



forestwise

Laboratório Colaborativo para a
Gestão Integrada da Floresta e do Fogo
www.forestwise.pt

Forests and Climate

The role of Forests on Climate Change Mitigation

Joana Vieira

Joana.vieira@forestwise.pt

 @joanavieir



1. Tree's Response to Climate

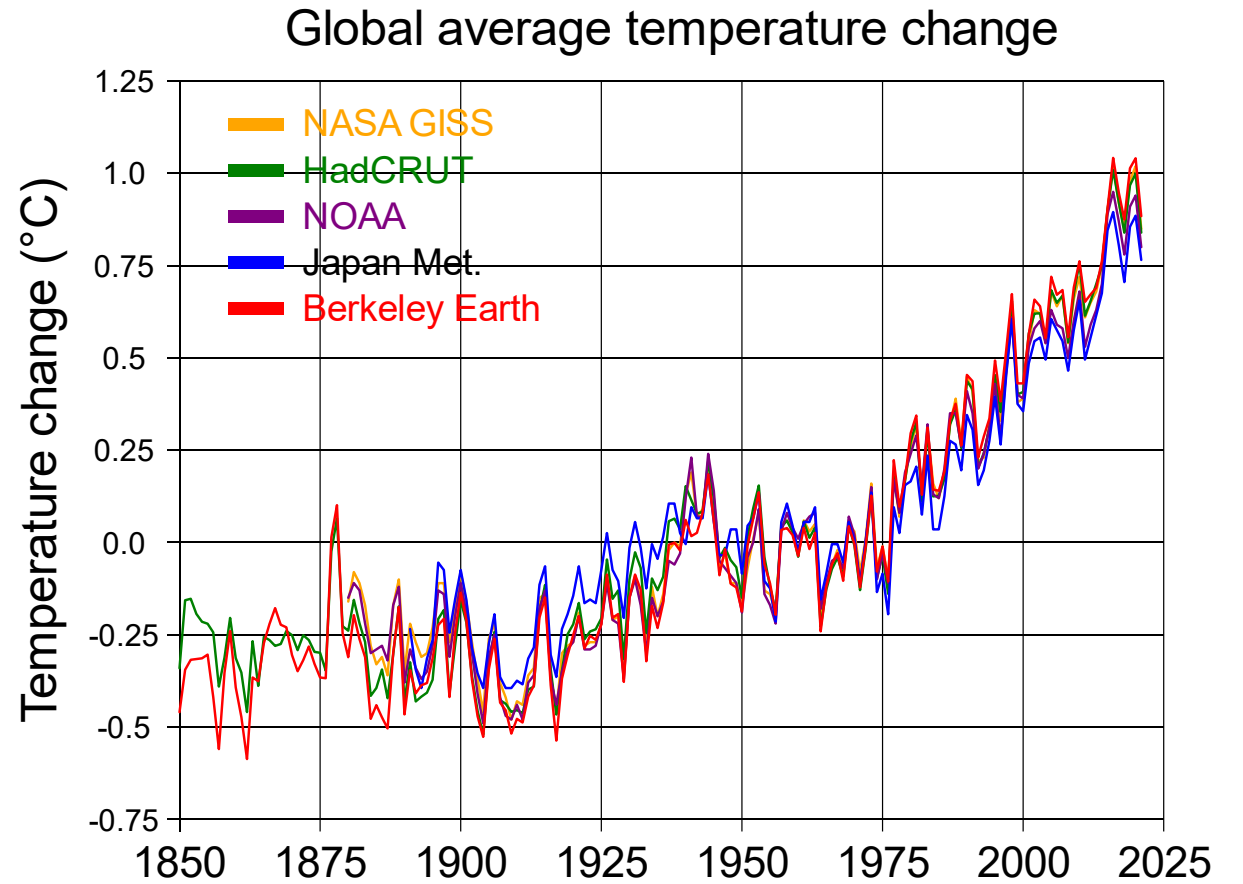
2. Role of Forests on Climate Change Mitigation



Global Climate Change

What is Global Climate Change?

Temperature increase

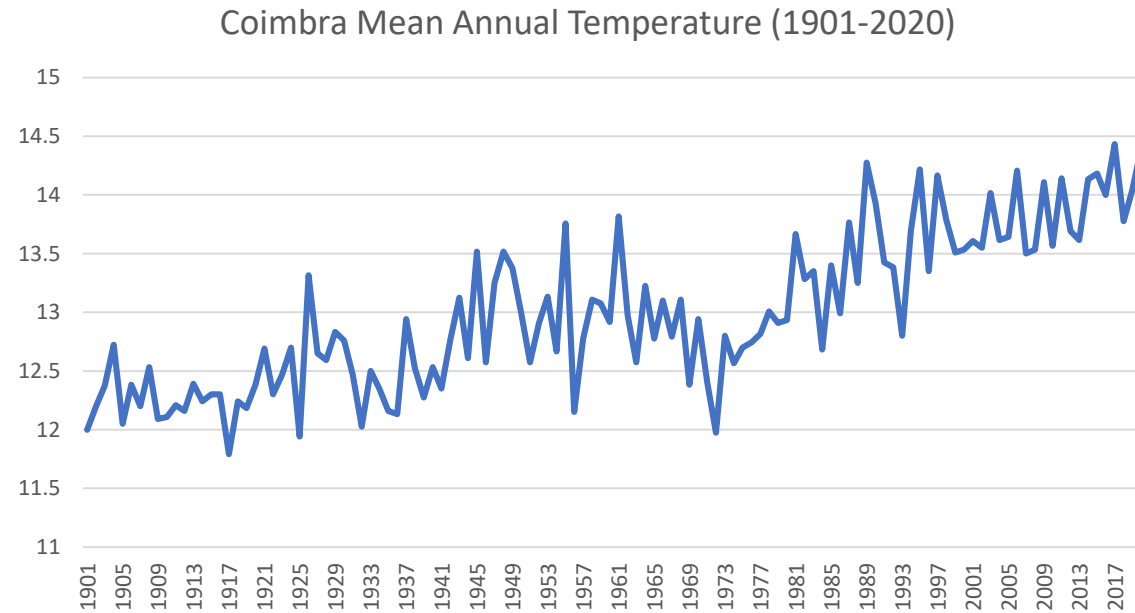




Global Climate Change

What is Global Climate Change?

