



CENTRE NATIONAL
DE LA RECHERCHE
SCIENTIFIQUE

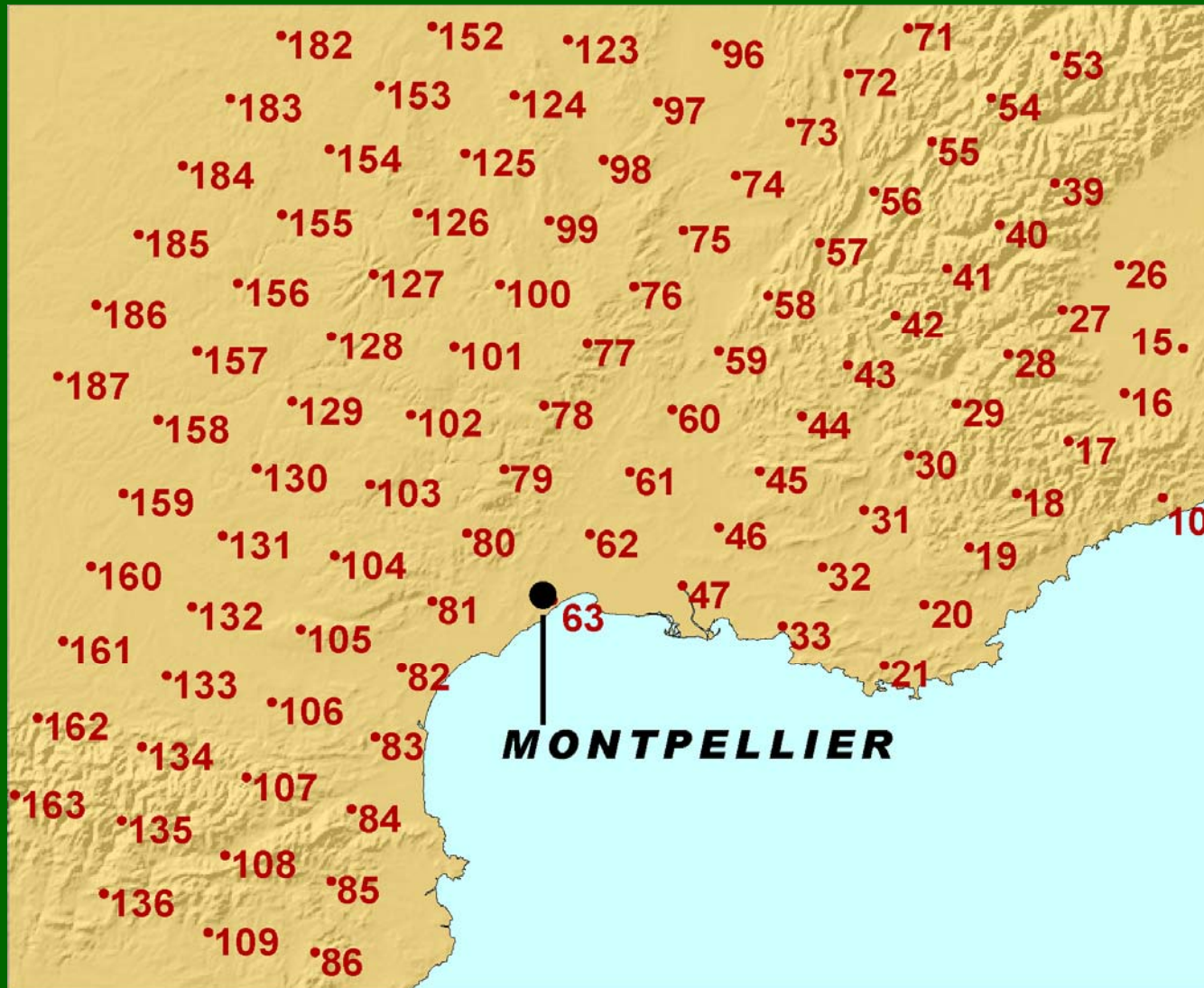


CENTRE D'ÉCOLOGIE
FONCTIONNELLE
& EVOLUTIVE

Vulnérabilité des forêts méditerranéennes aux changements climatiques

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Localisation des points de grille du modèle ARPEGE



Précipitations estivales (mai à août)

1970 - 2000

2070 - 2100

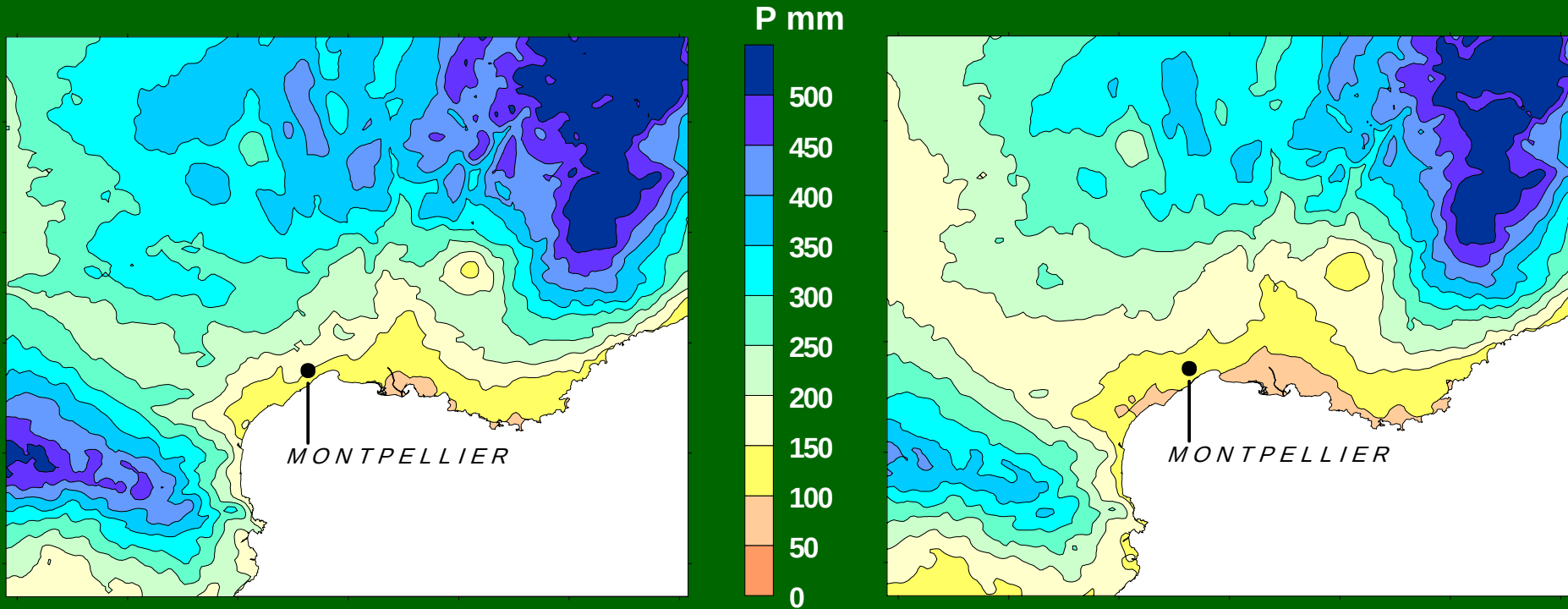
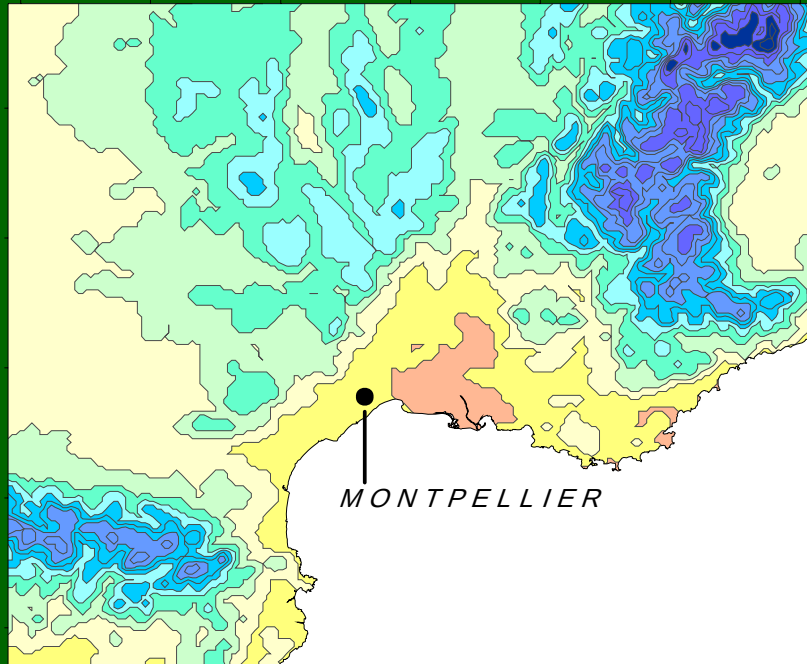


Table 2. Values of ΔP , $\Delta\sigma_P$ RWAF and $\Delta\sigma_T$ over the 26 Regions of Figure 1^a

Region	Season	ΔP , %	$\Delta\sigma_P$ %	RWAF	$\Delta\sigma_T$ %	Season	ΔP , %	$\Delta\sigma_P$ %	RWAF	$\Delta\sigma_T$ %
NEU	WS (May–Oct)	0.85 (0)	17.39 (2)	1.13 (1)	15.09 (4)	DS (Nov–Apr)	14.40 (2)	6.69 (1)	1.43 (2)	–19.45 (4)
MED	WS (Oct–Mar)	–9.73 (1)	24.94 (4)	1.09 (0)	–3.43 (0)	DS (Apr–Sep)	–21.58 (4)	39.99 (4)	1.47 (2)	15.25 (4)
NEE	WS (May–Oct)	6.02 (1)	23.23 (4)	1.34 (2)	4.19 (0)	DS (Nov–Apr)	20.07 (4)	16.71 (2)	1.93 (4)	–12.40 (2)
NAS	WS (May–Oct)	11.40 (2)	14.69 (2)	1.39 (2)	3.39 (0)	DS (Nov–Apr)	27.27 (4)	9.41 (1)	1.96 (4)	5.28 (1)
CAS	WS (Nov–Apr)	–2.08 (0)	21.89 (4)	1.29 (1)	2.02 (0)	DS (May–Oct)	–9.26 (1)	16.13 (2)	1.55 (4)	4.31 (0)
TIB	WS (Apr–Sep)	7.94 (1)	3.15 (0)	1.42 (2)	3.00 (0)	DS (May–Oct)	15.93 (4)	12.62 (2)	1.54 (4)	3.61 (0)

