

Lazare Tia:

Modeling of vegetation dynamics and its contribution to the water balance in semi-arid lands of West Africa

ZEF-Ecology and Development Series No. 58

In the Volta river basin, the contribution of trees to the surface water balance as a function of tree density was estimated. This was achieved through tree sap flow and biometric measurements in conjunction with Eddy Covariance and microclimate data recordings. The development of the cross-validated, multivariate regression LAI-SEB model was essential to accurately estimate tree transpiration in the semi-arid region. The results show that trees consume between 9 to 20% of rainfall, demonstrating the importance of trees in the functioning of water balance and the regulation of climate in semi-arid regions, especially during dry seasons. The results are valuable inputs for regional climate change modeling, biodiversity conservation and vegetation dynamics analysis.