Temperature increase



Global Climate Change

What is Global Climate Change?

- Extreme Events (Floodings, Landslide);





Global Climate Change

What is Global Climate Change?

- Heat Waves





Global Climate Change

What is Global Climate Change?

- Heat Waves

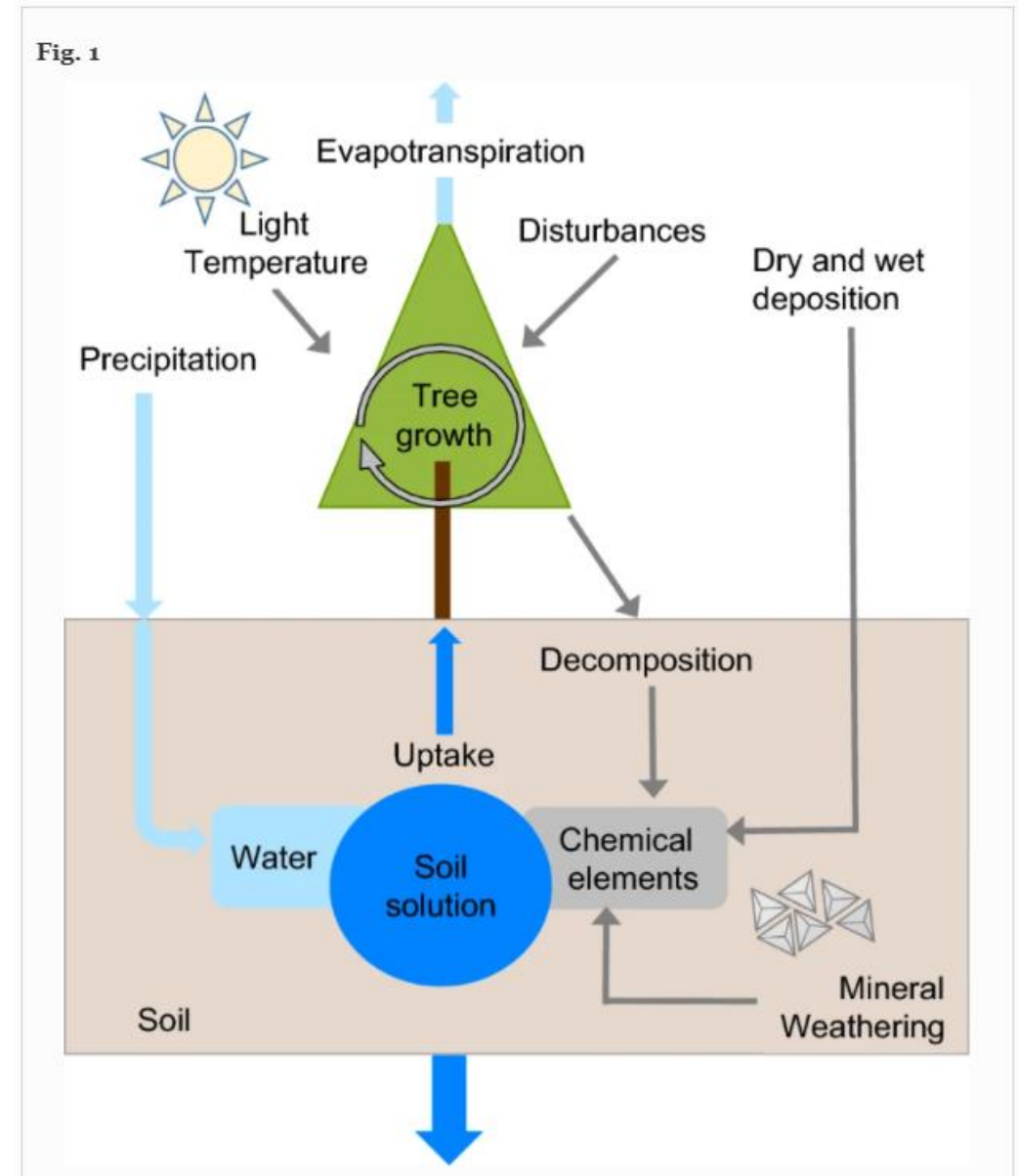


What about forests?