Températures maximales estivales (mai à août)

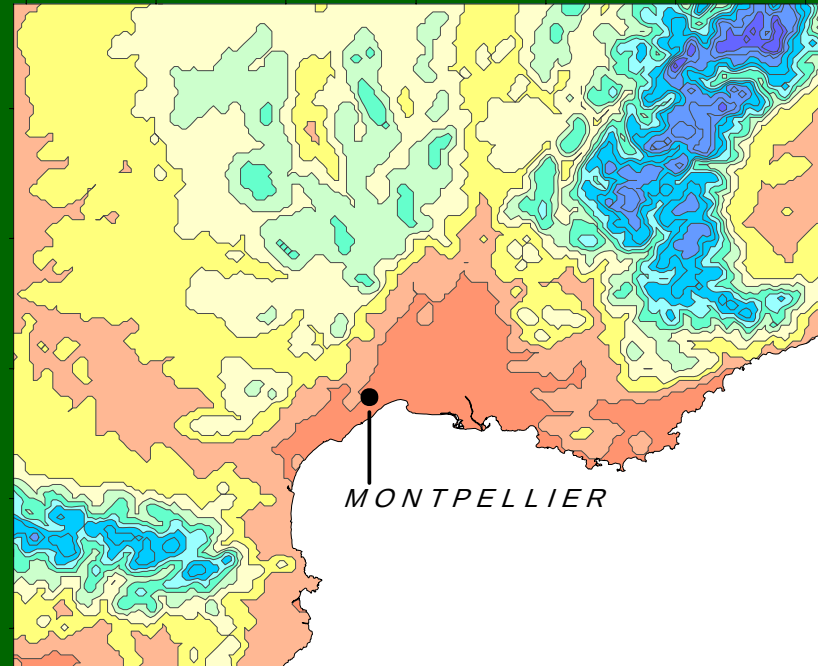
1970 - 2000



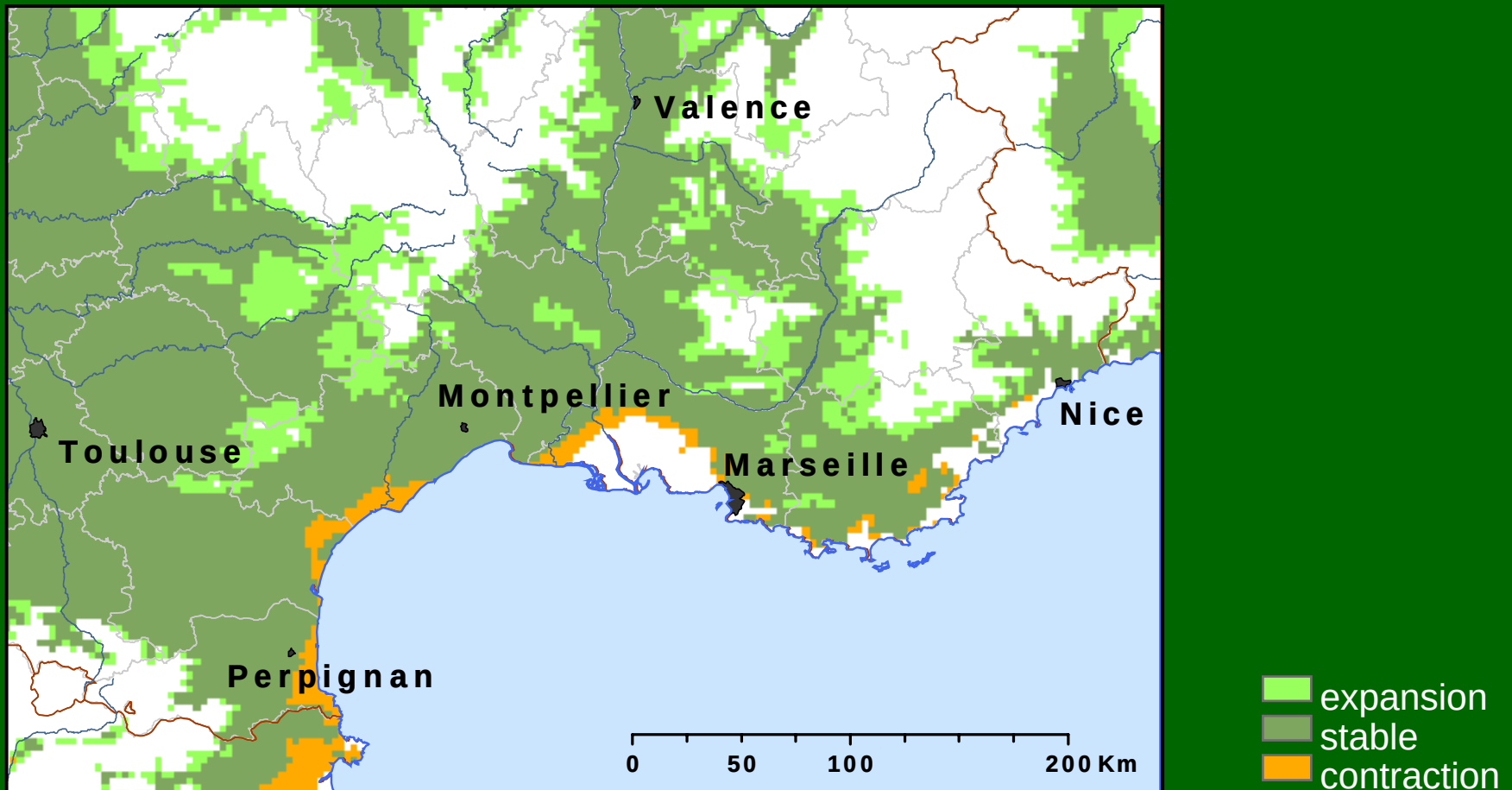
T °C



2070 - 2100



Aire bioclimatique de *Quercus ilex*



Arbre

Croissance radiale
et autres composants
de la production primaire

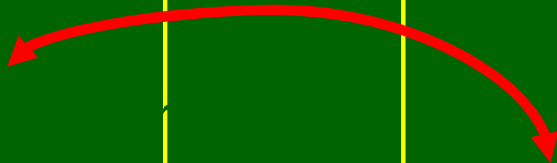
Écosystème

Flux d'énergie,
d'eau et de carbone

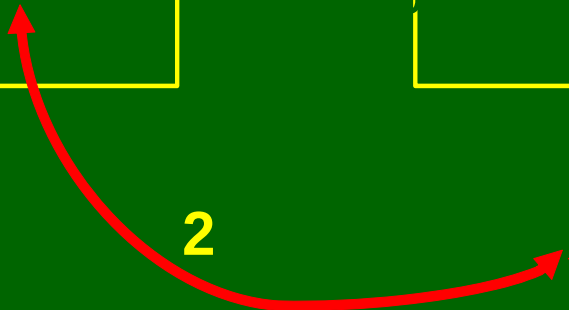
