PLACEMENT OFFER / ACADEMIC YEAR 2011-12

EMPLOYER INFORMATION	
Name of organisation	University of Corsica
Address	Av. Jean Nicoli 20250 Corte
Telephone	+3495450000
Website	www.univ-corse.fr
Number of employees	>**500**
Short description of the company	Public University with about **4.400 students**
CONTACT DETAILS	
Contact person for this placement	Lila FERRAT
Department	UMR CNRS 6134 SPE - Fire forest Project (http://spe.univ-corse.fr)
Direct phone and mail	+3610450268– ferrat@univ-corse.fr
PLACEMENT INFORMATION	
Department	Research laboratory
Description of activities	Influence of individual and station characteristics on Pinus laricio photosynthetic parameters
Summary of the internship	In the Mediterranean, forest fires represent a strong periodic threat for the environment, socio-economic activities, and human beings. In Corsica, in order to prevent them against large scale fires, prescribed burnings are carried out under Pinus laricio forest. However, resistance to thermal stress has only been empirically assessed so far, through comparisons that do not give any insight about the underlying mechanisms. Physiological and biochemical parameters are of particular interest as they are involved in the response to environmental stress, whether they are of biotic or abiotic origin (water deficit, temperature, nutrient deficiency, polluting agents, attacks by pathogens). These parameters can be related to the primary metabolism (i.e. linked to growth and photosynthetic activity) or to the secondary metabolism (i.e. linked to defence activity). Concerning the primary metabolism, photosynthesis is a good indicator of the adaptation of plants to their environment, since it decreases in plants experiencing adverse conditions. Carbon exchanges can be measured directly or evaluated indirectly by focusing on processes specifically linked to photosynthesis such as photosynthetic electron fluxes, chlorophyll fluorescence, leaf nitrogen content, stomatal conductance... In pine trees, if photosynthesis can be directly affected by heat transfer to needles during burning, it can also indirectly be affected by the loss of integrity of xylem vessels, as extreme temperatures may increase vulnerability and thus provoke dehydration of leaves and meristems. However, species which are less prone to embolism or, alternatively, which are capable of maintaining (and repairing) functional xylem ducts under extreme conditions have a higher chance of survival, likely because they are able to continue to extract water from the soil and thereby prevent dehydration of leaves and meristems. The originality of the work consists in testing the hypothesis that fires of high intensity have a

	long term negative effect, as they favour xylem embolism. The recommended approach requires to characterize tolerance levels of pines to experimental fires of various intensities. For each intensity, the heat stress will be thermodynamically characterized, then the impact of fire will be (i) evaluated on photosynthesis, through measurements of photosynthetic capacity, stomatic and mesophyll conductance (Fluorimeter, LICOR), (ii) assessed through measurements of biomass and growth, and (iii) assessed through measurements of sap flow and hydric potential (measurements of hydraulic conductance being taken as an indicator of embolism). The results should allow to understand the physiological responses of Pinus laricio to heat stress, in order to obtain reliable descriptors of plant sensitivity, determine tolerance levels and furnish recommendations for monitoring of ecosystems through prescribed burning practice.
Location	Corte (small town at the center of Corsica)
Start date	February to July (possibility to change).
Duration	6 months
Working hours / week	35
Accommodation (please select)	We can assist with finding accommodation; Student room is possible
Internship grant	**€410 / month**
COMPETENCES, SKILLS AND EXPERIENCE REQUIREMENTS	
Number of students required	1
Language and level of competence required	Strong knowledge in vegetal physiology Work in a pluridisciplinary team Field work in autonomy English- French Driving licence
Degree (select from the list below): master, Phd, Post Doc	
DOCUMENTS REQUIRED	
CV and e-mail to ferrat@univ-corse.fr introducing themselves.	