

MULTI-SCALE REMOTE SENSING AND CLIMATE TIME SERIES FOR MODELING ORANGE YIELD DECLINE IN FLORIDA (2007–2023)

Thursday, October 23, 2025 4:00 PM (20 minutes)

Florida has long been the center of U.S. citrus production, particularly for orange juice, but output has declined by more than 90% since the early 2000s due to the combined pressures of disease, hurricanes, and rising costs. Despite this collapse, Florida still maintains the majority of U.S. orange acreage, making it a critical region for understanding the dynamics of perennial crop decline. Reliable yield forecasting has become increasingly urgent in this context, yet existing approaches rarely integrate remote sensing and climate data across multiple temporal scales. This study develops a remote sensing and climate-based framework to model county-level orange yield variability in Florida from 2007 to 2023. Using MODIS NDVI and PRISM climate variables aggregated at four temporal resolutions, seasonal, monthly, 16-day, and 8-day, we evaluate the predictive capacity of vegetation and climate indicators for explaining interannual yield variability. Results show that coarser seasonal and monthly summaries capture broad yield patterns, while finer 16-day and 8-day composites provide more detailed insights into short-term phenological and climatic fluctuations influencing yield. By systematically comparing time scales, this research demonstrates the trade-offs between temporal resolution, model performance, and interpretability. The findings provide new biophysical evidence of Florida's citrus decline and establish a methodological framework for applying multi-scale time series analysis to perennial crop yield forecasting.

Is there a SINGLE day you are unavailable to present?

October 25, 2025

Is there a time of day you are unavailable to present?

Organized Session Details

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