Paysage et région

Mesures satellitaires
spatialement exhaustive
de paramètres biophysiques

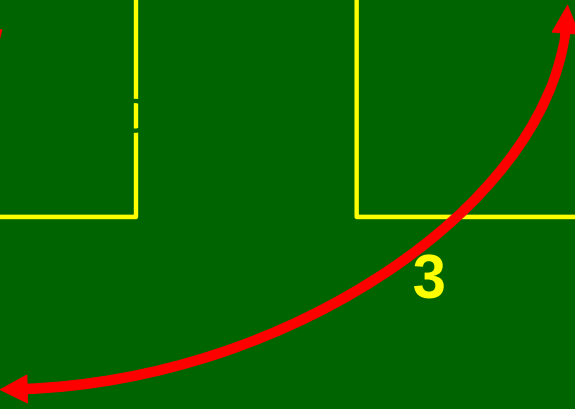
1



2



3



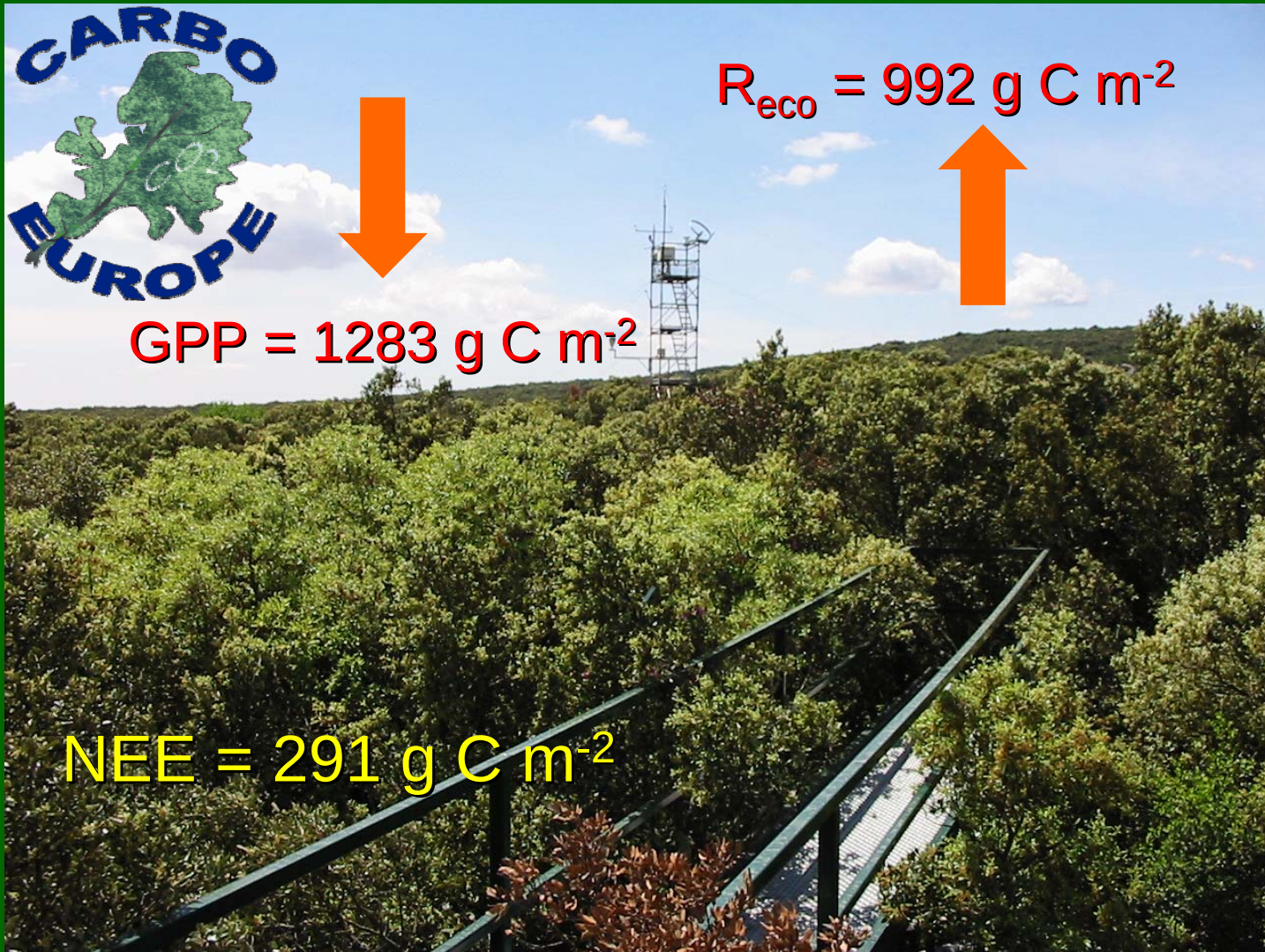


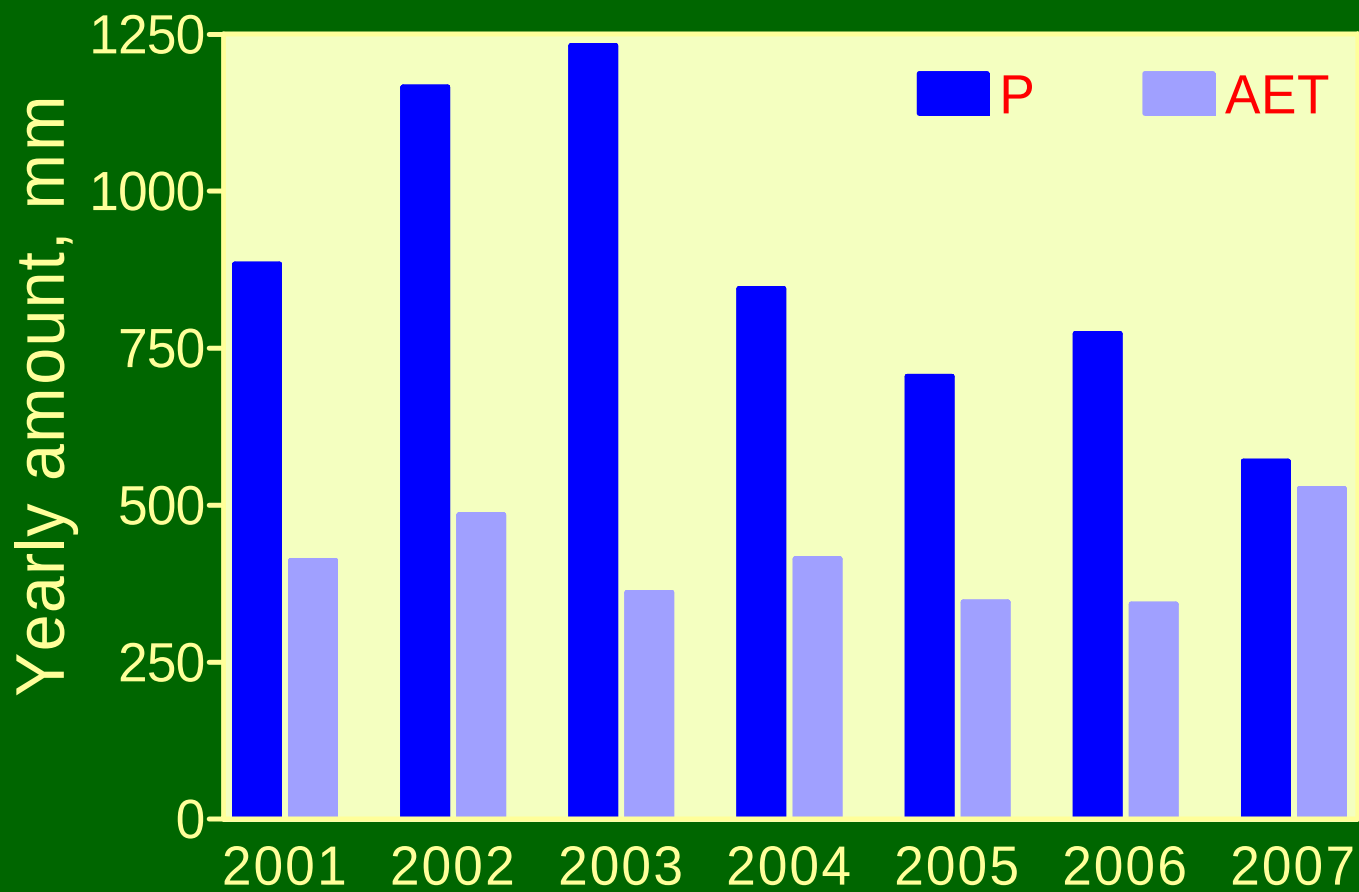
$GPP = 1283 \text{ g C m}^{-2}$

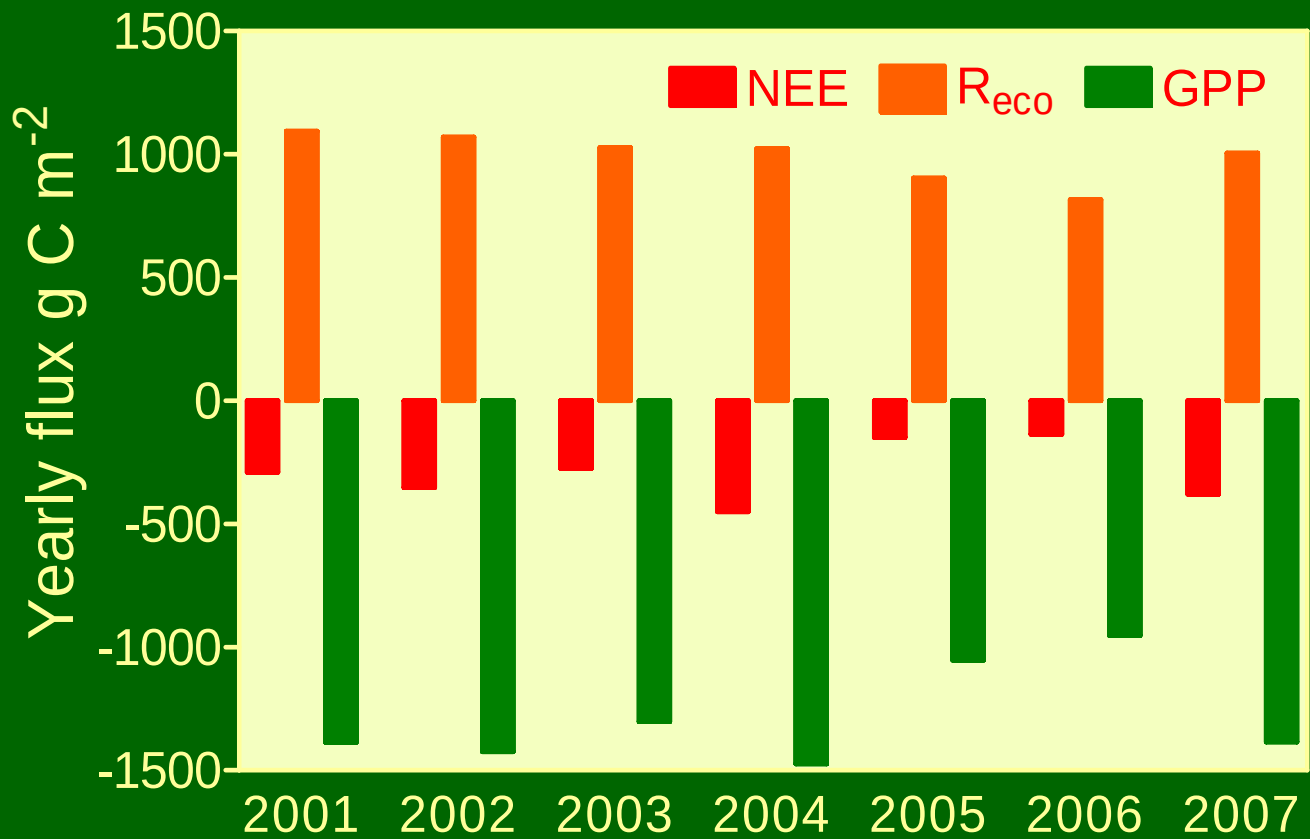
$R_{eco} = 992 \text{ g C m}^{-2}$

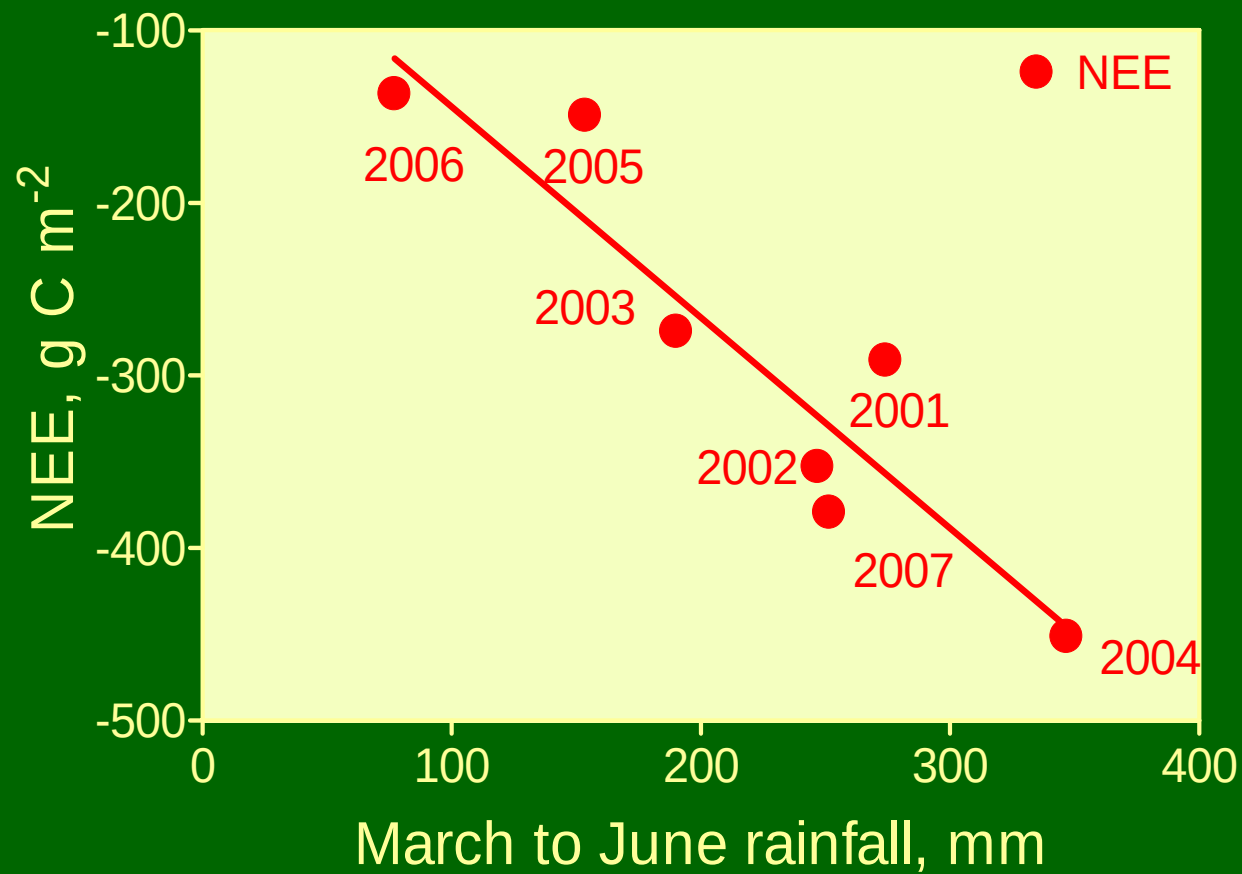


$NEE = 291 \text{ g C m}^{-2}$





