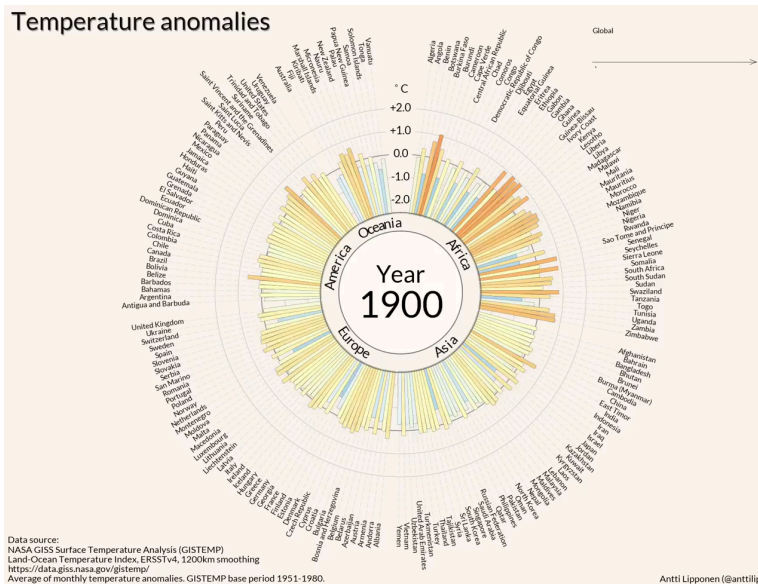


Optimal body mass, temperature, and energy budget



Tanjona Ramiadantsoa

University of Wisconsin-Madison

Ranomafana, Madagascar

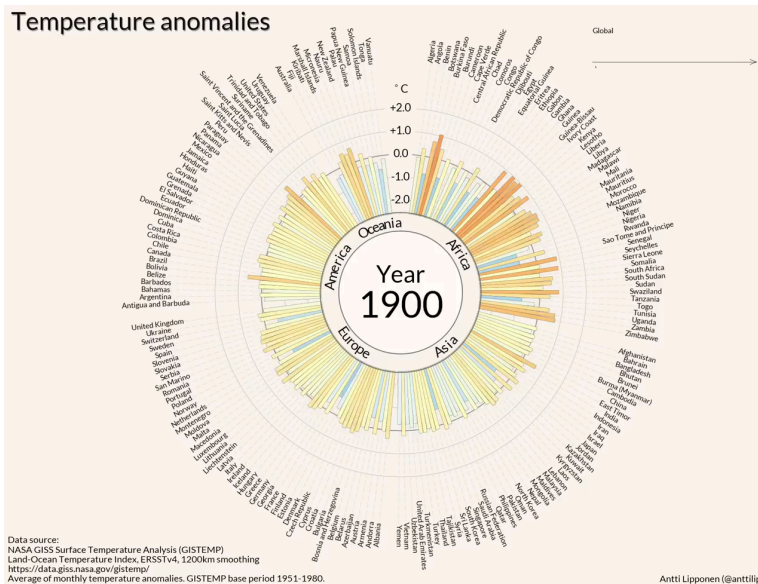
19 January 2018



Department of
Integrative Biology

UNIVERSITY OF WISCONSIN-MADISON

Optimal body mass, temperature, and energy budget



Bergmann's rule

Bergman's rule is an eco geographic principle that states that within a broadly distributed taxonomic clade, populations and species of larger size are found in colder environments and species of smaller size are found in warmer regions.



