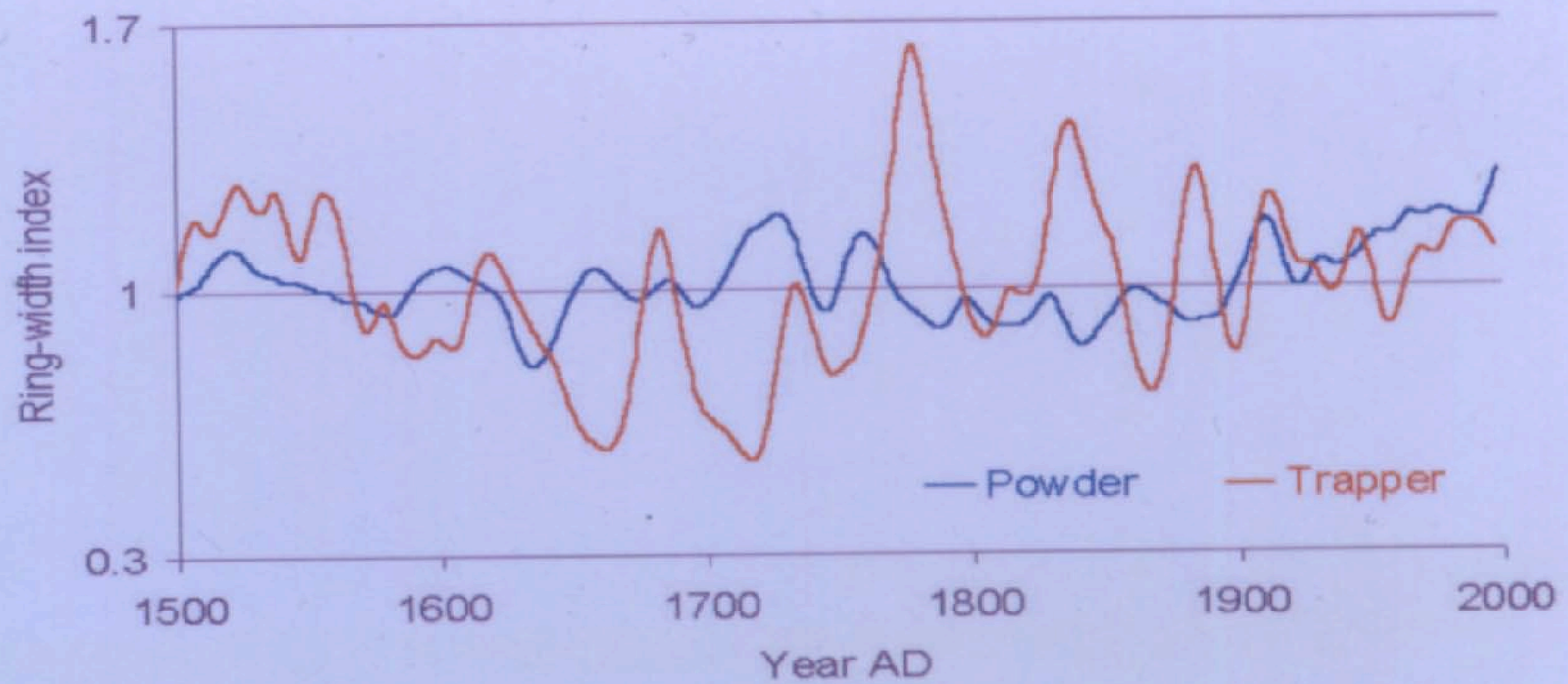
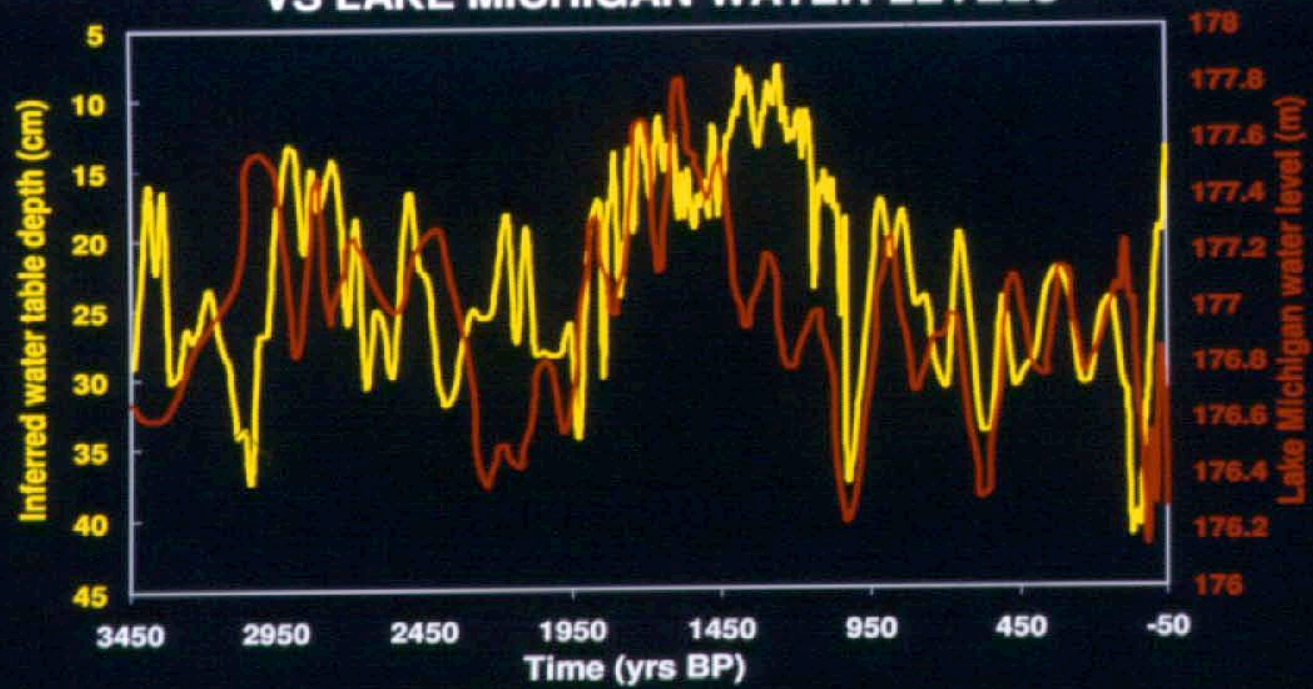


FIGURE 1.1.1. Temperature profiles at different depths in the ocean. The top plot shows the temperature profile at a depth of 10<sup>3</sup> m, and the bottom plot shows the temperature profile at a depth of 10<sup>6</sup> m. The x-axis represents time in units of 10<sup>4</sup> years ago, and the y-axis represents temperature in degrees Celsius. The plots show that the temperature profile at a depth of 10<sup>3</sup> m is highly variable, while the temperature profile at a depth of 10<sup>6</sup> m is much smoother.

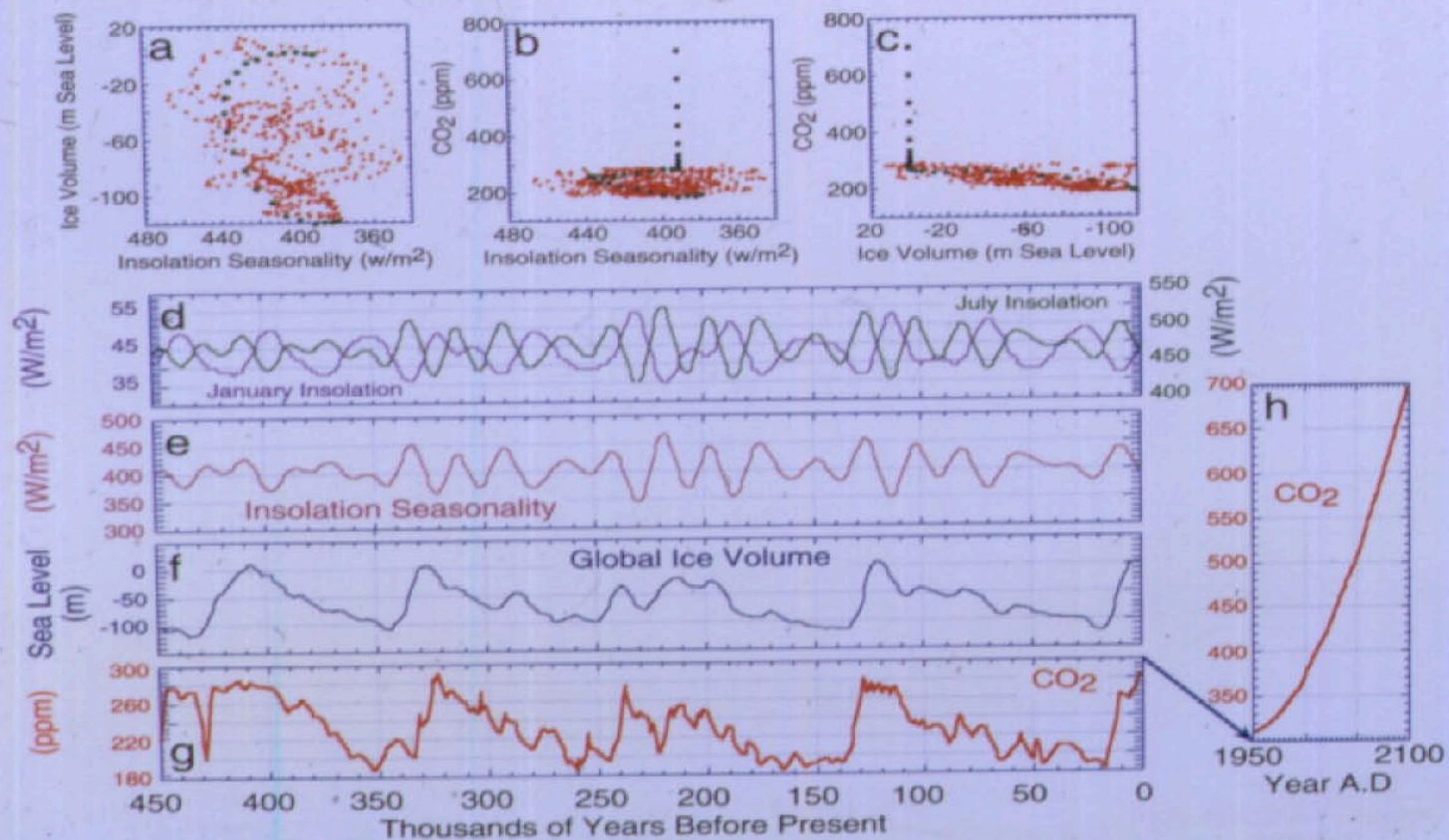
Upper (Powder) and lower (Trapper) treeline chronologies  
25 year cubic splines

