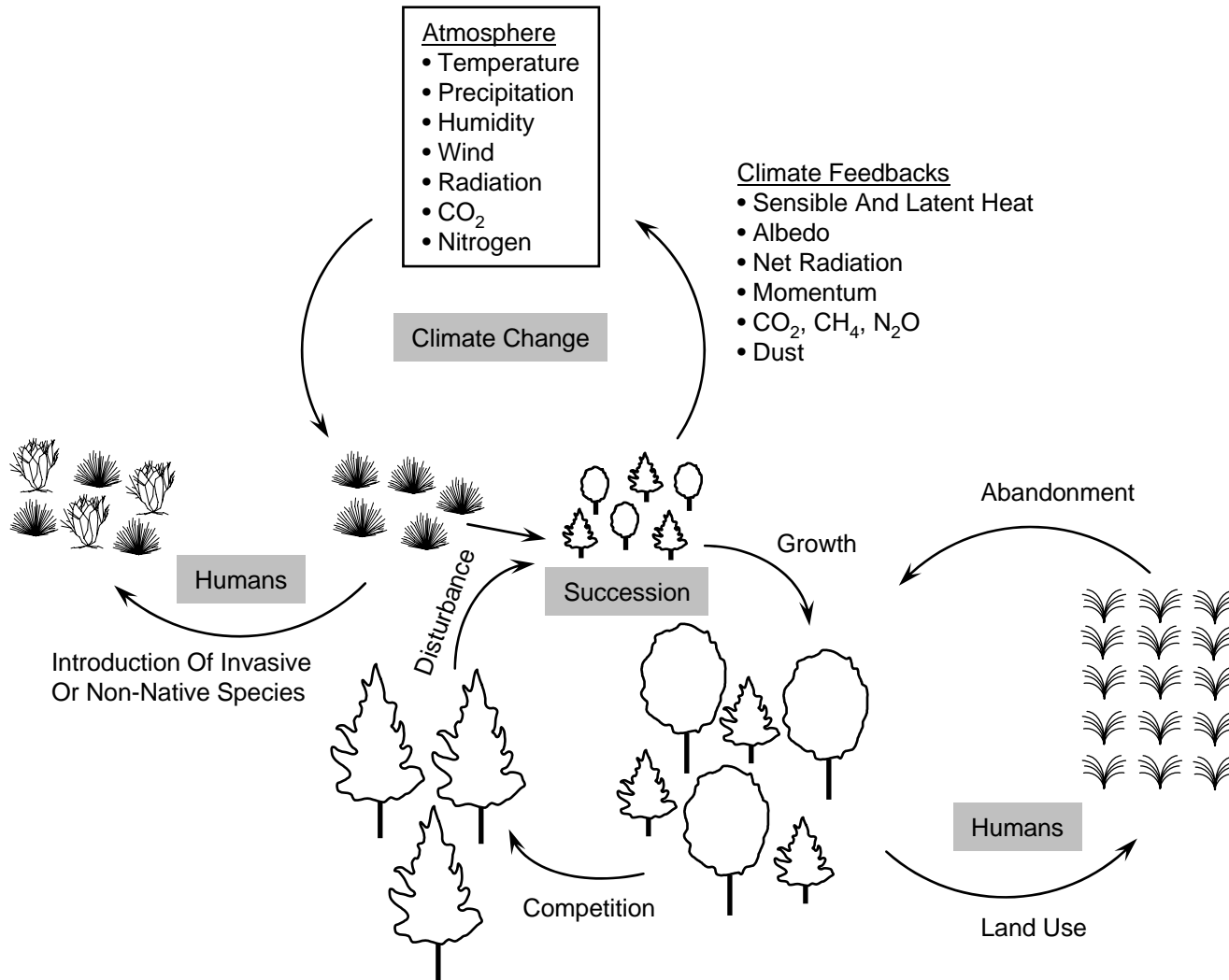
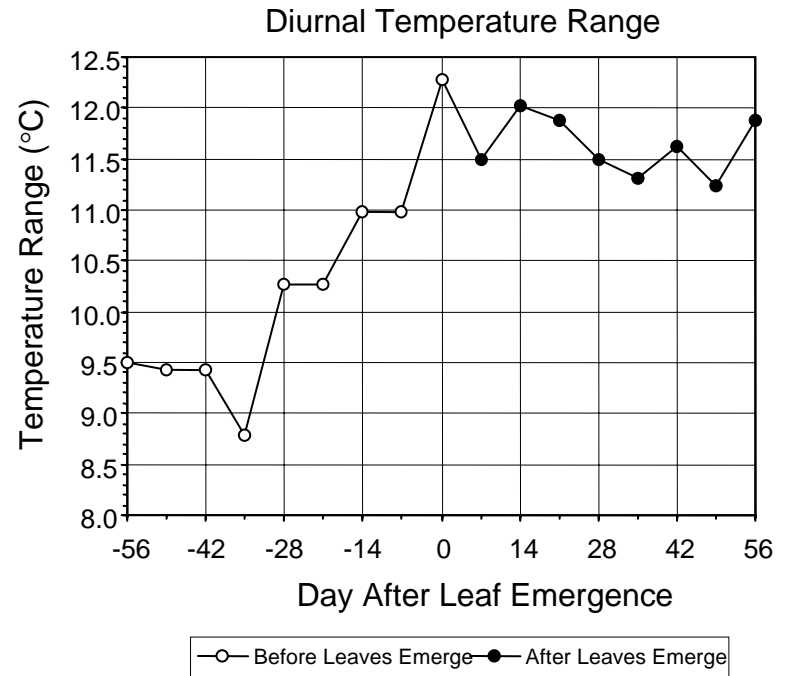
