

MAY 06 ————— 2026

# What are the potential impacts of an El Niño in the 2026-27 season on diseases in Florida?

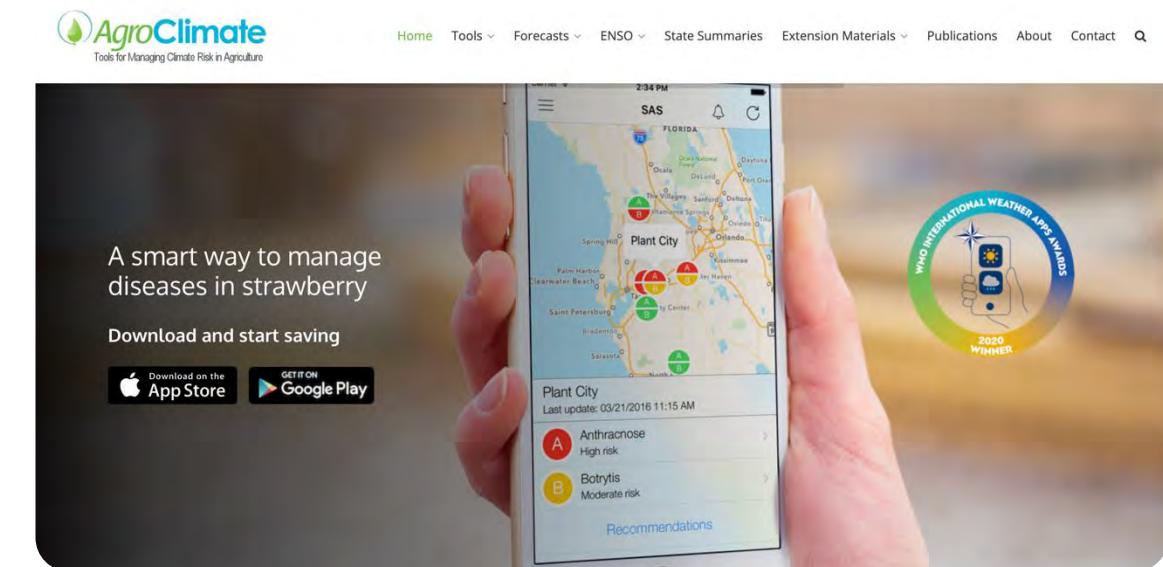
*Vinicius Andrei Cerbaro*  
CERBARO@UFL.EDU





