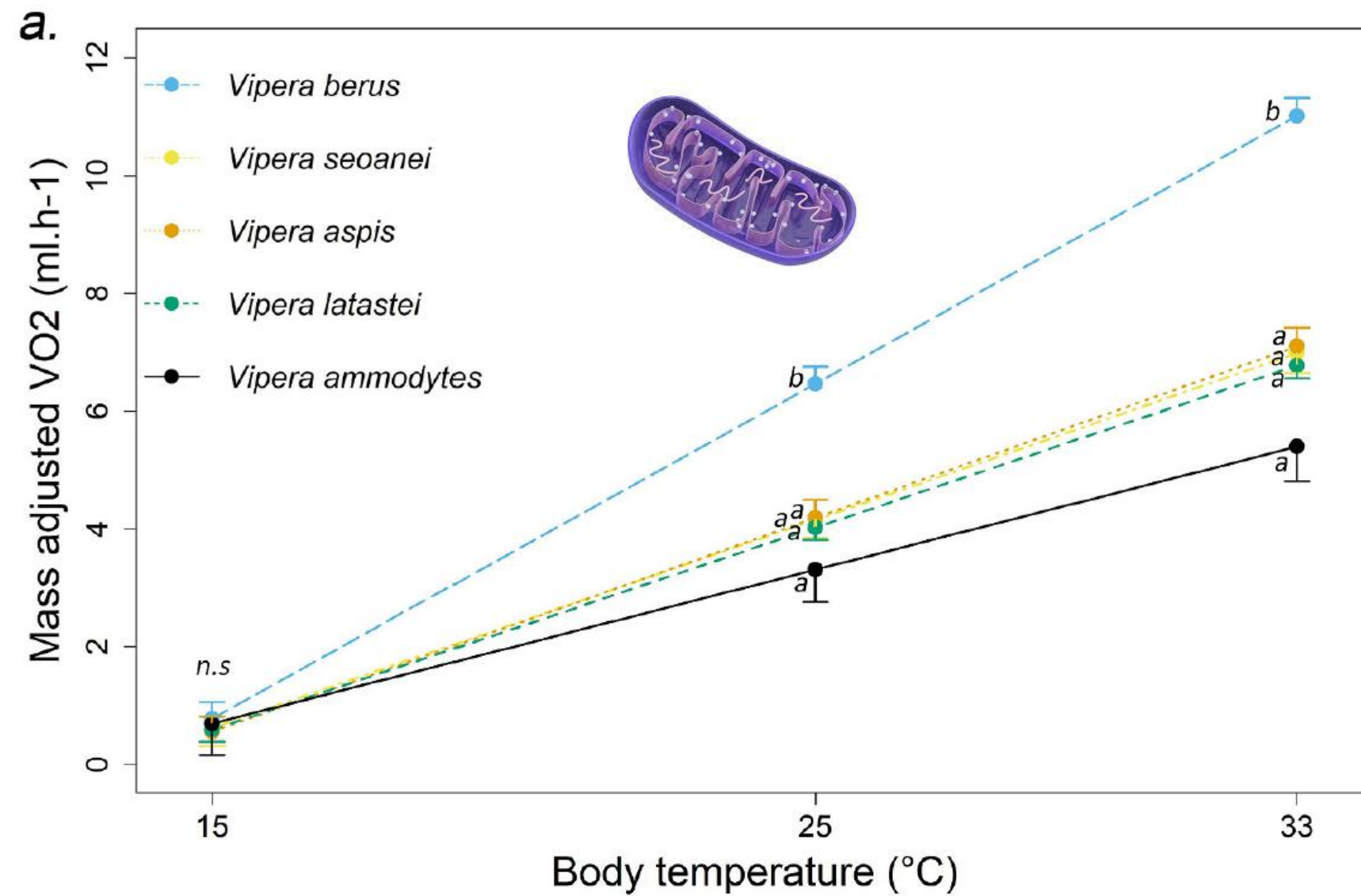
Réduction des coûts physiologiques



Dezetter et al. 2023

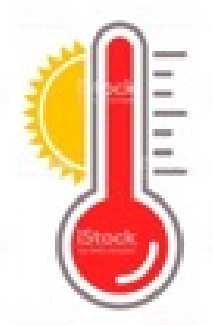
Ecophysiologie

Adaptations écophysiologiques



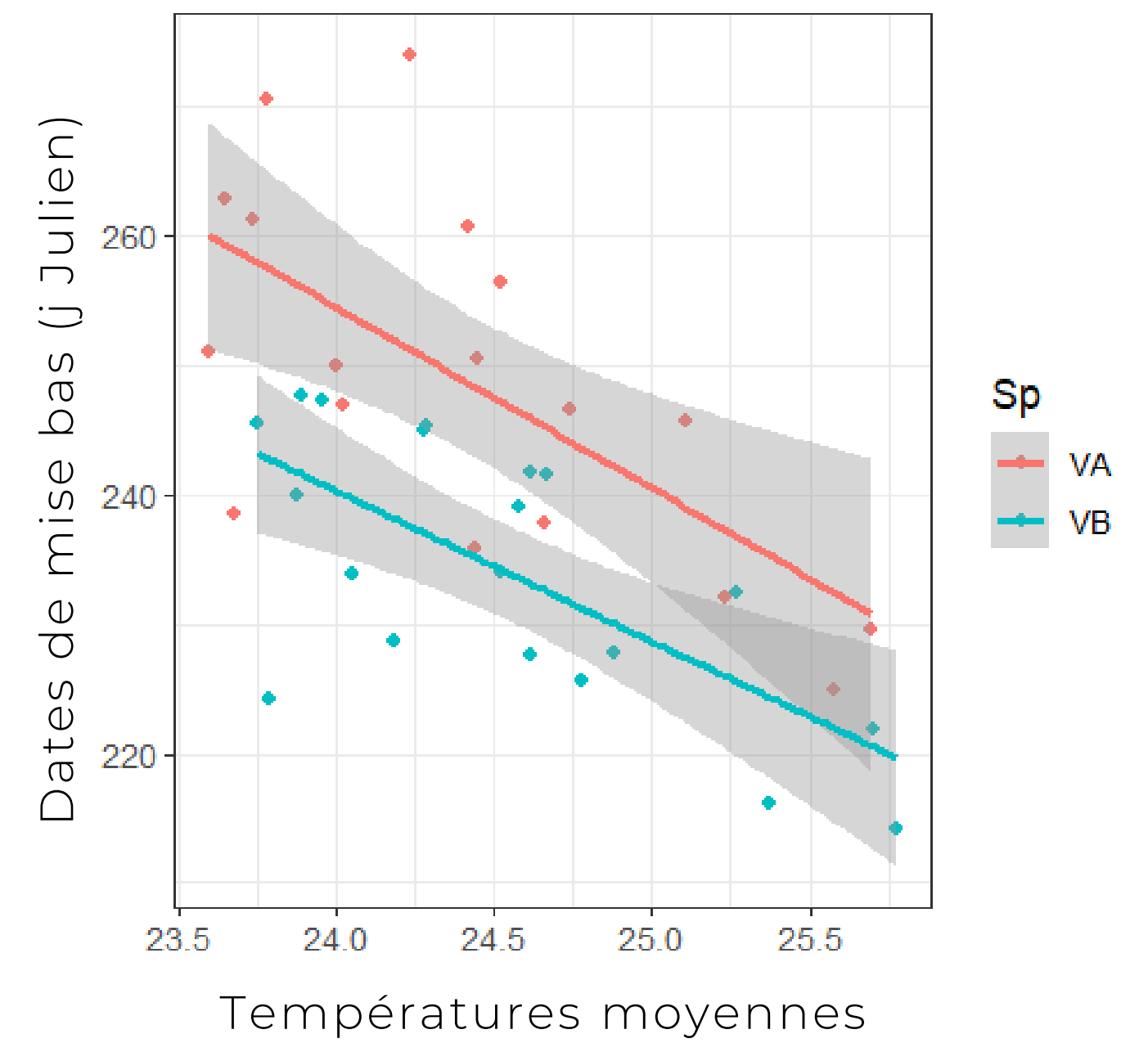
Ecophysiologie

Adaptations écophysiologiques