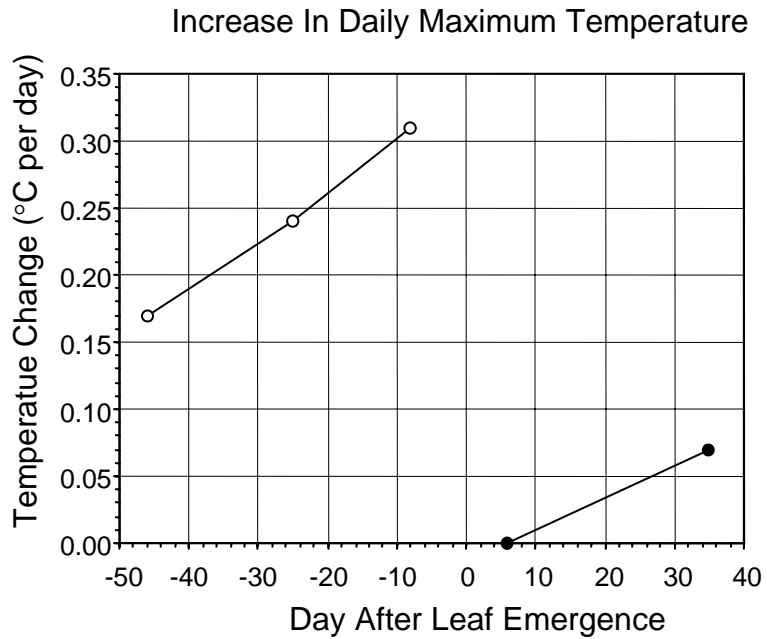
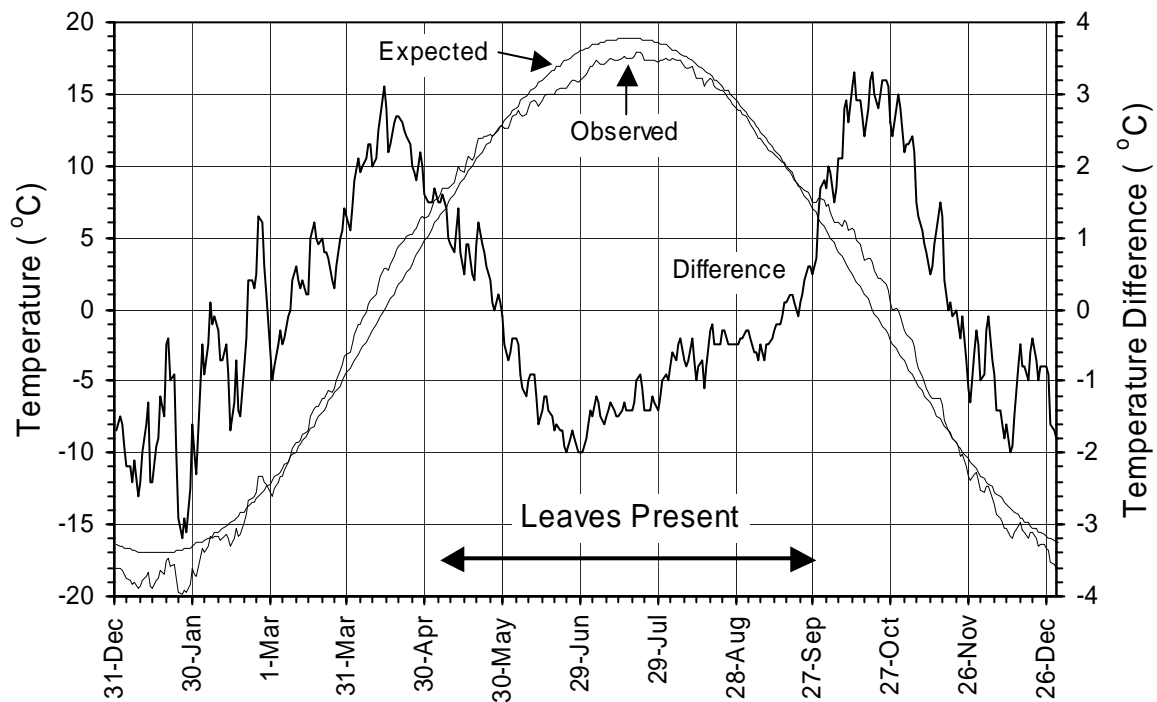