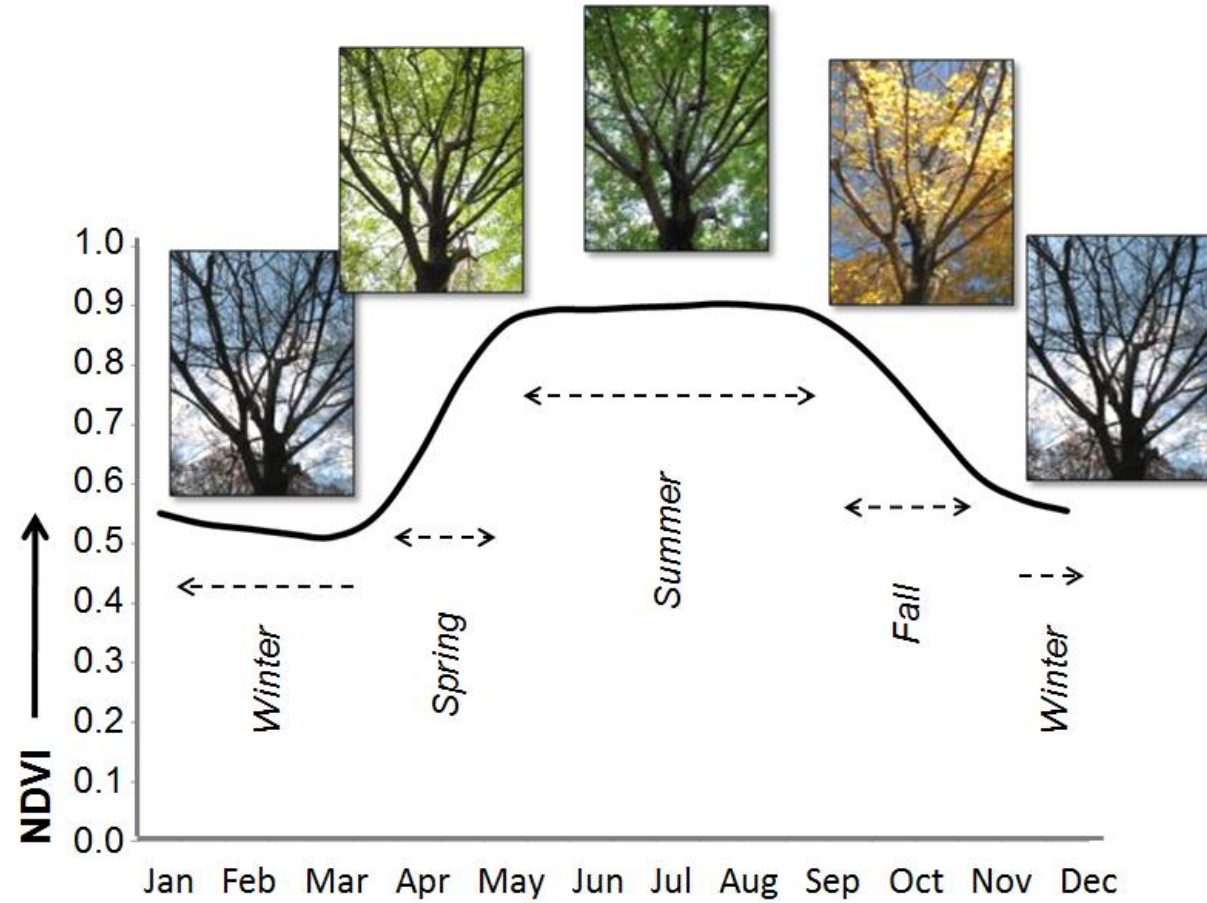
Does climate influence forests in any other way?



Tree growth?



Tree Growth Regulation

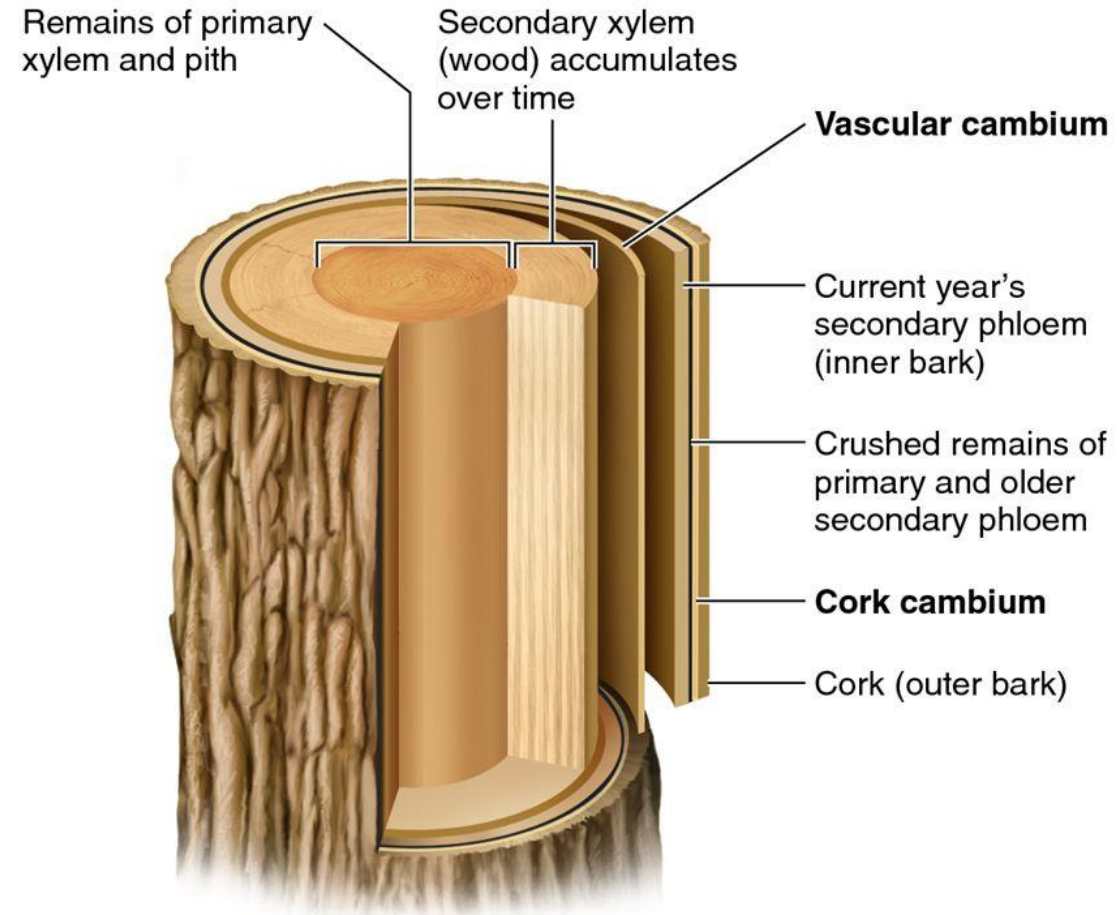


Is Tree Growth Responding to Climate Change?