Date de mise bas : Vb 15 jours plus tôt que Va

En 20 ans de suivis : Date moyenne 1 mois plus précoce



Ecophysiologie

Adaptations écophysiologiques



Vipera berus > *Vipera seoanei* = *Vipera aspis*



Vipera berus > *Vipera seoanei* =? *Vipera aspis*

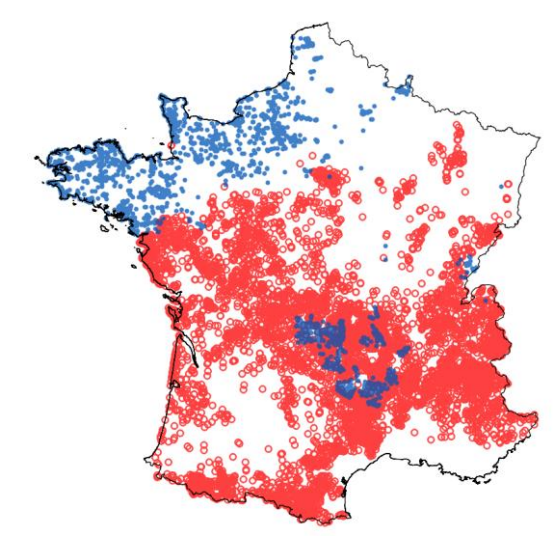