# Climate - Ecosystem Dynamics

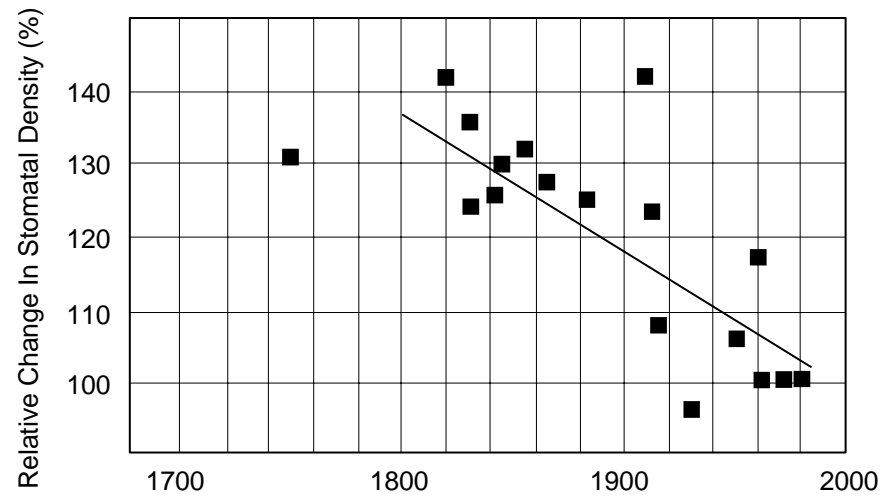




### Effect Of Leaf Emergence On Air Temperature



Stomatal Density Of Herbarium Leaves Back To 1750

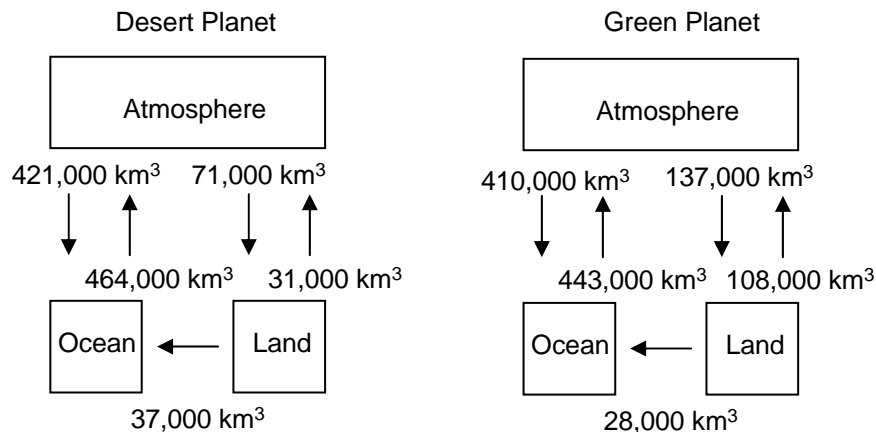


## Desert Planet Versus Green Planet

Surface Boundary Conditions

	Desert	Green
Vegetation Cover	0%	100%
Albedo	>0.28	0.12
Leaf Area Index	0	10
Roughness length	0.01 m	2 m
Soil Water	10 cm	Maximum

Annual Hydrologic Cycle

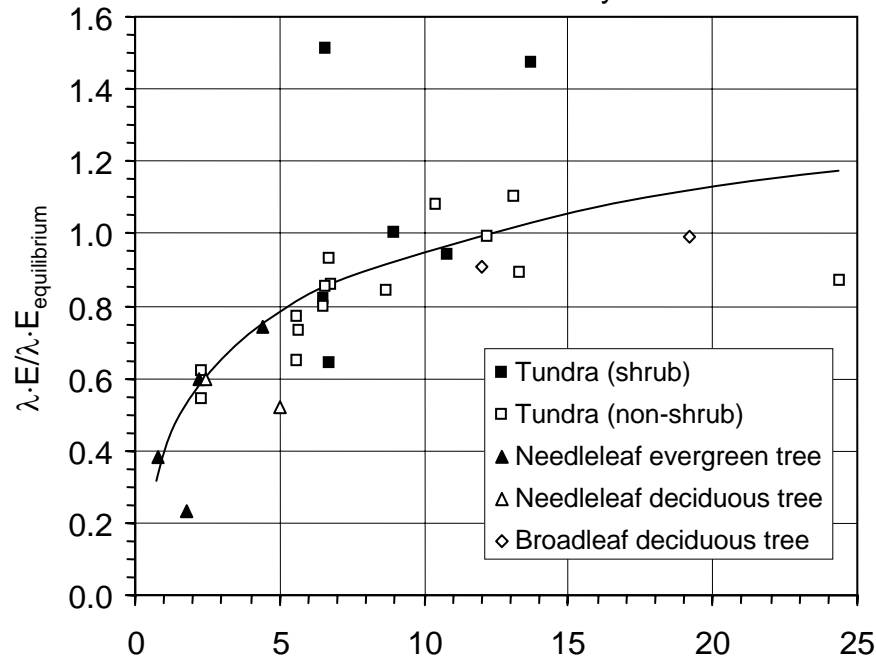


## Climate Zones

Percent of land cover by Köppen climate types

Climate Type	Desert	Green
Tropical	18.1%	19.4%
Arid/Dry	28.2%	9.1%
Temperate	12.2%	29.4%
Cold/Snow	27.3%	23.5%
Ice	14.2%	18.5%

