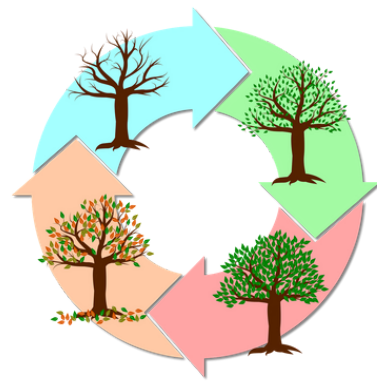




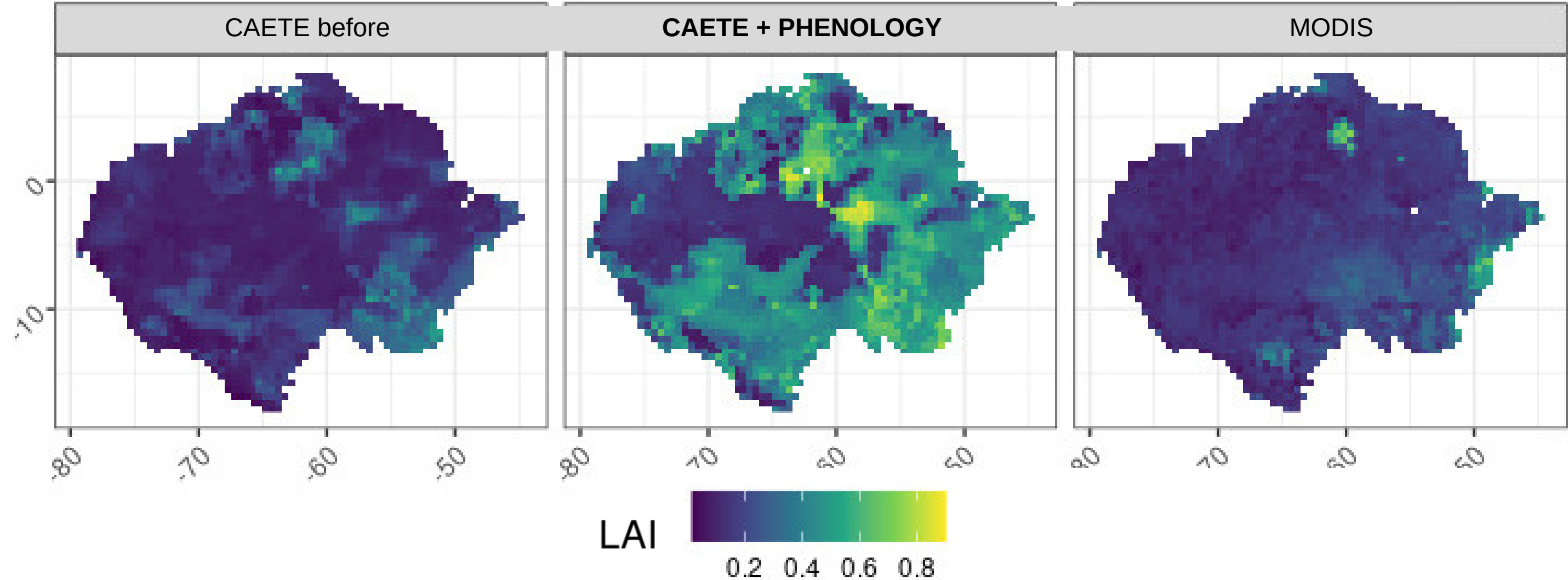
SOME RESULTS MODEL EVALUATION

PHENOLOGY MODULE INCLUDED

AND IMPACTS OF CLIMATE CHANGE

-30% PRECIPITATION AND CO₂ 600PPM

LAI amplitude throughout the Amazon biome



CAETE + phenology

Greater simulation of spatial
variability

