Title:	Parametrization of the DO3SE Model and Analysis of Stomatal Ux Measurements for Different Tree Species
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Abstract:	Troposheric ozone is a major pollutant that acts as a greenhouse gas and is harmful to humans as well as plants. The toxic effect of ozone to plants include yield loss, leaf injury etc.. Different ozone exposure metrices like Mx, W126, AOT40 were used in the past to determine a O3dose/plant response relationship. In this study, we are looking at a new metric known as PODy (phytotoxic Ozone Dose). This metric was developed based on the stomatal ux measurements as a measure of ozone that enters the stomata of a leaf. Ozone was measured using UV absorption photometry and the stomatal conductance measurements were done using a leaf porometer. Proper calibrations were performed for both instruments for data quality and assurance. Stomatal conductance measurements were taken on the leaves of 5 different tree species namely, Arjun, False Ashoka, Jamun, Neem and Peepal around the campus during the December 2016- February 2017. These trees are most abundantly found in the cities of India. Stomatal conductance values along with the temperature, pressure, humidity, solar radiation, ambient O3 measurements were in cooperated into the DO3SE (Deposition of Ozone for Stomatal Exchange Model). The DO3SE model was calibrated by boundary line parameterization for parameters like temperature, vapor pressure deffcit and solar radiation in a species-specific manner. The modelled v/s measured comparison was done for the stomatal conductance values and best correlations were observed for False Ashoka, Jamun and Neem. There are nearly 17,000 False Ashoka trees present in Chandigrah. POD0 value for False Ashoka is calculated to be 7.7 mmol m-2 and the total ozone uptake by all False Ashoka trees in Chandigrah assuming a crown diameter of 2 m and a leaf area index (LAI) of 4 is about 26.5 kg of ozone during the month of January alone. In the urban atmosphere, trees can play a major role in the removal of pollutants and help in maintaining the ozone levels under control by dry deposition process. Similarly, NO2 intake can also be calculated with the help of diffusivity ratio between NO2 and O3(1.01). The NO2y value is 8.16 and the total removal is 26.9 kg of NO2.
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