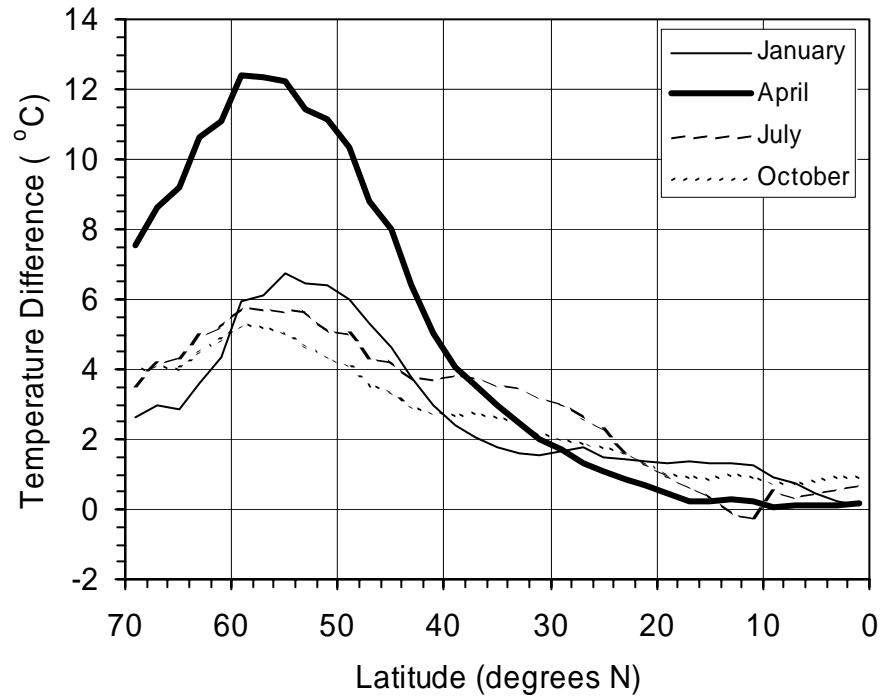
### Arctic And Boreal Ecosystems



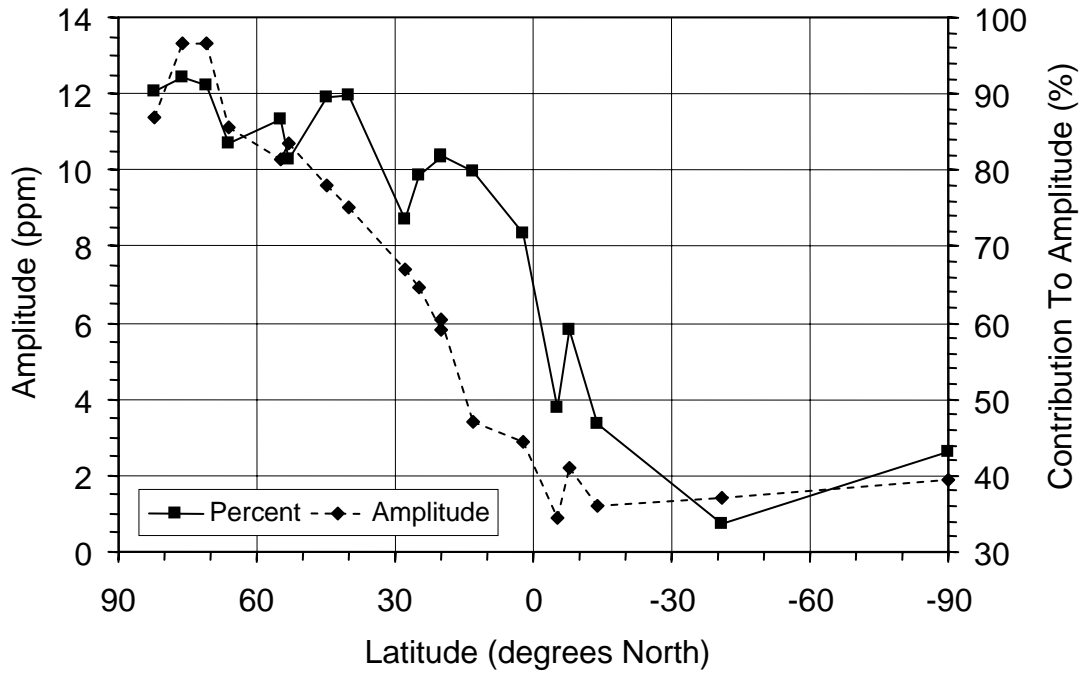
Maximum Canopy Conductance ( $\text{mm H}_2\text{O}\cdot\text{s}^{-1}$ )

	Conductance	Ratio
Tundra (shrub)	8.9	1.06
Tundra (non-shrub)	8.7	0.83
Needleleaf evergreen tree	2.3	0.49
Needleleaf deciduous tree	3.6	0.56
Broadleaf deciduous tree	15.6	0.95

### Effects Of Boreal Forests On Climate: Forested - Deforested

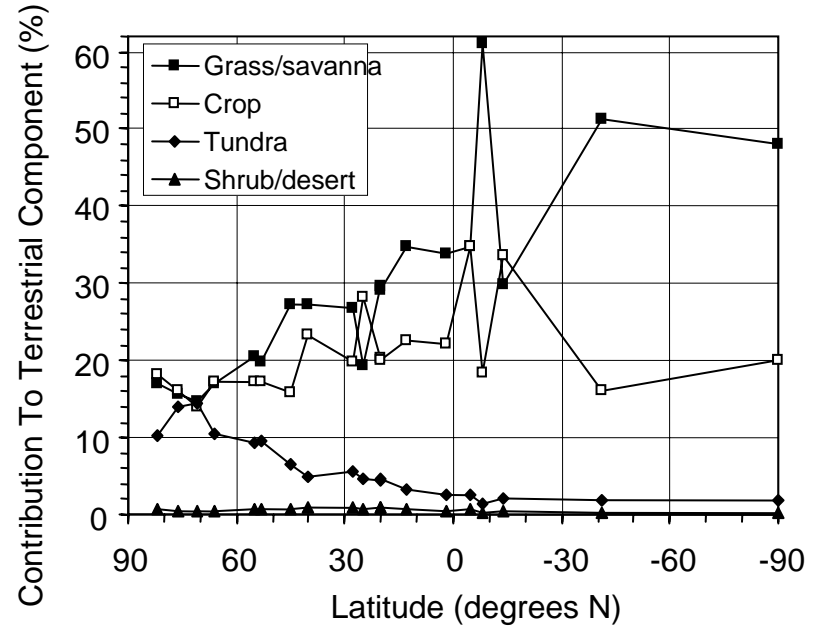
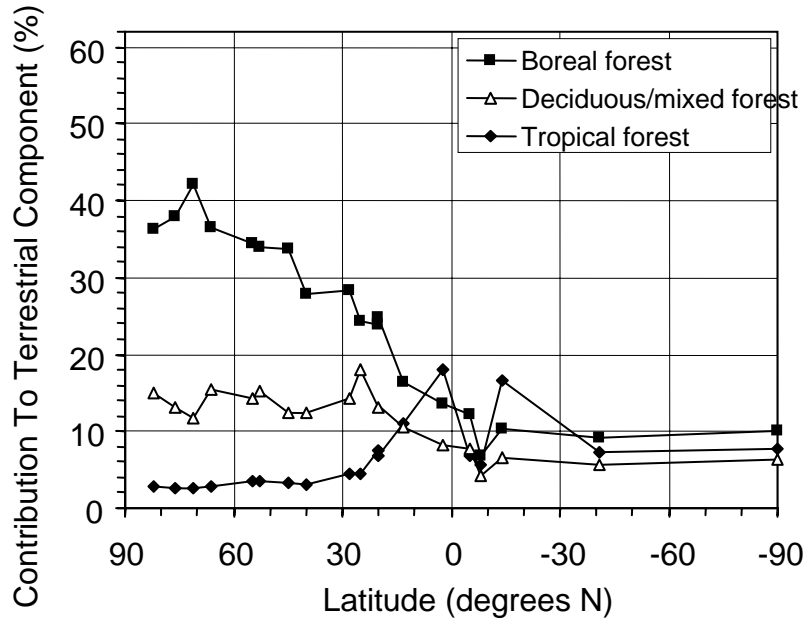


