

Abstract

The estimation of the ozone-induced effects on trees and setting the critical levels for ozone is necessary. Recent development in the robust stomatal ozone flux model called DO3SE model has shown great result in Europe. The multiplicative algorithm used in this model has incorporated many functions like Air temperature, VPD, Soil moisture, PAR, Ozone concentrations and plant phenological stages. And more functions like Ozone concentration, CO₂ concentration can be used for further efficiency of the model. Till now exposure based metrics like Mx, AOT40 etc. have been used in India to study any ozone-induced plant response. Here we have used another metric which is known as PODy metric. Leaf porometer was used to obtain the field data (sunlit leaf stomatal conductance). The meteorological data and the field data was taken in between May 2017 to September 2018. In this study, five tree species namely Shisham, Karanja, Babool, Amaltas, and Silk Floss tree were studied and parameterization for these environmental factors was done for DO3SE model. The boundary line parameterization of different response functions was done for each tree species. Many models are available for stomatal ozone flux modeling and no model performs well in all environment and for all species. Therefore parameterization of conductance model is necessary, in order to evaluate the performance and modify the model for better accuracy.

The study will help in progression for finding the critical level for ozone-induced effects on different tree species, the biomass loss, and identifying tree species which have a mechanism to tolerate abiotic stress like atmospheric pollutants.