Warmer Springs → Earlier Growth onset



Tree growth response to climate?



Is Tree Growth Responding to Climate Change?

YES!





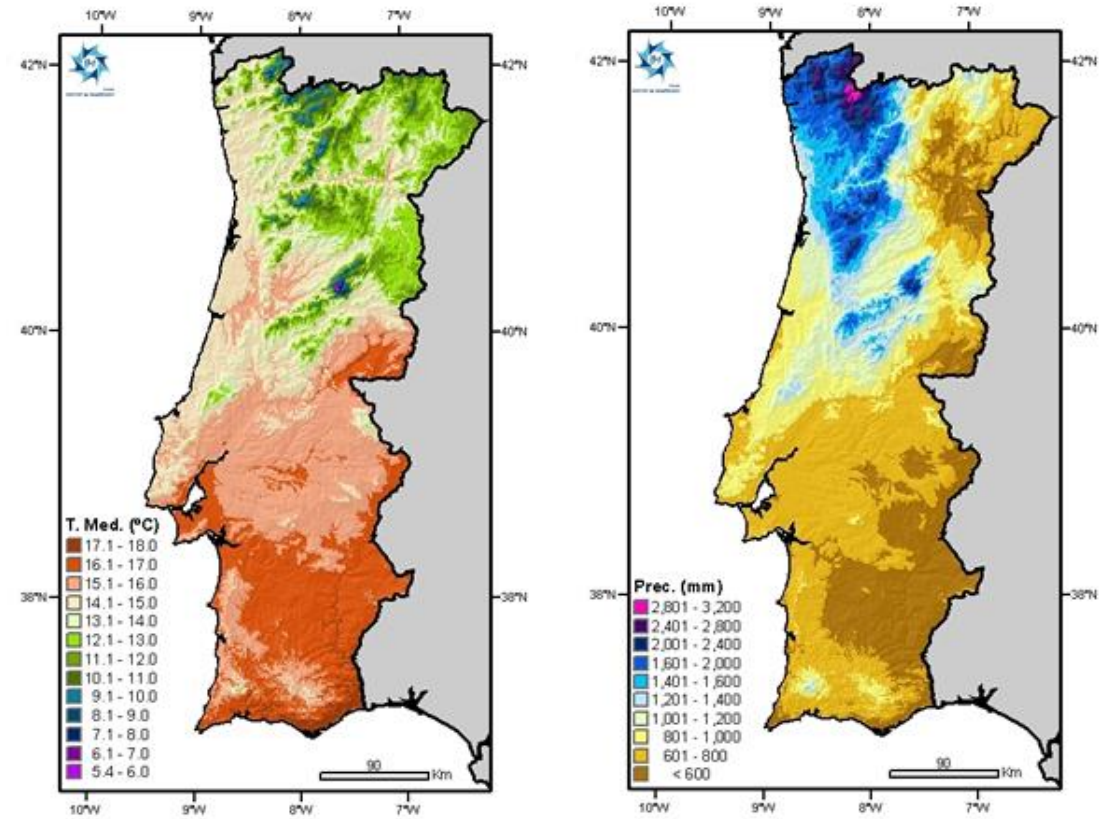
Tree growth response to climate?



How trees respond along a climatic gradient?

Trees respond to climate

- Start to grow earlier;
- Growth depends on water availability

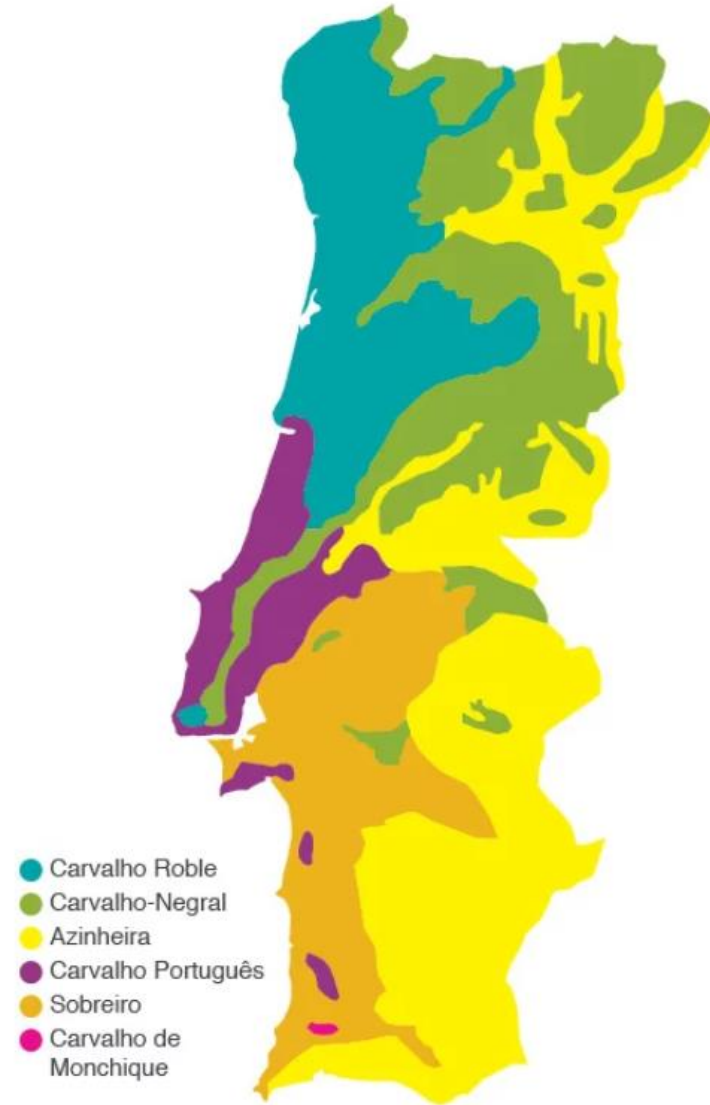


Mean Annual Temperature

Annual Precipitation



Tree growth response to climate?



