



ECOLOGÍA FUNCIONAL Y CAMBIO GLOBAL CREAM-CSIC (Doctores)



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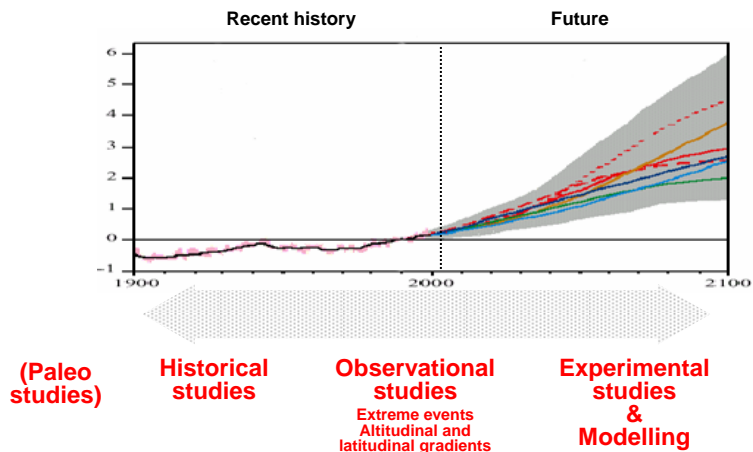
This Rutishauser