Tanjona Ramiadantsoa

University of Wisconsin-Madison

Ranomafana, Madagascar

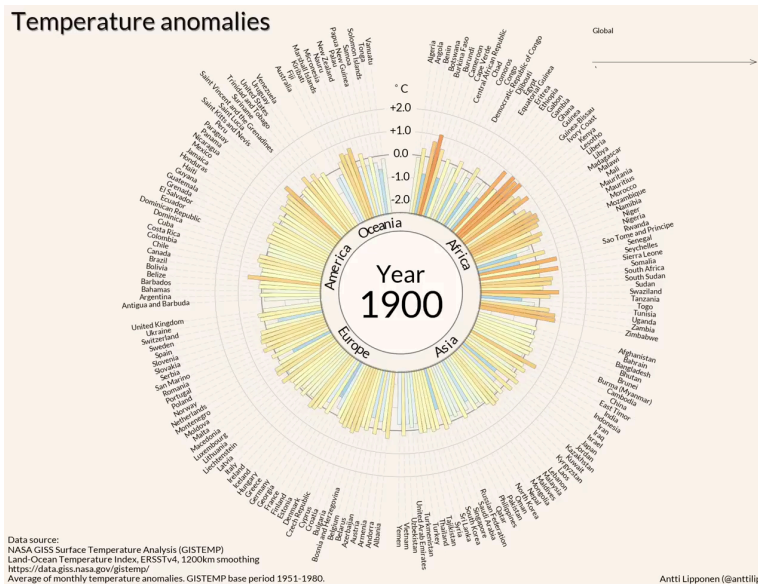
19 January 2018



Department of
Integrative Biology

UNIVERSITY OF WISCONSIN-MADISON

Optimal body mass, temperature, and energy budget



Bergmann's rule

Bergman's rule is an eco geographic principle that states that within a broadly distributed taxonomic clade, populations and species of larger size are found in colder environments and species of smaller size are found in warmer regions.



Q1: Why does net energy gain changes with body mass?

Q2: Does the body mass of dung beetles increase with decreasing temperature in Madagascar?