Vipera berus =? *Vipera seoanei* > *Vipera aspis*

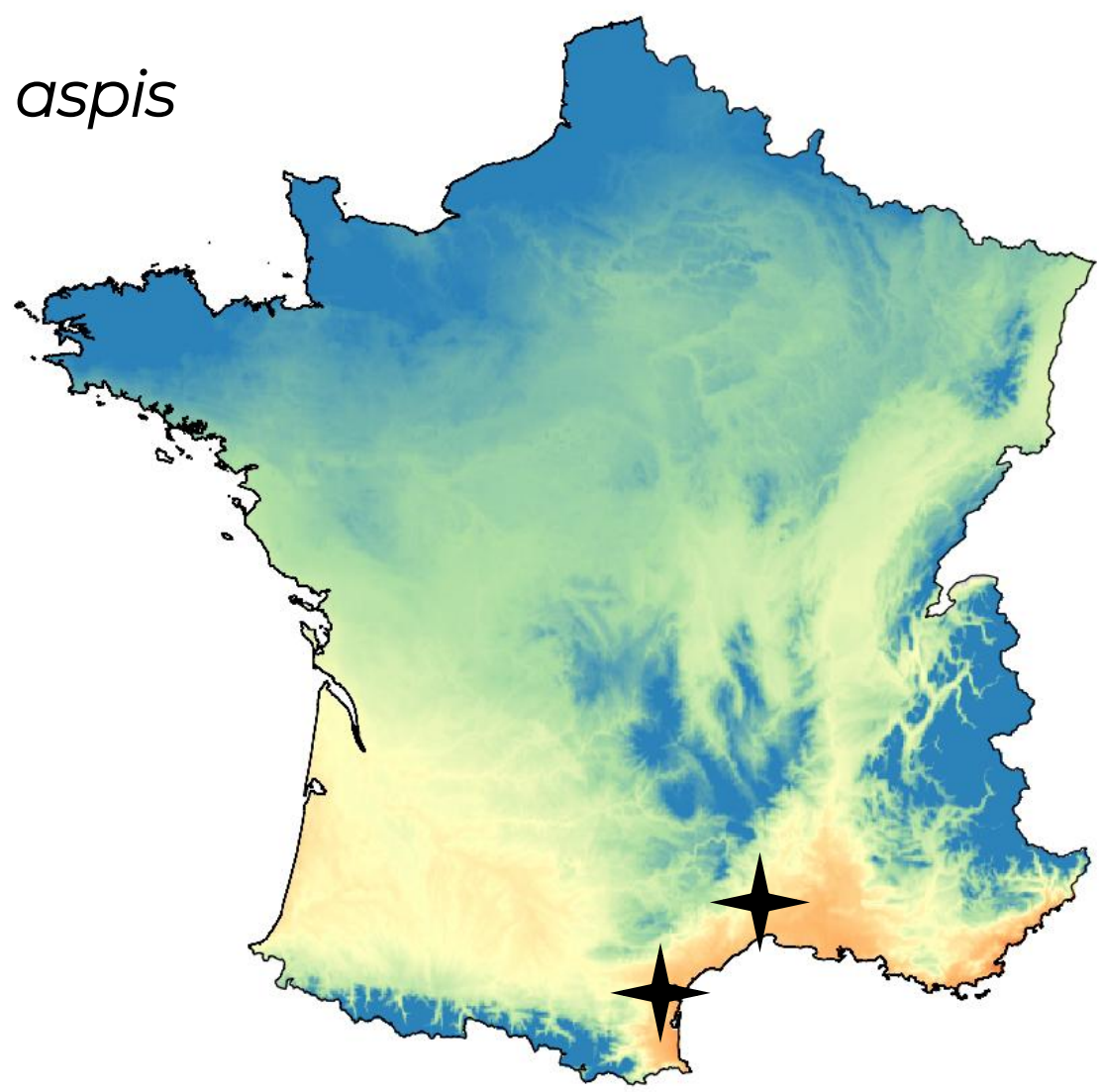
Ecophysiologie

Sensibilité dépendante du contexte

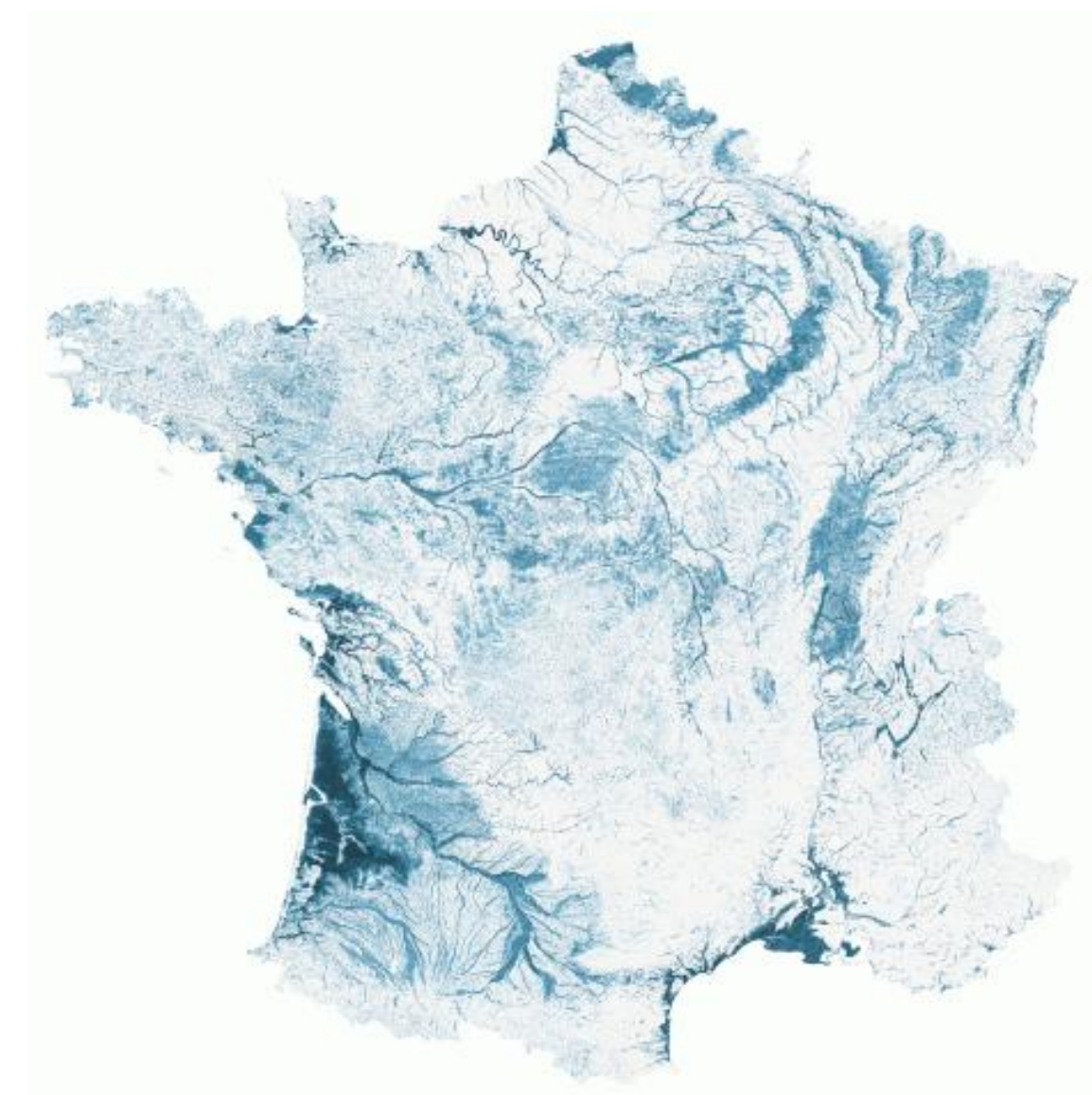
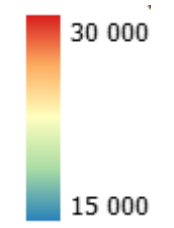
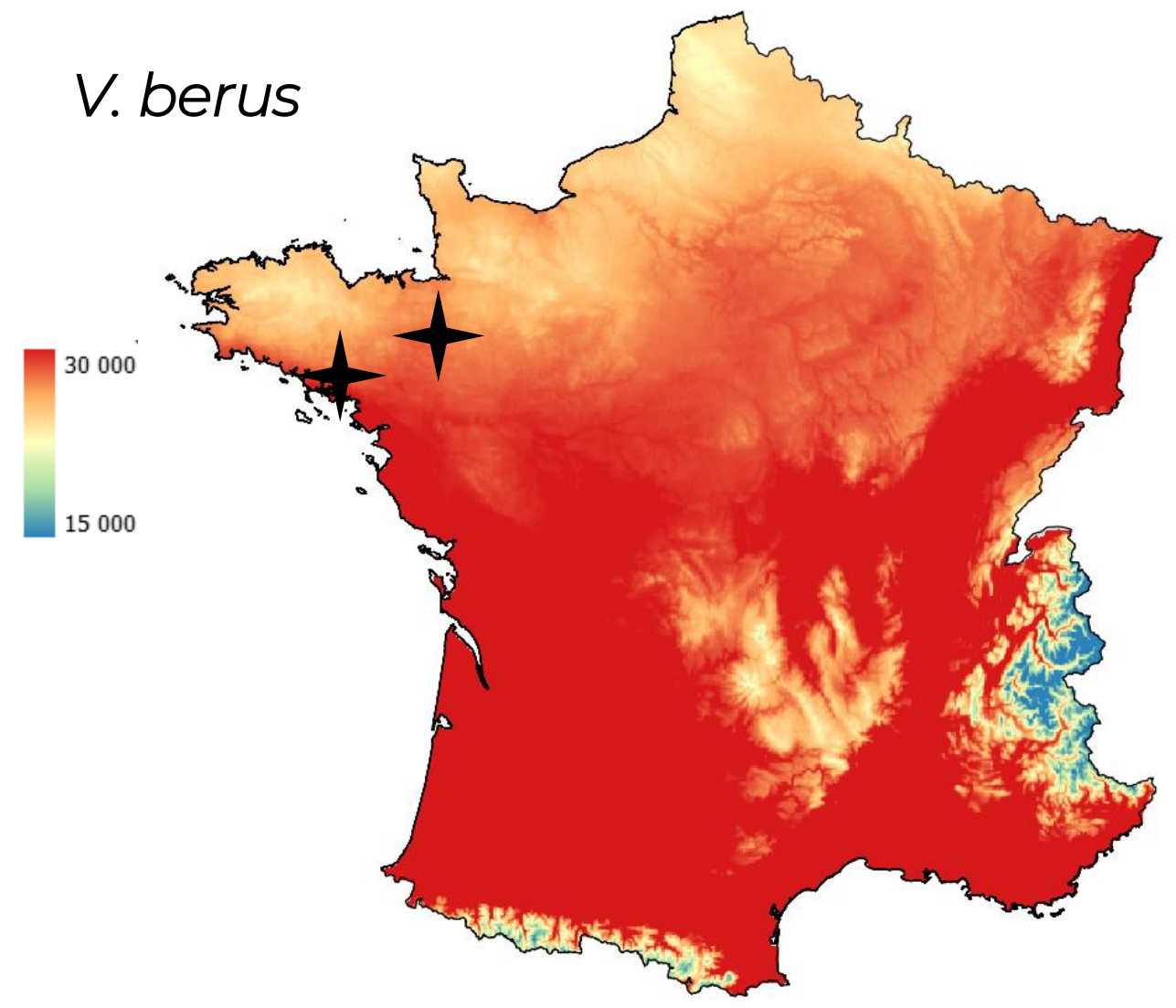
Budget énergétique annuel