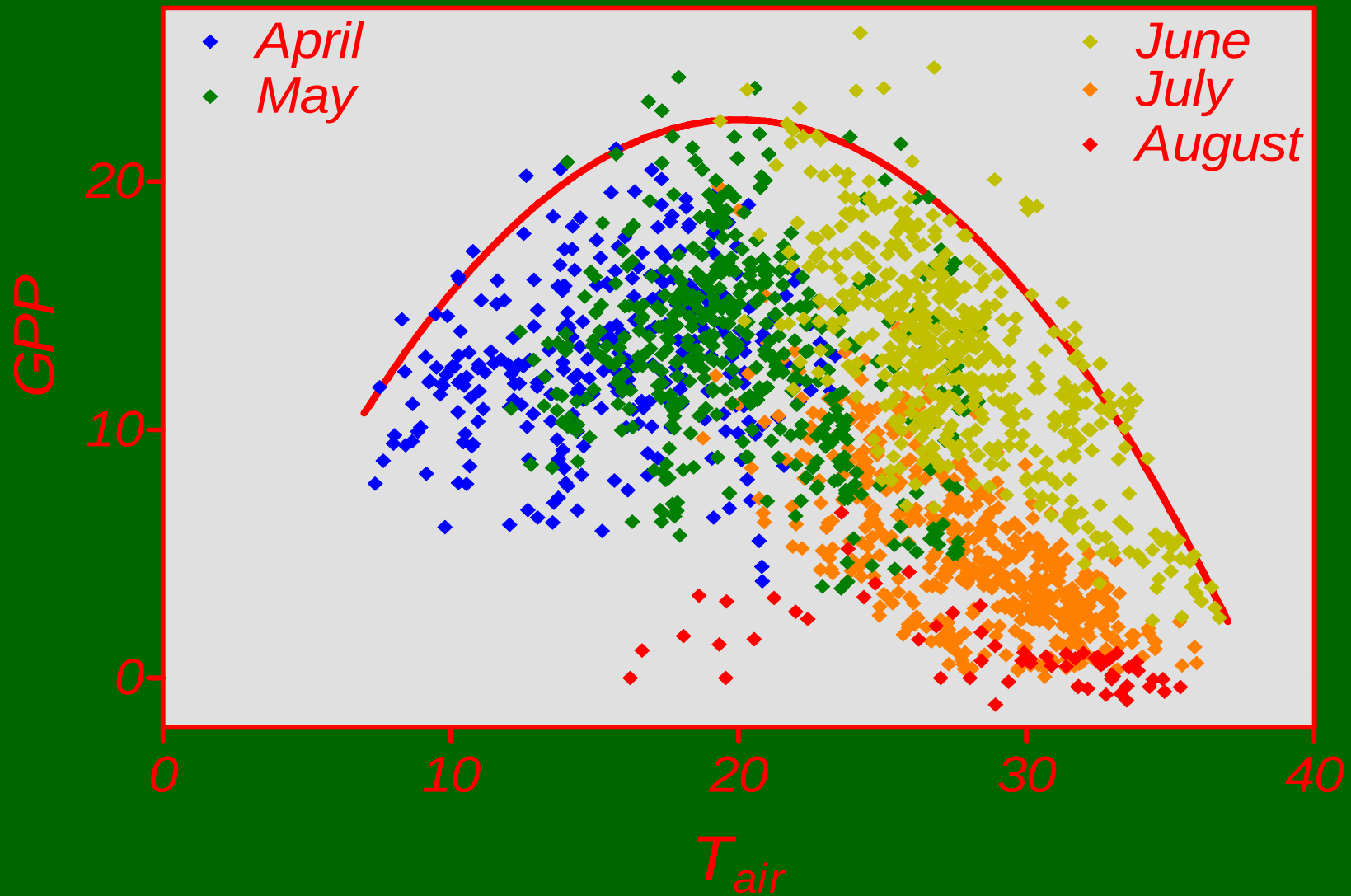


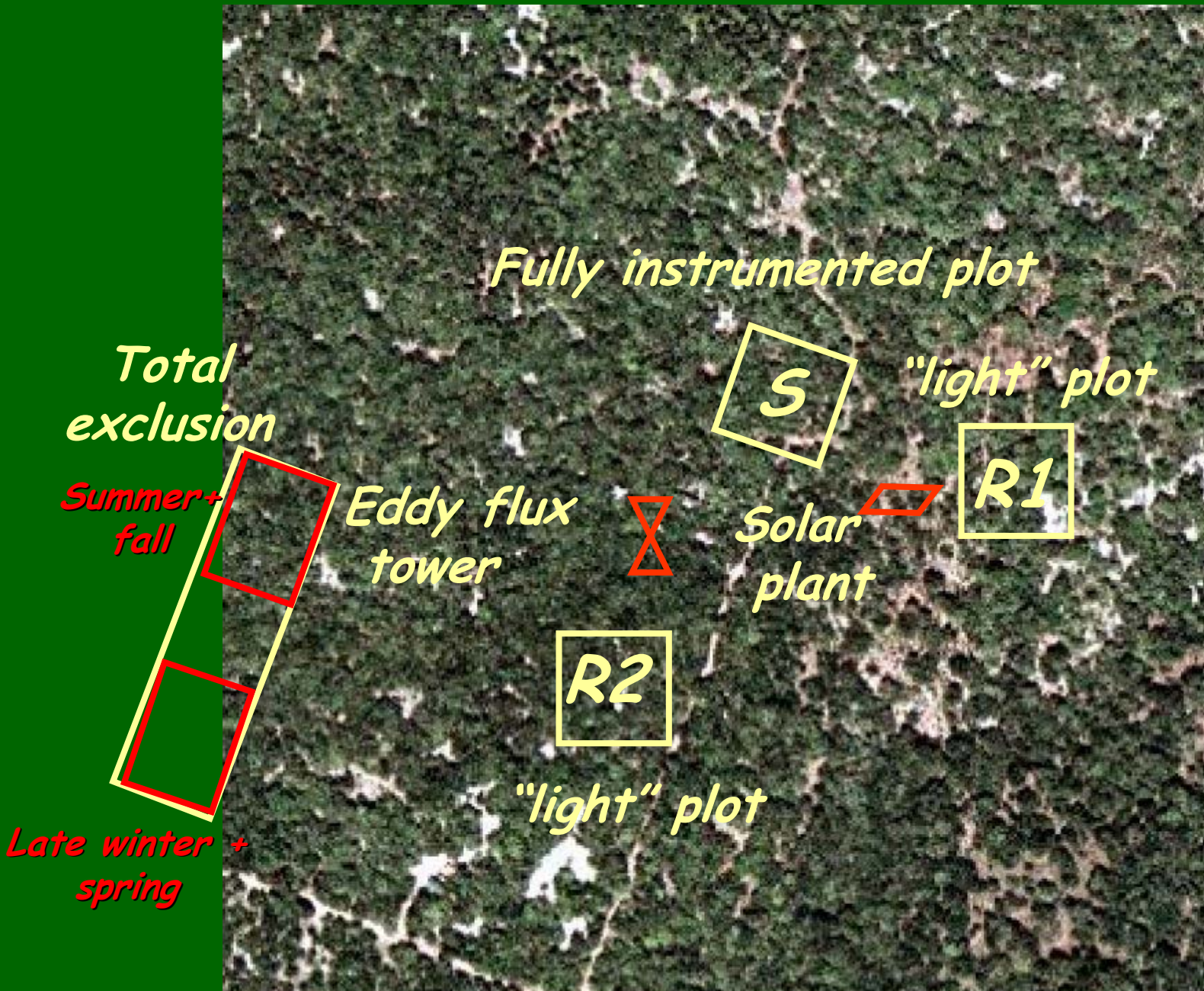


Faire des suivis à long terme et utiliser les événements exceptionnels

- Comprendre les réponses aux phénomènes transitoires (ex. heat pulse 2003)
- Permet d'étendre la validité des modèles de fonctionnement (évite les extrapolation hasardeuses)
- Informe sur les capacités d'acclimatation des arbres et des écosystèmes