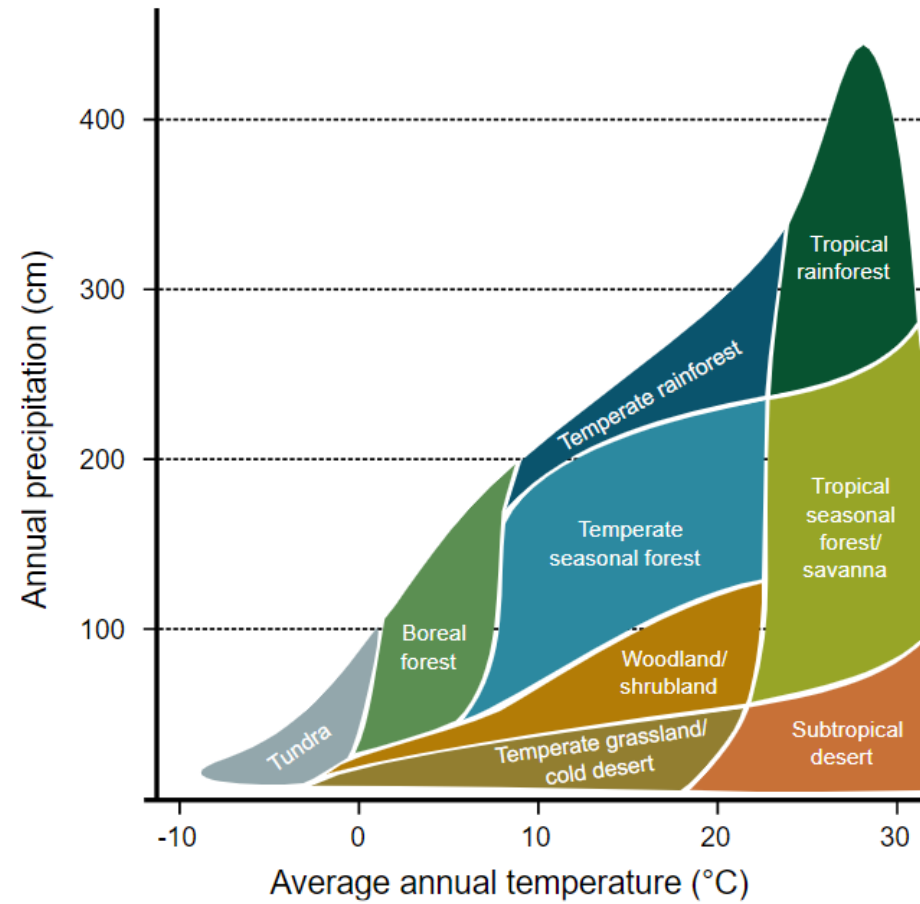


Portuguese Oaks

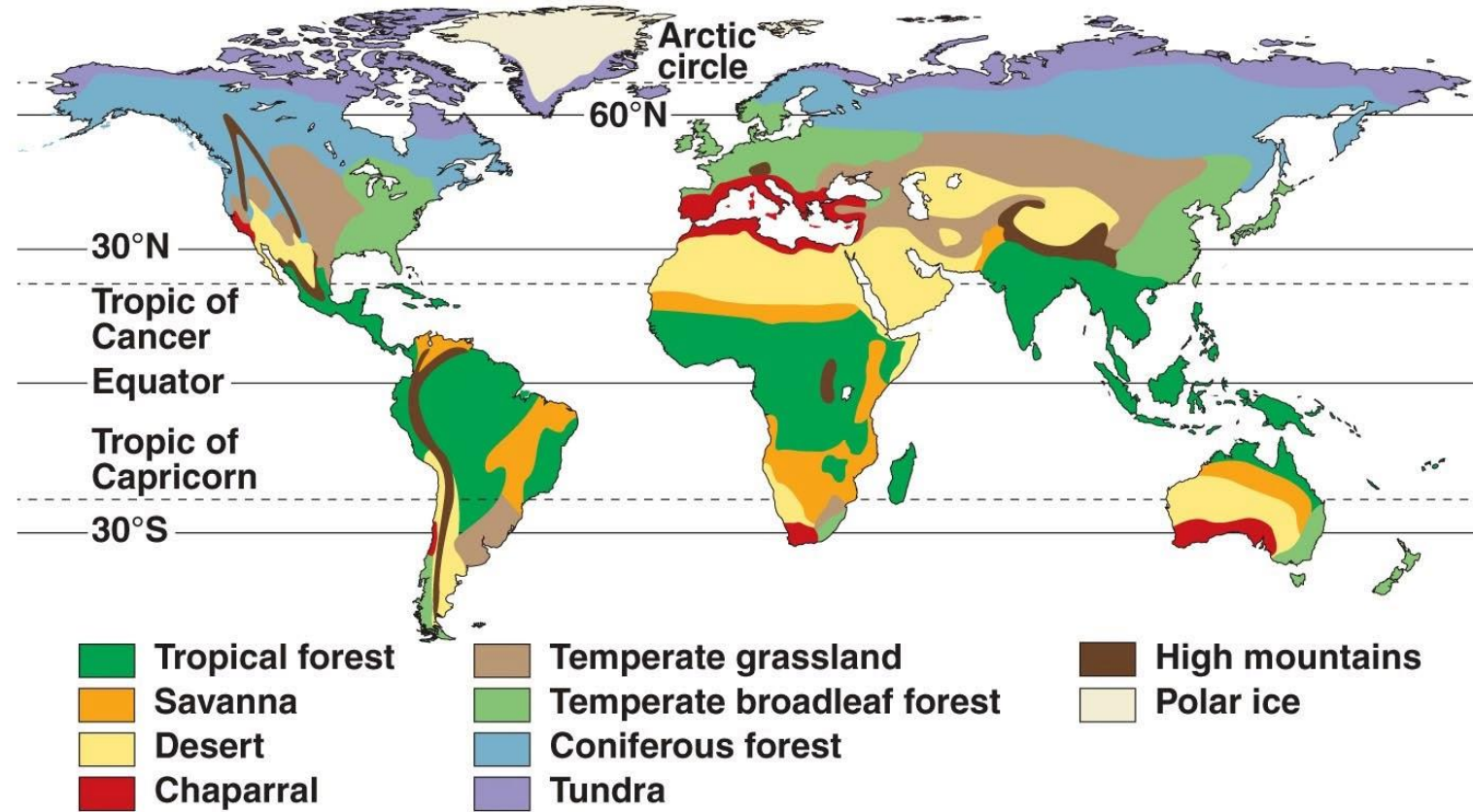


Trees are adapted to the environment!