V. aspis



V. berus

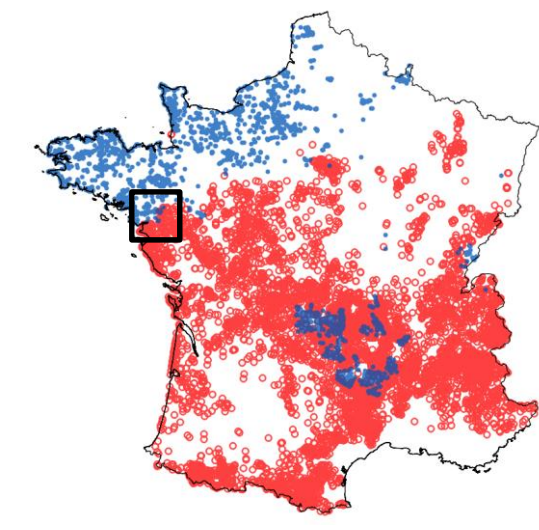


Milieux humides

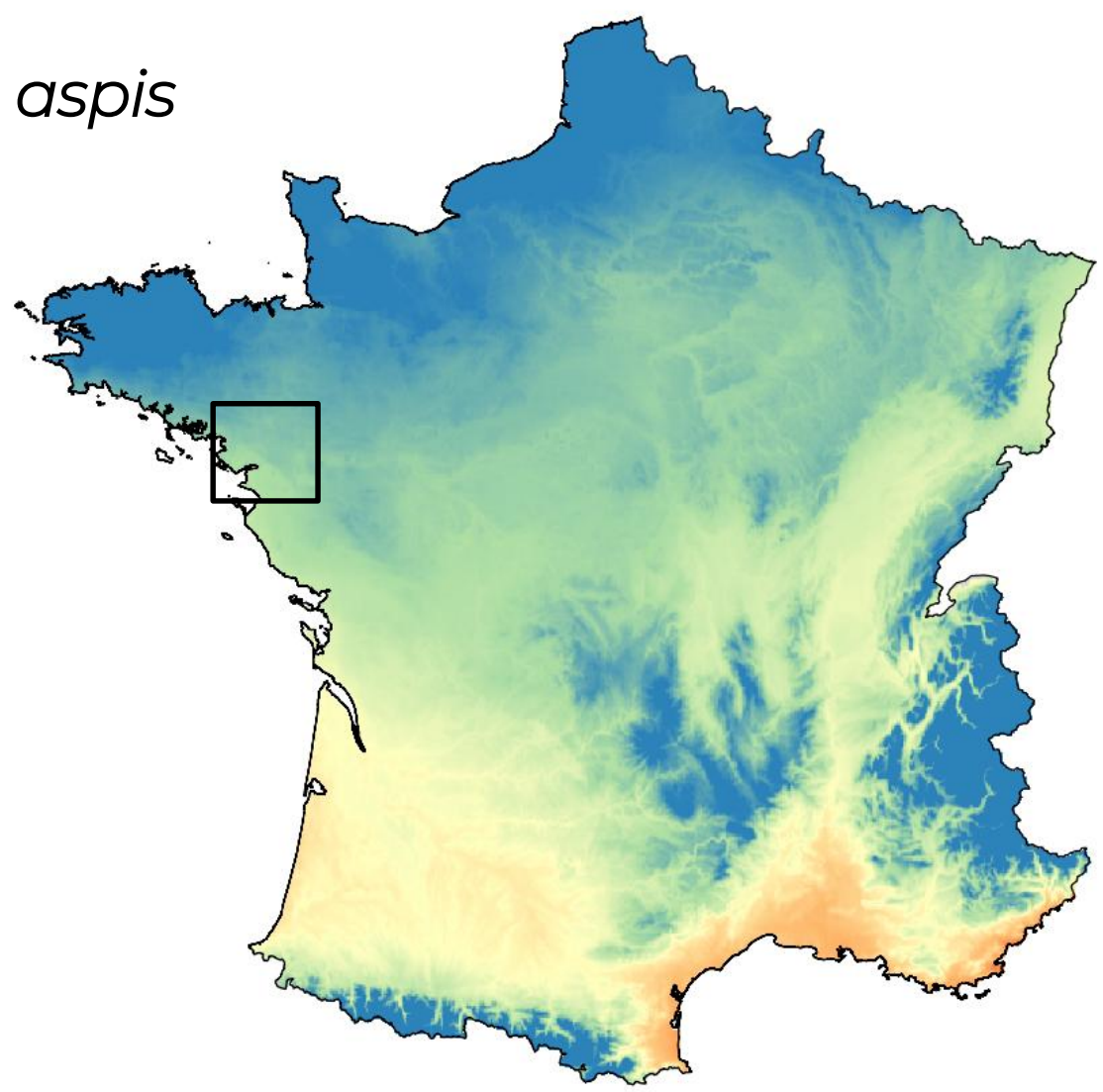
Ecophysiologie

Sensibilité dépendante du contexte

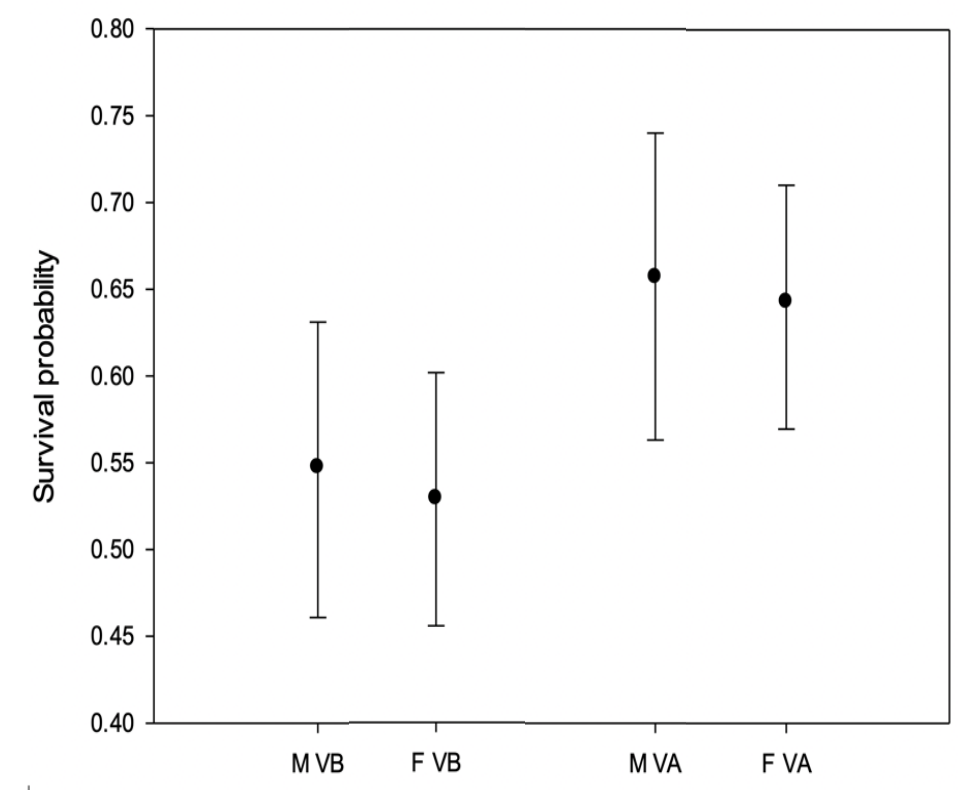
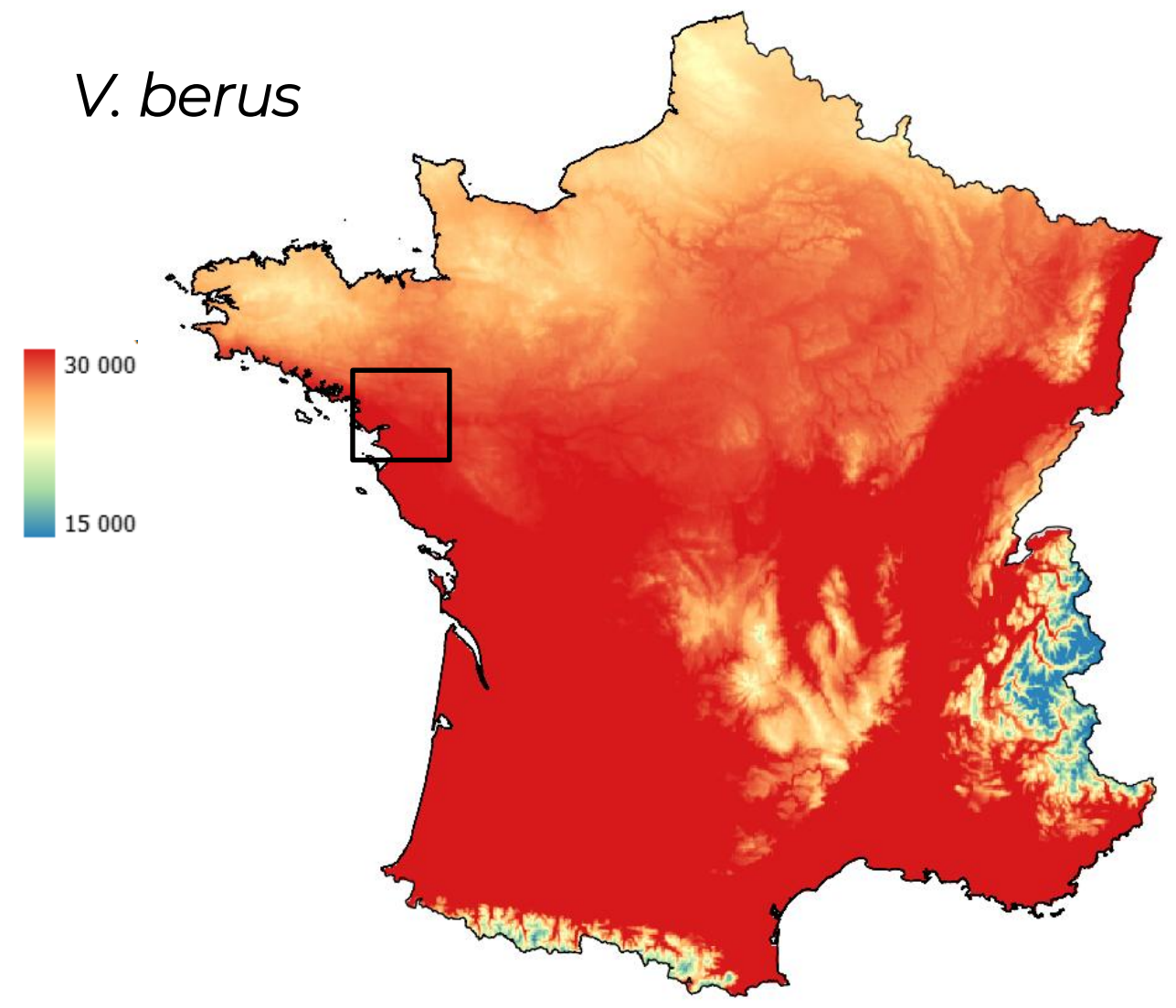
Budget énergétique annuel



V. aspis



V. berus



Guillon et al. in prep.