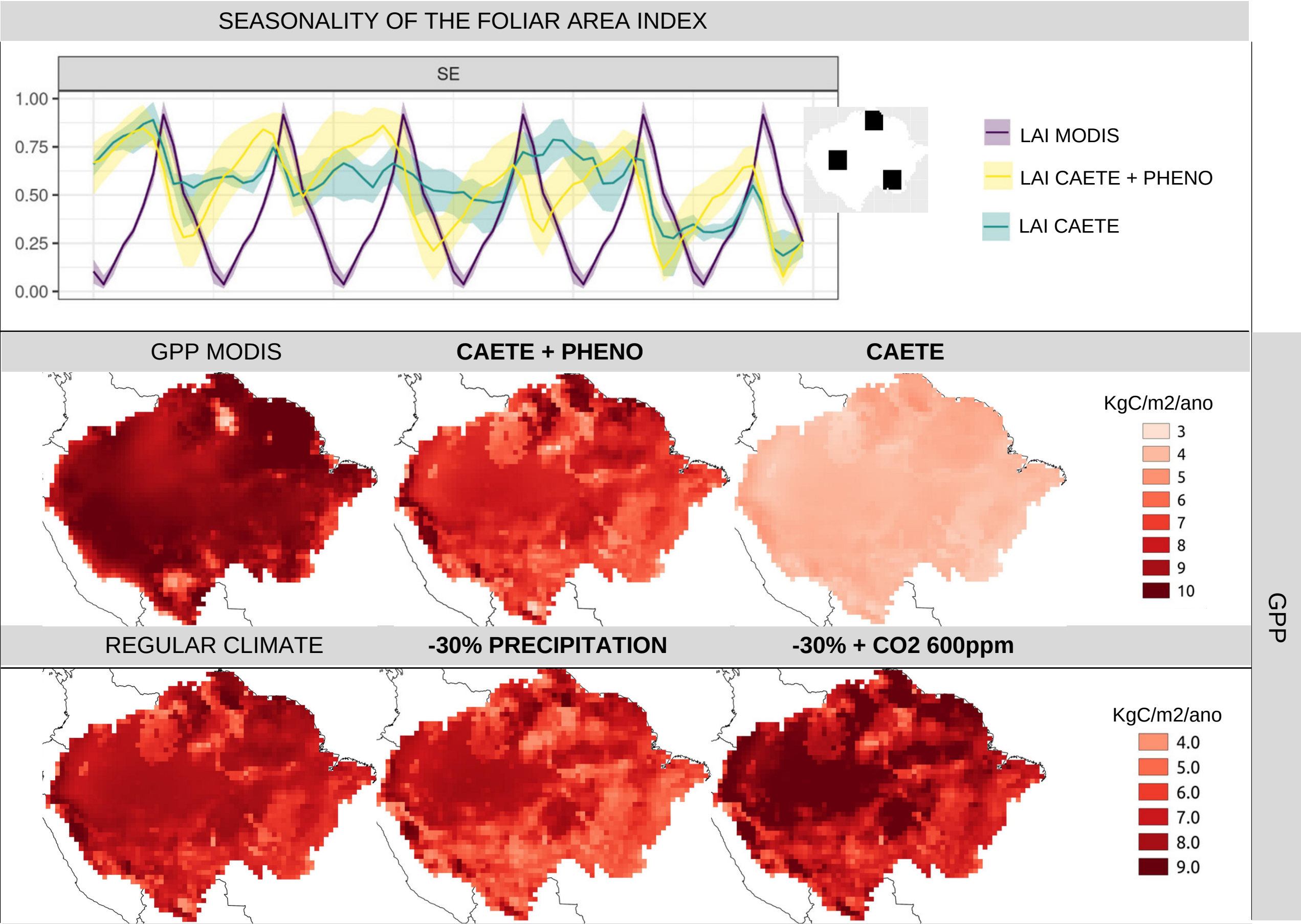
Previous version and MODIS

In general, considers the
Amazon as homogeneous

The inclusion of a phenological module driven by ontogeny and hydraulics increased the amplitude of the leaf area index, especially in the southern and eastern regions that have a greater semi-deciduous component.