Climate Influence on Terrestrial Biomes



Terrestrial Biomes

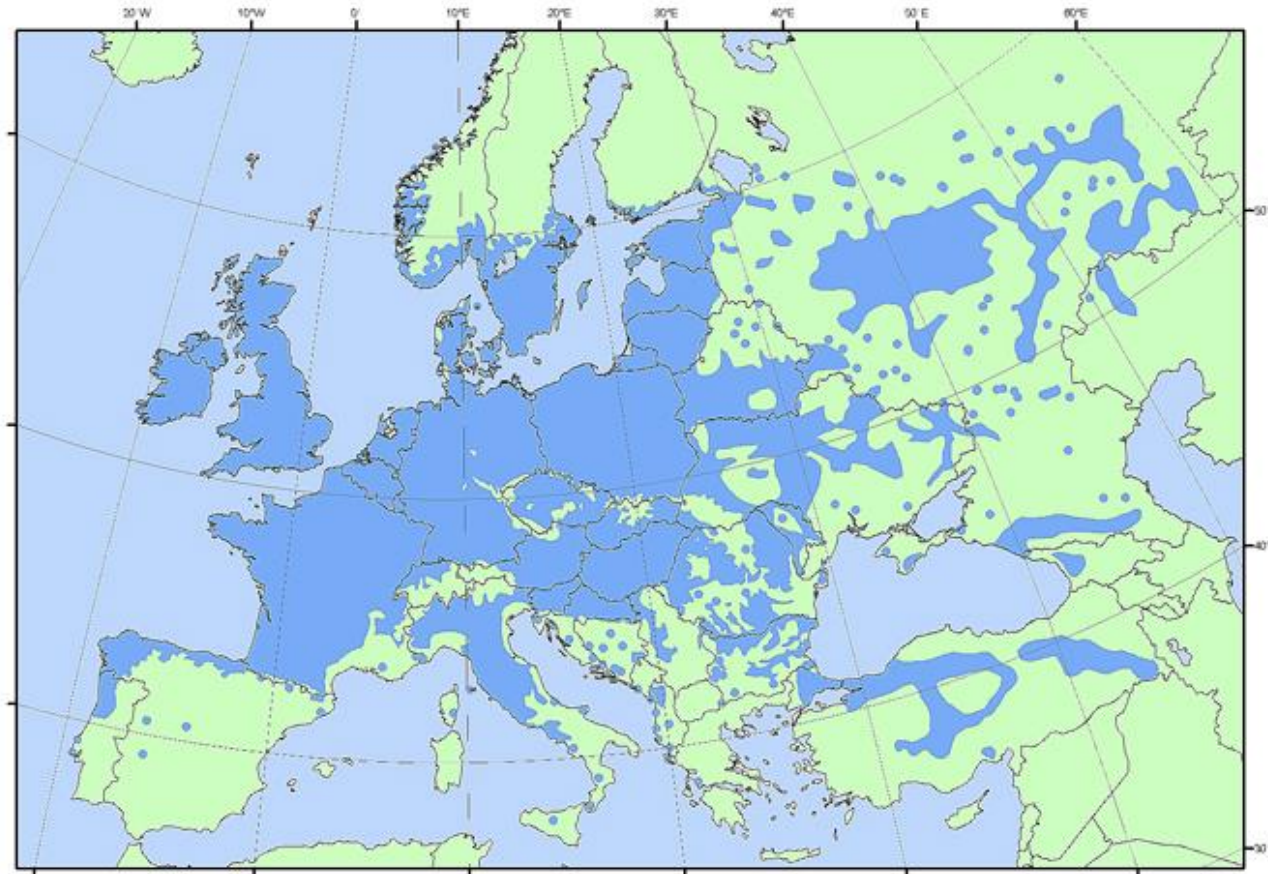


What is the Impact of Climate Change for Species Distribution?