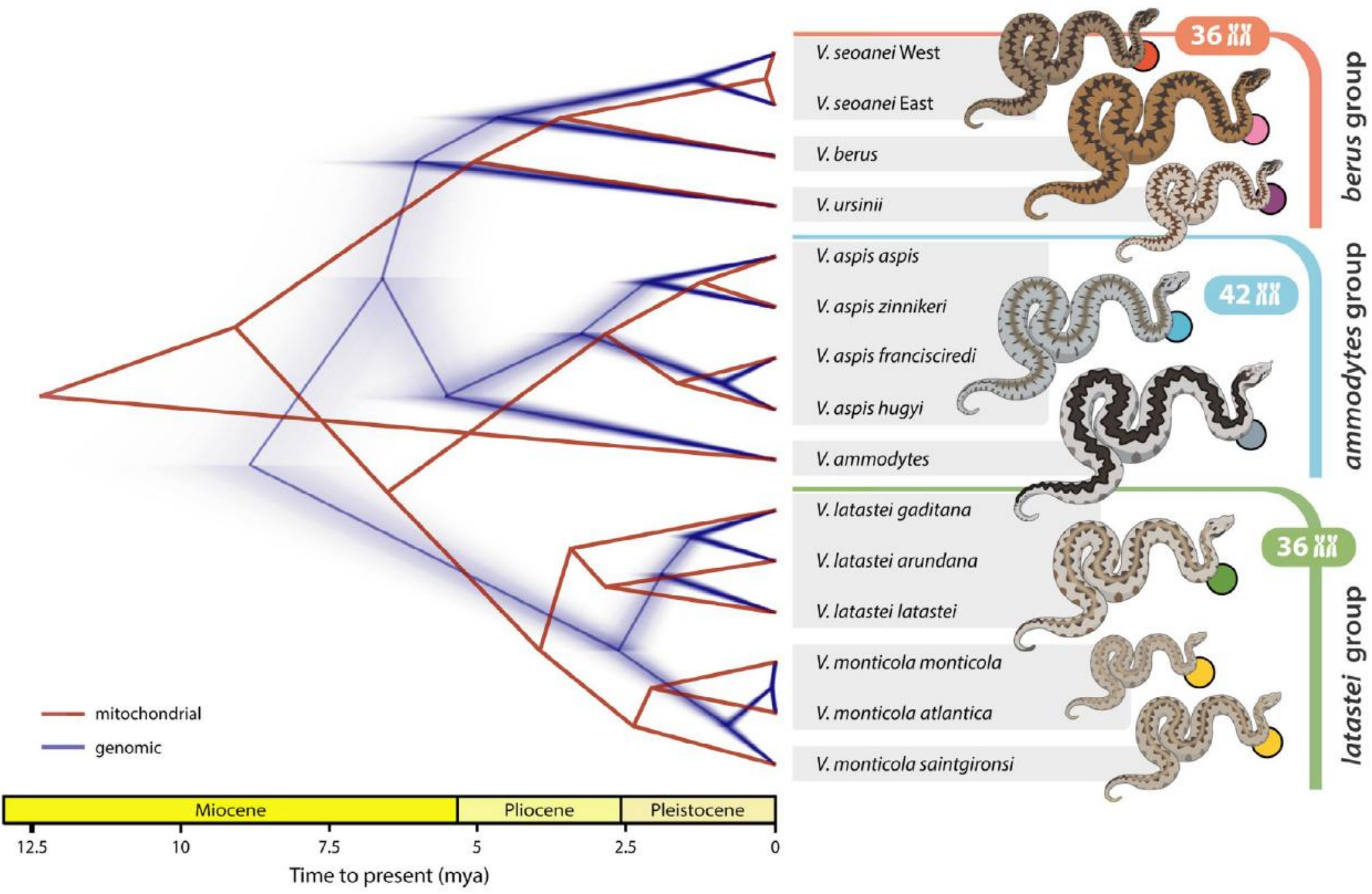
Guiller et al. in prep.

Biogéographie

3 groupes phylogénétiques

V. aspis et *V. ammodytes* monophylétique

Forte introgression historique



Received: 3 January 2023 | Revised: 22 June 2023 | Accepted: 30 June 2023

DOI: 10.1111/jbi.14694

RESEARCH ARTICLE

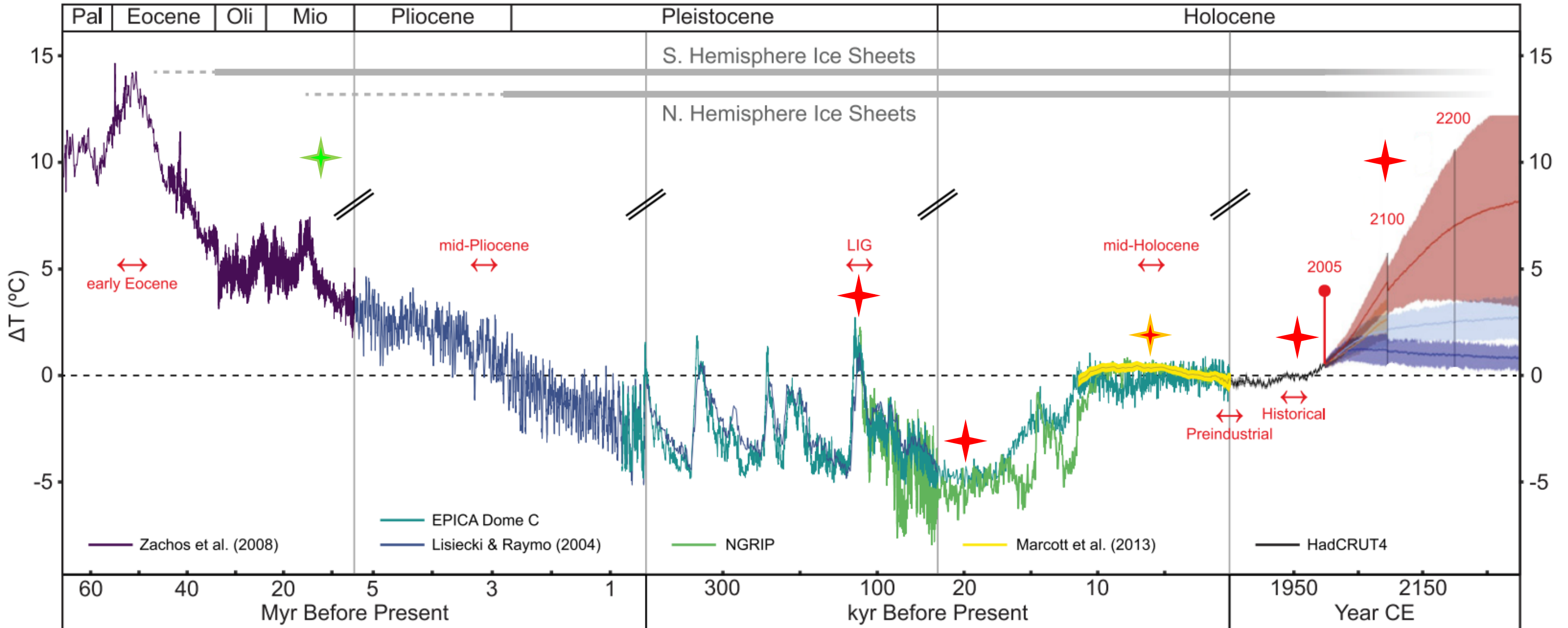
Journal of Biogeography WILEY

Climatic adaptation explains responses to Pleistocene oscillations and diversification in European vipers

Nahla Lucchini^{1,2,3} | Antigoni Kaliontzopoulou⁴ | Olivier Lourdaï⁵ | Fernando Martínez-Freiría^{1,2}

