

INTRODUCTION

Background

- Evapotranspiration (ET) is a main component of the hydrological cycle, which assures the availability of precipitation on the earth's surface.
- Global warming is anticipated to alter the evapotranspiration rate by intensifying the hydrological cycle.
- In this project, we investigated the monthly, seasonal, and annual trends of reference evapotranspiration of Florida.

METHODS

Study sites

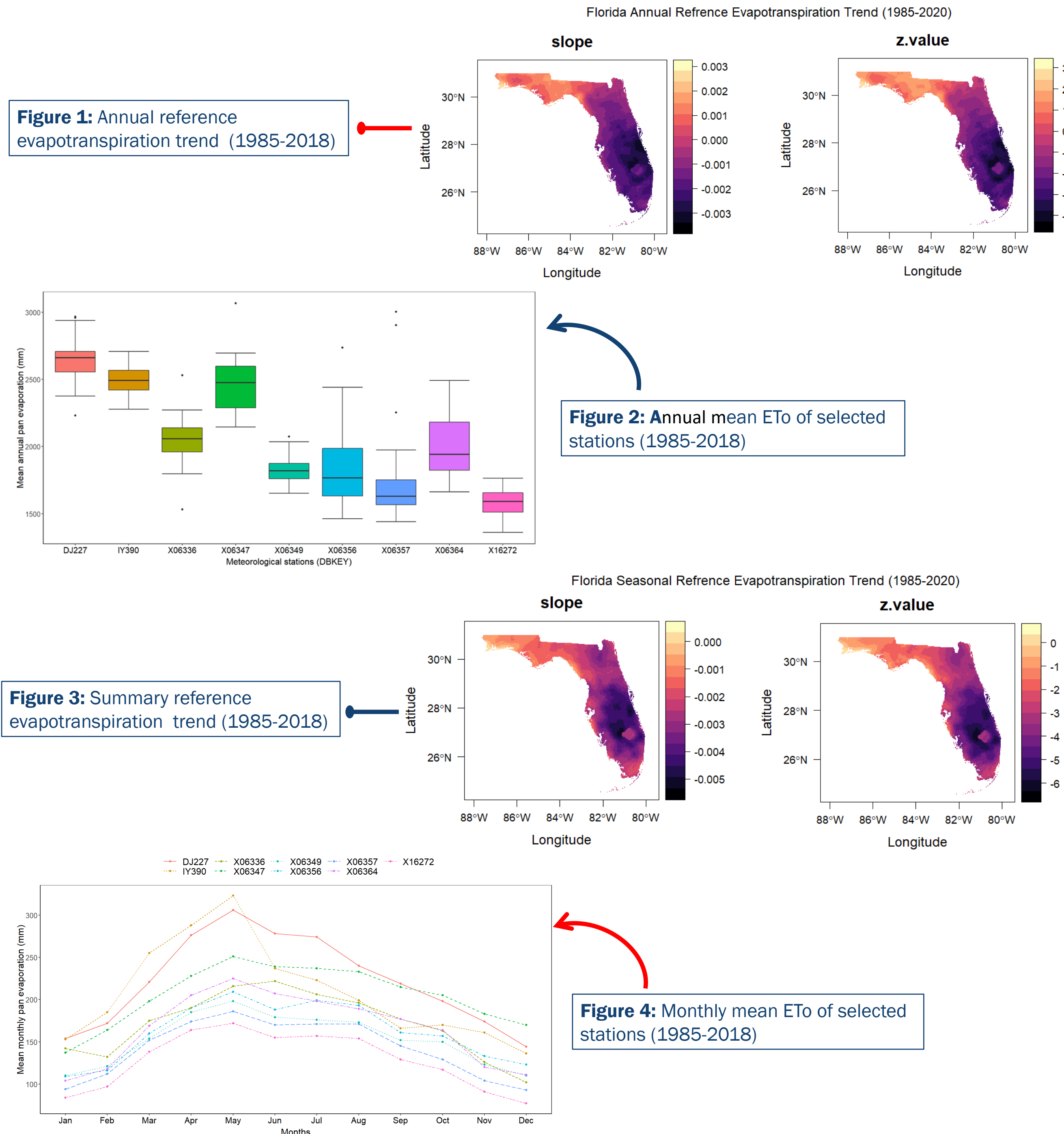
- Florida is the southern region of the U.S. state.
- The climate of the north and central parts of the US state of Florida is humid subtropical. Most of South Florida has a tropical climate.

Data inputs

- Daily ETo and climatic data of Florida for the 1985-2018 period were downloaded from (USGS) data center.
- Standard procedures were followed to filter the data that fulfill the minimum requirement for trend analysis.

Mann-Kendall (MK)

- Mann-Kendall (MK) is commonly used test to identify monotonic trends in hydrological and climatic data (Yue et al., 2002a).
- Z-test and Sen's slope estimator were used to measure the significance and magnitude of trend, respectively.
- Kendall and dplyr R packages were used for the analysis.



RESULTS

Historical data statistics

- The annual reference evapotranspiration of Florida ranges between 1577-2655 mm.
- The seasonal ETo of the Florida varies from 258-865 mm. Spring and summer are the seasons where the maximum mean seasonal ETo was recorded.
- On a monthly scale, the mean monthly ETo of the Florida fluctuates from 84-323 mm. April, May, and June are the months where the maximum ETo was recorded.

ETo and climatic variables trends

- Southeast of Florida has shown a decreasing (-0.003 mm/year) annual trends while northwest of the region shown an increasing trend (0.001-0.003 mm/year) however, none of the region has observed a statistically significant trend (Fig. 1).
- Seasonally, summary season has shown similar trend as annual ETo, but it was not significant (Fig. 3).
- Annual trend analysis of climatic variables has shown temperature, wind speed, and solar radiation, relative humidity plays a major role for the variability of ETo.

CONCLUSION

- Florida's ETo and climatic variables has shown a spatial and temporal variability however, the variability was not significant.

REFERENCES

Yue, S., Pilon, P., Cavadias, G., 2002a. Power of the Mann-Kendall and Spearman's rho tests for detecting monotonic trends in hydrological series. J. Hydrol. 259, 254-271.
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