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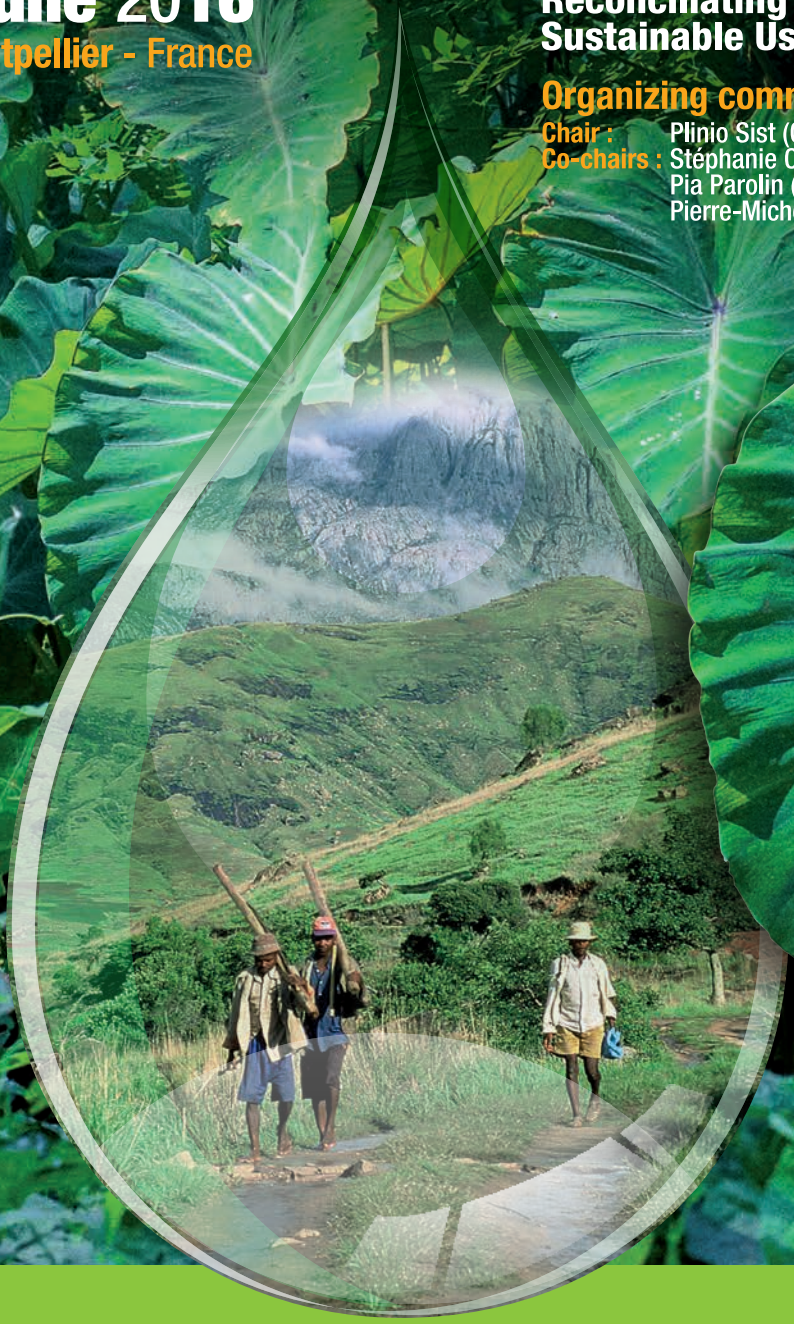

PROGRAM & ABSTRACTS

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P40-01 – S40 *Tropical tree structure and function: directions and gaps four decades after Hallé*
17:30 – 18:30 – Joffre Area (Level 1)

Carbon and water economy are decoupled in the Atlantic forest (São Paulo, Brasil)

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Background: Rainforests account for 34% of its gross primary productivity and around of 50% of plant total carbon stocks. The Brazilian Atlantic Forest (BAF) is considered as a major Hotspot for biodiversity conservation due its high endemism, diversity and threat (only 12% of its original area and highly fragmented). To understand better BAF functionality we need further knowledge on functional traits of the species that occurs in the different plant physigonomies and successional statues linking community structure and ecosystem function. This study aims to examine a group of functional traits of the main species of four areas of Atlantic Montane Forest in order to understand better their resource economics.
Methods: Four areas of 1 ha with different disturbance historic were sampled in the State Park of Serra do Mar in São Paulo State, Brazil. The traits analyzed were: maximal CO2 assimilation rate (A), Respiration rate (R), instantaneous water use efficiency (WUEi), Leaf dry mass content (LDMC), Branch density (BD), leaf area to sapwood area (L:S) and leaf area (LA). We sampled tree individuals of all 55 species that composes seventy per cent of the total basal area of each plot.
Result: The PCA analysis for all 55 species shows that the first axe (40% of total variation) is composed by the leaf carbon economic spectrum and the second axes (27% of total variation) is composed by aspect of leaf and branch water economy, mainly WUEi in oposition to L:S and BD.
Discussion: The two main axes have orthogonality suggesting independence between the two groups of functional traits, e.g. strategies of carbon use are decoupled from strategies in the investment in vascular tissue and water use. Interestingly, only part of the total space available is occupied and restricted to intermediate values of carbon economy and investment in vascular tissue plus water use. This high diversity of strategies in the acquisition and use of carbon and water may be the result of the «stabilizing niche differences», where the complementary use of resources allows a greater number of species coexistence in the same area and produces an increased community resource use efficiency. For this to happen there must be the narrowing of the ecological niche of the species in question and therefore a decrease in interspecific variability and increased intraspecific variability as proposed by the theory of coexistence (Chesson 2000).

P40-02 – S40 *Tropical tree structure and function: directions and gaps four decades after Hallé*
17:30 – 18:30 – Joffre Area (Level 1)

Comparative study of architecture and geometry of the date palm male and female inflorescences.

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The date palm, Phoenix dactylifera L. (Arecaceae), is a subtropical palm widely cultivated for numerous uses and ecosystematic services. The date palm is a dioecious species, which shows a marked dimorphism in inflorescence structure. To describe this dimorphism, architecture and geometry of male and female inflorescences were studied through kinetics of inflorescencial development and architectural and geometrical characterization of mature inflorescences. Two methodological approaches were used: a visual approach consisting of direct observations of inflorescence architecture of trees in situ and a technical approach through the valuation of different structural and geometric parameters of inflorescence. On every plant, inflorescence development is acrotone. Every palm leaf axils an inflorescencial bud. Inflorescence and female spikelets are longer than male ones. For female inflorescence, spikelets lengths are linked to their relative position on the rachis, the number of spikelets is on average 62, every spikelet carries 55 flowers on average. For male inflorescence, the length of spikelets seems independent of their relative position on the rachis. Number of spikes and flowers is higher with on average 236 spikes per rachis and 81 flowers per spike. In conclusion, architecture of male spikelets is more complex than female one.