Geophysical Research Abstracts,
Vol. 11, EGU2009-10374, 2009
EGU General Assembly 2009

Comparison of budburst dynamics between species on altitudinal gradient

H. Davi, M. Gillmann, and T. Ibanez
INRA, Avignon, France, hendrik.davi@avignon.inra.fr / +33-04.32.72.29.99

Phenology of plants is a key ecosystem parameter controlling carbon and water fluxes and also acting on the dynamics of communities. This parameter is highly sensitive to the climate and consequently is often used as a proxy of global change. In this paper, we attempt to analyse the dynamics of budburst every week for seven species (Fagus sylvatica L., Acer opalus Mill , Sorbus aria L., Quercus pubescens Willd. Abies alba Mill., Pinus sylvestris L., Pinus nigra Arnold) in two altitudinal gradients, one in a northern slope and one in a southern slope in the Ventoux mountain. The originality of this work is to assess not only the budburst date but to more precisely analyse the dynamics of budburst and its variation with altitude according to the species.

Two important results are highlighted. First, the dynamics of budburst changes according to the species. Three distinct patterns can be drawn, a rapid sigmoid increase for the deciduous species, a short sigmoid increase for the pines and an intermediate curve for silver fir. These dynamics can be slowing down for coniferous when frost arises during the budburst. The second topic is the link between budburst and temperature by analysing respectively the year, the altitudinal and the aspect (north and south) effects. In 2007, budburst occurs earlier for Fagus, Acer, and Abies, it does not change for pines and is delayed for Sorbus. Date of beech budburst is the same between north and south in spite of higher temperature in south. The altitude effect on budburst varies greatly according to species and the year with a weak effect on Fagus and a stronger effect for the others species showing a threshold at 1200 m. By analysing the mean of temperatures at each altitude, we conclude that temperature effect acts differently between years or between altitudes. To conclude, we highlighted the complex effect of temperatures on budburst varying between species and situations.