Global change research within the Tree Physiology and Ecosystem Science Lab at NC State University

Three research positions are immediately available to examine the effects of climate change on bioenergy production, ecosystem dynamics and carbon cycling in managed and natural forests of North Carolina. Screening of applications will begin immediately and continue until suitable candidates are found, with the objective of filling all positions by spring/summer/fall 2015. Interested persons should send cover letter, CV, academic transcripts (unofficial copies are fine), relevant reprints, and (brief) letters of recommendation to Dr. John King: john_king@ncsu.edu.

Position 1 - MS graduate teaching assistantship in ecophysiology of sycamore for bioenergy
Short-rotation coppice (SRC) culture of woody crops has potential to generate clean sustainable energy from marginal lands and contribute to local economic development. However, data on the sustainability and tolerance to environmental stress of such land use systems is severely lacking. This position will investigate productivity, water use, and drought tolerance of sycamore planted at high density and managed as an SRC system. Research will include leaf-level physiology, NPP, whole-tree and stand water use, site water balance and bioenergy water use efficiency. The position will also provide significant teaching experience as a graduate teaching assistant for undergraduate courses in NC State’s interdisciplinary Environmental Sciences program. Required qualifications include a BS degree in a complementary discipline from a recognized college/university, good academic record, and demonstrated interest in research. Desired qualifications/competitive advantage include significant experience in an academic research project in ecology, bioenergy or forest ecophysiology, co/authorship on a peer-reviewed publication, and strong letter(s) of recommendation. Position is anticipated to last two years starting in August 2015 and is contingent upon continued availability of funding and satisfactory performance. The position includes stipend, tuition remission, student health fees, and research expenses.

Position 2 - PhD research assistantship in root physiology and production in natural and managed forested wetlands
The land-ocean interface along the coast of North Carolina is an extremely dynamic environment subject to short- and long-term changes in hydrology, land use, and climate. Conserving the significant natural resources of the region, and at the same time protecting human welfare and the rapidly growing economy, creates the need for a better understanding of how coastal ecosystems adjust to the changing conditions. In particular, natural forested wetlands provide many ecosystem services, including C storage, water cycling, biodiversity conservation, economic development and protection from storm surges and flooding. The widespread loblolly pine industry is a main economic engine of the region and an important land use component across the Southeast. Our group is using a combination of ecosystem monitoring (using eddy covariance and biometric approaches), ecosystem modeling, and experimental manipulations in a long-term research program to quantify natural and managed forest responses to the dynamic coastal environment. This PhD assistantship will lead efforts to understand belowground tree growth and C inputs to soils by conducting a series of root phenology and production experiments. There will also be opportunities to study to root physiological responses (growth, gas exchange, hydraulic conductivity, etc.) to changes in salinity, hydroperiod (rapidly fluctuating water table), and management. Required qualifications include a BS degree in a complementary discipline from a recognized college/university, good academic record, and demonstrated interest in research. Desired qualifications/competitive advantage include significant experience in an academic research project in belowground ecology, GIS (for scaling and mapping) and forest ecophysiology, co/authorship on a peer-reviewed publication, and strong letter(s) of recommendation. Position is anticipated to last three years and is contingent upon continued availability of funding and satisfactory performance. The position includes stipend, tuition remission, student health fees, and research expenses.