Talavera et al. 2025

Biogéographie

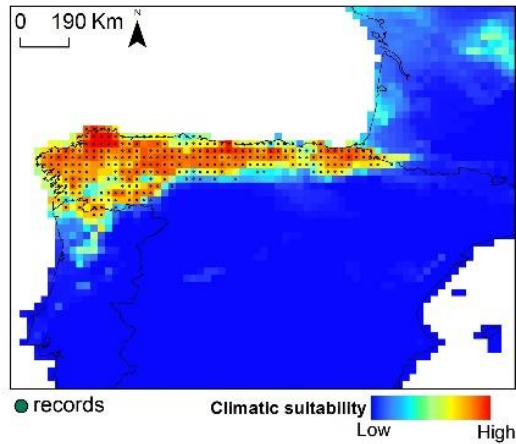


Burke et al. 2018

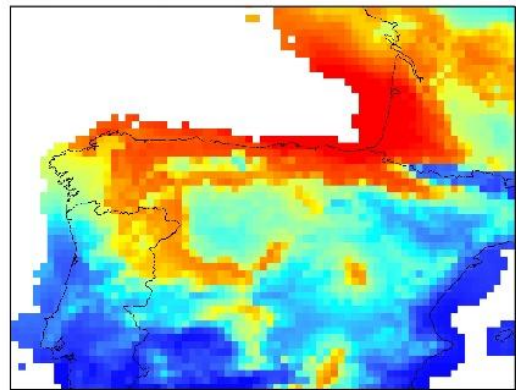
Biogéographie

Vipera seoanei

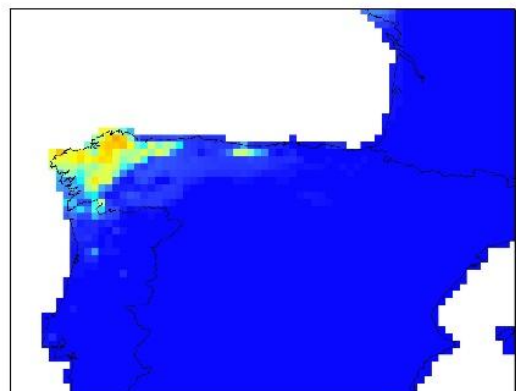
Current Average model/projections



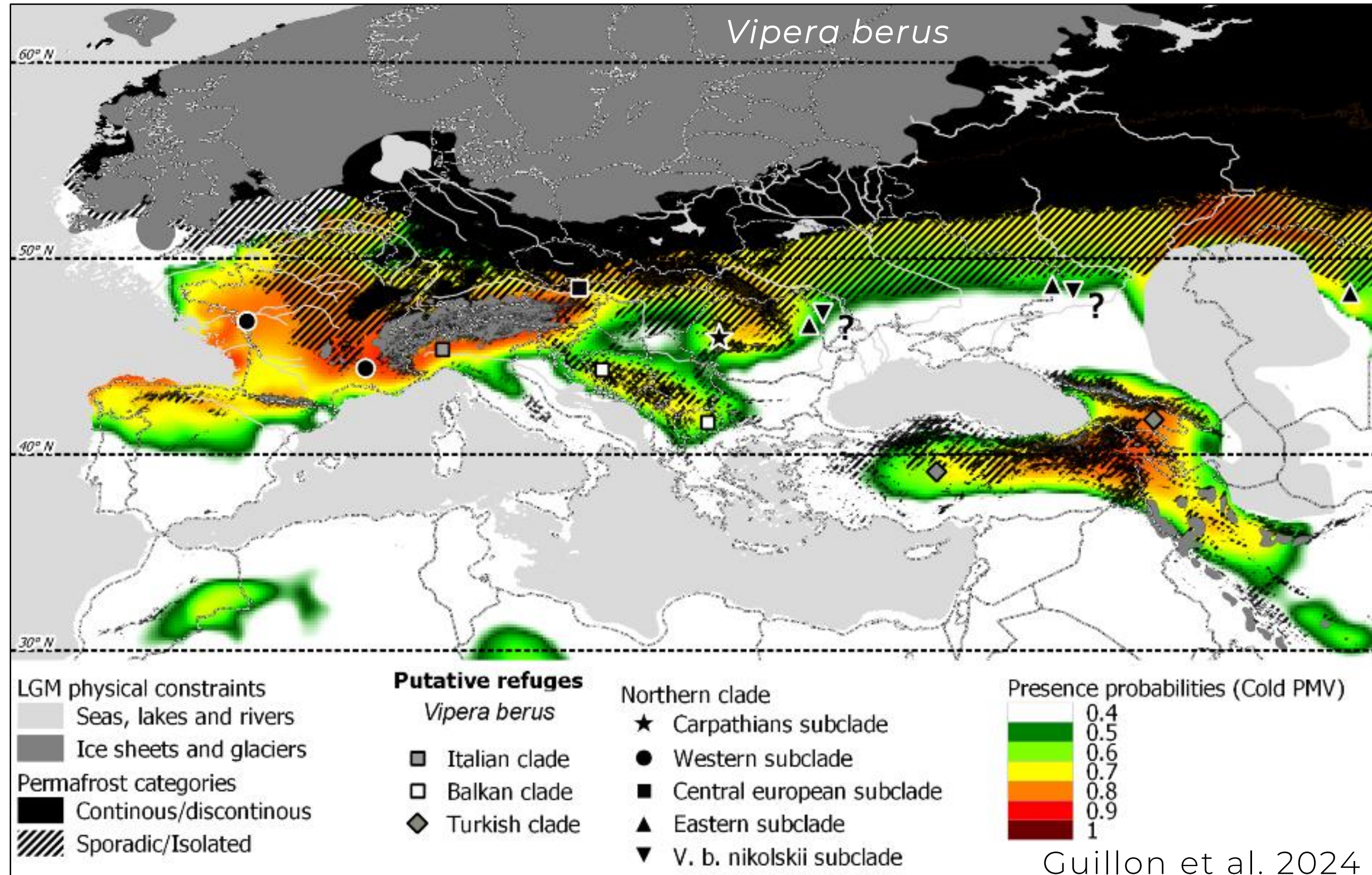
Last Glacial Maximum



Last Interglacial



Lucchini et al. 2023

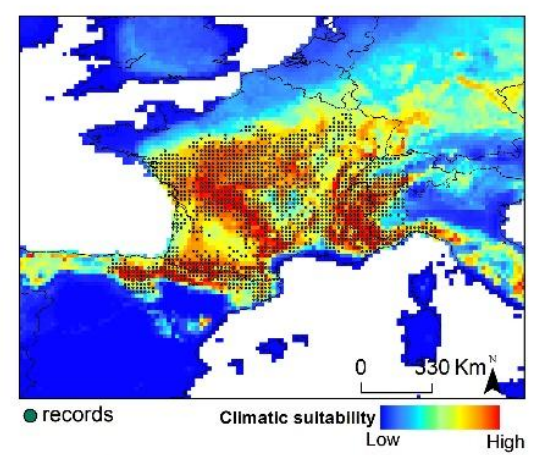


Guillon et al. 2024

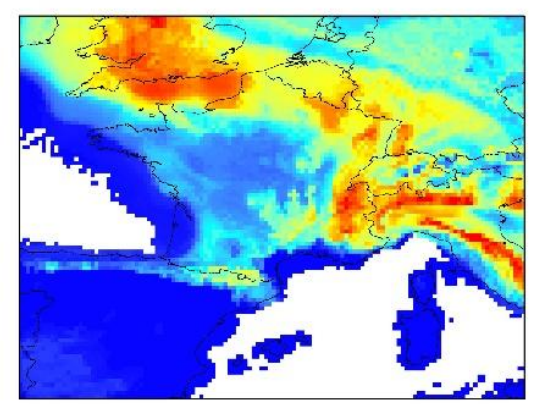
Biogéographie

Vipera aspis ouest

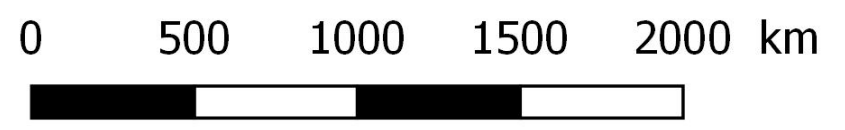
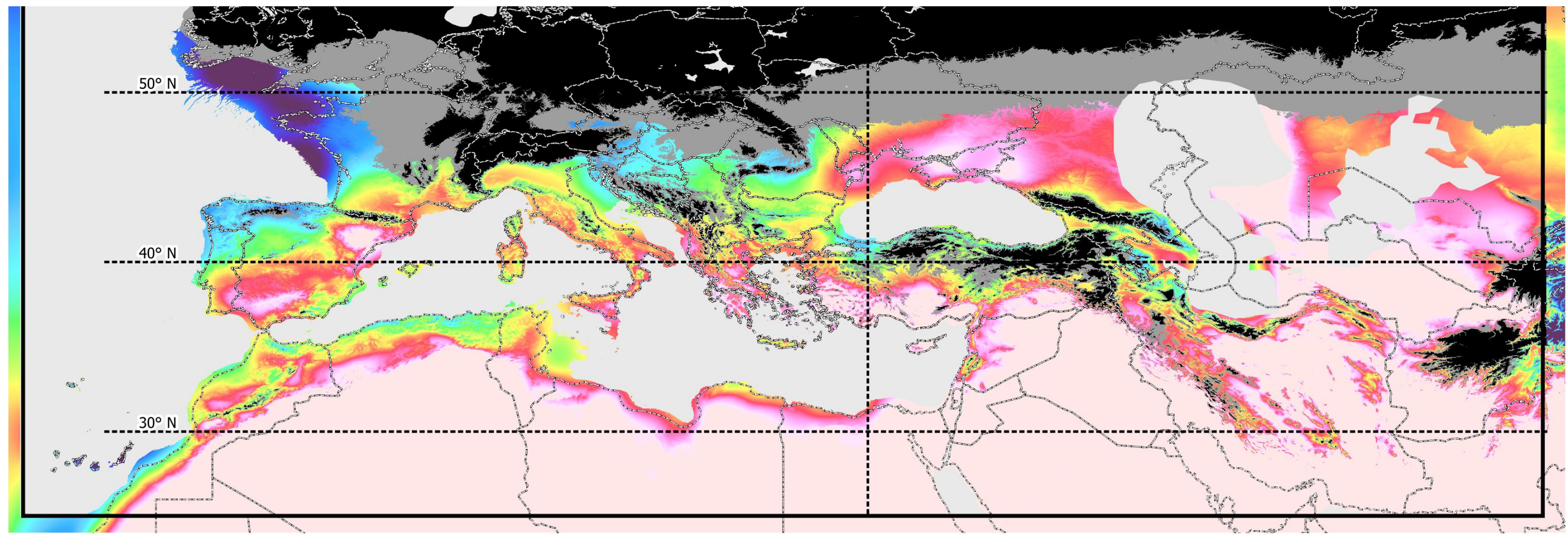
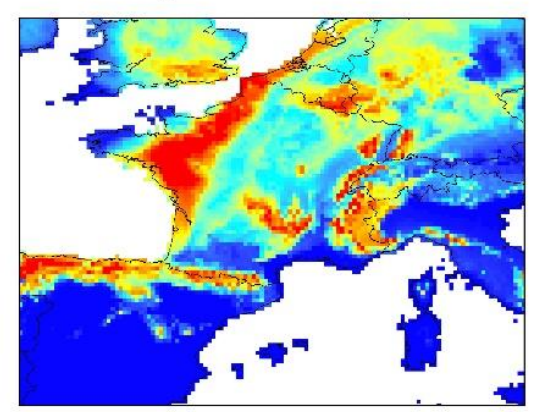
Current Average model/projections