Heat wave 2003

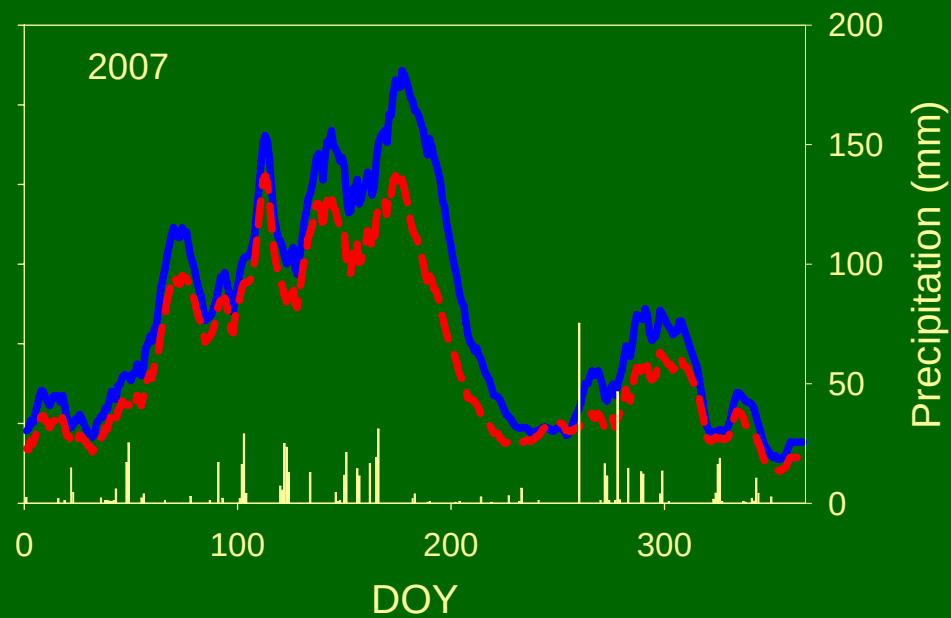
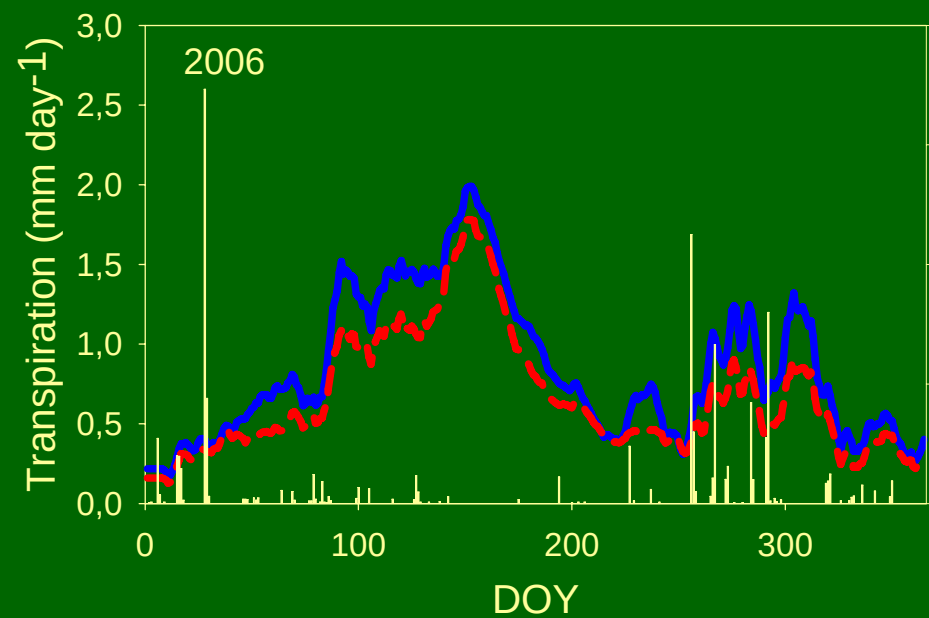
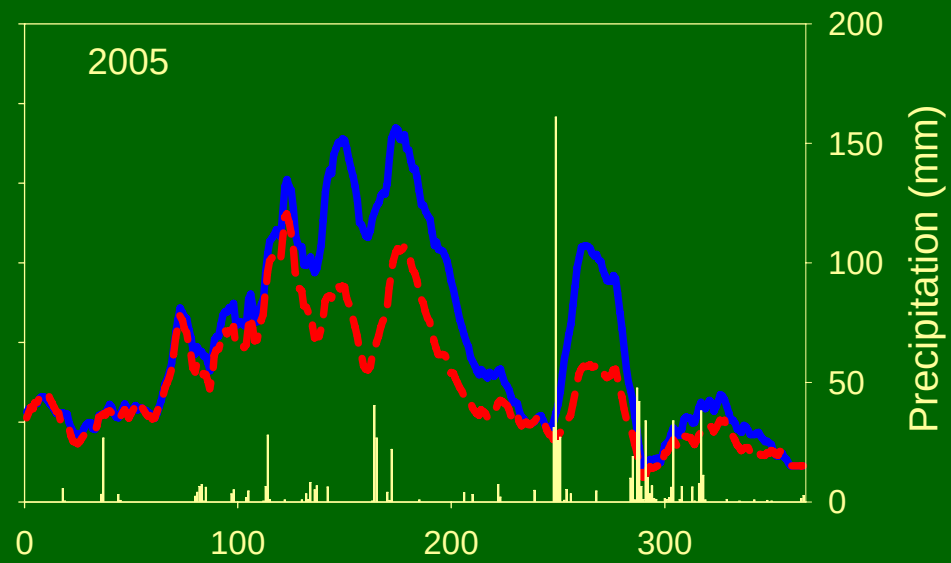
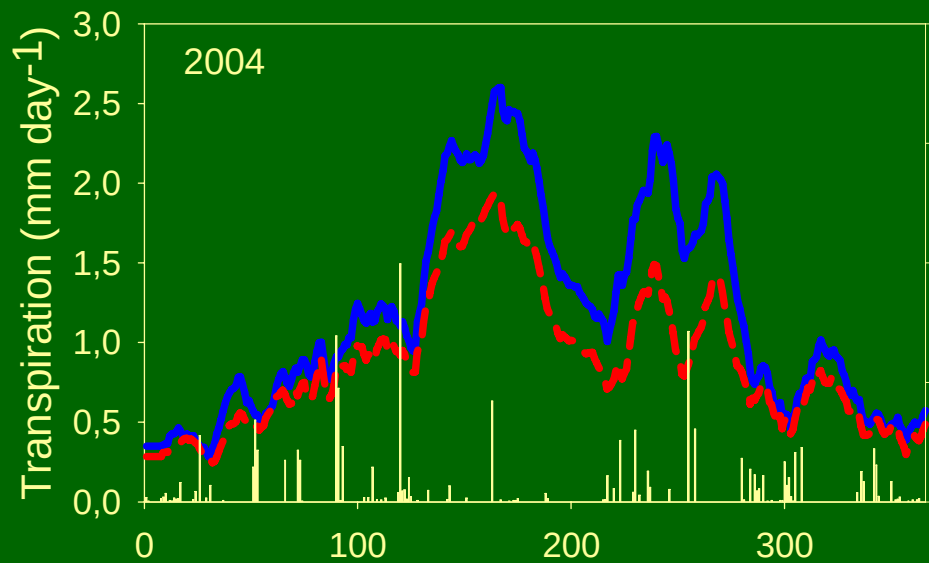




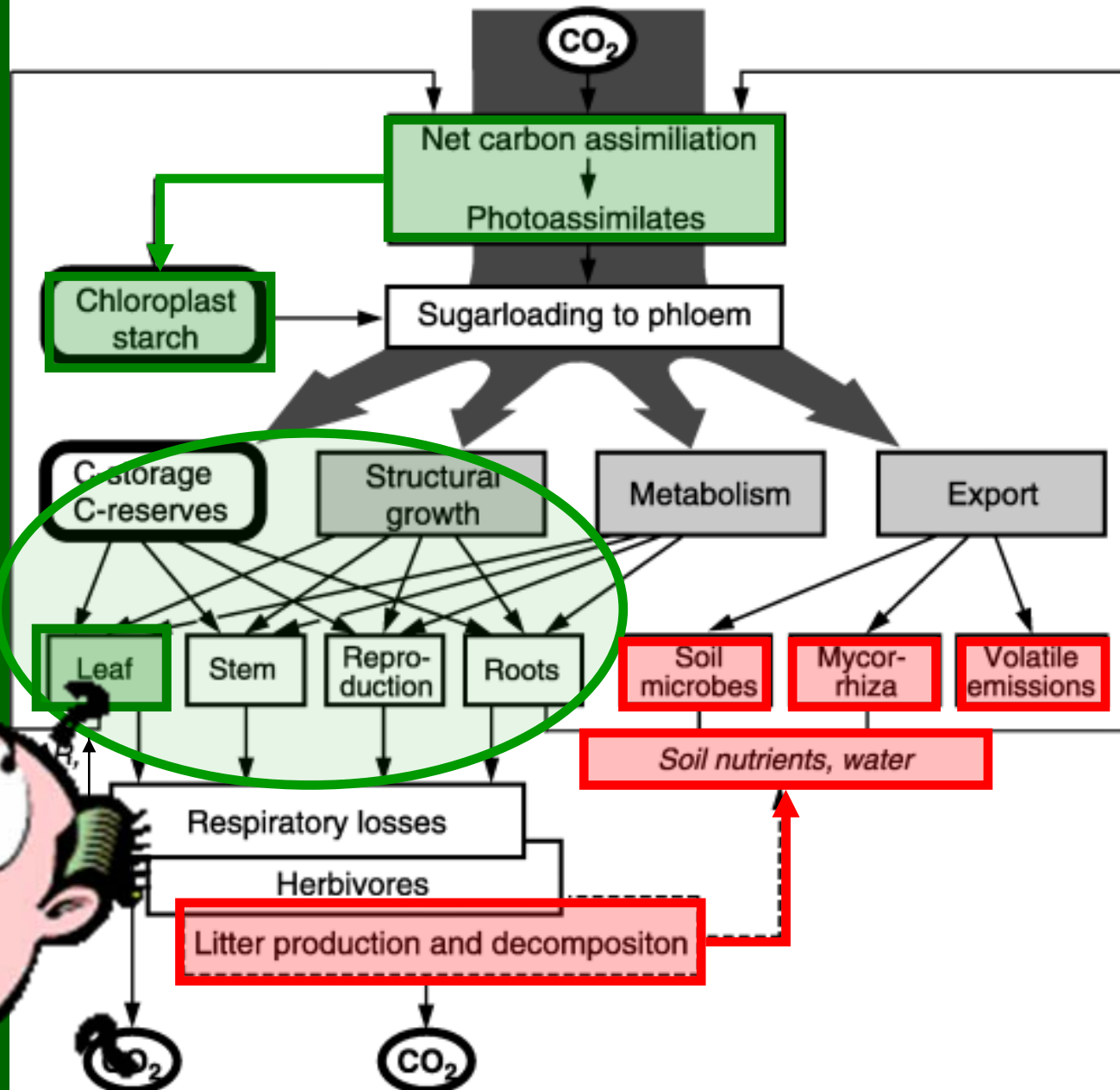


Mind UE: Mediterranean Terrestrial
Ecosystems and Increasing Drought -
Vulnerability Assessment