EUFORGEN Secretariat
c/o Biodiversity International
Via del Tre Denari, 472/a
00057 Maccanese (Fiumicino)
Rome, Italy
Tel: (+39)066116251
Fax: (+39)0661079001
e.f_secretariat@cgiar.org
More information
and other maps at
www.euforgen.org

Quercus robur



This distribution map, showing the natural distribution area of *Quercus robur* was compiled by members of the EUFORGEN Network

Citation: Distribution map of Pedunculate oak (*Quercus robur*) EUFORGEN 2009, www.euforgen.org

First published online on 10 November 2004 - Updated on 24 July 2008

0 250 500 1,000 Km



What is the Impact of Climate Change for Species Distribution?

- Species are more vulnerable at the edge of their distribution
- Physiologic Limit

Significant Changes in Environmental Conditions



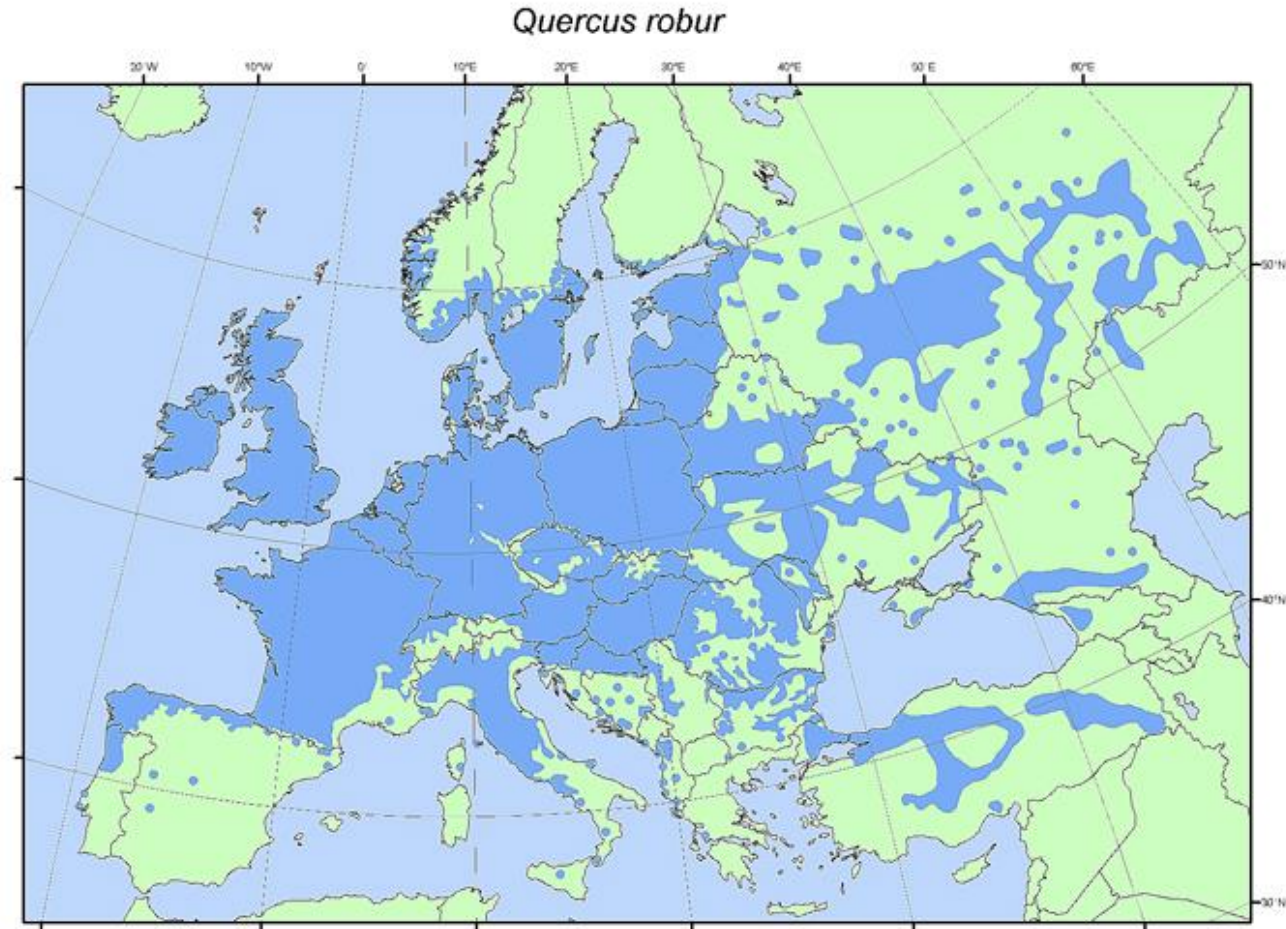
**Changes in Species
Geographic Distribution**

What is the Impact of Climate Change for Species Distribution?

Temperature Increase



EUFORGEN Secretariat
c/o Sovensity International
Via del Tre Denari, 472a
00057 Maccanese (Fiumicino)
Rome, Italy
Tel. (+39)066118251
Fax. (+39)0661079661
euf_secretariat@euforgen.org
More information
and other maps at
www.euforgen.org





