

Interactive comment on “L-band vegetation optical depth as an indicator of plant water potential in a temperate deciduous forest stand”

by Nataniel Holtzman et al.

Anonymous Referee #1

Received and published: 12 November 2020

General comments:

The manuscript presents the use of tower-based radiometer data in L-band to test the link between estimated VOD from one polarization and plant water potential over the red oak forest. The manuscript reports on an experiment carried out during the 2019 growing season in central Massachusetts, United States. The manuscript is well written and contains worthwhile material that brings up the diurnal variation in VOD and its relationship with the diurnal plant water potential cycle. These results are credible and could further the understanding of the crop water dynamics. However, the intensive fieldwork to collect leaf water potential data has been done for 4 days in July which

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was quite short in time and it was not enough to make a firm conclusion. Although short field work experiments have been performed, the presented results can be used in future analysis. Therefore, I think this work can be accepted for publication.

Specifics comments:

1- Please add the Precipitation data and dew data in the manuscripts or supplemental information.

2- It would be nice if you compare VOD results from SMAP satellite with your data for the study area to illustrate the effect of scale on VOD estimation and especially shows how much VOD estimation would be different between your data and SMAP on the evening overpasses.

3- Although some of the previous studies have indicated that the presence of dew cannot affect the VOD, some studies presented its effect on VOD estimation. It would be nice if you can make a plot and add it in the supplementary in which shows the averaged VOD value at each hour from midnight to early morning for example from 12 to 6 for two conditions of the wet and dry canopy. It will help to better investigate the effect of dew on VOD estimation.

4- In figure 3, the temporal variation in VOD is different for each day. It would be nice if you could discuss the reason for the different daily trends. Also, the decreasing trend that you mention from July 11 through July 14 is not visible from the graph and it would be useful if you can fit a line to show that trend in the supplementary material.

5- In figure 7, you fit a line to the scatter plots and consider a linear relationship. By checking data of 3 months, we can see that the data in September shows some linear trend as the fitted line shows but the data of June and July are not fitted to that line. So, I think it would be better for this plot that you will use the Spearman rank correlation method and also shows the correlation for each month separately.