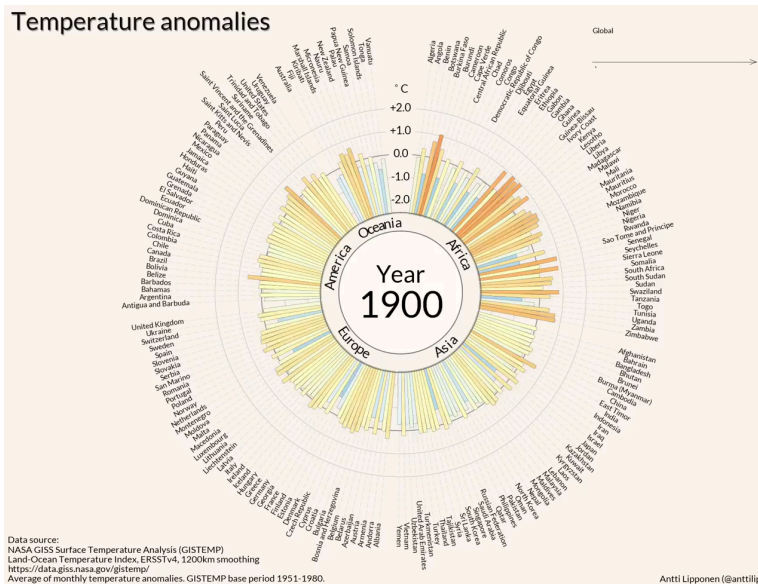


Optimal body mass, temperature, and energy budget



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Ranomafana, Madagascar

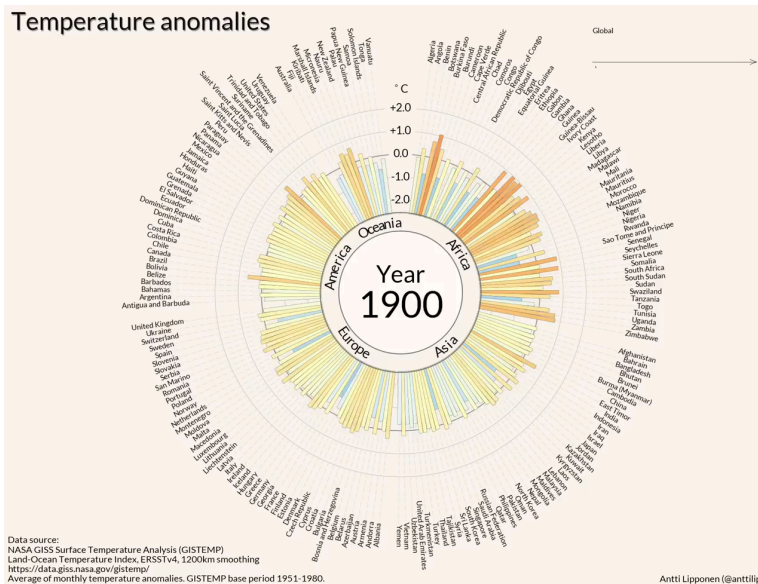
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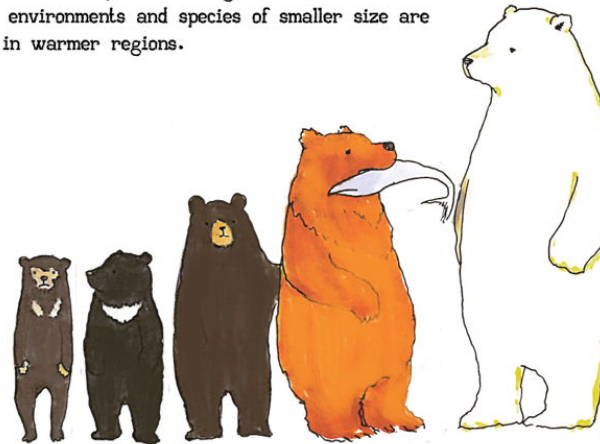
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Optimal body mass, temperature, and energy budget



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.



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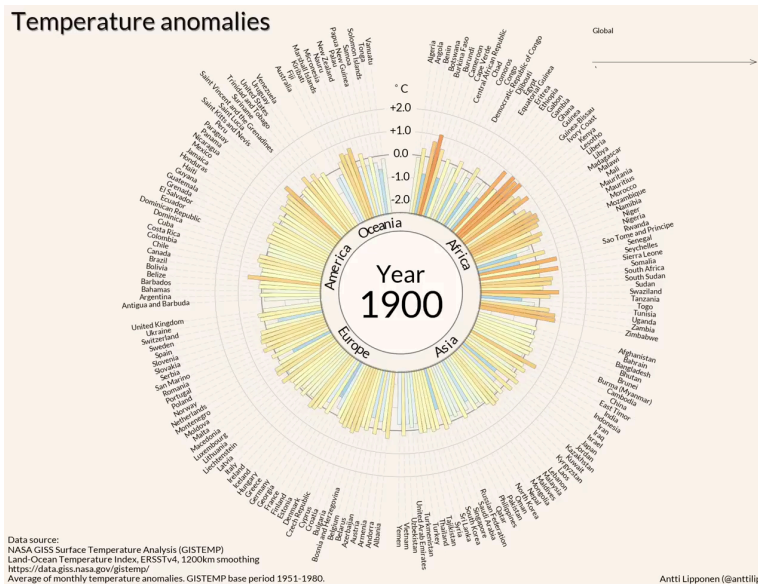
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Q1: Why does net energy gain changes with body mass?

