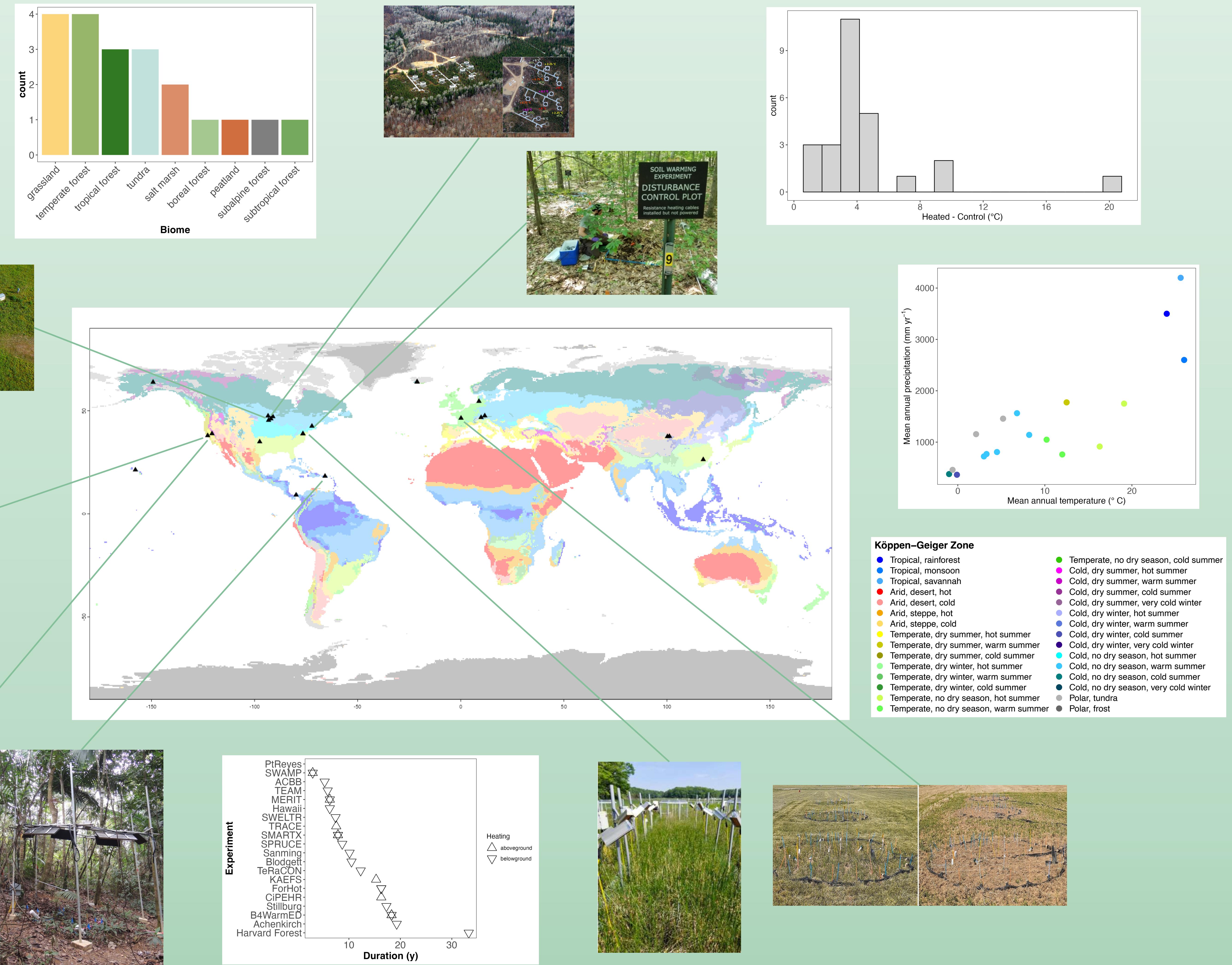


DeepSoil2100 and SWEDDIE:

Synthesizing Warming Experiments to Depth—Data Integration Effort

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What and why

DeepSoil2100

What? Network of whole-ecosystem warming experiments with documented warming extending below topsoil (> 30 cm)

Why? Leverage experimentalist & modeler knowledge across sites; deploy coordinated sampling campaigns

SWEDDIE

What? Harmonized database built with FAIR principles and a flexible architecture to encompass a dynamic and broad range of data

Why? Synthesize current empirical knowledge of ecosystem warming responses for comparison across site gradients and improved model benchmarking

Database Pipeline:

1. Enter core data

2. Annotate raw measurement data

3. QA/QC

4. Query database and compile custom report

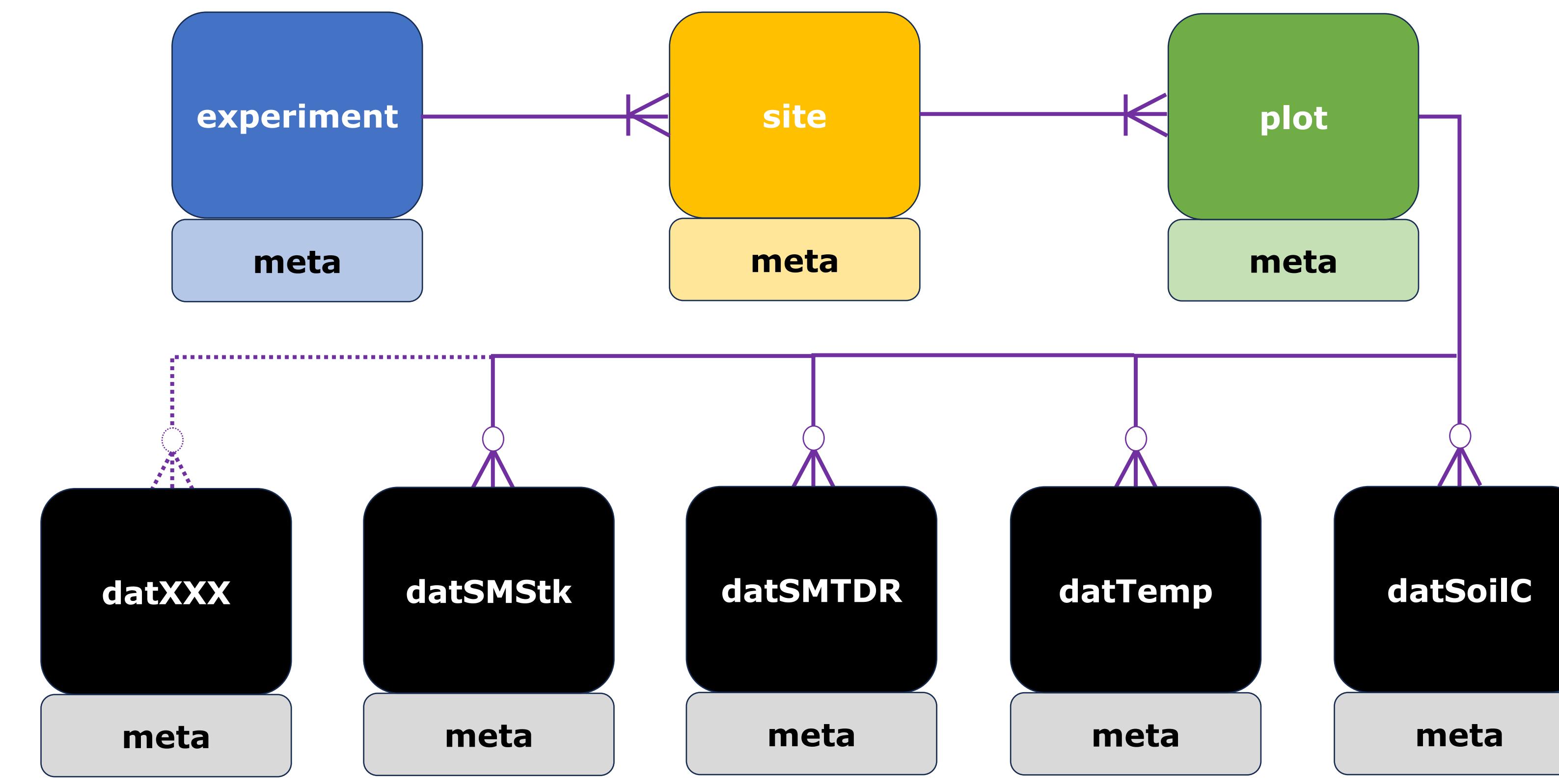
Hybrid Data Ingestion

Colored boxes represent **core data**—template-based

Black boxes represent **measurement data**—keyed translation

- ‘dat’ files can be any kind of data, e.g., sensor based time series, soil core measurements, flux chamber measurements, microbial community characterizations, etc.