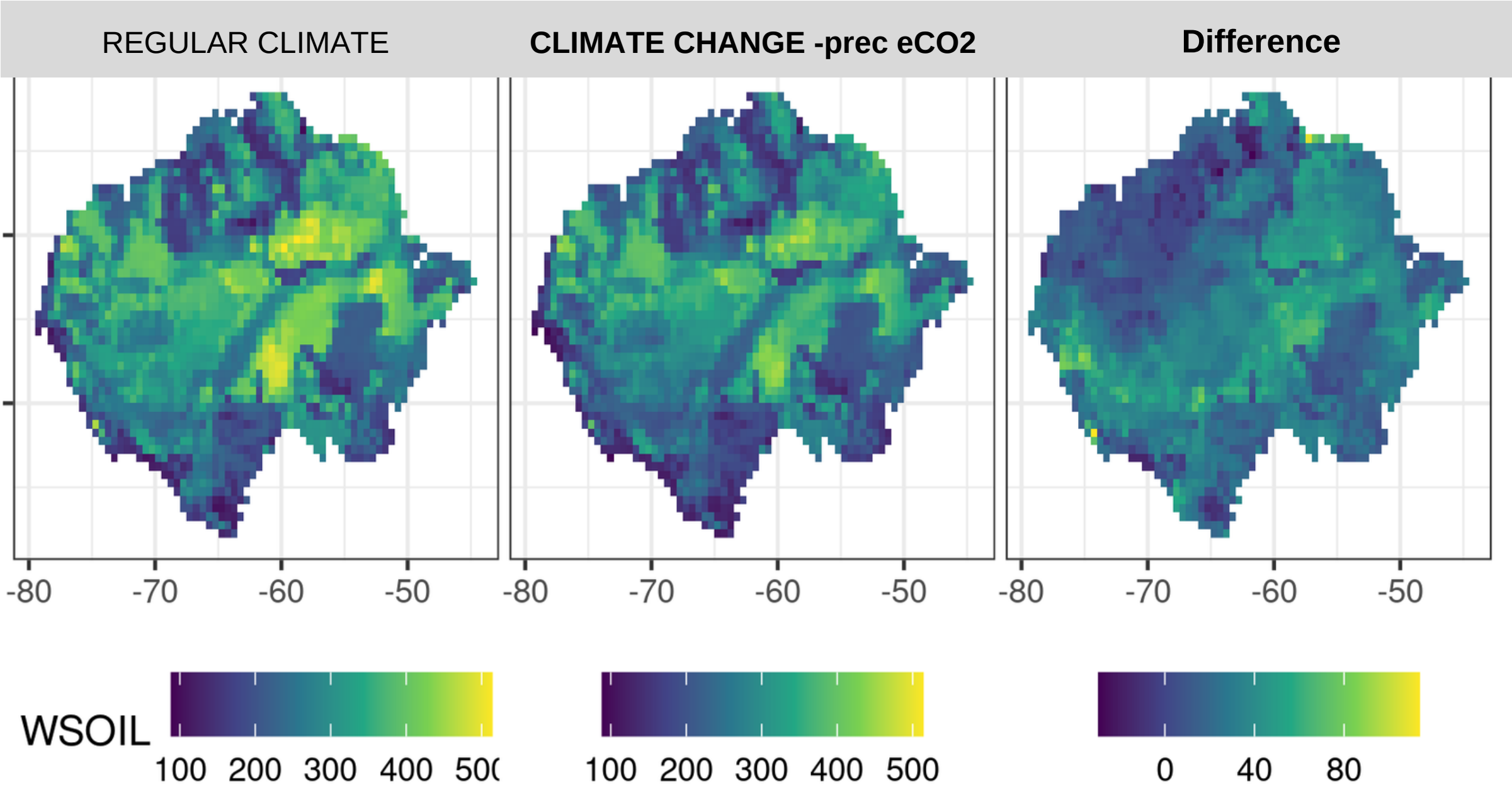
Seasonality of the modeled LAI; GPP representation and Impacts of climate change on GPP

(video attached with explanation)