Loles Asensio

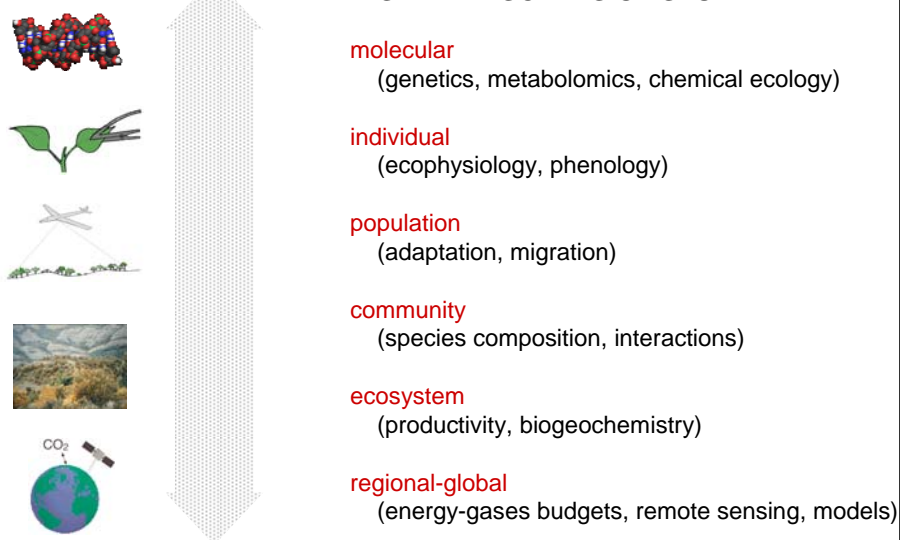
FUNCTIONING OF TERRESTRIAL ECOSYSTEMS AND GLOBAL CHANGE

TEMPORAL SCALES OF STUDY



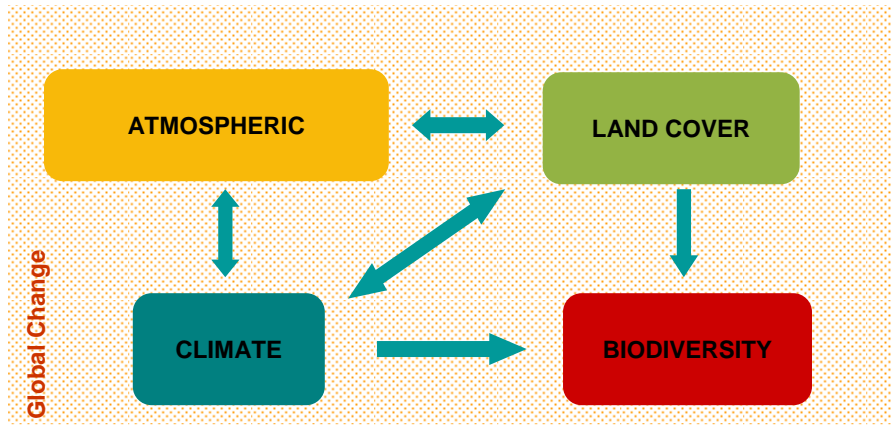
FUNCTIONING OF TERRESTRIAL ECOSYSTEMS AND GLOBAL CHANGE

SPATIAL SCALES OF STUDY



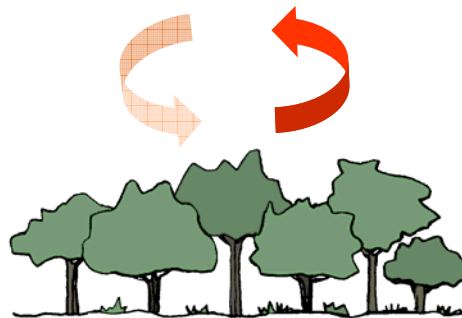
FUNCTIONING OF TERRESTRIAL ECOSYSTEMS AND GLOBAL CHANGE

TERRESTRIAL ECOSYSTEMS



CREAF-CSIC Barcelona

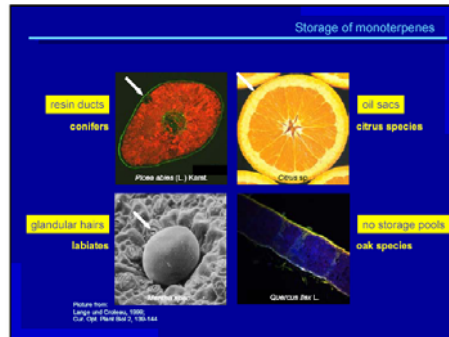
Atmospheric changes



Terrestrial ecosystems

VOCs

-Biogenic, natural (80%)



-Anthropogenic (20%)



Which are the effects of the increased biogenic volatile emissions?

Increasing biogenic emissions
An increasingly scented world

Biological alterations

Environmental alterations

-Higher plant protection in front of increasing abiotic stresses: high temperatures, air pollution, high irradiance, oxidative stress, ... Will it be enough?:

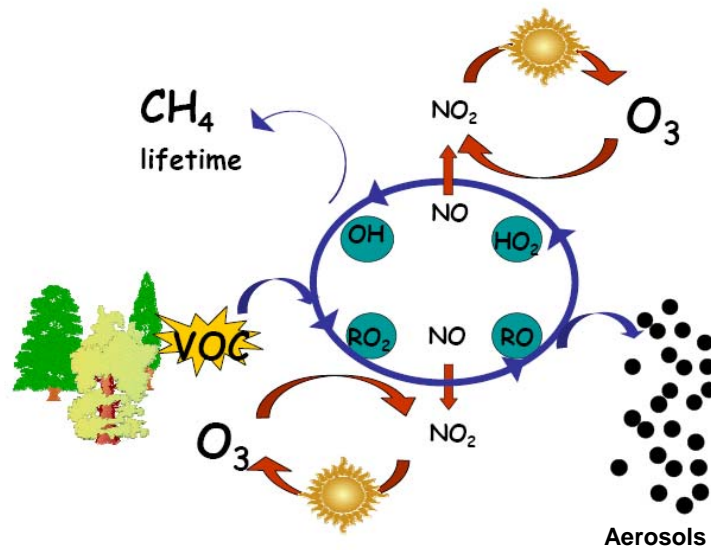
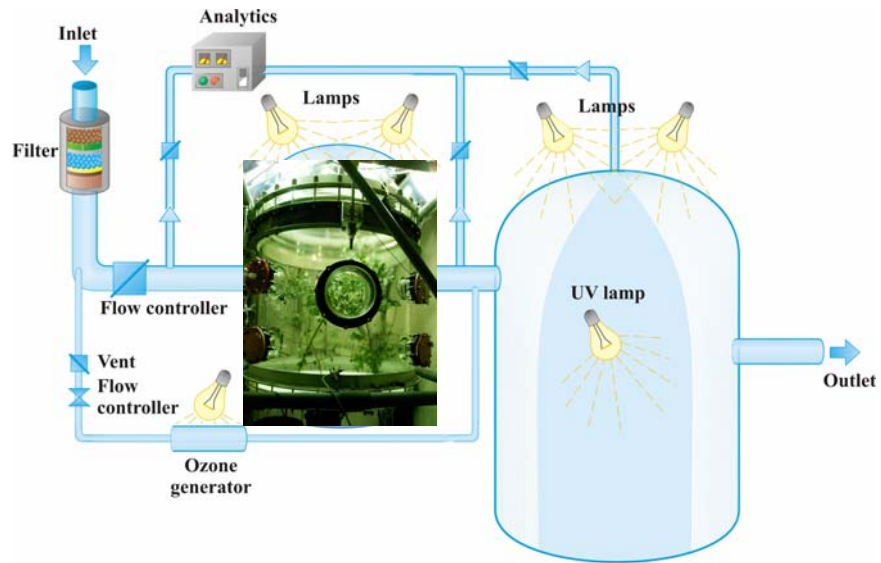
-Increased defence against neighbours, pathogens or herbivores and increased attraction of pollinators and herbivore predators and parasitoids ... or higher confusion in the relationships between plants and other organisms?