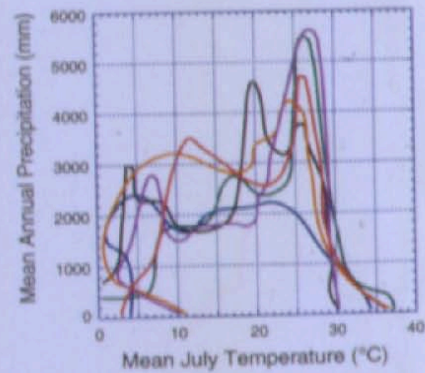
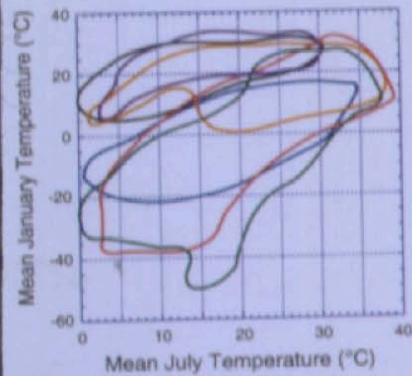
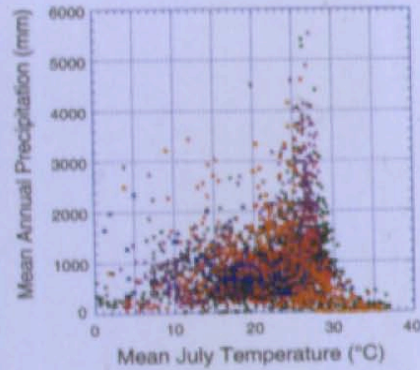
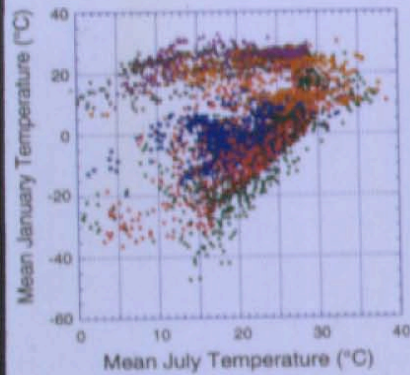


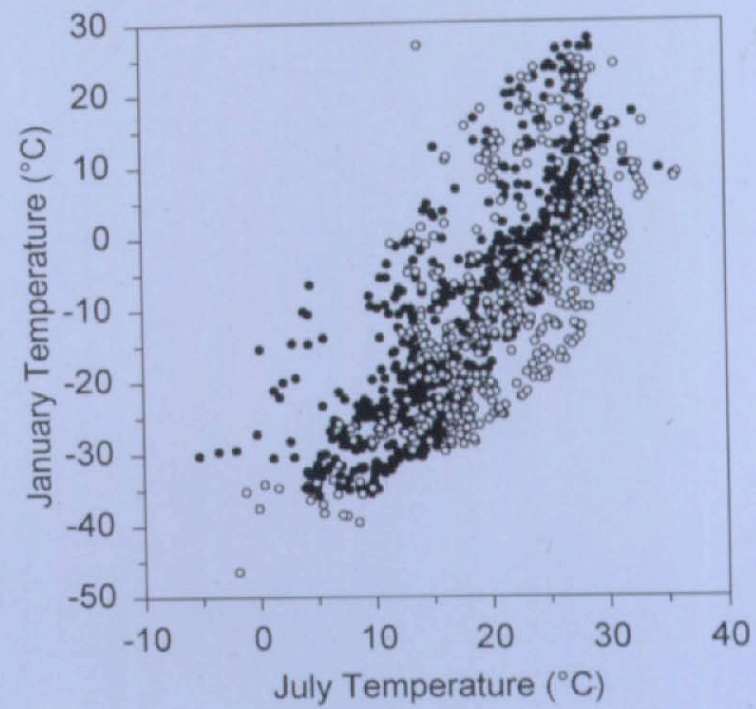
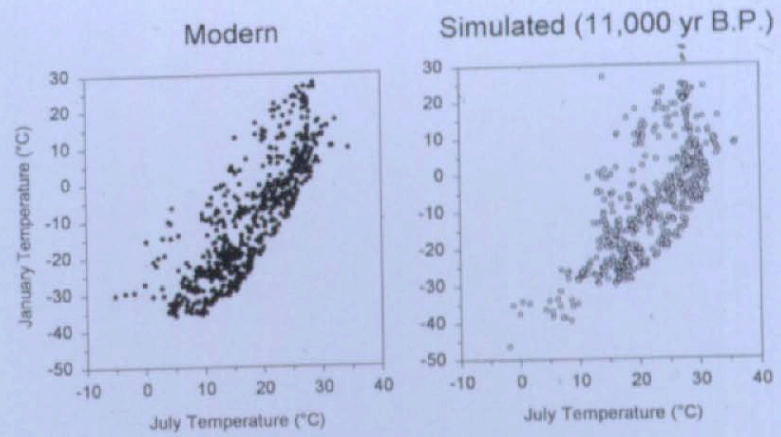
# MINDEN BOG TESTATE AMOEBA-INFERRED PALEOHYDROLOGY VS LAKE MICHIGAN WATER-LEVELS