The fate of carbon in plants

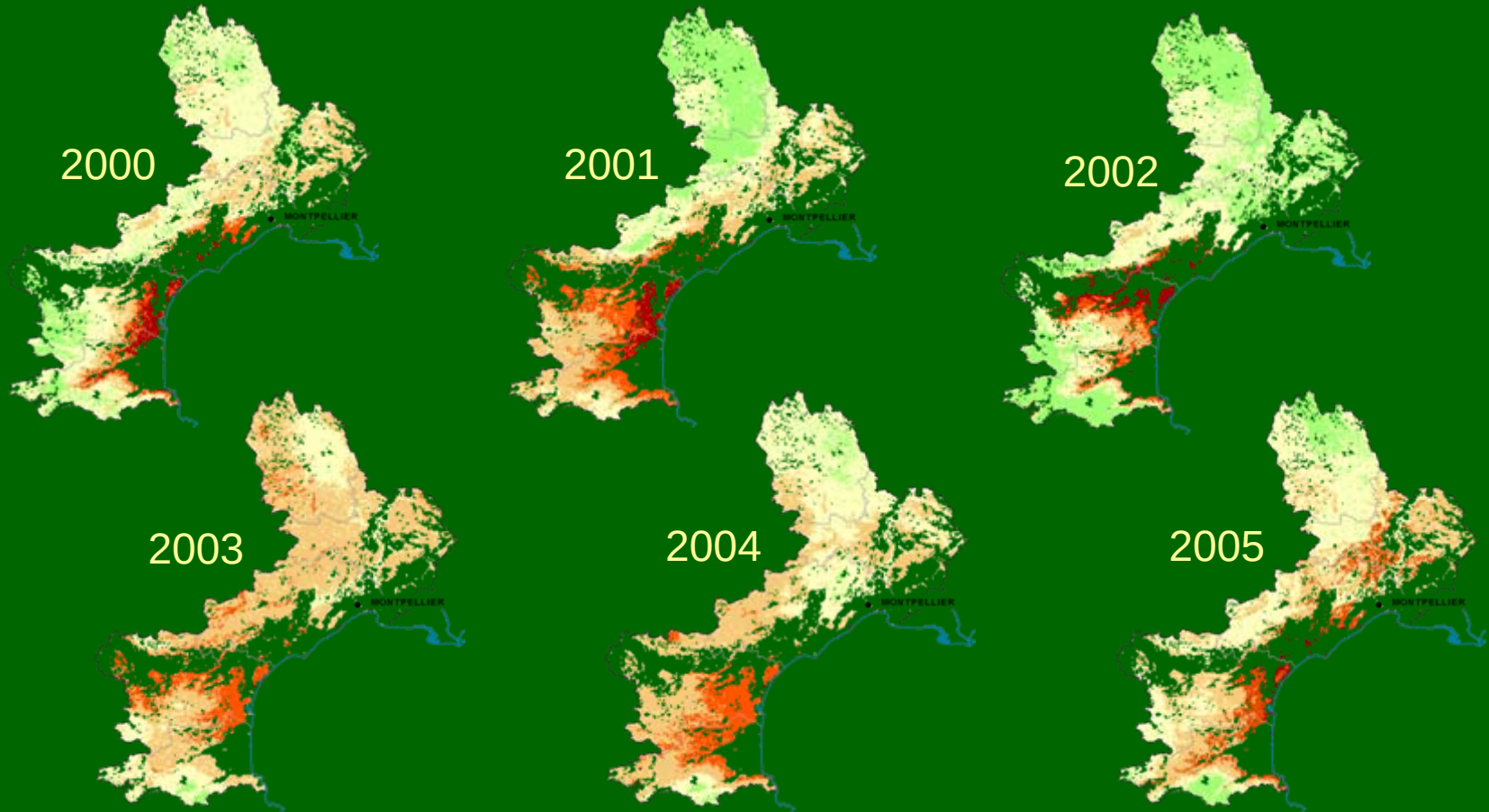


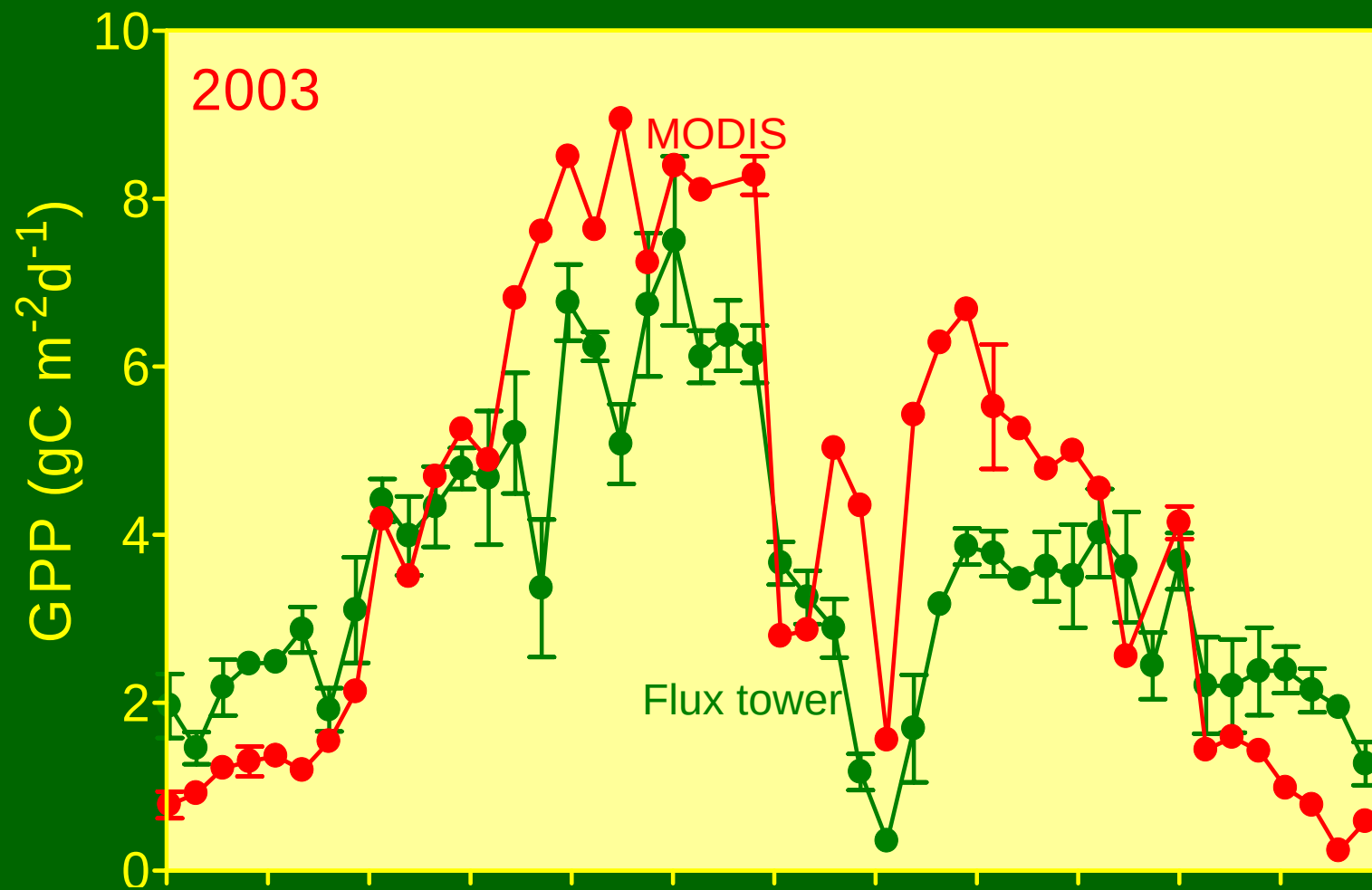
Drought duration ($RWC < 0.7$)