Tanjona Ramiadantsoa

University of Wisconsin-Madison

Ranomafana, Madagascar

19 January 2018

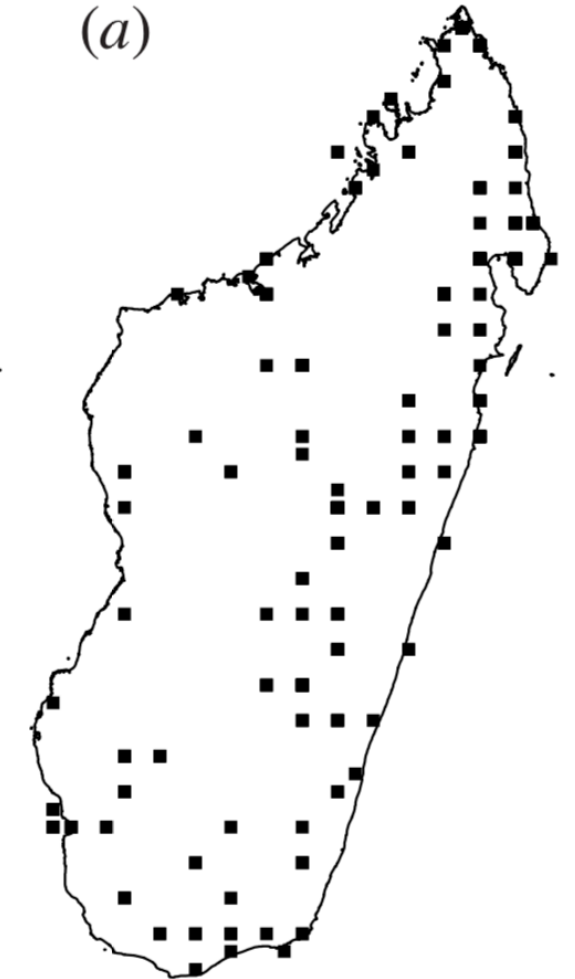


Department of
Integrative Biology

UNIVERSITY OF WISCONSIN-MADISON

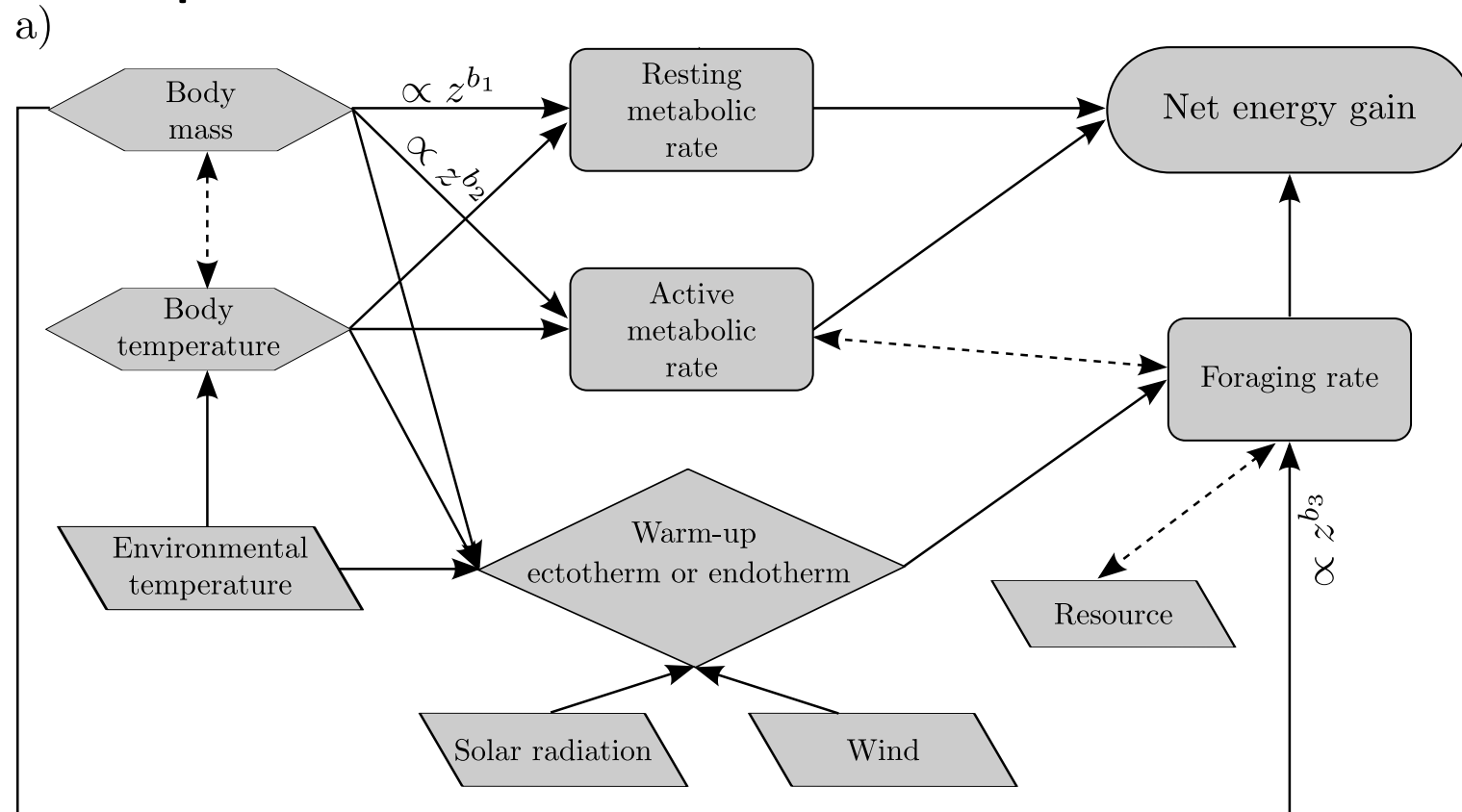
Does the body mass of dung beetles increase with decreasing temperature in Madagascar?

- Response: insect body mass
- Explanatory: mean annual temperature
model – `glmer(mass~temp + (1|site), family = normal)`
- Data collection:
 - Obtain body mass measurements from database in Helsinki and the Paris National Museum of Natural History
 - Extract raster climate data for WorldClim database (Hijmans et al., 2005)



Sampling locations: year 1875-2006

How does net energy gain changes with body mass, temperature, and resource availability



Future goal

- Develop a generalized thermal performance curve

