Comparison of Remote Sensing Soil Electrical Conductivity from Planetscope and Ground Measured Data in Wheat and Beet Yields

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Introduction

The soil is a building block that forms the basis of life. It is estimated that 20% of the world's total cultivated areas and 33% of irrigated agricultural land are negatively affected by high salinity. In this context, determining the spatial and temporal distribution of soil salinity and dynamic monitoring in ensuring soil sustainability can provide a quantitative assessment.

Aim of the study

Considering that not many studies can be found in the literature for soil salinity mapping using high-resolution imagery such as PlanetScope, this study aims to compare remote sensing soil electrical conductivity from PlanetScope and ground measured data in wheat and beet fields in the farming areas of Alpu, Turkey.
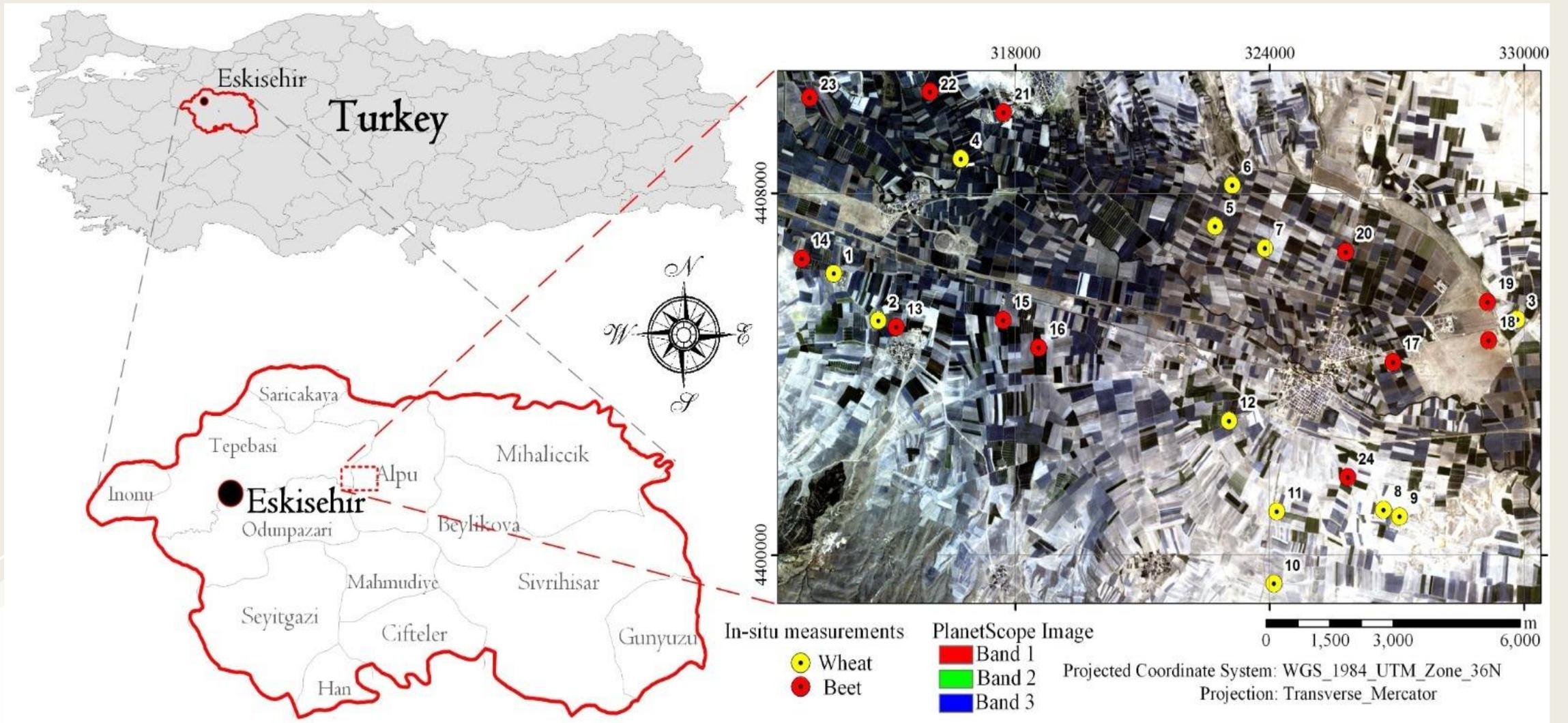
Study Area