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

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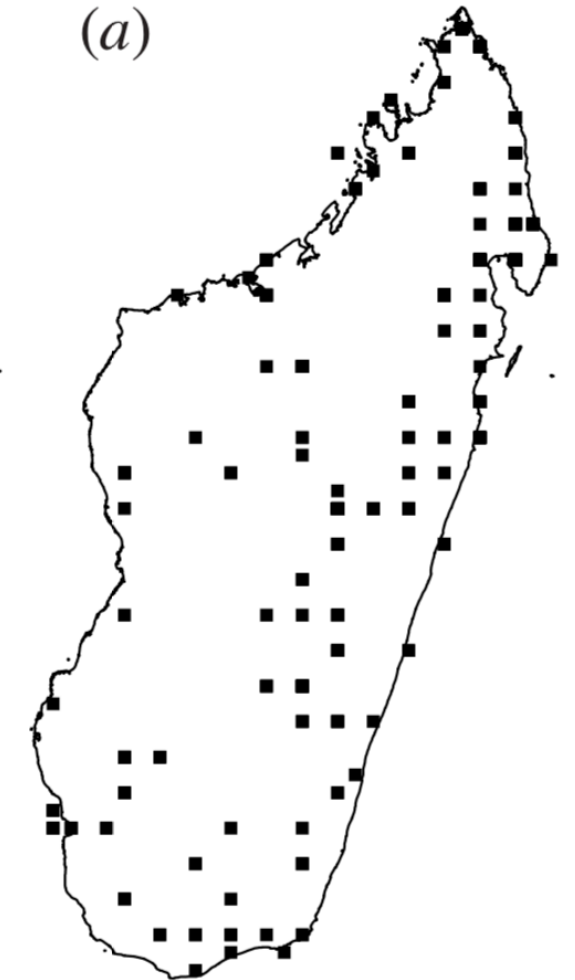


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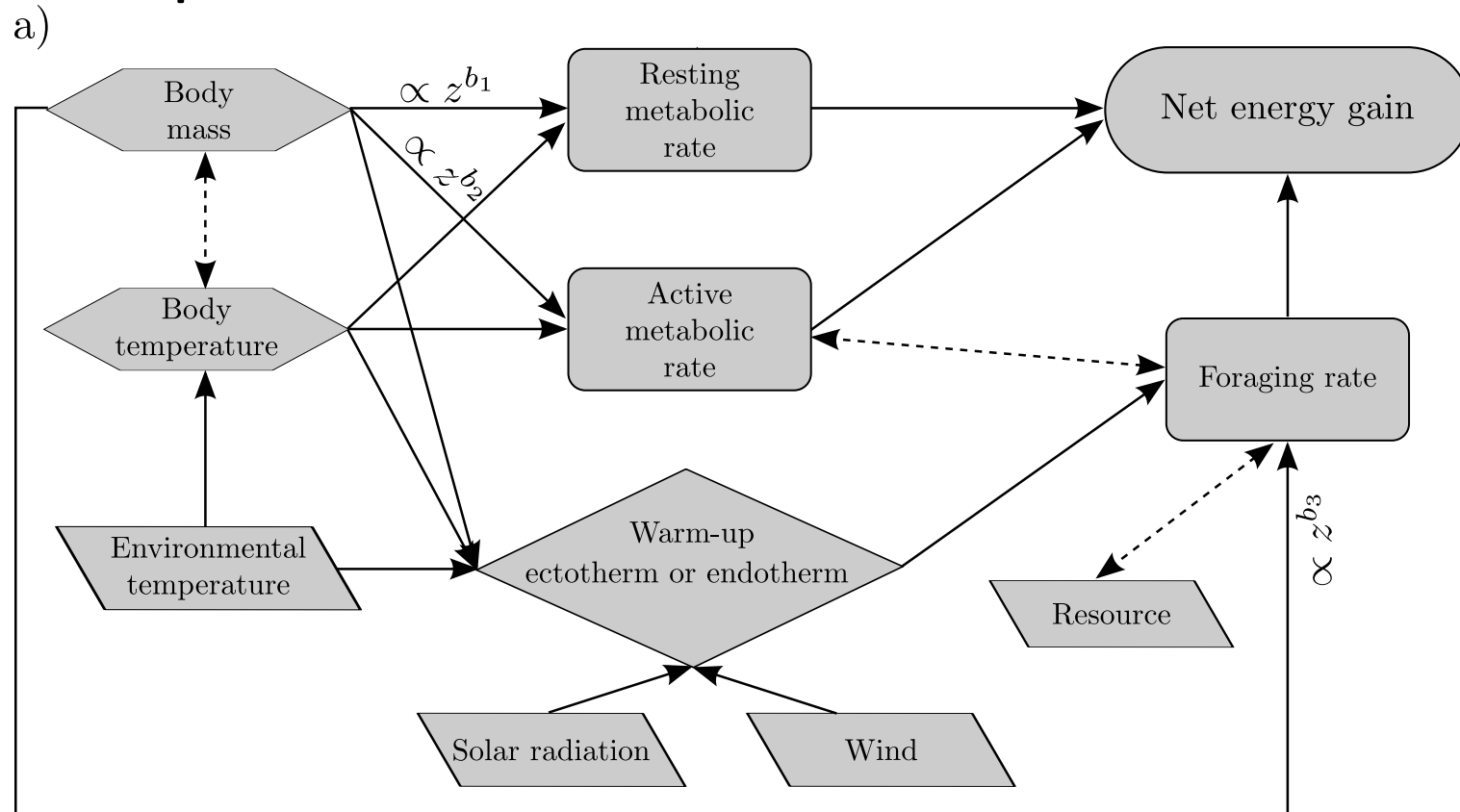
Does the body mass of dung beetles increase with decreasing temperature in Madagascar?

- 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