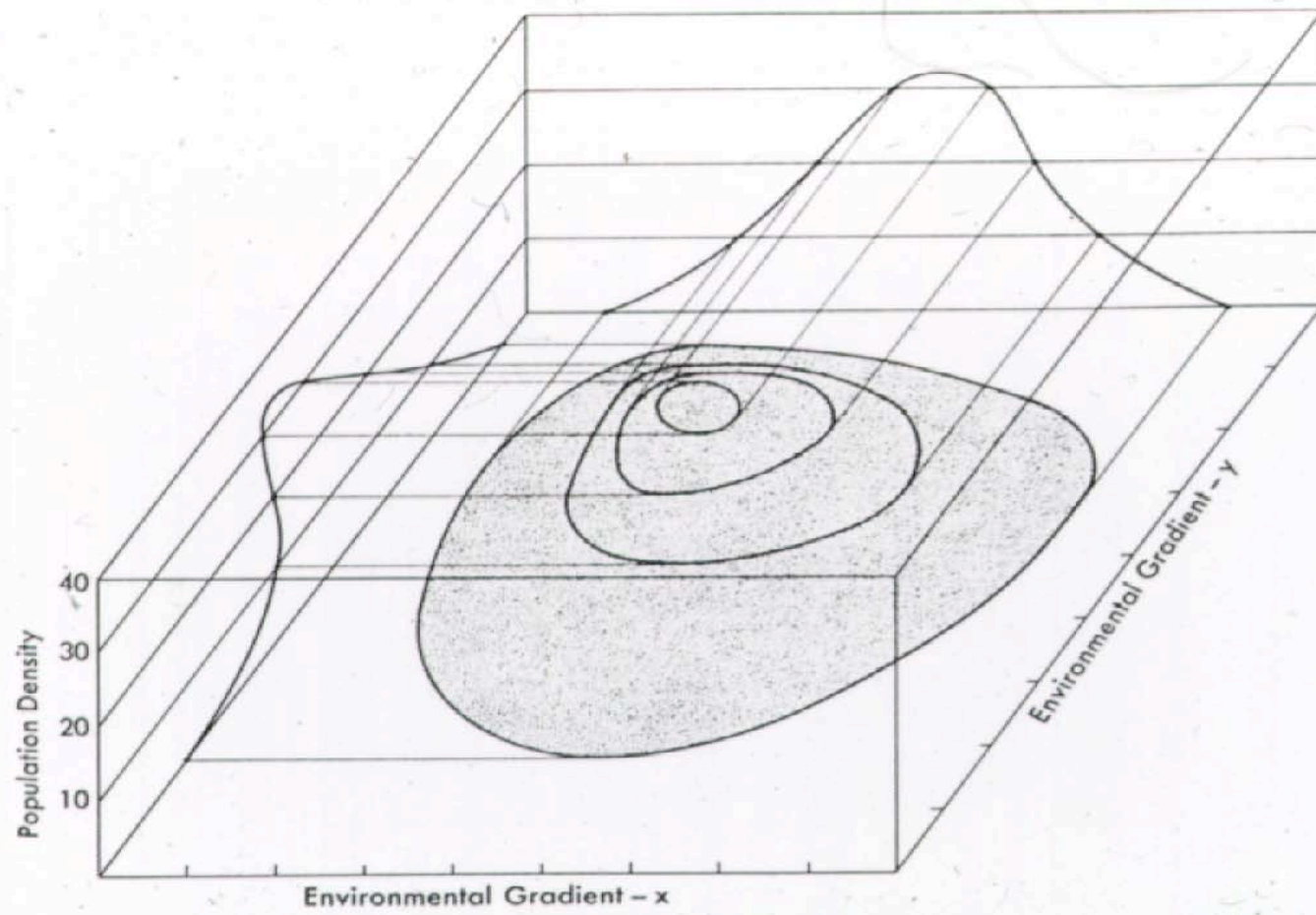




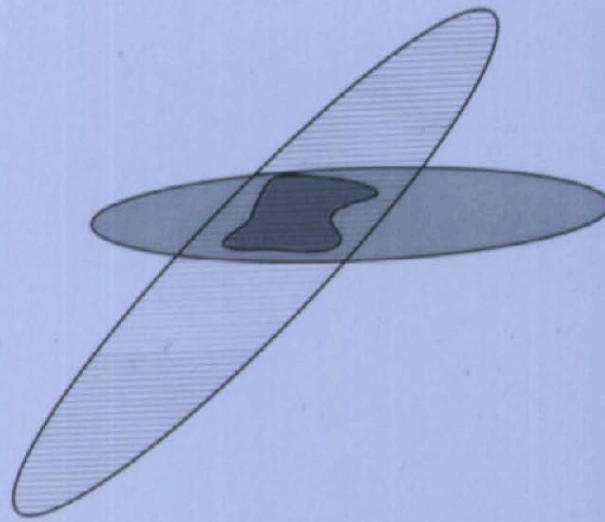








Environmental Variable 2



Environmental Variable 1



Realized  
Environmental Space



Fundamental  
Niche Space

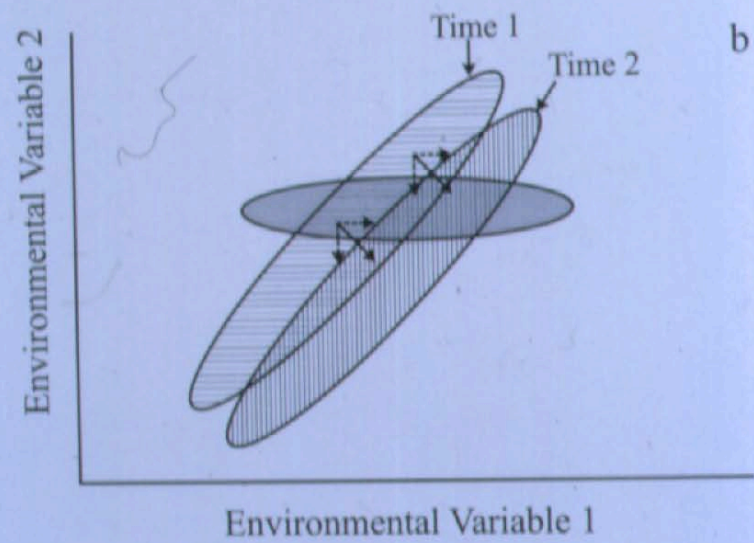
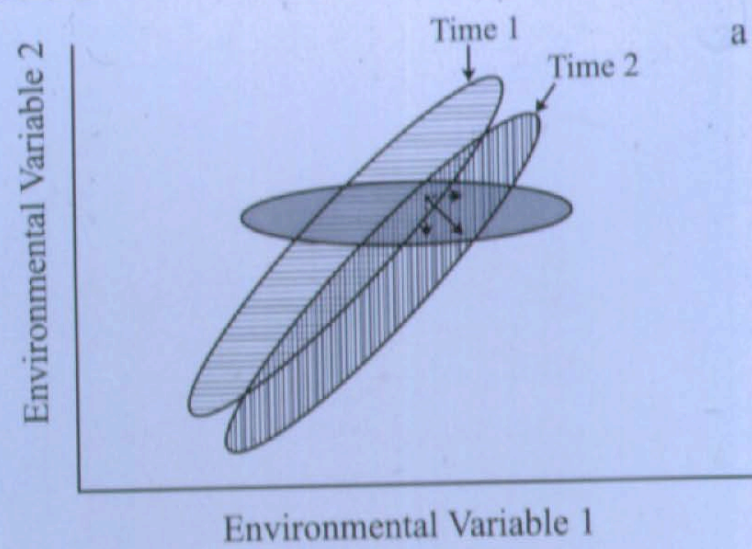