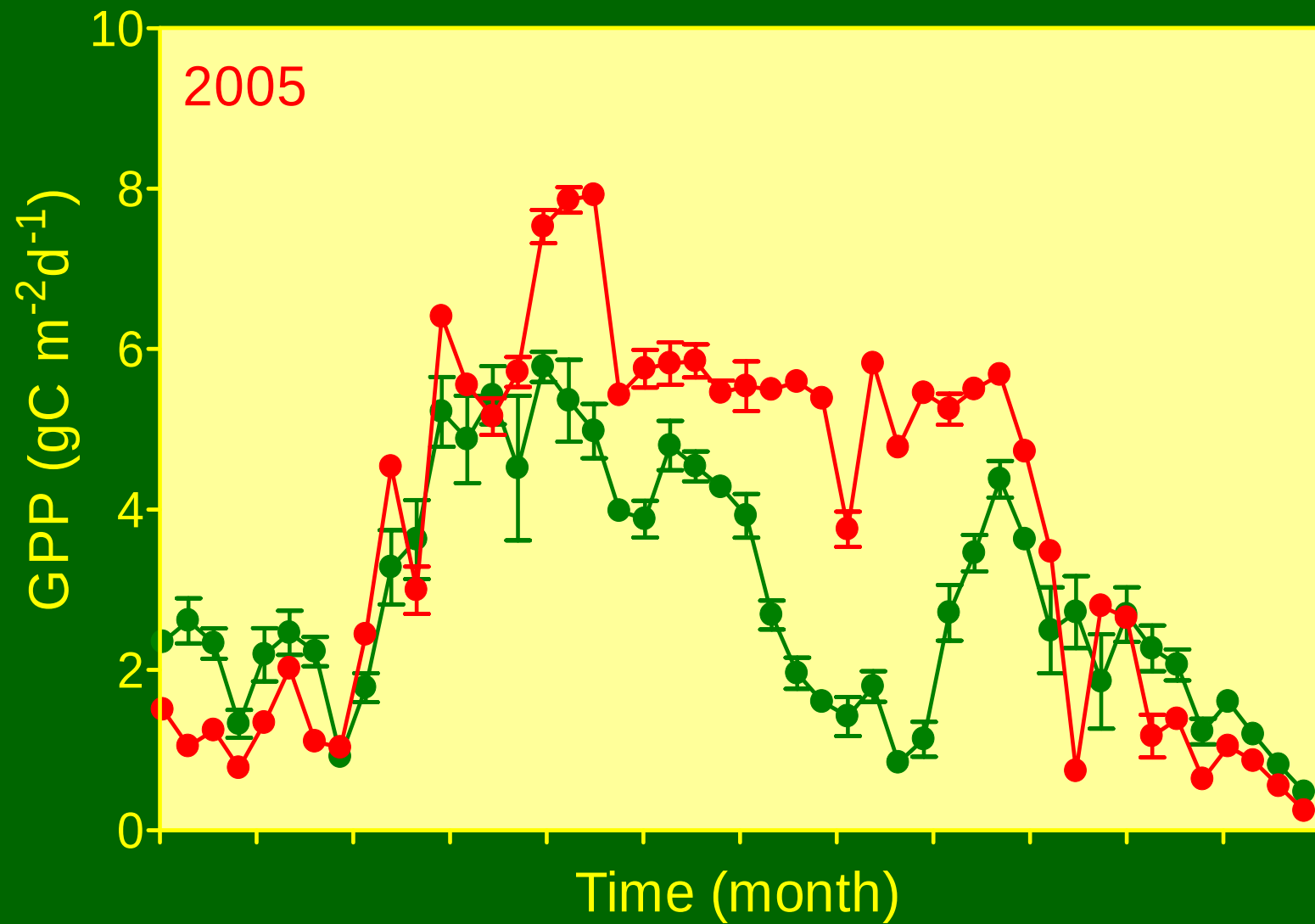
Number of days

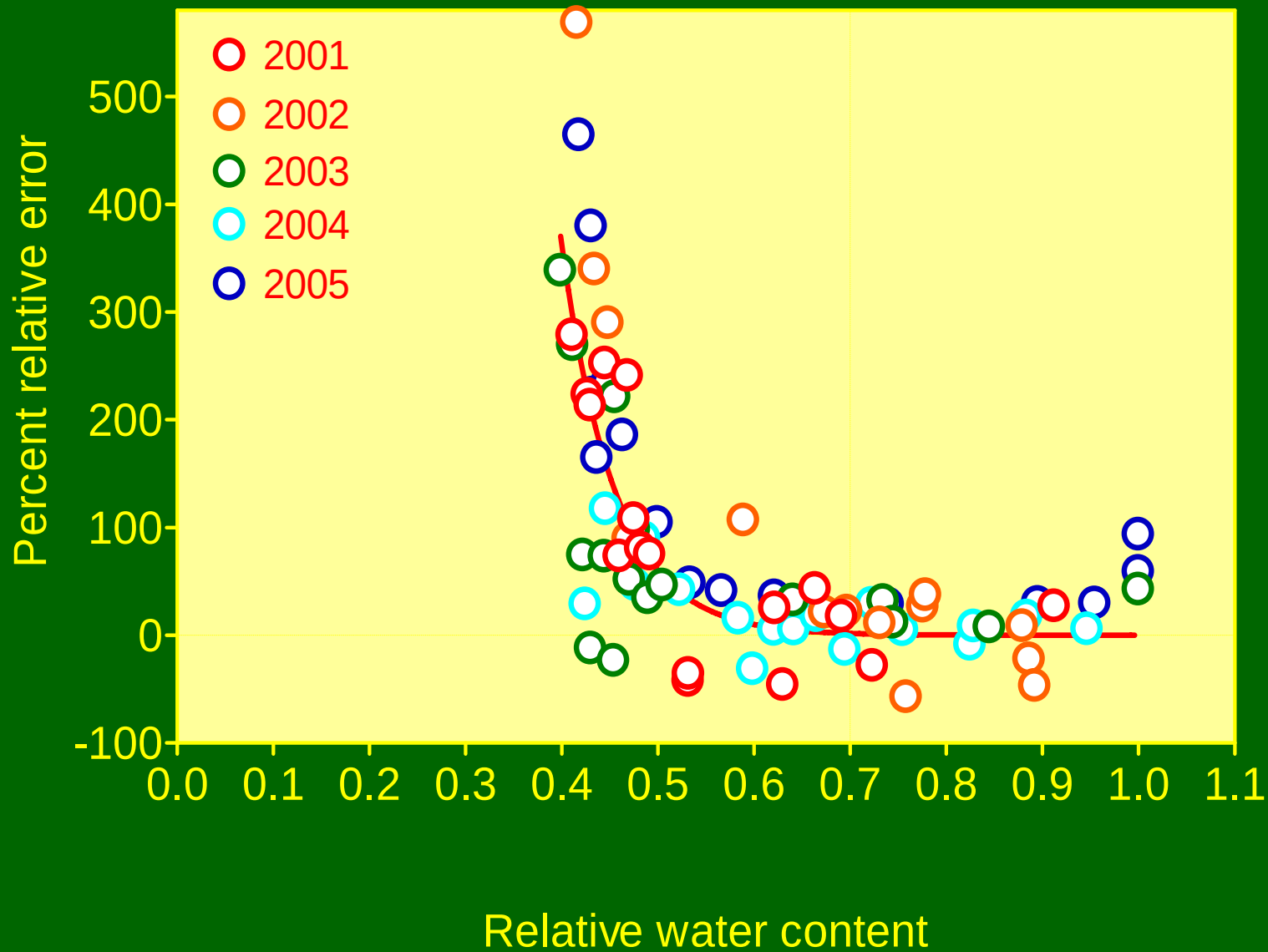


agricultural or urban area









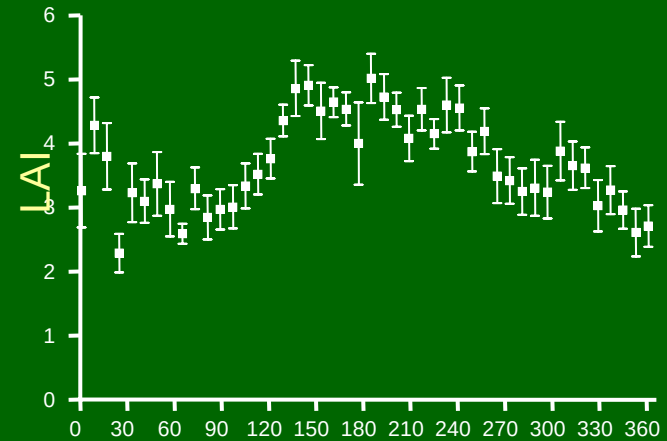
Analyser les arrières effets à l'échelle régionale



Attaque massive de
Lymanthria dispar
chronique du LAI MODIS
sur les écosystèmes à
Quercus ilex dominant

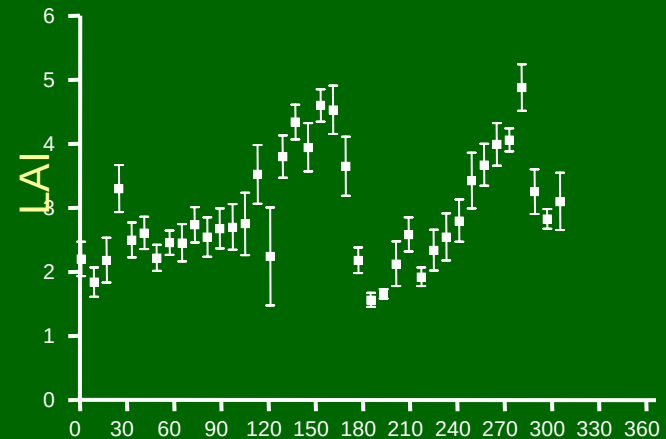


2003



Temps (jour)

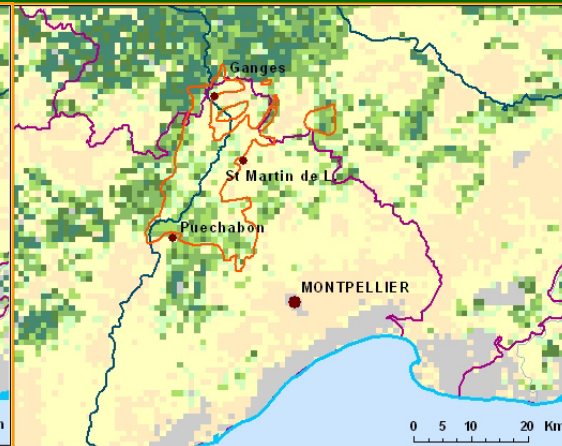
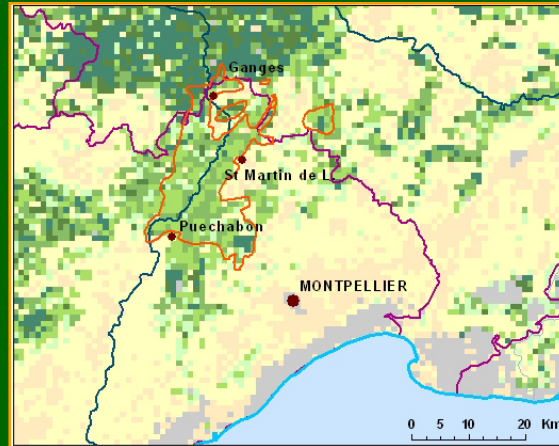
2004