### Contribution Of Terrestrial Ecosystems To Seasonal Amplitude

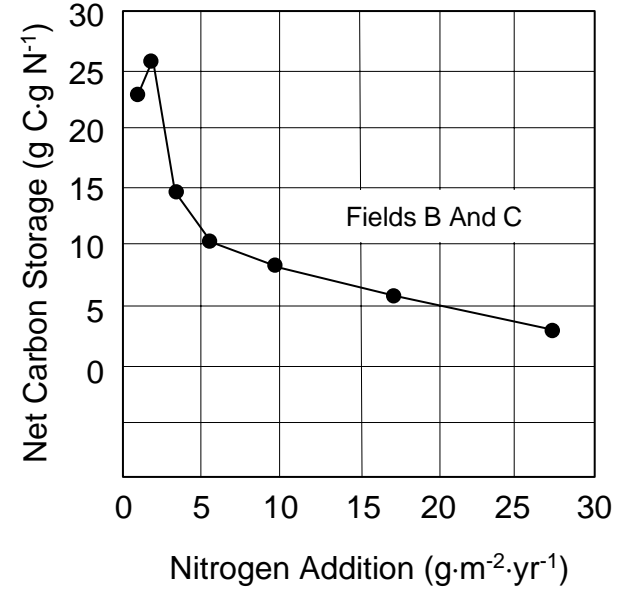
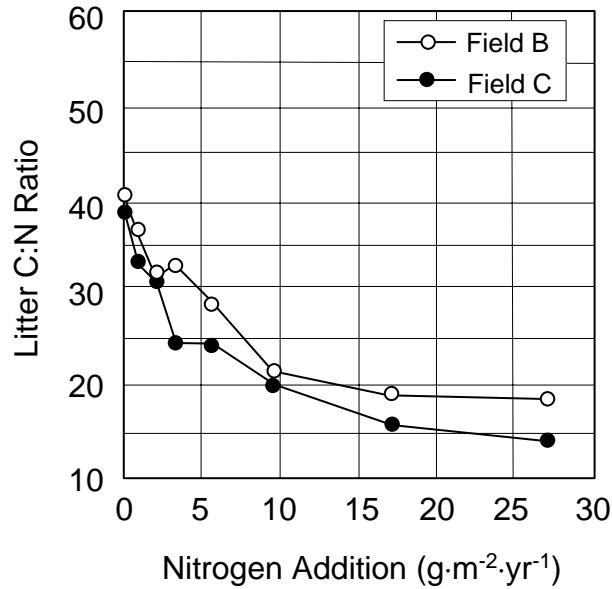
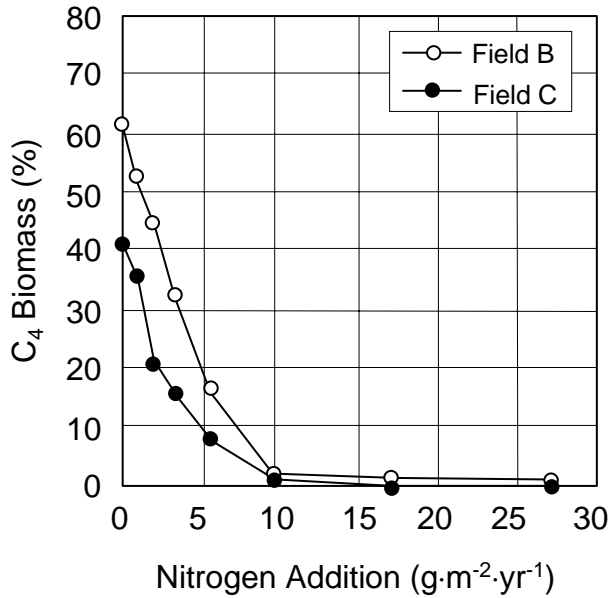




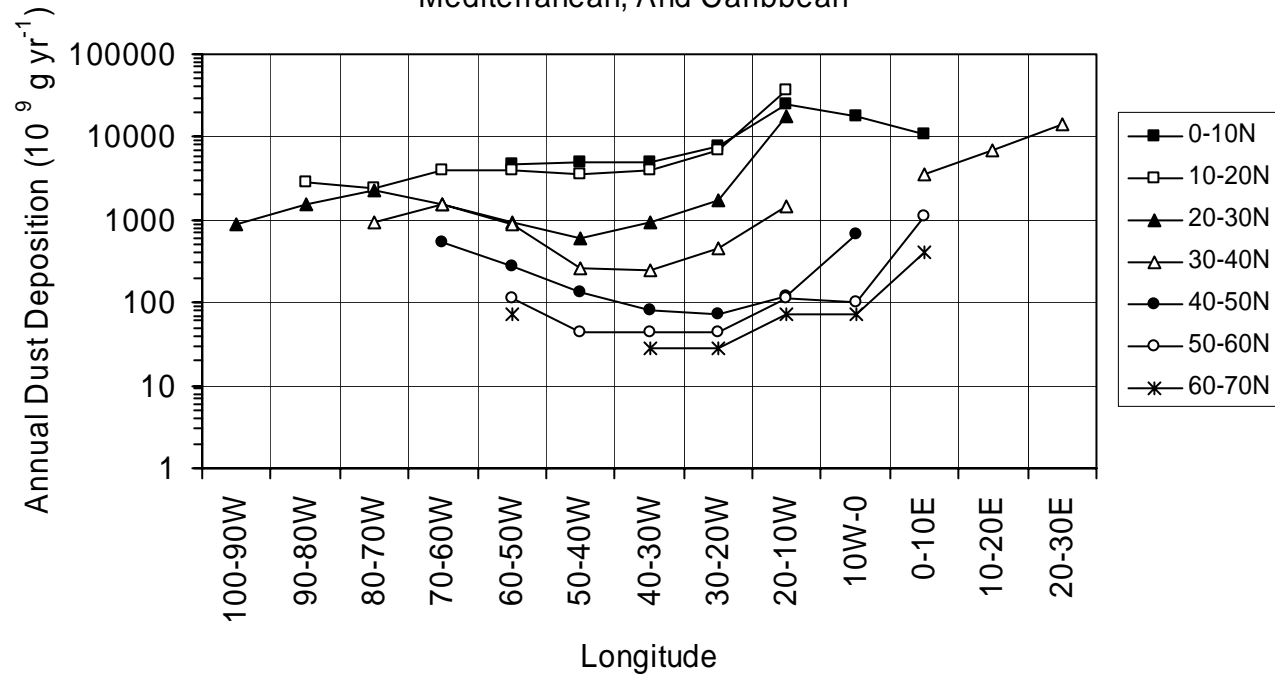
## Role Of Terrestrial Ecosystems In Seasonal Amplitude