Larger carbon loss from plants

- Altered tropospheric chemistry through changing oxidizing potential: **Higher ozone, methane and aerosol concentrations**

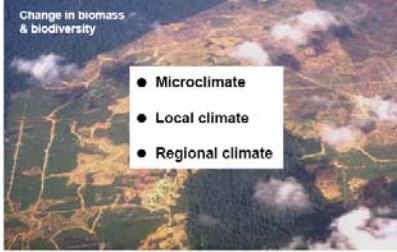
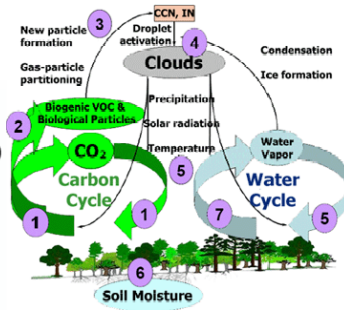
- Altered climate through aerosol formation and direct and indirect greenhouse effects: cooling or warming?

...production of aerosols, O₃,.... from BVOCs (sesquiterpenes...



Coupling of Carbon & Water Cycles

The figure depicts a schematic of biogenic aerosol regulation and linkage of the carbon and water cycles (1) CO₂ exchange, (2) VOC and bio-particle emissions, (3) CCN and IN, (4) Cloud properties, (5) Impact of clouds on environment, (6) Soil moisture, and (7) Transpiration and energy flux