Last Glacial Maximum

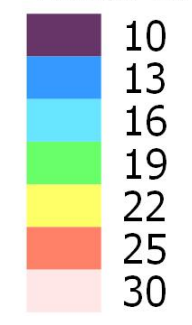


Last Interglacial



Country

Tmax of July (22 kyr BP, °C)



Permafrost zones

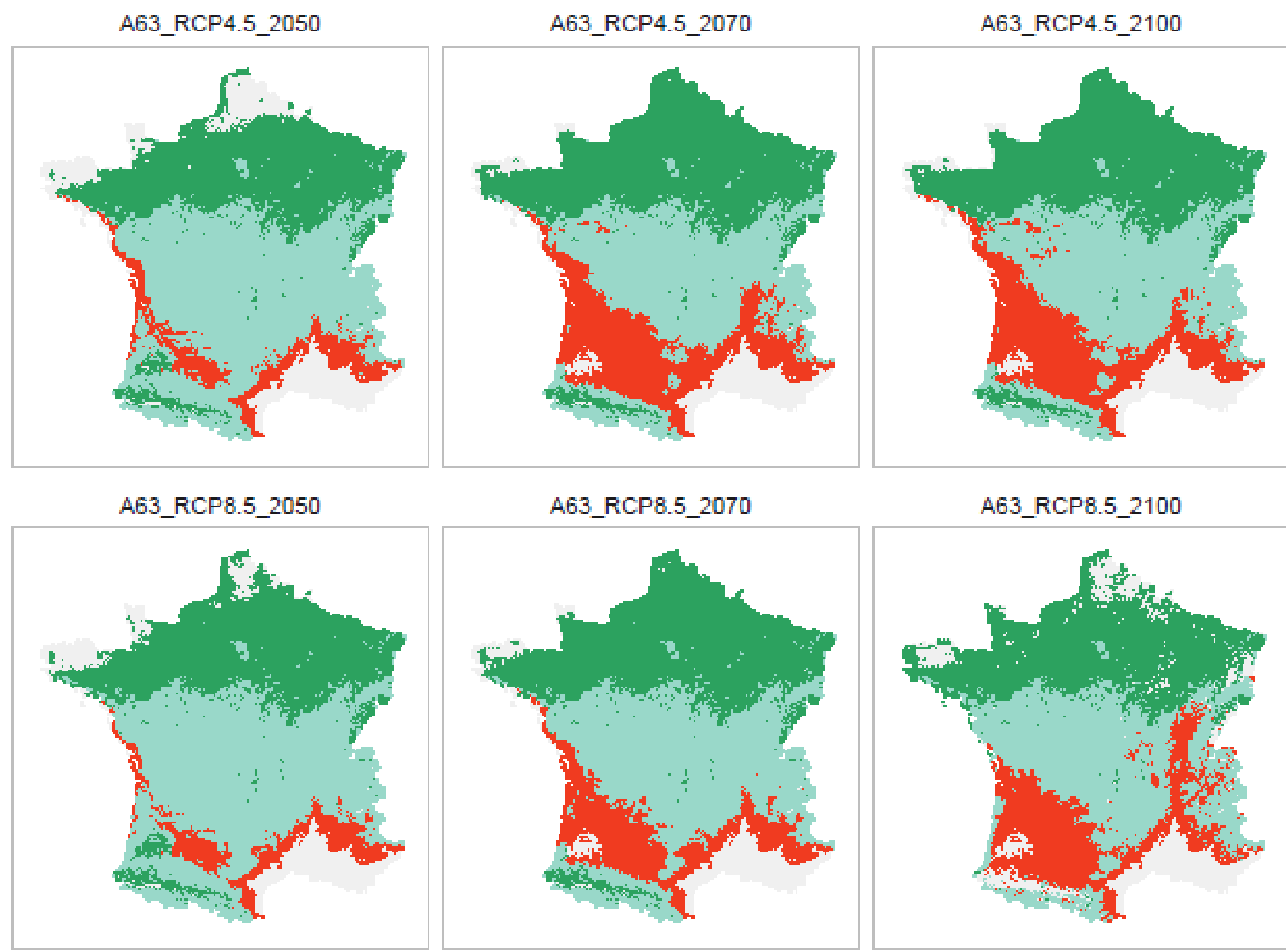
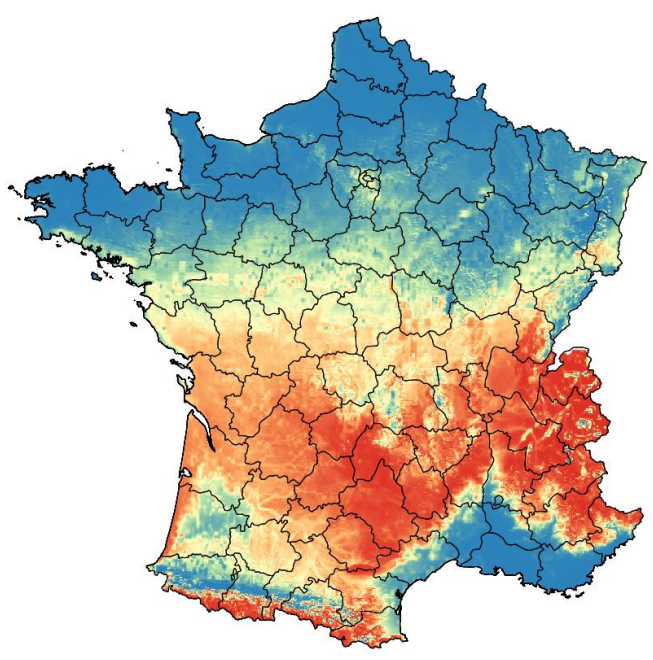