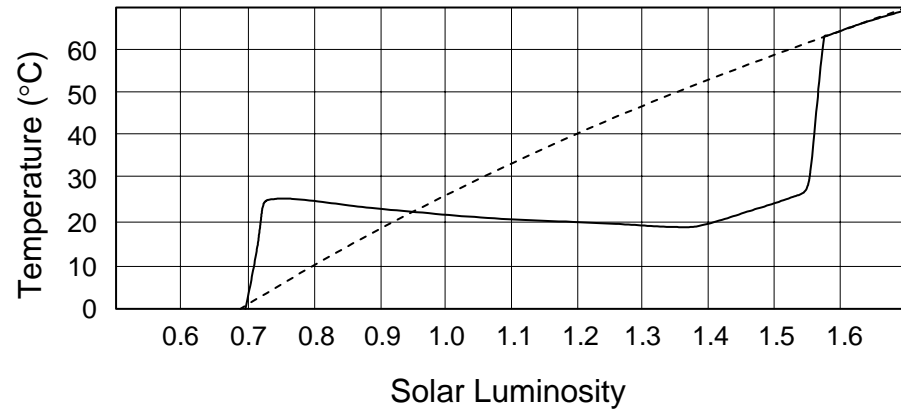
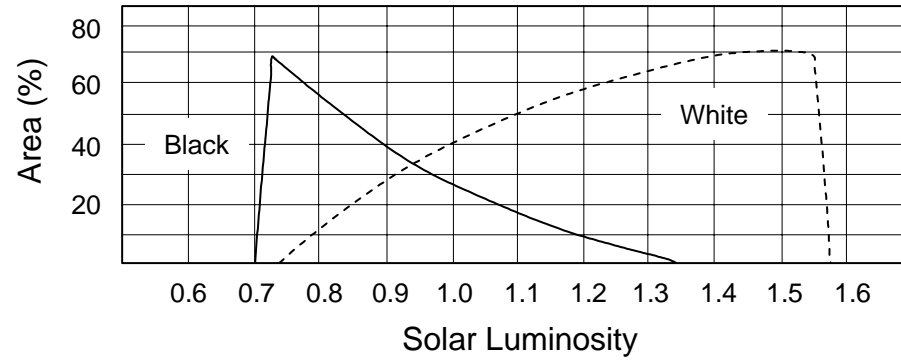
### Response Of Temperate Grasslands To 12 Years Of Nitrogen Addition