Material and Methods

In this study, soil sampling was carried out using a random sampling method from the fields. The coordinates of each measurement point were recorded using handheld GPS. The electrical conductivity (EC) at the measurement points was measured with PNT 3000 COMBI + device. Three measurements were made by immersing the electrical conductivity probe 10 cm below the soil surface.
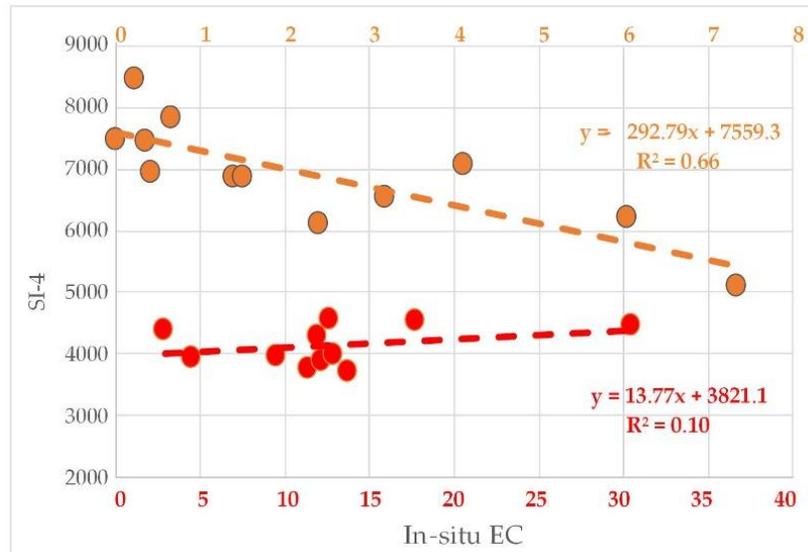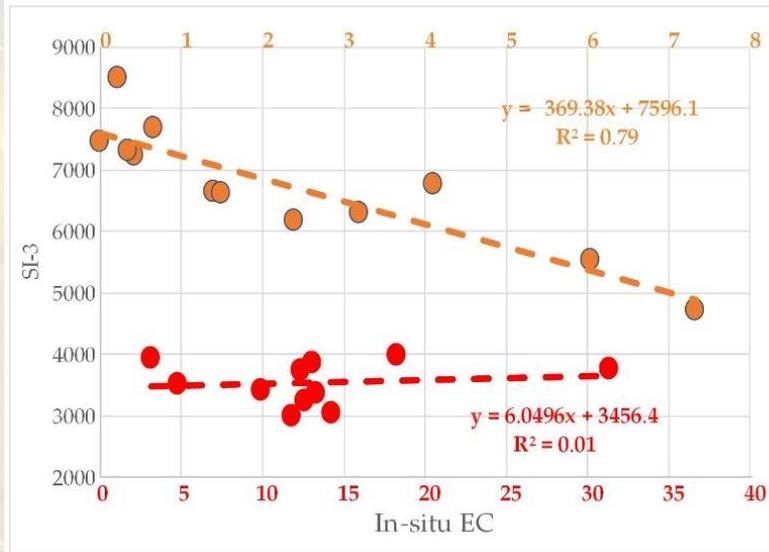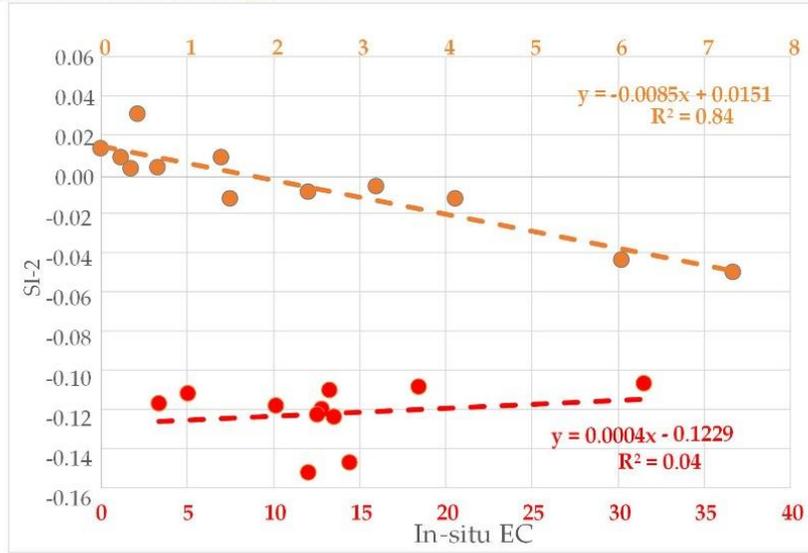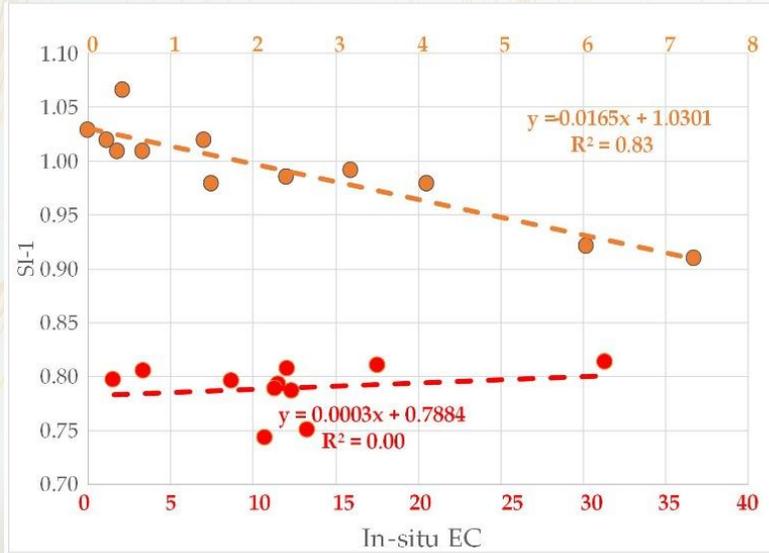
Spectral indices

Spectral Indices	Formula	Reference
Salinity Index - 1	$SI = \dfrac{B}{R}$	Bannari et al., 2008
Salinity Index - 2	$SI = \dfrac{B-R}{B+R}$	Bannari et al., 2008
Salinity Index - 3	$SI = \dfrac{G \times R}{B}$	Bannari et al., 2008
Salinity Index - 4	$SI = \dfrac{B \times R}{G}$	Abbas and Khan, 2007

Results

Conclusion

The conducted study aimed at investigating the correlation between in-situ salinity measurements and spectral indices retrieved from PlanetScope satellite imagery in Alpu, Eskisehir, Turkey. After a significant correlation was established between wheat field measurements and satellite data, a regression model was developed with a prediction power of 95%. No significant correlation was found in the beet field measurements.

THANKS!

Does anyone have any questions?

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