Lucchini et al. 2023

Guillon et al. 2024

Biogéographie

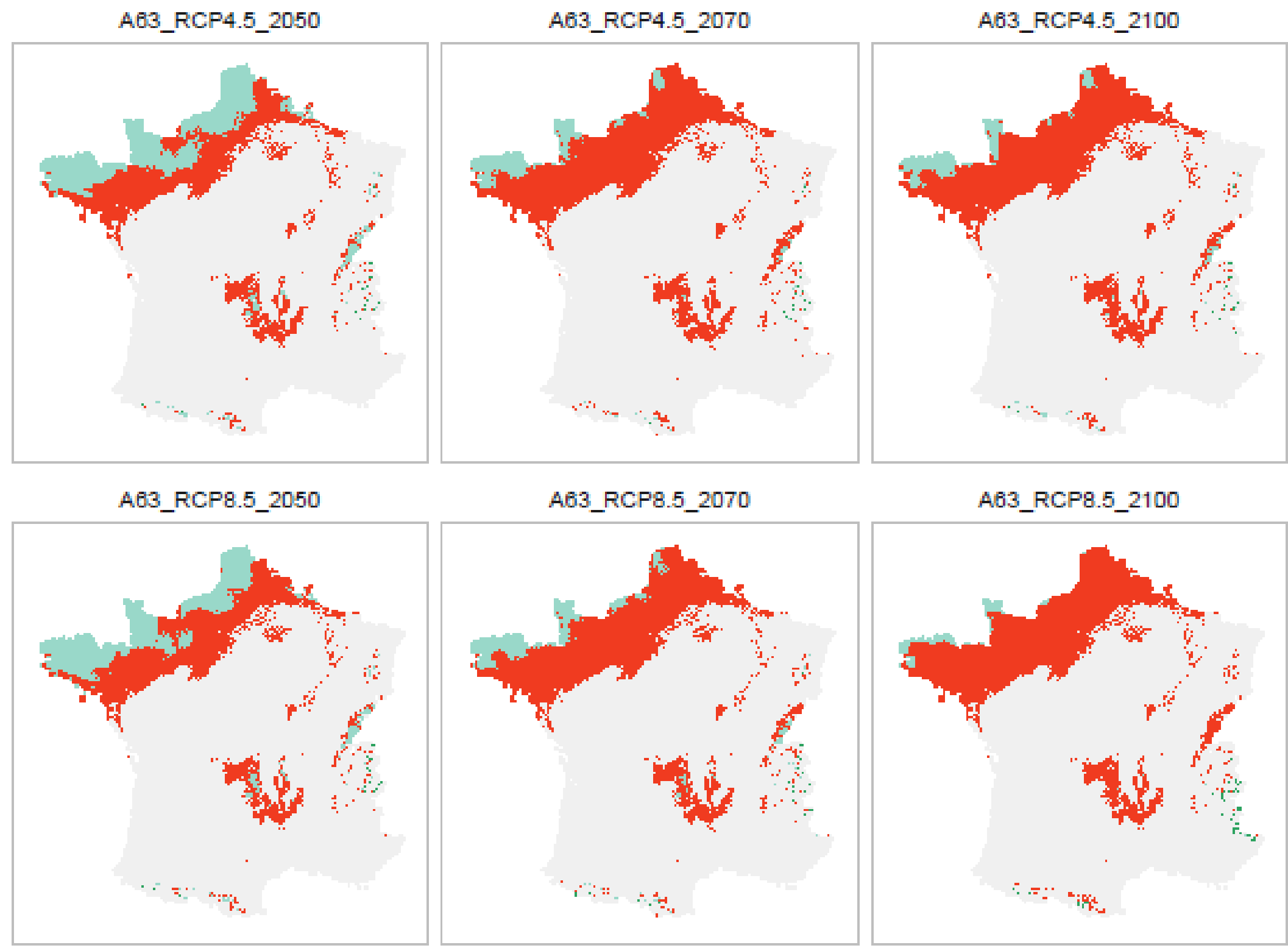
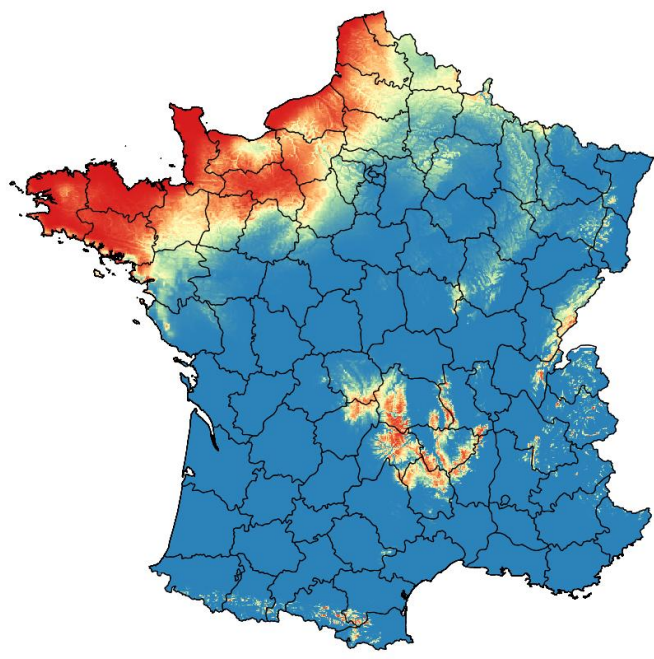
Vipera aspis



Guillon et al. in prep.

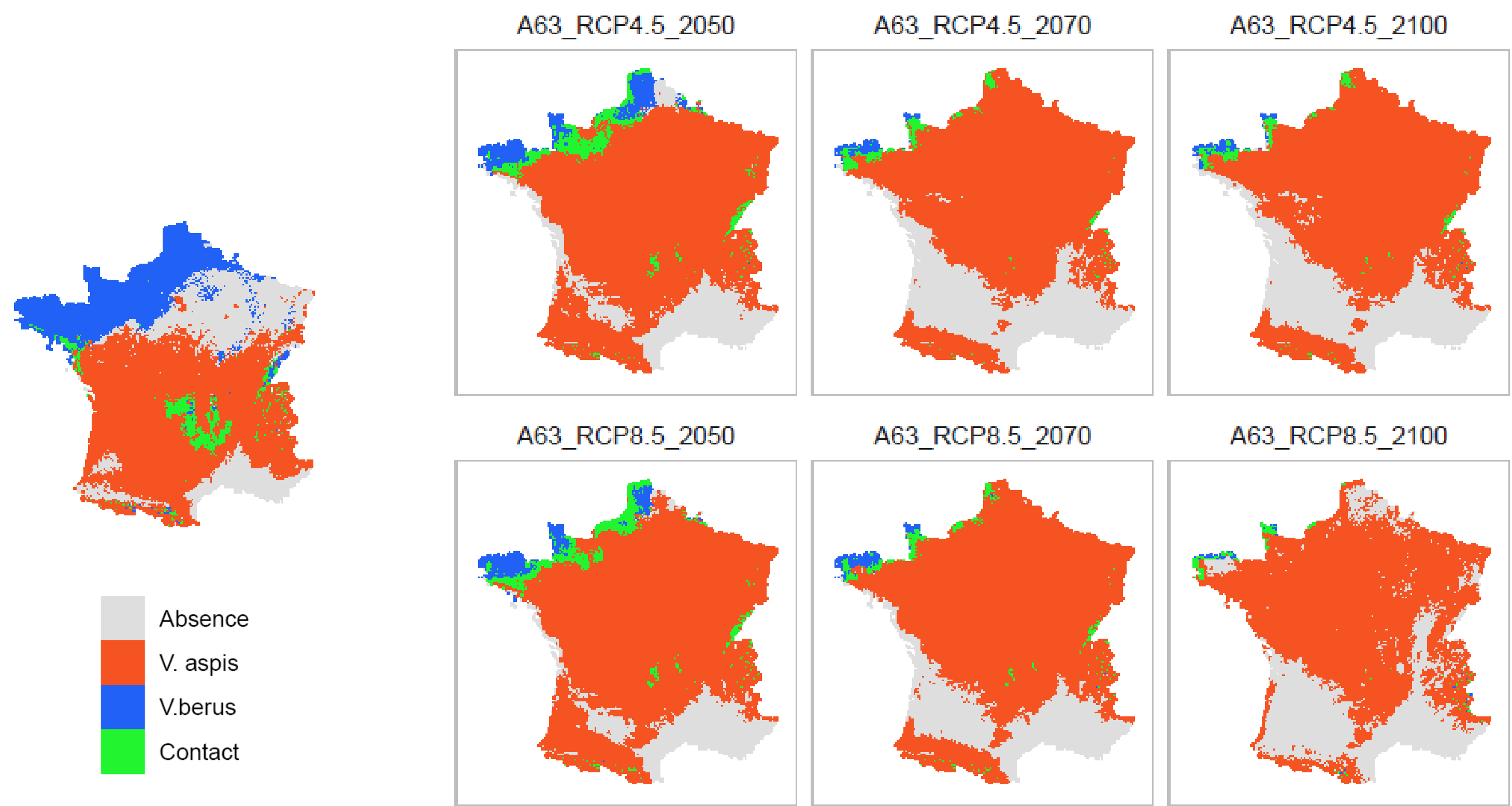
Biogéographie

Vipera berus



Guillon et al. in prep.

Biogéographie



Guillon et al. in prep.

Merci pour votre attention

COORDONNÉES

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