Dust Deposition In The North Atlantic, Mediterranean, And Caribbean

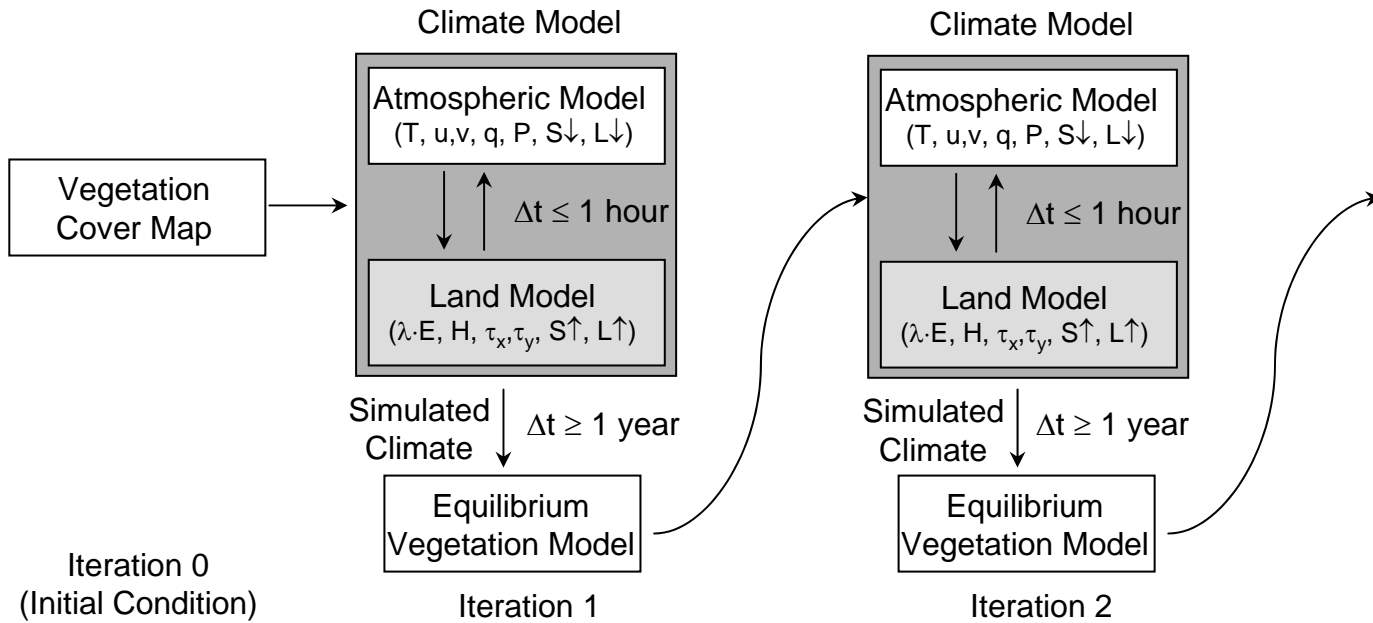


# Daisyworld

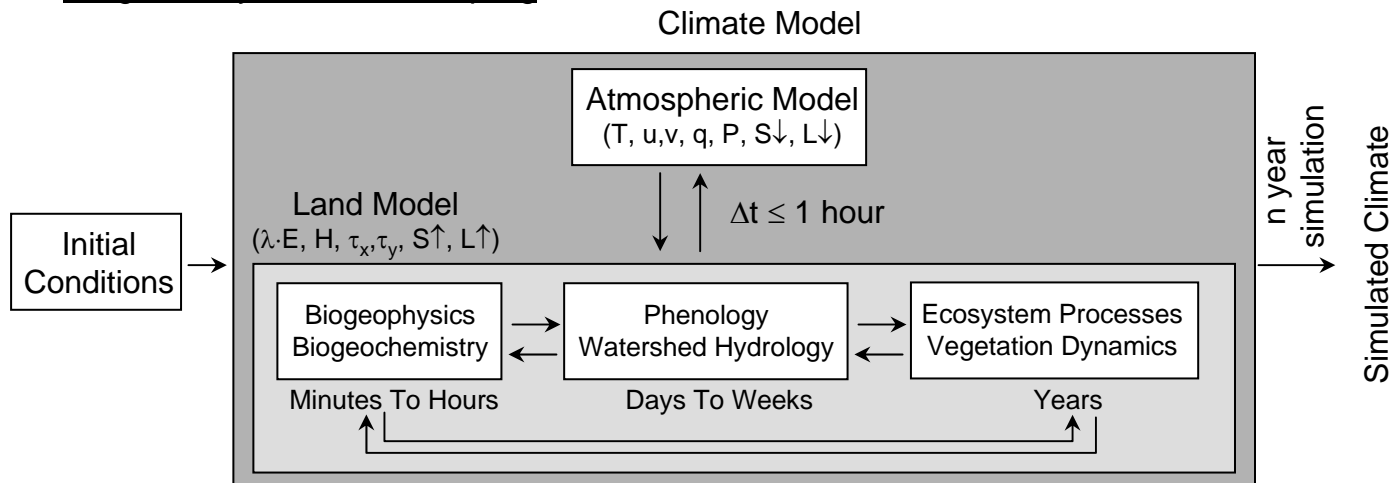


# Methods Of Climate-Ecosystem Coupling

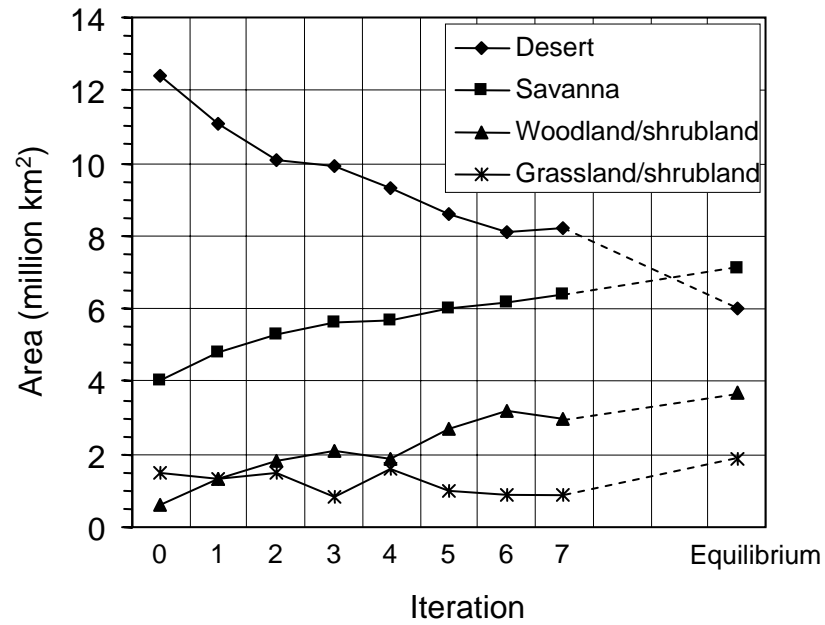
## Asynchronous Equilibrium Coupling



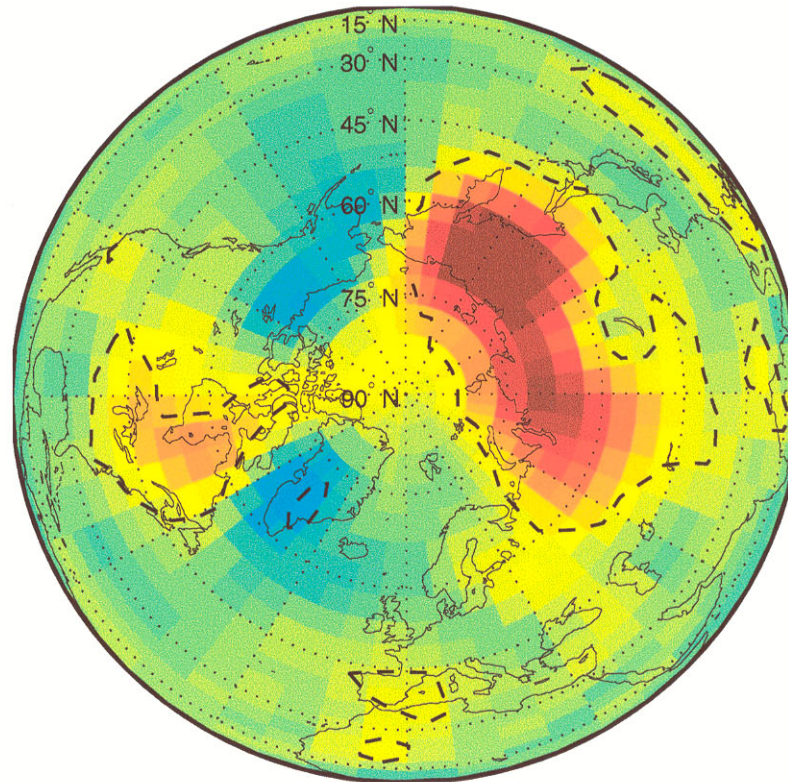
Integrated Synchronous Coupling



North African Vegetation Cover 6000 Years Ago



March – April – May



$\Delta$  Temperature: RPV - R (°C)