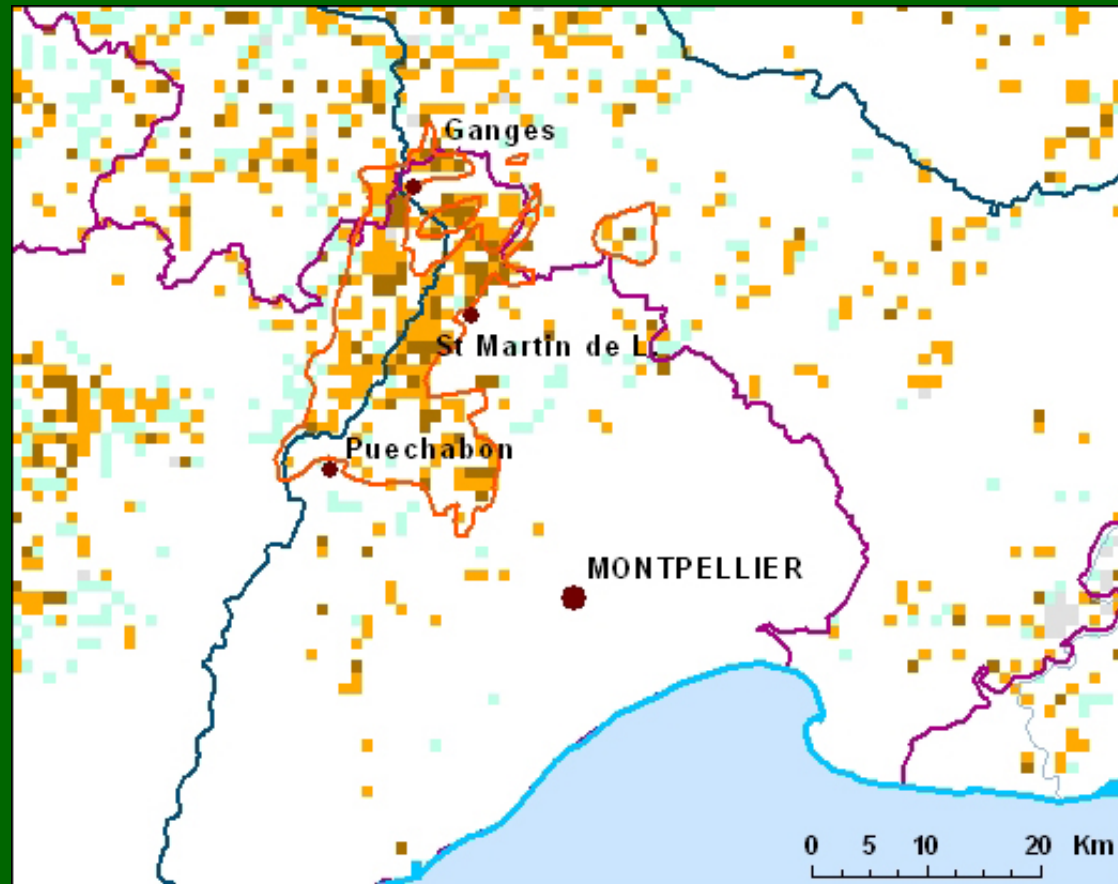
Temps (jour)

Juillet 2003

Juillet 2004



Comparaison
de 2004 et 2003



Climatic unpredictability and parasitism of caterpillars: Implications of global warming

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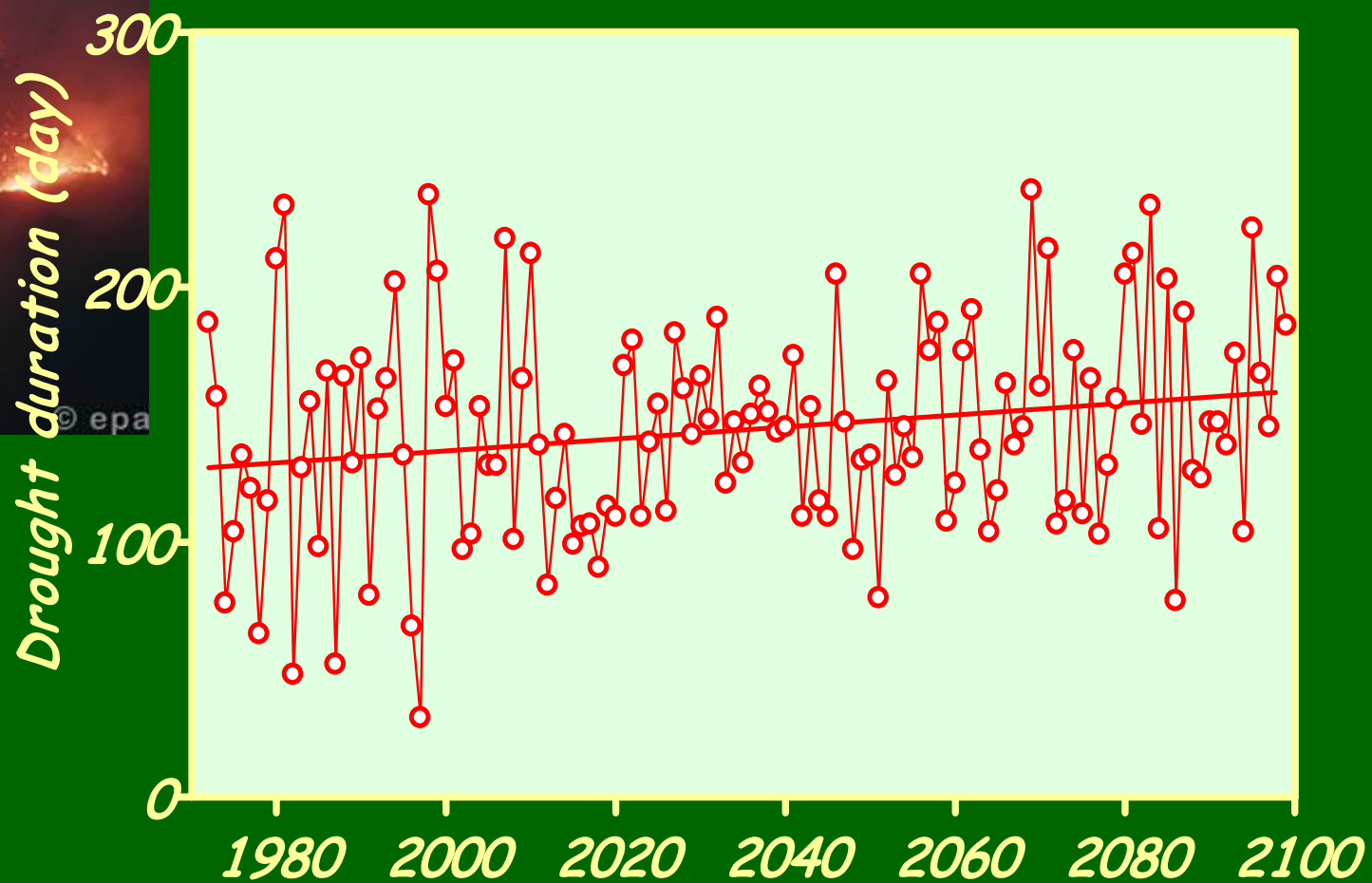
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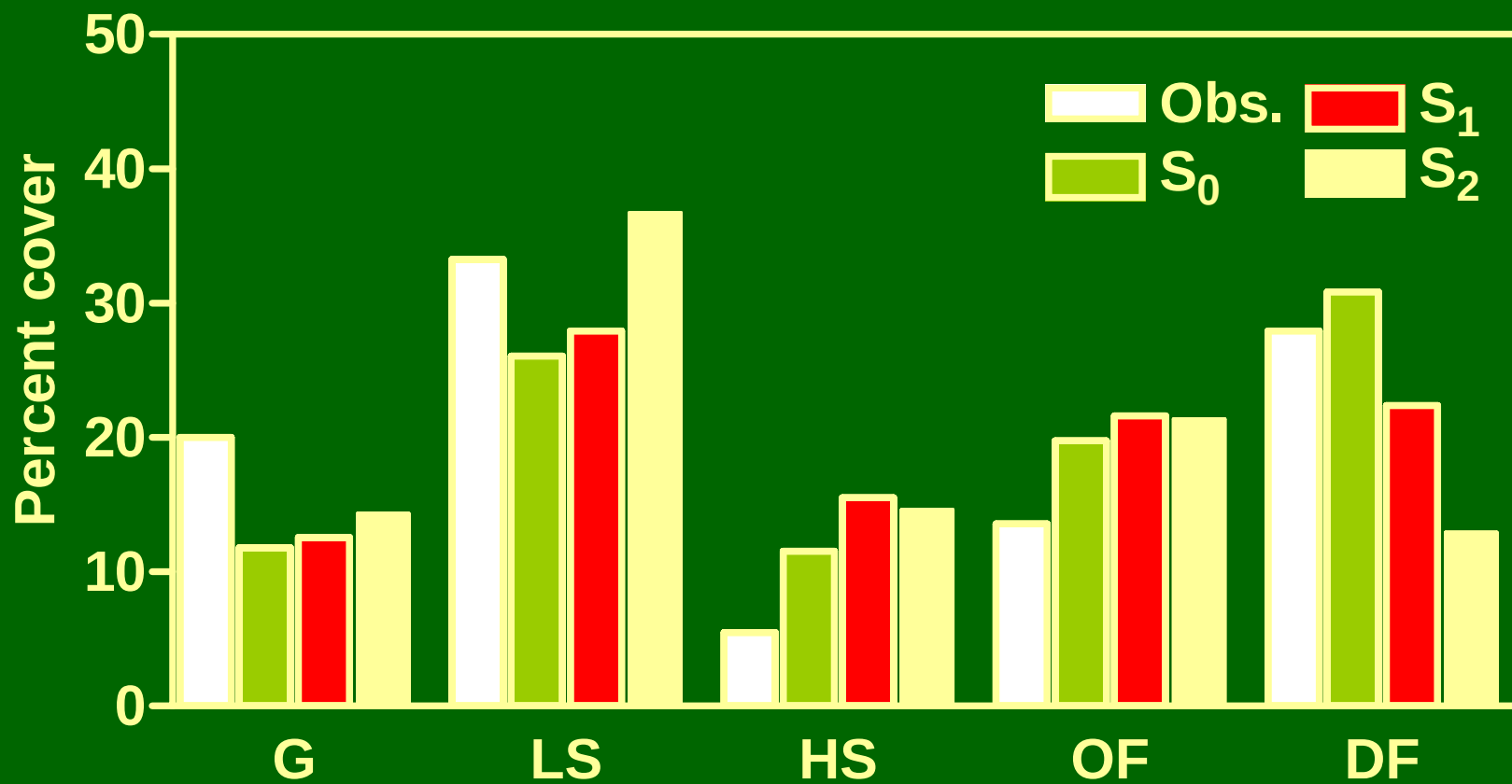
Contributed by D. H. Janzen, October 10, 2005

insect outbreaks are expected to increase in frequency and intensity with projected changes in global climate through direct effects of climate change on insect populations and through disruption of community interactions. Although there is much concern about

temporal variance in herbivore populations, parasitoids and other enemies may be affected by both the unpredictable climatic variation itself and the unpredictable amplified variance in host dynamics in response to climate. The inevitable lags

Le régime des perturbations est plus sensible
aux changements climatiques que les fonctions
des écosystèmes







Passing over Southern California at 3:10 p.m. on October 24, 2007, NASA's Terra satellite captured this image of the massive wildfires that have devastated the area.