

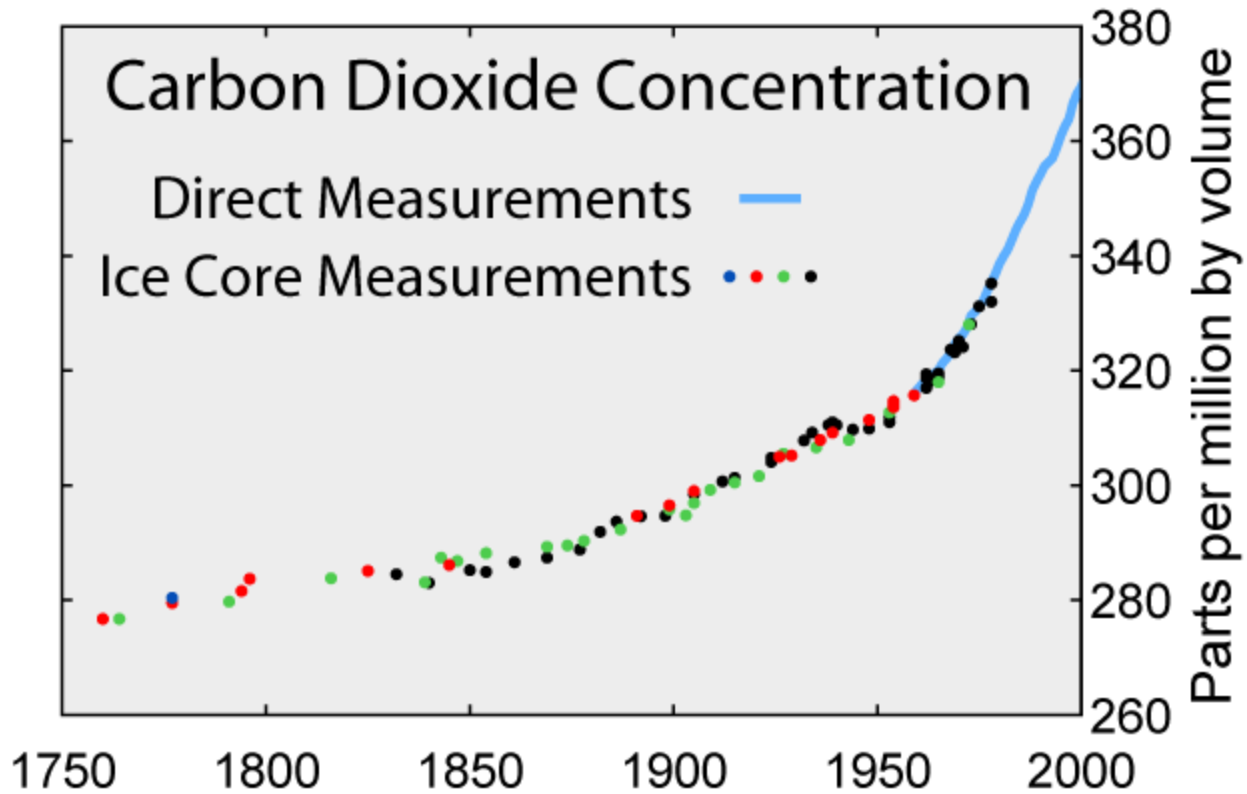
Global Warming and Rhizosphere Microbial Community



Because microbes embody the vast diversity of life they are major drivers of Earth's biogeochemical cycles.



The global climate is predicted to change drastically over the next century and its impact on rhizosphere community is not known !

