



Vegetation dynamics from the Last Glacial Maximum to the Future - A focus on France

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The aim of our study is to investigate the potential response of ecosystems to environmental changes, such as past or future climatic changes. Therefore, we use simulations of potential European vegetation and vegetation reconstructions from palynological data over a regional area (France). Strong climate variations are expected to occur within our century. Will vegetation have time to adapt to temperature increase and precipitation modifications ?

We have set up vegetation groups based on the climatic tolerances and requirements of each plant identified by its pollen grain. The evolution of these Bioclimatic Affinity Groups (BAG) is reconstructed during the past 18000 years and the corresponding rates of change are computed. Two periods of maximal changes are evidenced, accounting for different ecosystem dynamics: the first is related to the Glacial-Interglacial transition and to the replacement of herbaceous environments by forests, whereas the other period is linked to recent human activity, with increases in agriculture and forest management.

The CARAIB model (Otto *et al.*, 2002) has been modified to simulate BAGs net primary productivity. The simulations indicate that expected climate change will lead to major transformations of potential vegetation (*e.g.* opening of Mediterranean environments, disparition of toundras,...). Several authors have stated that some important species might not be able to adapt to this new climate. Though, vegetation simulations must be interpreted in the light of palaeodynamics to define which plant type may have enough time to migrate and/or adapt and which may disappear.