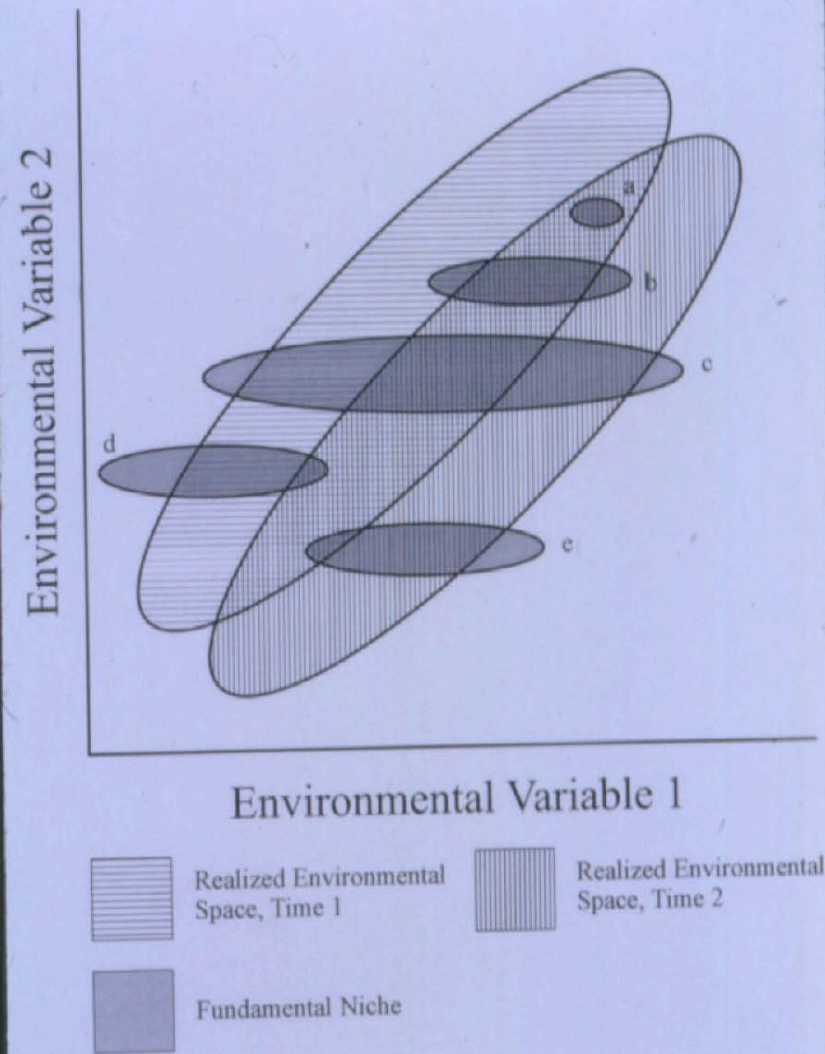
Potential  
Niche Space



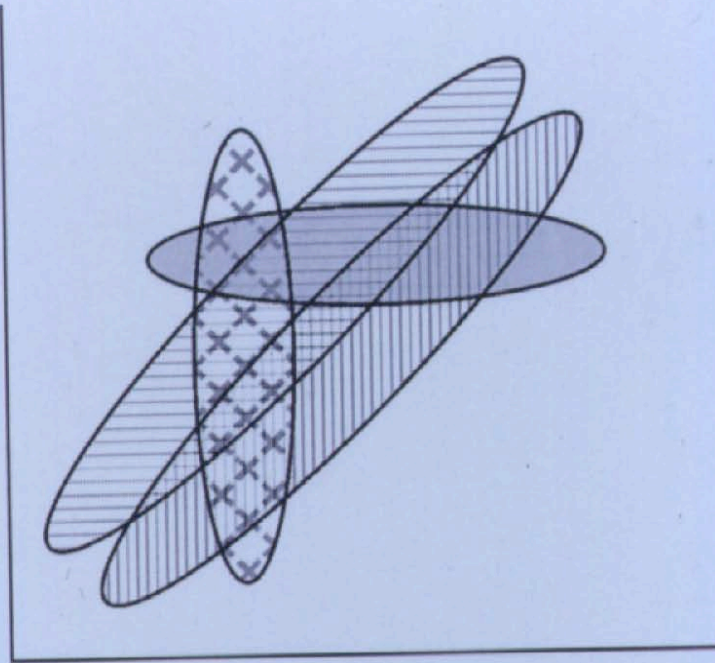
Realized Niche







Environmental Variable 2



Environmental Variable 1



Realized Environmental Space, Time 1



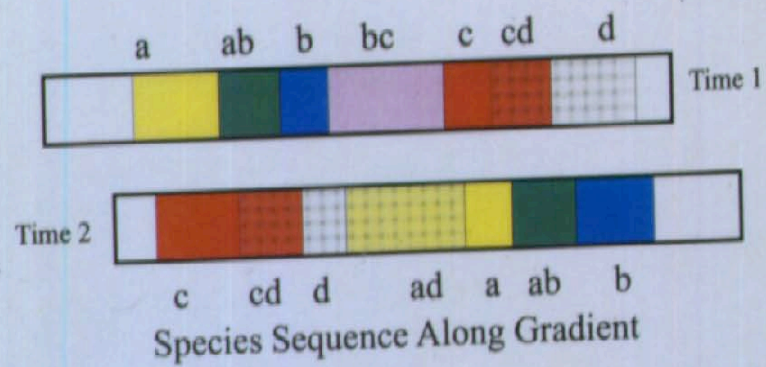
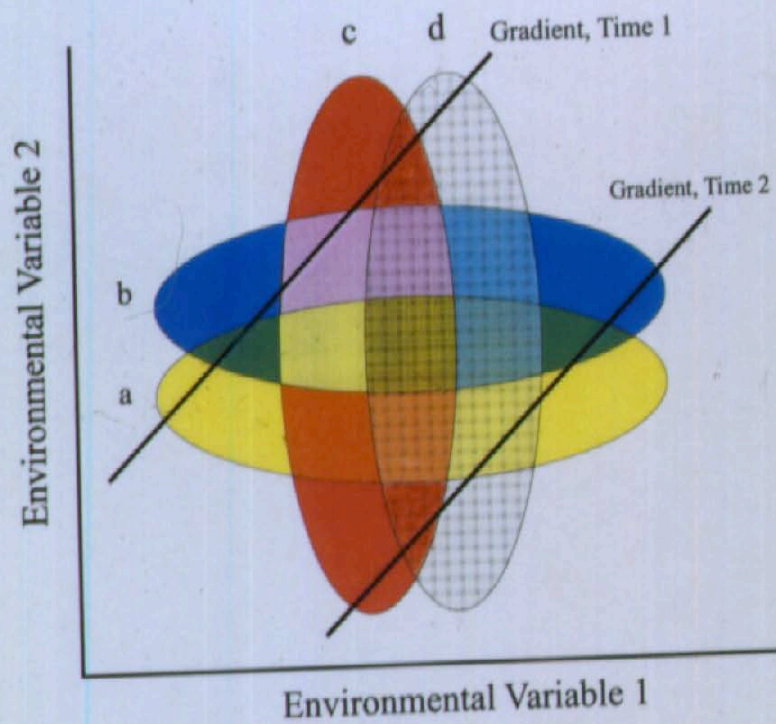
Realized Environmental Space, Time 2



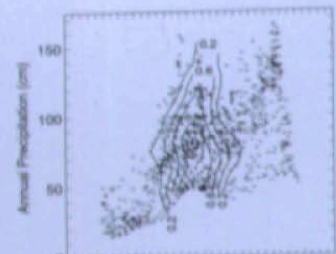
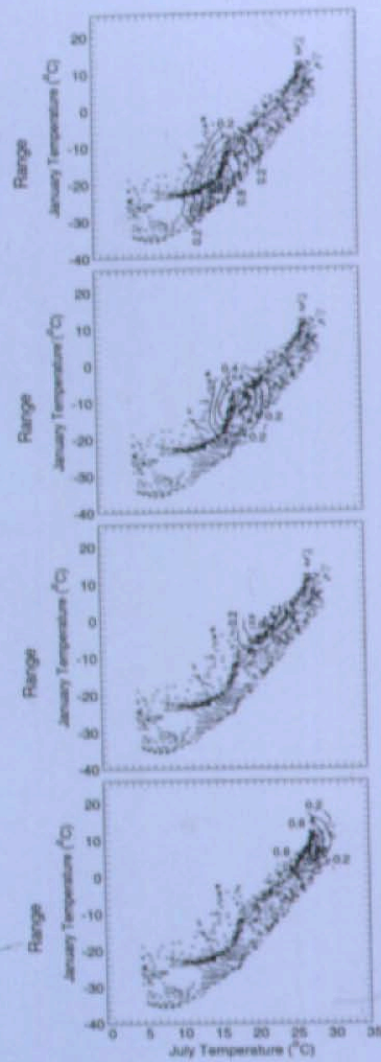
Fundamental Niche, Species 1



