**opportunities to investigate the FUNCTIONAL PHENOLOGY of ecosystems using a european digital camera network**

**Lisa Wingate**

*INRA ISPA, France*

Phenological events such as the spring leaf-out and the autumn fall exert a strong control on both spatial and temporal patterns of the carbon and water cycle. As these life cycle events are strongly influenced by changes in weather patterns from year to year, phenology is deemed a robust integrator of the effects of climate change on natural systems. It is now recognised that improved monitoring of phenology on local-to-continental scales is now needed. At FLUXNET sites around the world overlooking forests, pastures, and wetlands, we have identified an opportunity to establish precision measurements of phenological events by simply mounting networked digital cameras (‘webcams’) and recording daily (or even hourly) images of the vegetation canopy. A recent synthesis study has identified several phenocam networks already ‘keeping an eye’ on canopy development whilst simultaneously monitoring carbon and water exchange between the forest and the atmosphere. Within Europe this network is in its infancy, however it is growing steadily with almost 40 sites identified across different ecosystems. In this talk I will present the efforts of this growing, European phenocam network and illustrate with examples taken from the network some of the key advances that can now be tackled using this multi-technique approach. This multi-scale monitoring of phenology and net ecosystem exchange of CO2 will enrich our understanding and efforts at modelling not only the impacts of climate on phenology but also the impact of phenology on climate through feedbacks on the carbon and energy cycle of the planet.