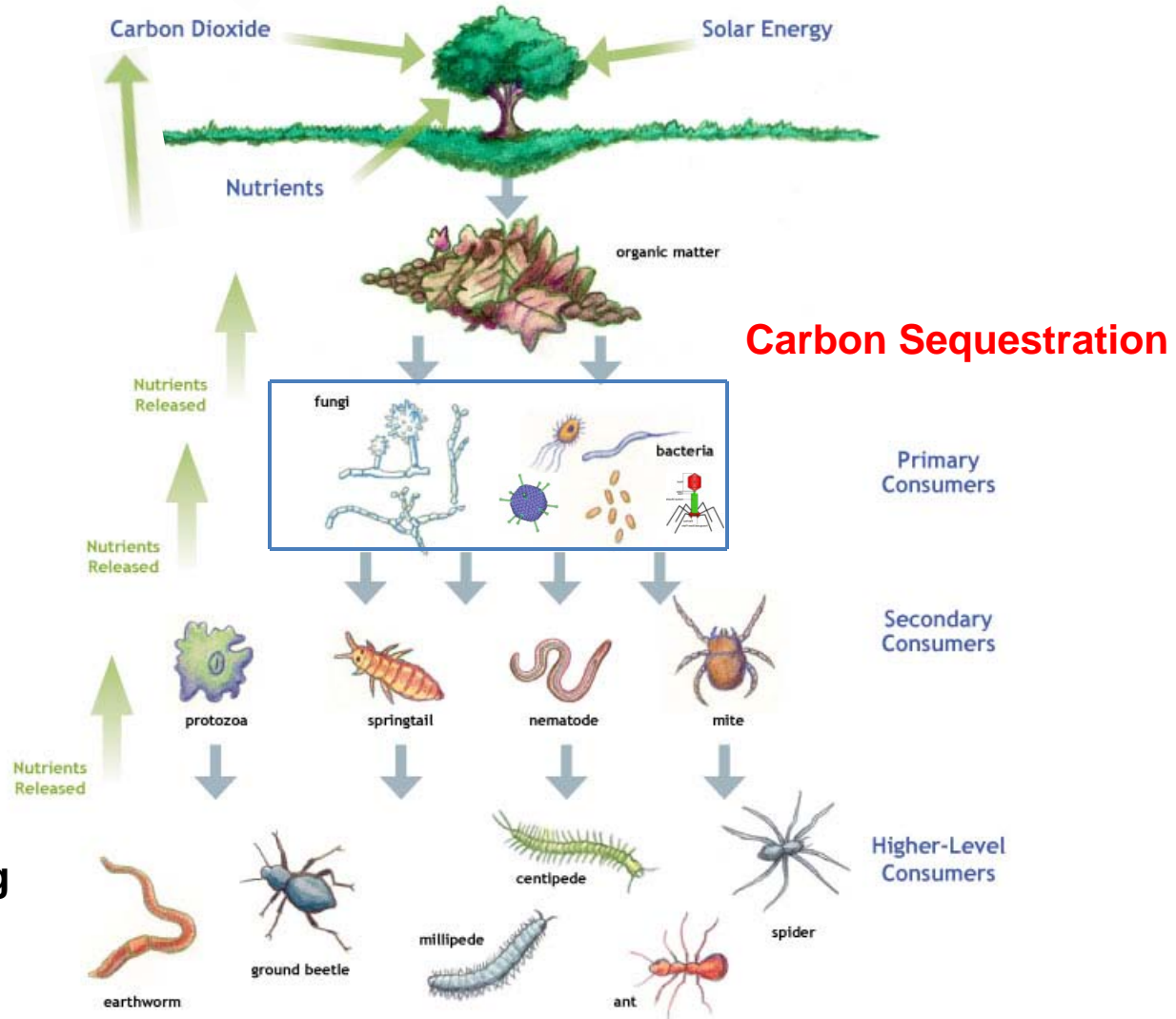


This graph shows global average atmospheric concentrations of carbon dioxide from 1750 to 2000. The light blue line indicates actual direct atmospheric measurements. The colored dots indicate data gathered from ice cores; each color represents a different ice core sampling site.

Credit: Robert A. Rohde and the [Global Warming Art](#) project



Global Warming



Rhizosphere microbial community profoundly Influences:

- Nutrient cycling
- Biomass productivity
- Carbon sequestration

Greater understanding of the role of rhizosphere microbial community and its relationship to global warming is key for future food and energy security

landscapeforlife.org/soil/3b.php

Rhizosphere Microbial and Macrofaunal Community



Rhizosphere Community Study -Omics Approach.

- The impact of elevated CO₂ and other climatic parameters on rhizosphere community can be studied in controlled environments (lab and field) using genomic and other “omics” approaches



Omics Technologies

1

Genomics : Who is there?

Metagenomics: What they can do?

2

Transcriptomics: When & where they have done?

3

Proteomics: How they can do?

4

Metabolomics: What they have done

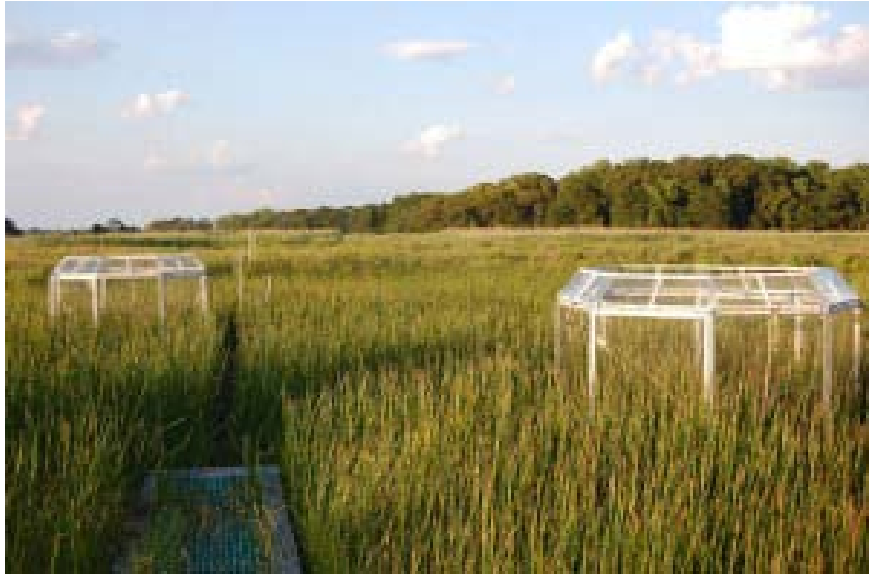
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Phenomics: What happened





LTFR experiment to study how plants will respond to climate change.



Research pods or chambers to study the impact of CO₂ on rhizosphere community



Effect of Global Warming on Rhizosphere Community:

Relevant to Oklahoma and has Global importance

Canaan Patricia, OSU
Bioinformatics

Babu Fathepure, OSU:
Microbial diversity

Jizhong Zhou, OU
Community genomics

Carmen Greenwood, OSU
Invertebrate community



**Global Warming and
Rhizosphere
Microbial Community**

Lee Krumholz, OU
Microbial diversity

Elshahed Mostafa, OSU
Microbial diversity

Ramamurty Mahalingam
Functional genomics

Sunkar Ramanjulu, OSU
microRNA

Michael Anderson, OSU
Plant productivity

Rakesh Kaundal, OSU
Bioinformatics