Fundamental Niche, Species 2

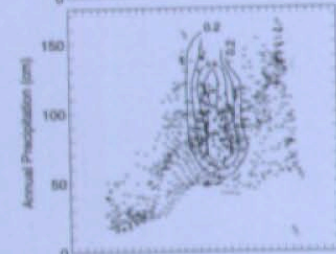






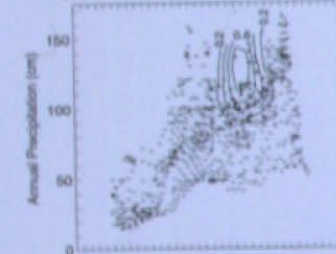
*Pinus banksiana*

- absent  
• present



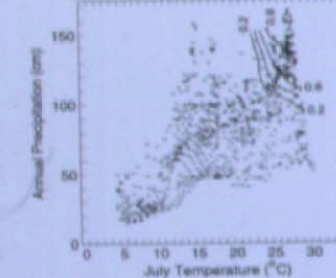
*Pinus resinosa*

- absent  
• present



*Pinus rigida*

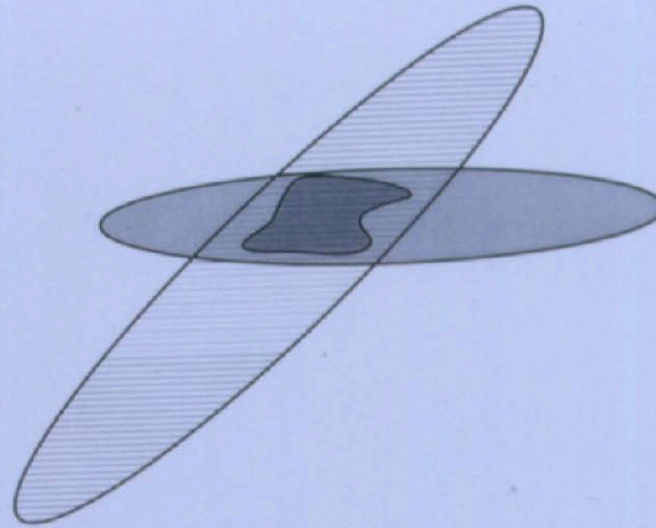
- absent  
• present



*Pinus taeda*

- absent  
• present

Environmental Variable 2



Environmental Variable 1



Realized  
Environmental Space



Fundamental  
Niche Space



Potential  
Niche Space



Realized Niche





















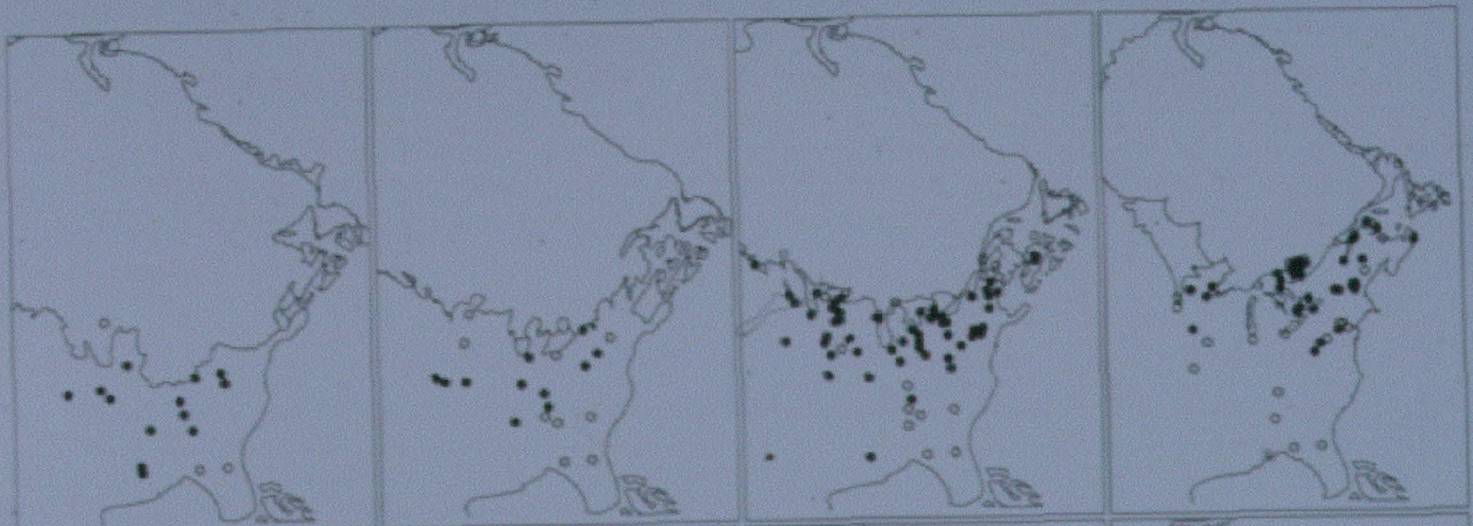




