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Title:	Parametrization of the DO 3 SE stomatal flux model for five Indian winter wheat cultivars
Authors:	Singh, Sukhwinder (/jspui/browse?type=author&value=Singh%2C+Sukhwinder)
Issue Date:	28-Nov-2018
Abstract:	Measurements of leaf-level stomatal conductance ( $g_{sto}$ ) are central to the ozone ( $O_3$ ) risk assessment and the calculation of Triticum aestivum yield loss based on the absorbed $O_3$ phytotoxic dose (POD). In this study we present measurements and a comparative analysis of $g_{sto}$ field measurements from four triticum aestivum cultivars grown as irrigated winter wheat in the state of Punjab, in the NW-IGP during winter 2016-17 and 2017-18. The cultivars RAJ3765, GW322, C306 and DBW88 were directly obtained from breeders, while local farmers cultivars obtained from a seed shop were grown for comparison. The $g_{sto}$ measurements in combination with phenology observations on the plants are used to derive environmental response functions for the parameters light, temperature, soil moisture, water vapour pressure deficit, plant phenology and time of the day for all nine triticum aestivum cultivars. The response functions thus obtained can be used for two purposes. Firstly, we use them for revising the $g_{sto}$ model parameterization of the DO3SE model in order to precisely model the ozone related crop yield losses using the POD 6 exposure-response functions for each of the cultivars for both growing seasons. Secondly, the same environmental response functions have also more immediate uses in identifying a given cultivars potential to cope well with certain climate change or air pollution related stressors, such as heat waves and droughts or its potential to fare well in years affected by prolonged wintertime fog in the NW-IGP.
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