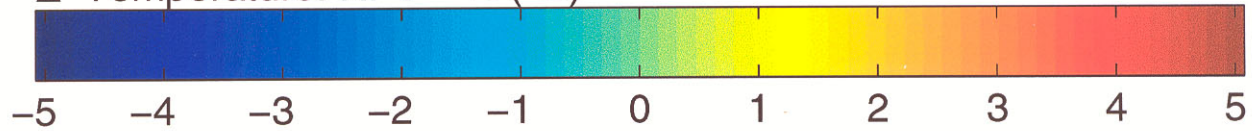
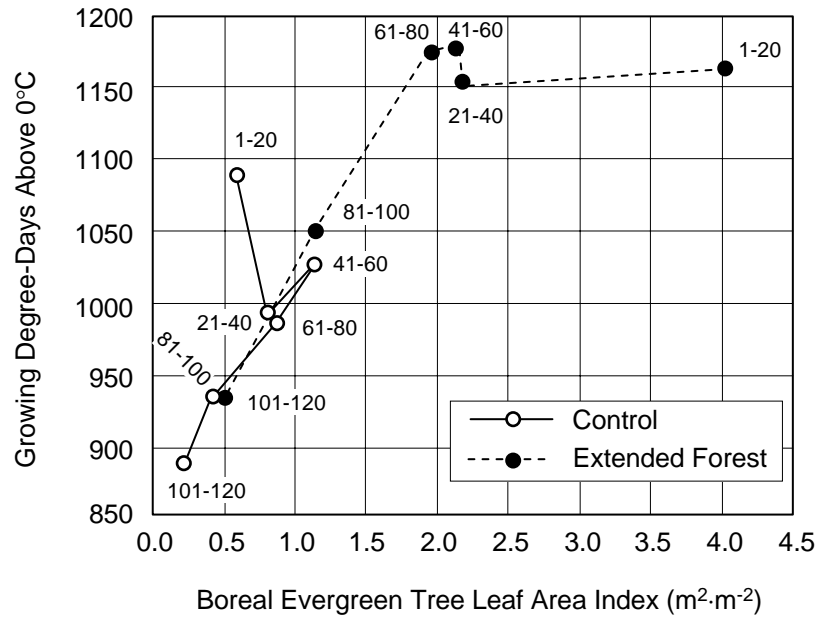
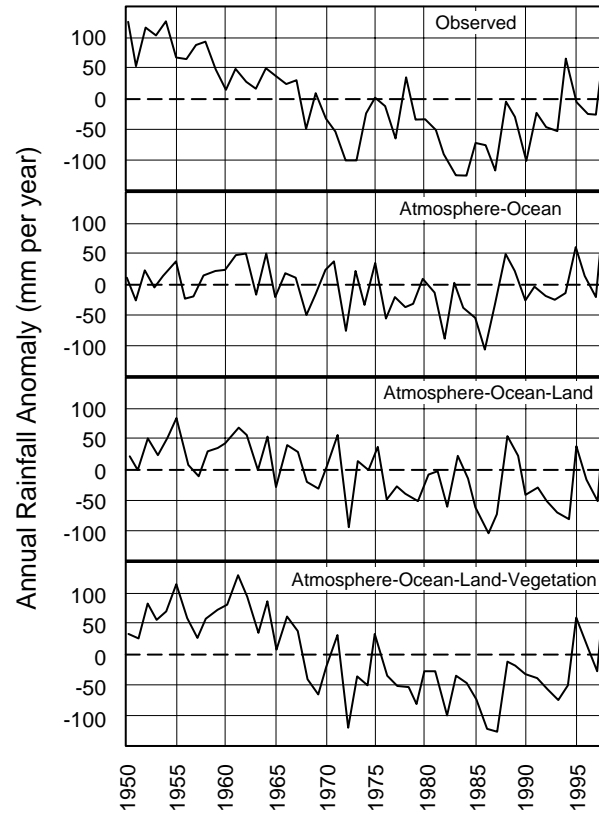


Figure 4b

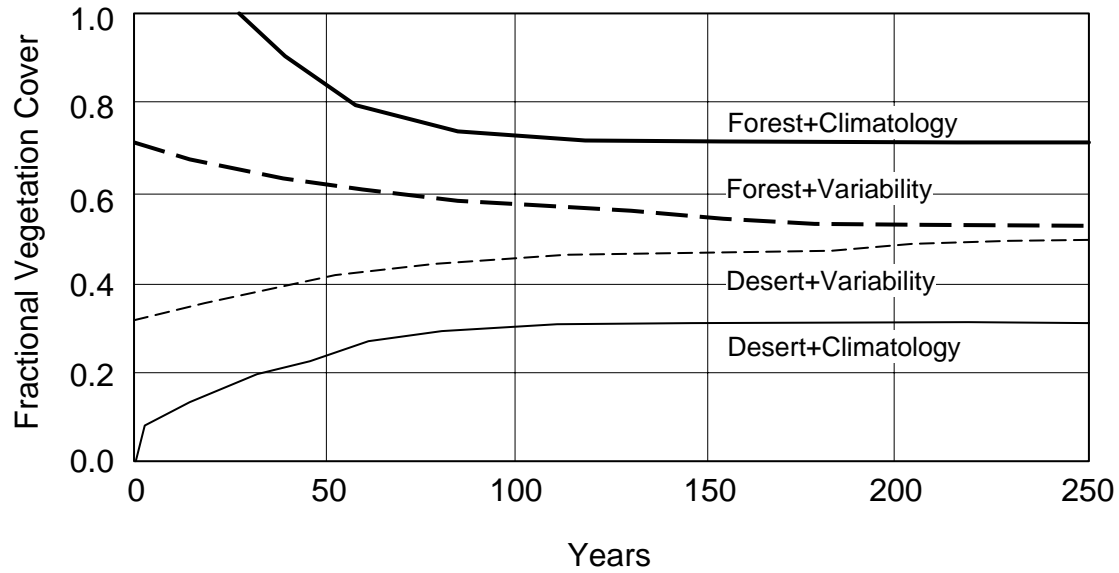




### Precipitation Variability And Vegetation Feedback In The Sahel



Vegetation Cover In The West African Sahel



# West African Climate And Vegetation