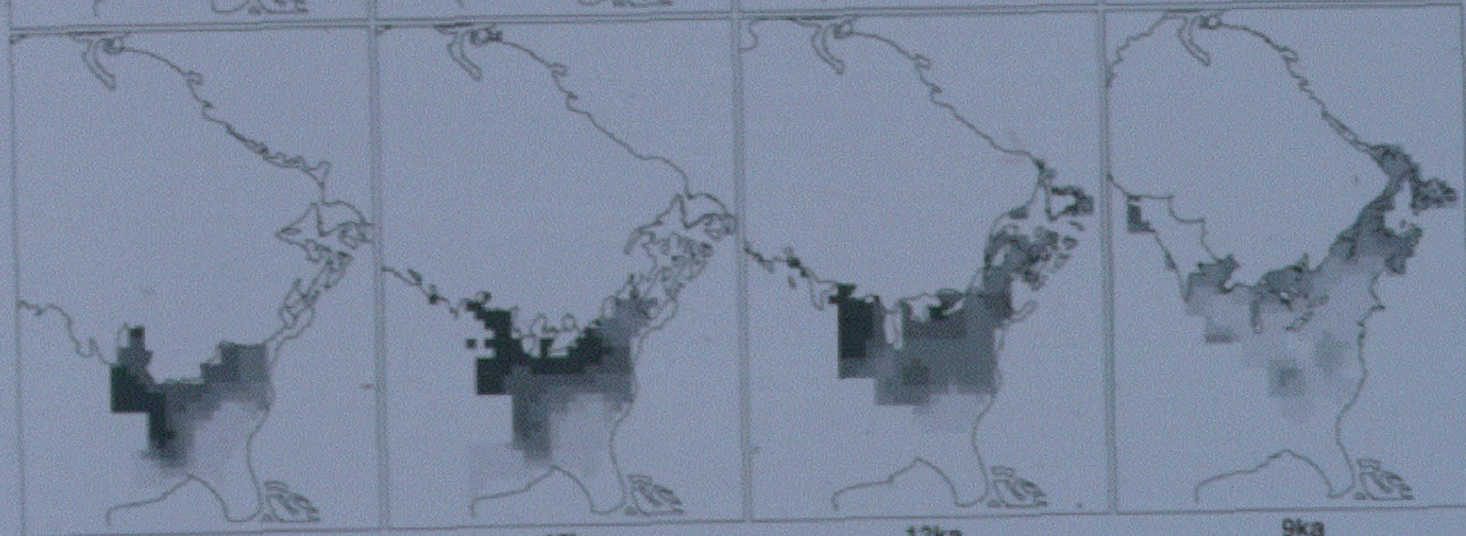


*Picea*

Macrofossil



Pollen



16ka

15ka

12ka

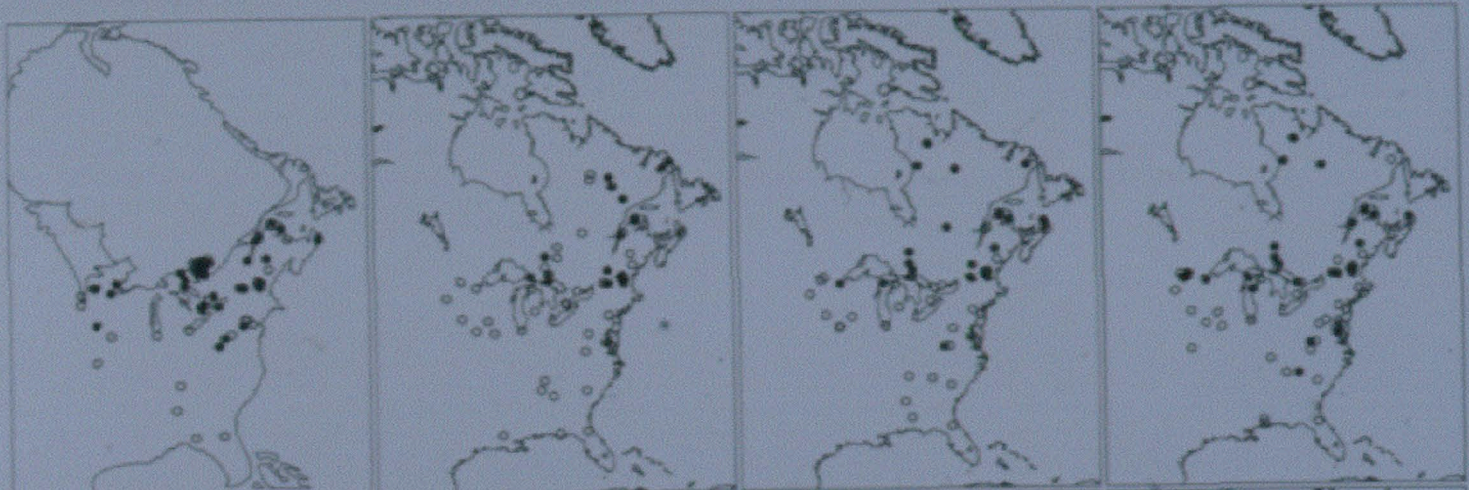
9ka



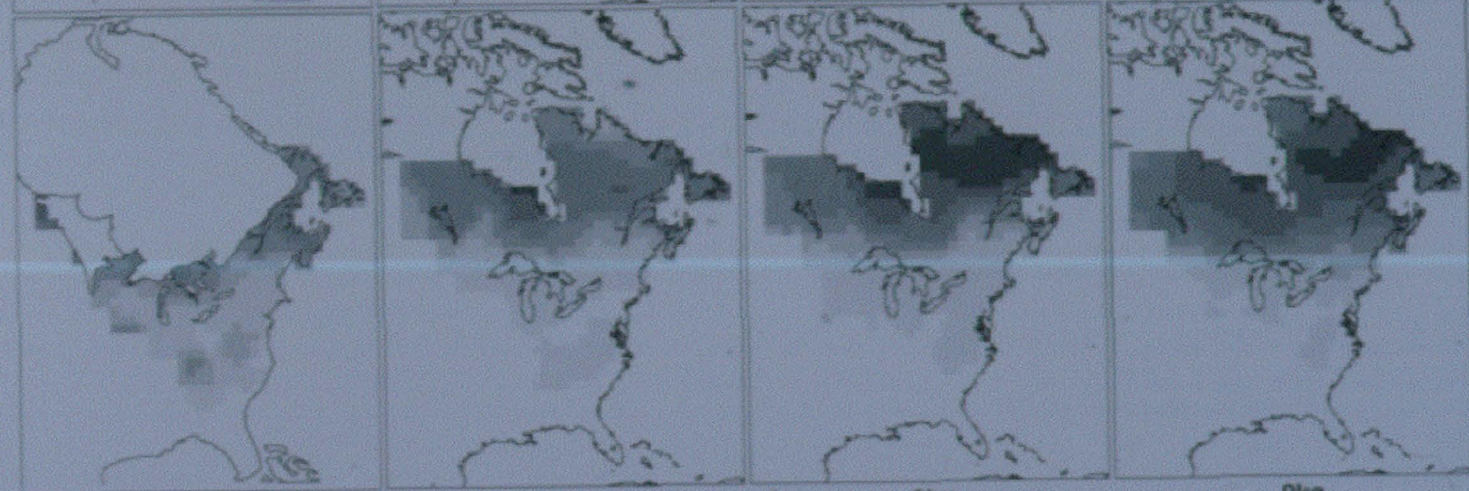


*Picea*

Macrofossil



Pollen



9ka

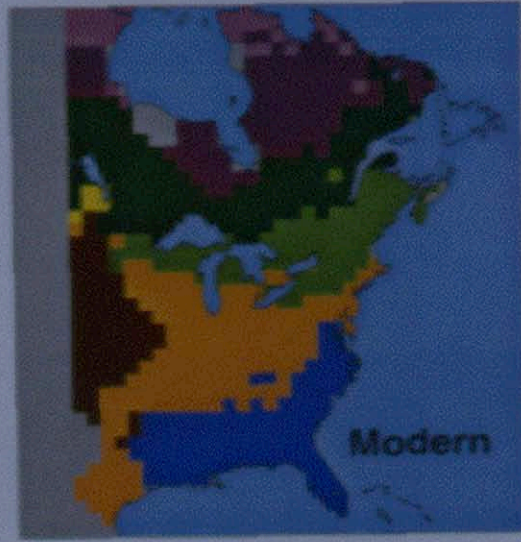
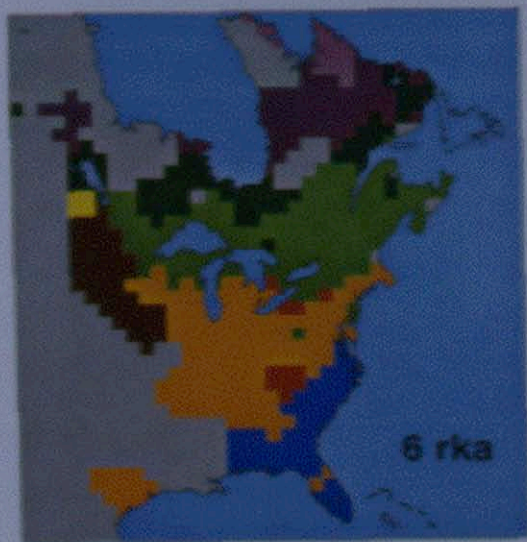
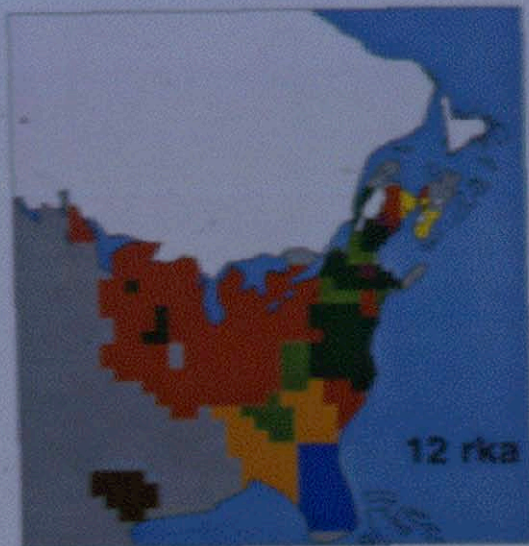
6ka

3ka

0ka

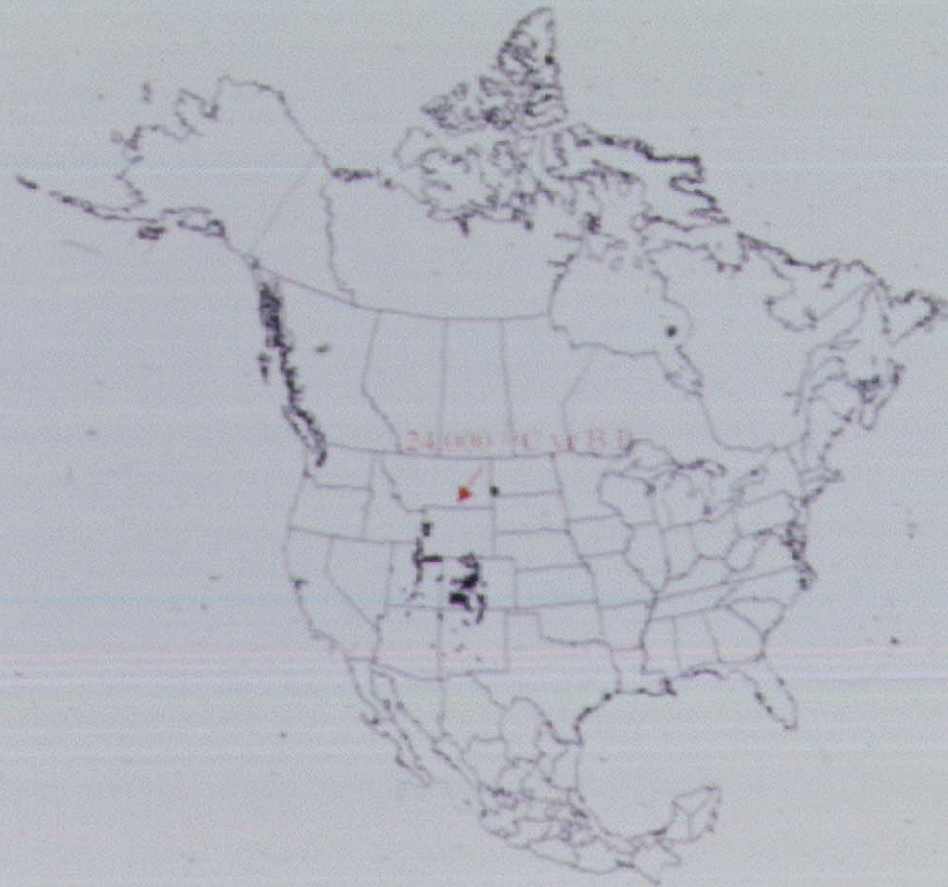






- Ice
- Tundra
- Forest Tundra
- Boreal Forest
- Mixed Forest
- Deciduous Forest
- Aspen Parkland
- Prairie
- Southeast Forest
- No Analog
- No Data