Data Model

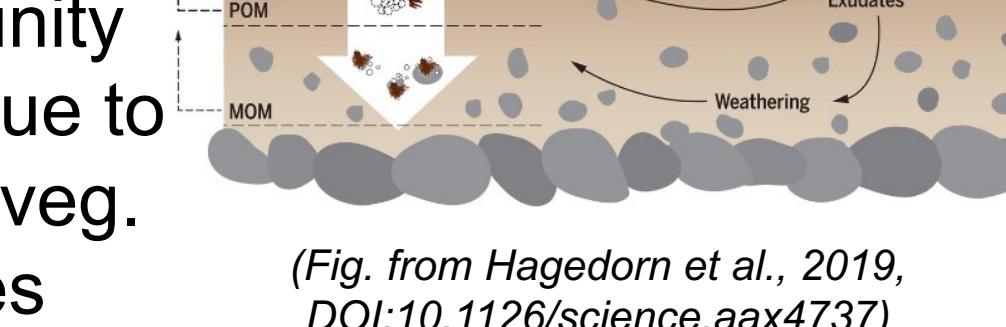


Next Steps

- annotating temperature and moisture data
- database launch manuscript and site/infrastructure comparison
- coordinated sampling campaign

3) How does warming affect coupling of above and belowground processes?

- Vegetation response rate v. soil
- Microbial community shifts due to nutr. & veg. changes



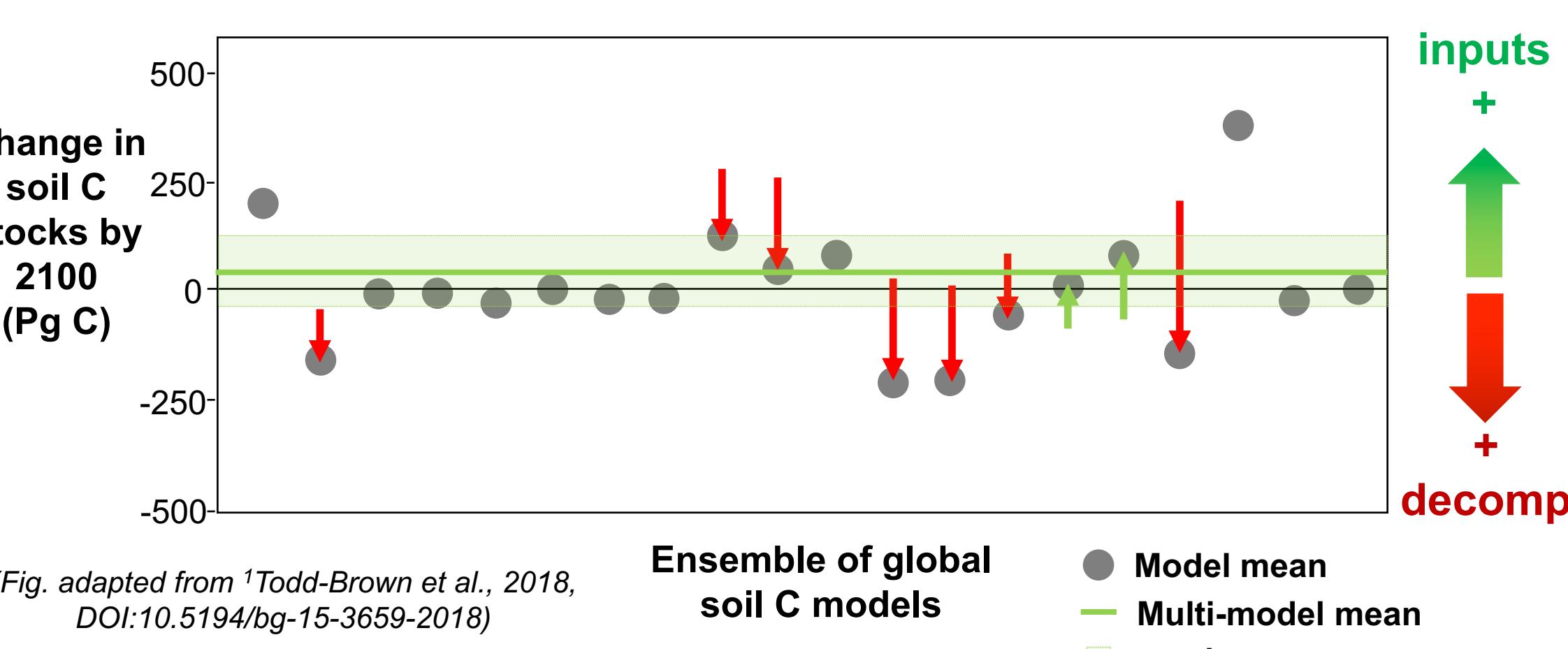
Acknowledgments

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Key Synthesis Questions

1) How will soil C stocks respond to warming?

- Q10s derived from soil warming experiments indicate potential losses by 2100¹



2) How do soil C warming responses change with depth?

- ~75% of soil C < 20 cm
- mechanisms of soil C persistence and abundance diverge with depth²