ECOLOGÍA FUNCIONAL Y CAMBIO GLOBAL CREAM-CSIC DAURE campaign



Roger Seco



Joan Llusà



Iolanda Filella



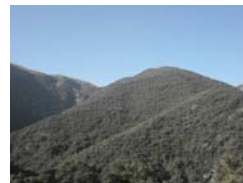
Rebeca Izquierdo



Anna Àvila



Josep Peñuelas

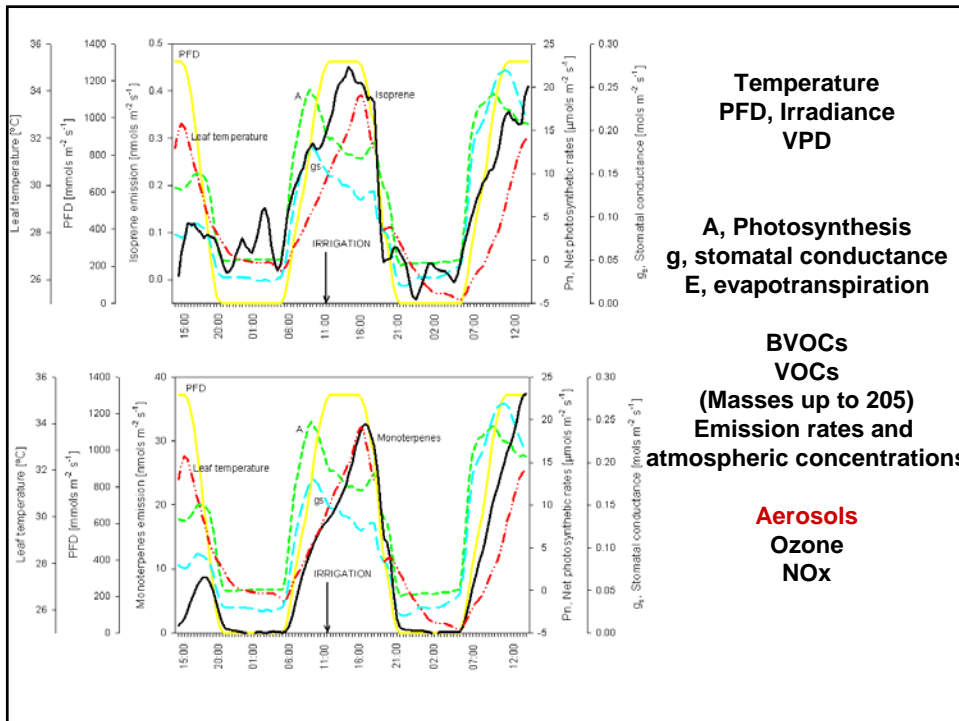
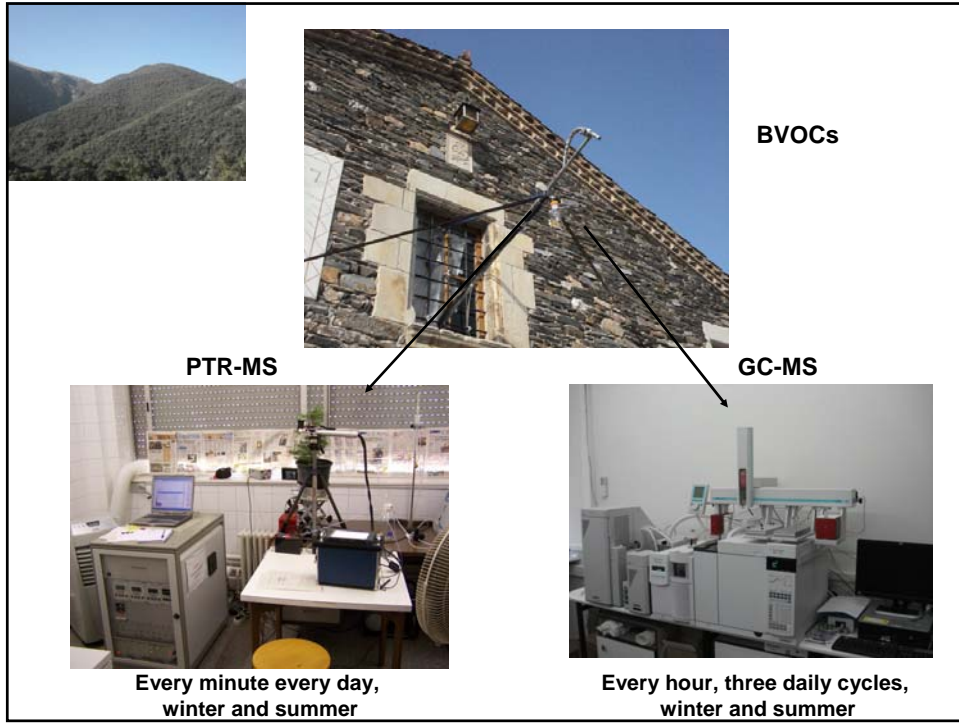