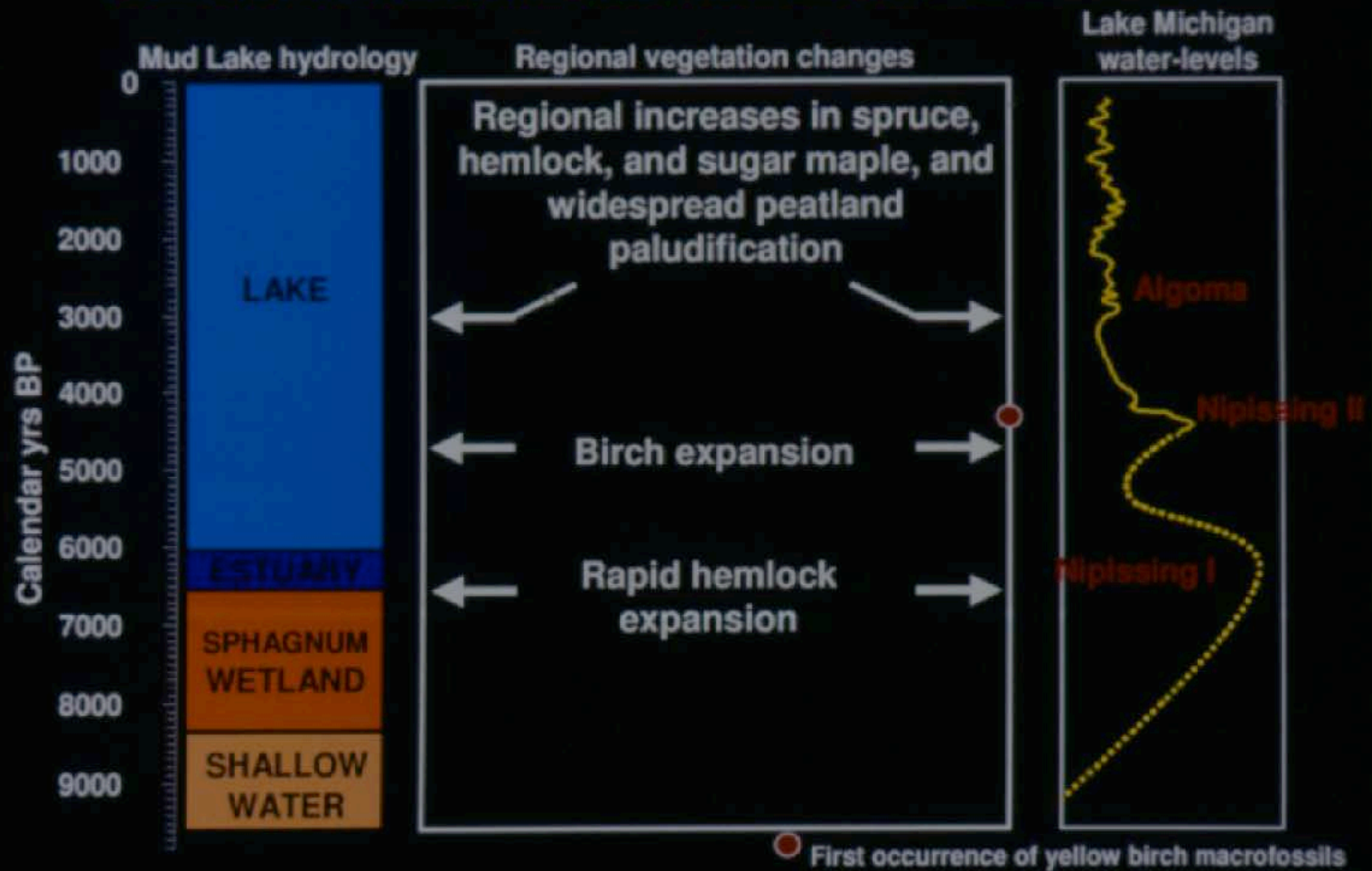
*Picea pungens*





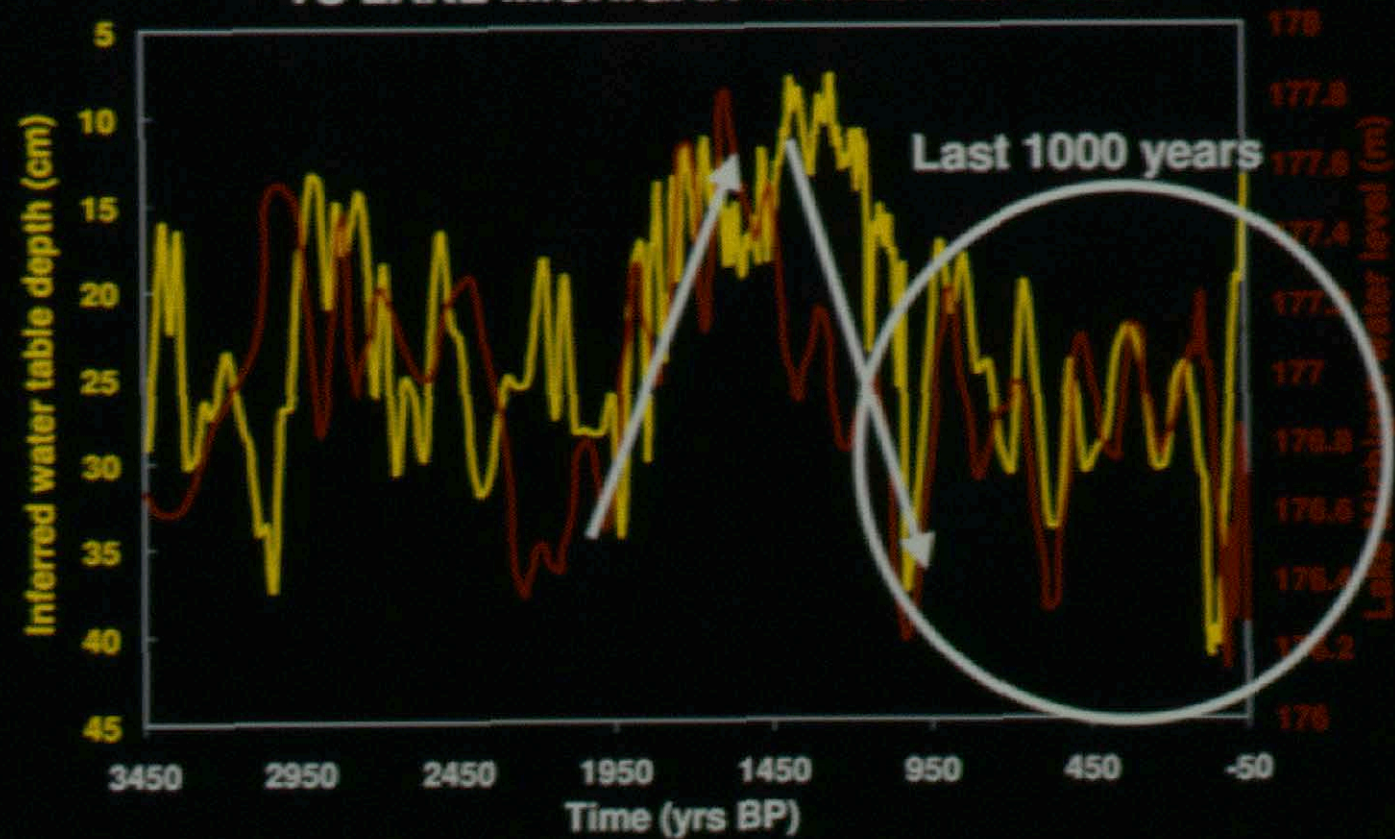


## COMPARISON OF REGIONAL VEGETATION HISTORY AND WATER-LEVELS





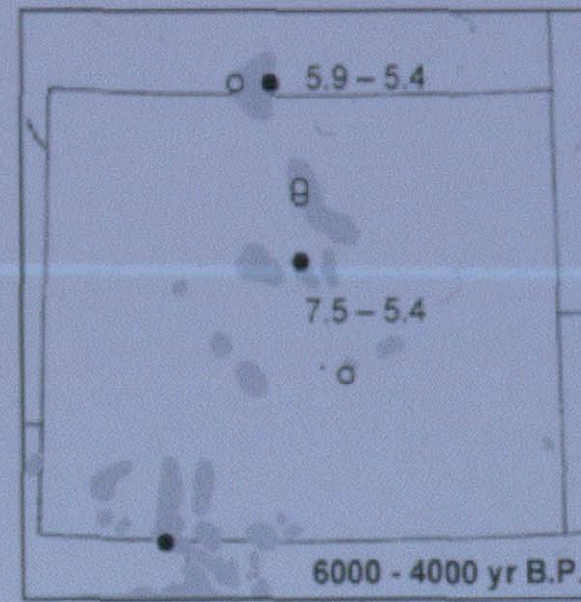
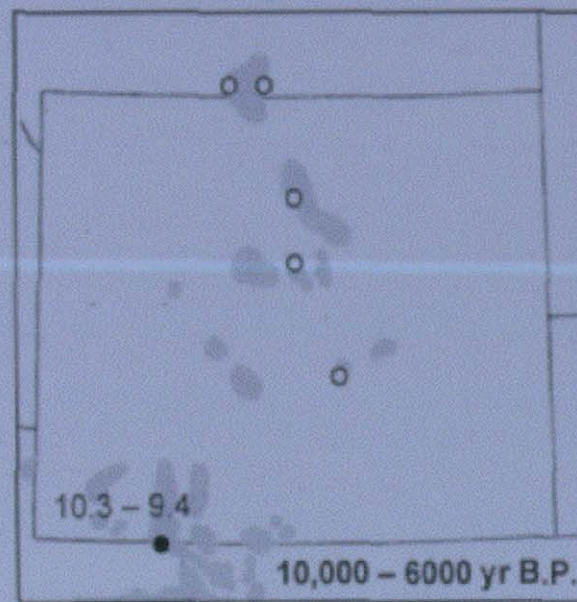
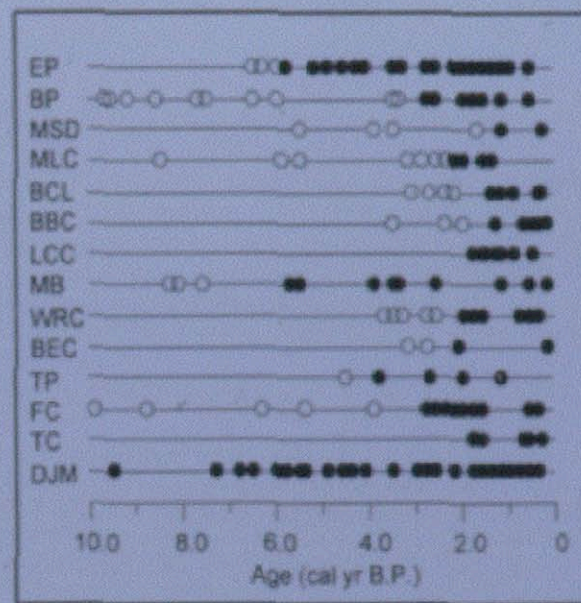
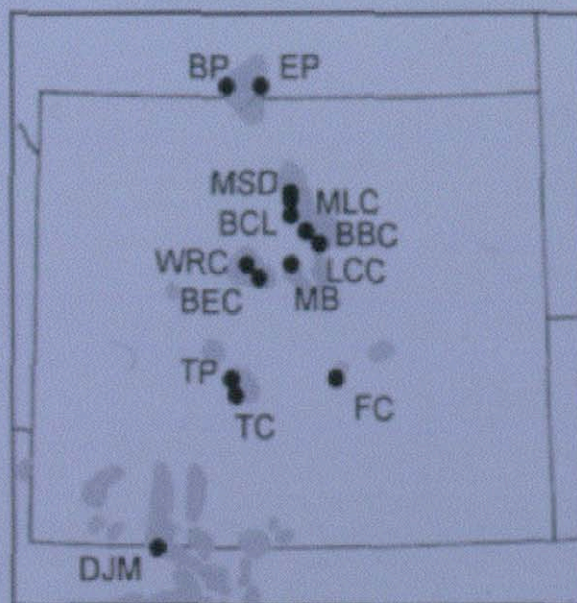
# MINDEN BOG TESTATE AMOEBA-INFERRED PALEOHYDROLOGY VS LAKE MICHIGAN WATER-LEVELS