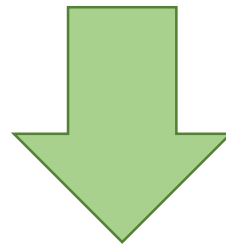
1. Tree's Response to Climate

Tree Growth is dependente on Climatic Conditions



Temperature
Photoperiod

Precipitation

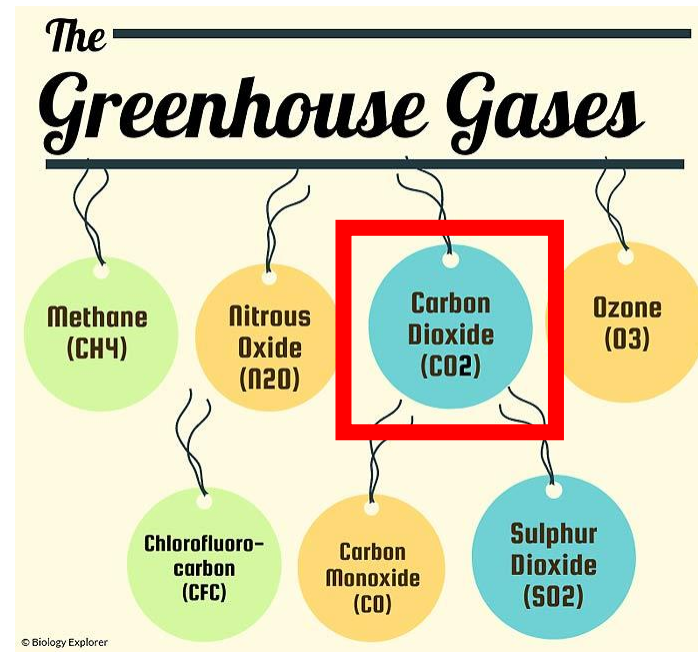


Species Distribution

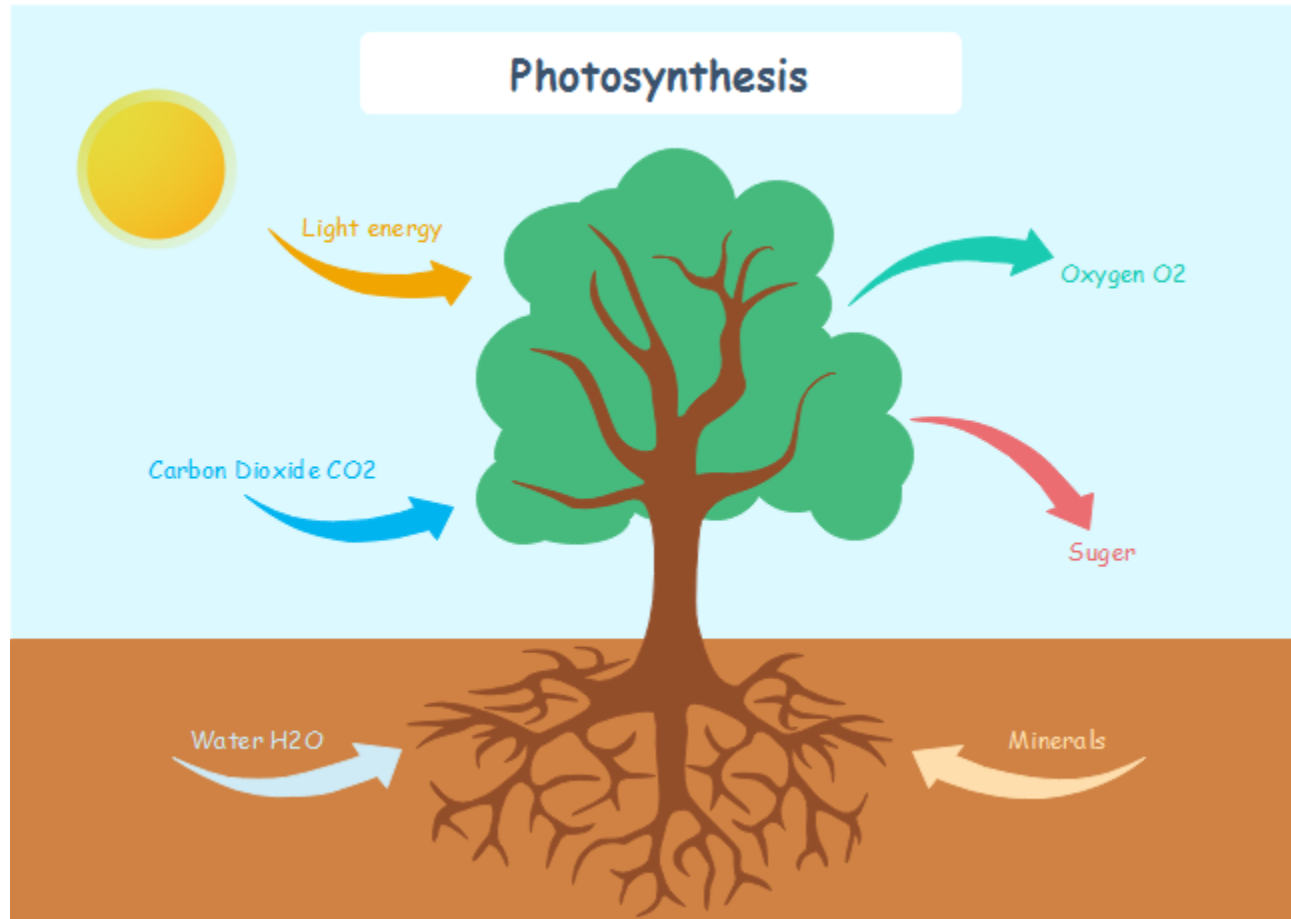
2. Role of Forests on Climate Change Mitigation

What is causing Climate Change?

Greenhouse Gas Emission



2. Role of Forests on Climate Change Mitigation



**Trees capture
Carbon Dioxide!**



**More Forests =
Less CO₂
atmosphere**



How can we help Forests?

- Forest management and silviculture;
- Biodiverse Forests;
- Forestry more attractive;
- Selecting more resilient forest species;
- Assisted migration.





Take home message:

Consider a carrer in Forestry!

Thank you for the attention!