IMPACTS IN SOIL WATER AVAILABILITY

Regular climate - application



CLIMATE CHANGE

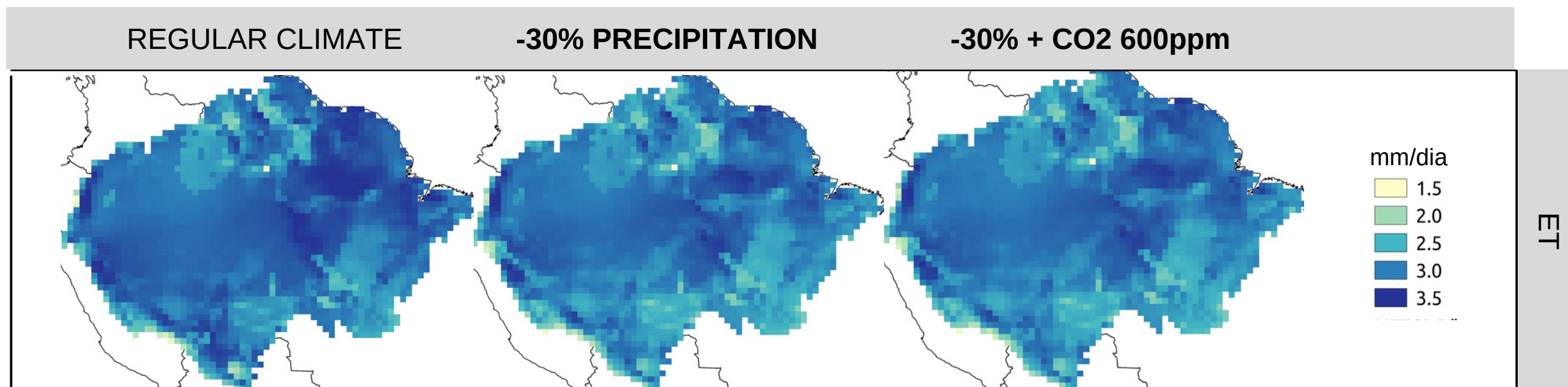
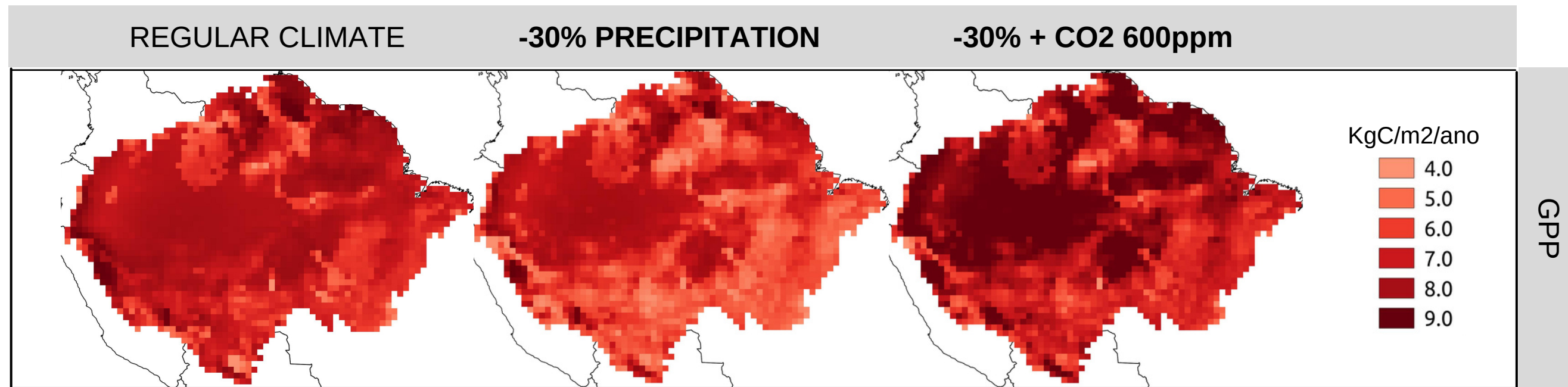
Amazon - humid

↓ soil water
↑ affected area

Amazon + humid

No significant impact

IMPACTS IN SOME CARBON AND WATER BIOGEOCHEMICALS



IMPACTS IN SOME CARBON AND WATER BIOGEOCHEMICALS

So focused on the analyzes at the biogeochemical level that represent the second specific objective of the work, following the mechanistic sequence of the model, we can see that a 30% reduction in precipitation reduced the gross primary productivity in the southern region of the Amazon, which is an area of transition to a less humid Amazon. The wetter part of the Amazon, on the other hand, did not show a reduction in productivity, possibly because it still has sufficient water supply for physiological activities to occur. When CO₂ fertilization is considered, the more humid Amazon has an increase in productivity since it has enough water even though it reduces rainfall and more CO₂ is available for the plant to assimilate. And for less humid areas, CO₂ fertilization supplied the reduction observed when only the reduction in precipitation was considered.