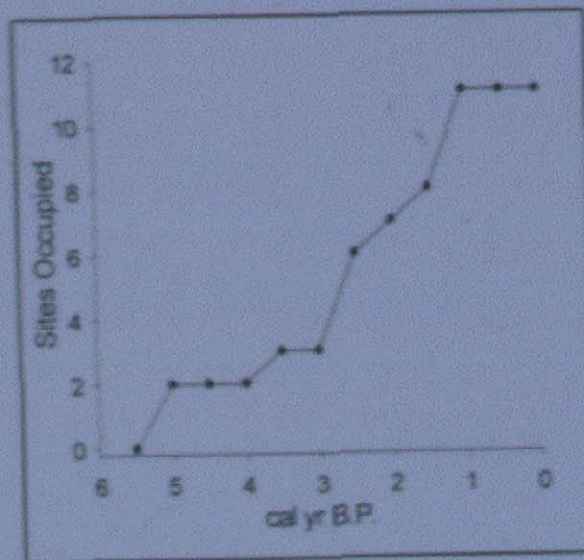
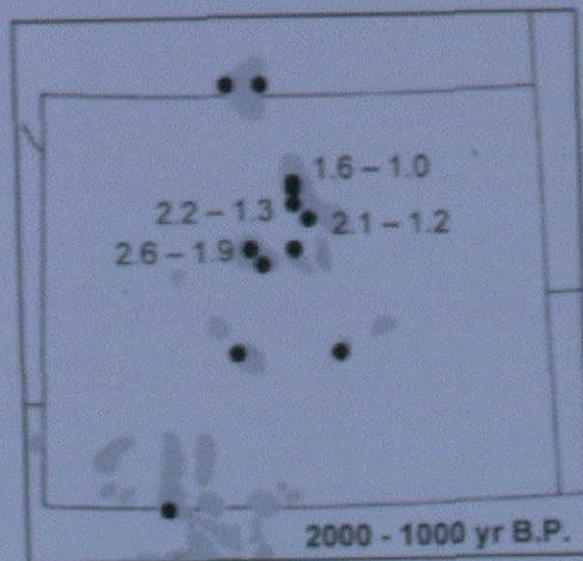
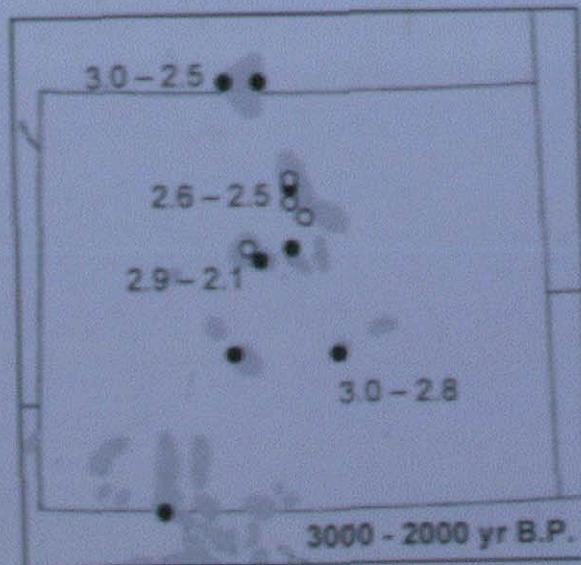
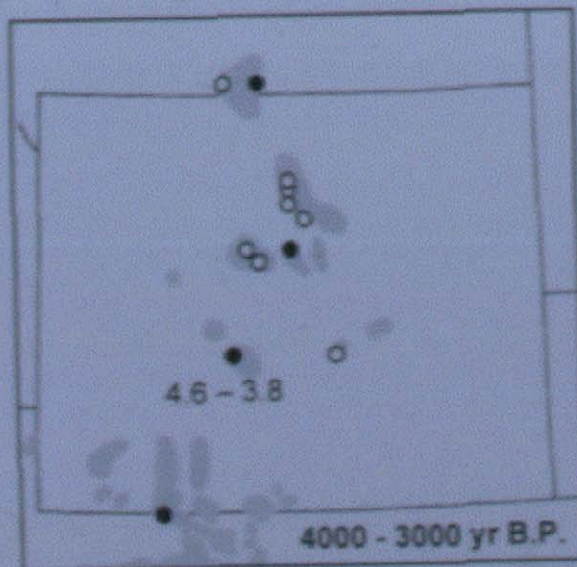


















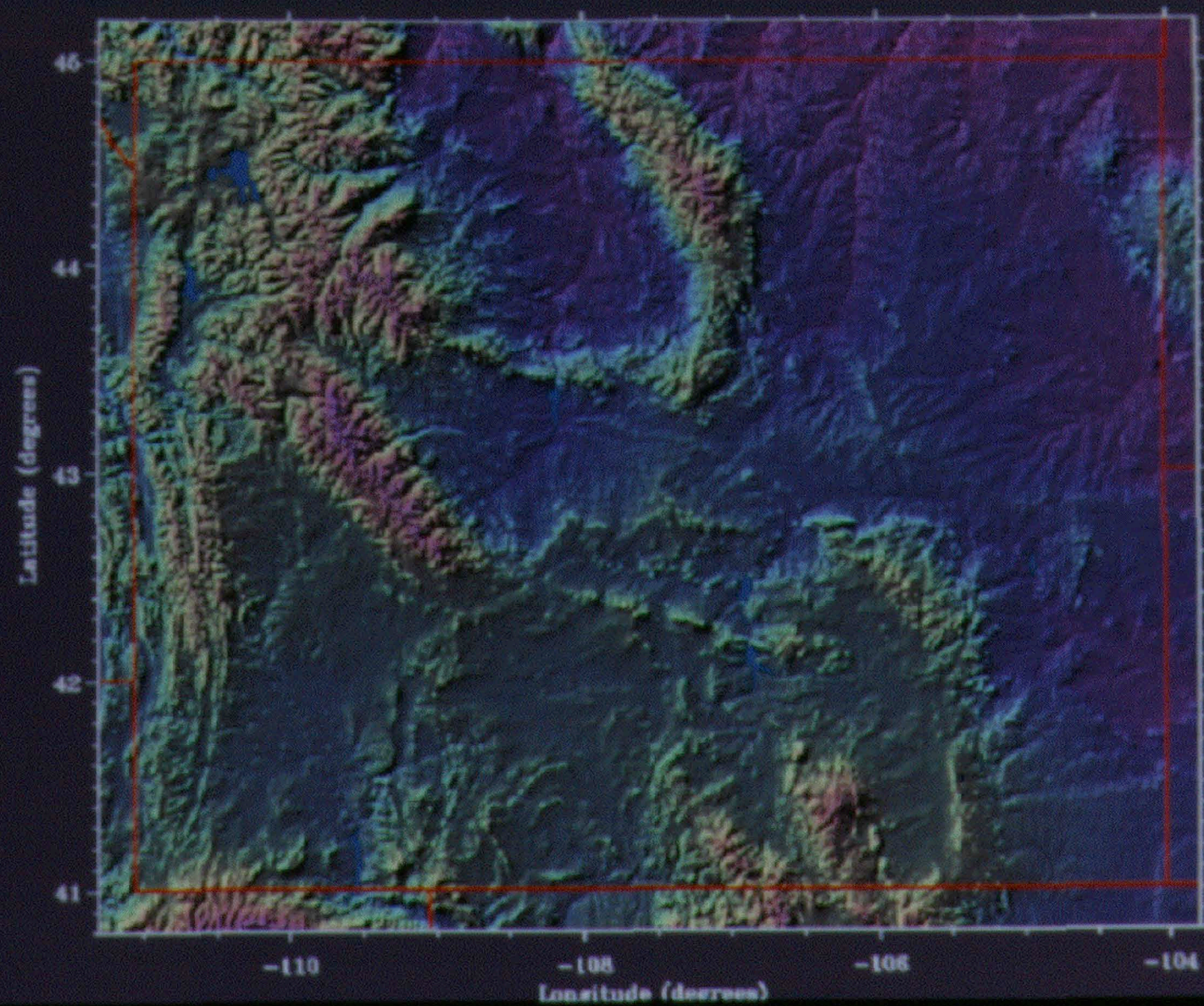














"Again, the climate of all regions is doubtless changing, as it has changed in past ages. So, too, there are crustal movements up and down. In other words the condition of equilibrium is never reached, and when we say that there is an approach to the mesophytic forest, we speak only roughly and approximately. As a matter of fact **we have a variable approaching a variable rather than a constant.**"

Henry Chandler Cowles , 1901

Thomas Wolfe

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YOU CAN'T  
GO HOME  
AGAIN

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