Model-based optimization of the trade-offs between biomass production, climate feedback and water consumption in short rotation coppice forestry.

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energy use ennot



wind energy





Evolution of CO<sub>2</sub> concentration in the atmosphere. 100 thousand year ice age cycles (max. 300 ppm) and even higher spike since industrial revulution (390 ppm in 2010).







## ADAPTATIONS TO THE ORCHIDEE MODEL FOR SRC SIMULATION

# MANAGEMENT ADAPTATIONS

- Coppice
- = remove aboveground
- PHYSIOLOGICAL PARAMETERS
- V<sub>c max</sub> & J<sub>max</sub> = much higher

# ALLOCATION ADAPTATIONS

Sexual reproduction
= not present for 5 years after

#### Diagram of the functioning of ORCHIDEE.

### biomass

- Uprooting (final harvest)
- = remove above + belowground biomass

Irrigation

= add x mm of rain per day

• SLA

= 66% of regular broadleaf tree

### Stand density

= after coppicing 1 stem resprouts into multiple stems coppice

Allocation to leaves
= LAI<sub>max</sub> ~ stand age<sup>2</sup> (2 years)

Woody root growth
= ±0 after coppice



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