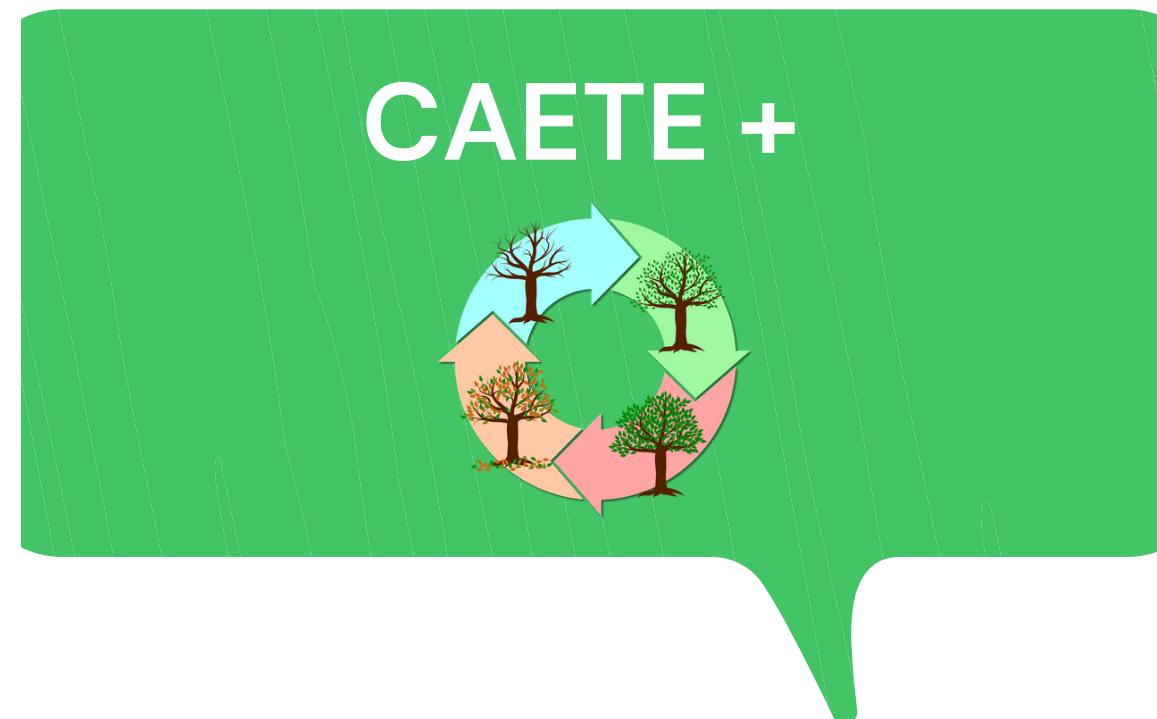
GPP

For evapotranspiration, a small reduction of this process was observed compared to the regular climate, but without distinction between the sensitivity tests, so it is possible that the plants are increasing the efficiency of water use, both with a reduction in the provision of water, as well as the increase in CO₂, using less water for each assimilated carbon, and consequently reducing the evapotranspiration of the ecosystem, proportional to the humid and less humid regions of the Amazon.

ET

Other analyzes were made, if you are interested, please email me

SOME CONCLUSIONS



1

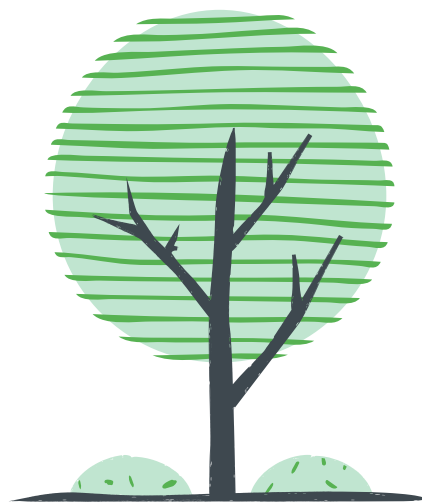
Better representation of LAI seasonality for less humid areas in the Amazon

2

Greater spatial variability of LAI across the Amazon

3

Needs adjustments to better represent the wettest areas of the Amazon



SOME CONCLUSIONS

Climate
Change

4

Evident impacts on biogeochemical cycling processes



SOME CONCLUSIONS

Phenology in DGVMS

5

Further studies are needed that relate phenology to the hydraulics of the plant in the DGVMS

6

Basis for future applications of phenology in tropical forests