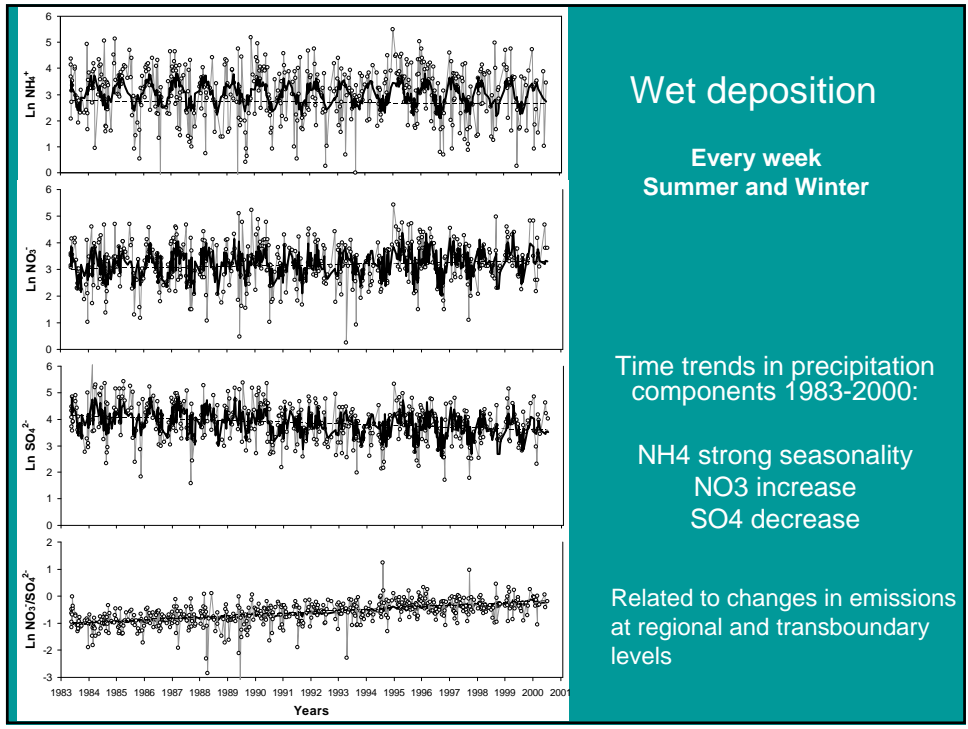
BVOCs EMISSION RATES



Every hour,
three daily cycles,
winter and summer

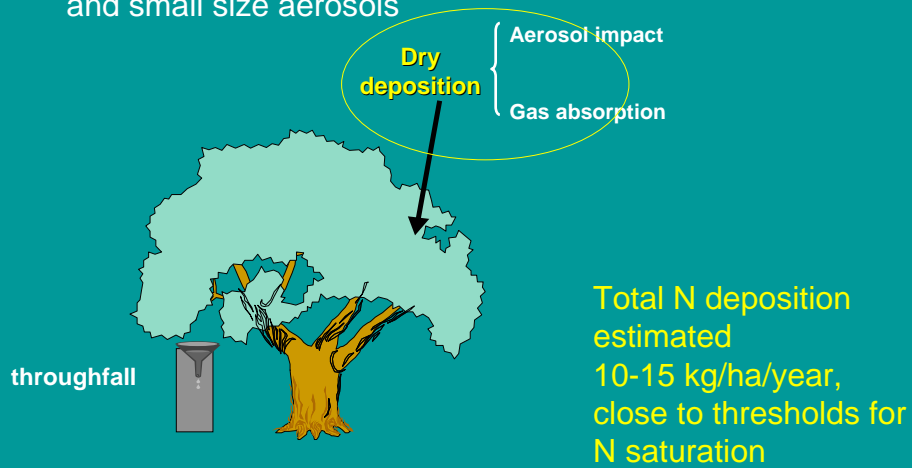






Nutrient deposition to forests

- Nitrogen deposition (eutrophication, acidification)
 - Wet deposition well known
 - Dry deposition: need for better knowledge for gases and small size aerosols



BARCELONA DAURE CAMPAIGN



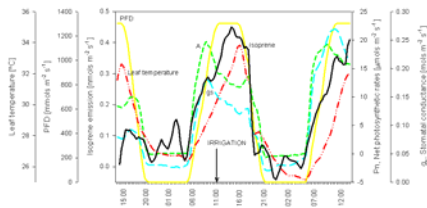
PTR-MS



**Every minute every day,
winter and summer campaigns**

BARCELONA DAURE CAMPAIGN

**Temperature
PFD, Irradiance
VPD**



**BVOCs
VOCs
(Masses up to 205)**

**Aerosols
Ozone
NOx**