# Presentation overview

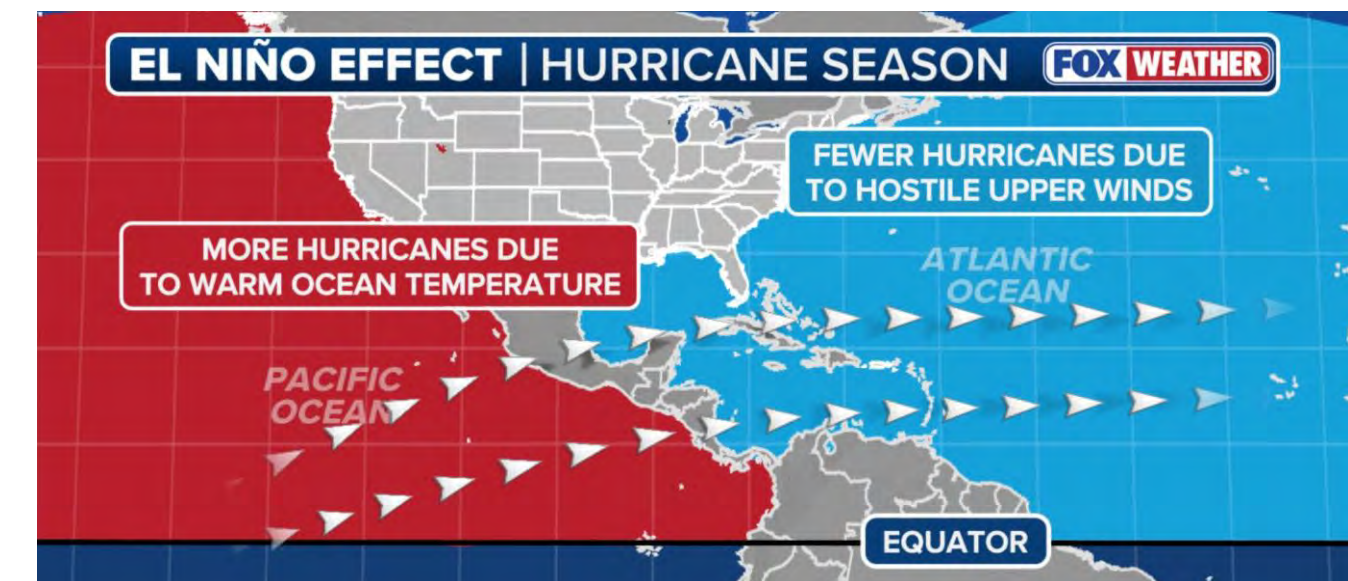
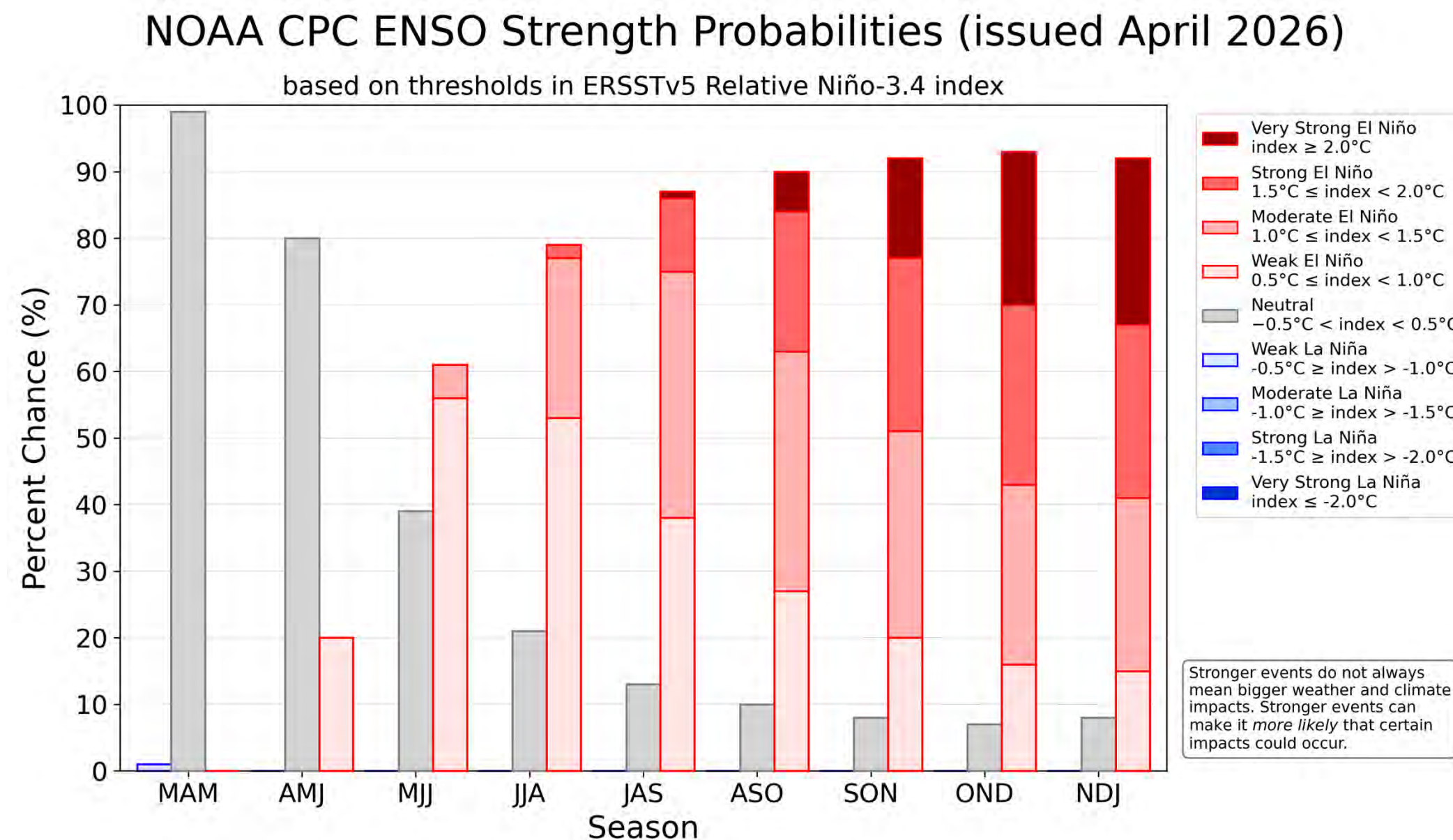
- **Vinicius Andrei Cerbaro (Vinny)**
  - Postdoctoral Associate at UF/IFAS ABE
  - Strawberry Advisory System developer since 2015
- **Over the next 15 minutes:**
  - El Niño-Southern Oscillation (ENSO) Forecast
  - ENSO: Florida Weather and Disease Risk
  - The Strawberry Advisory System (StAS): what if you are not near a FAWN station?





# ENSO Forecast: Super El Niño?

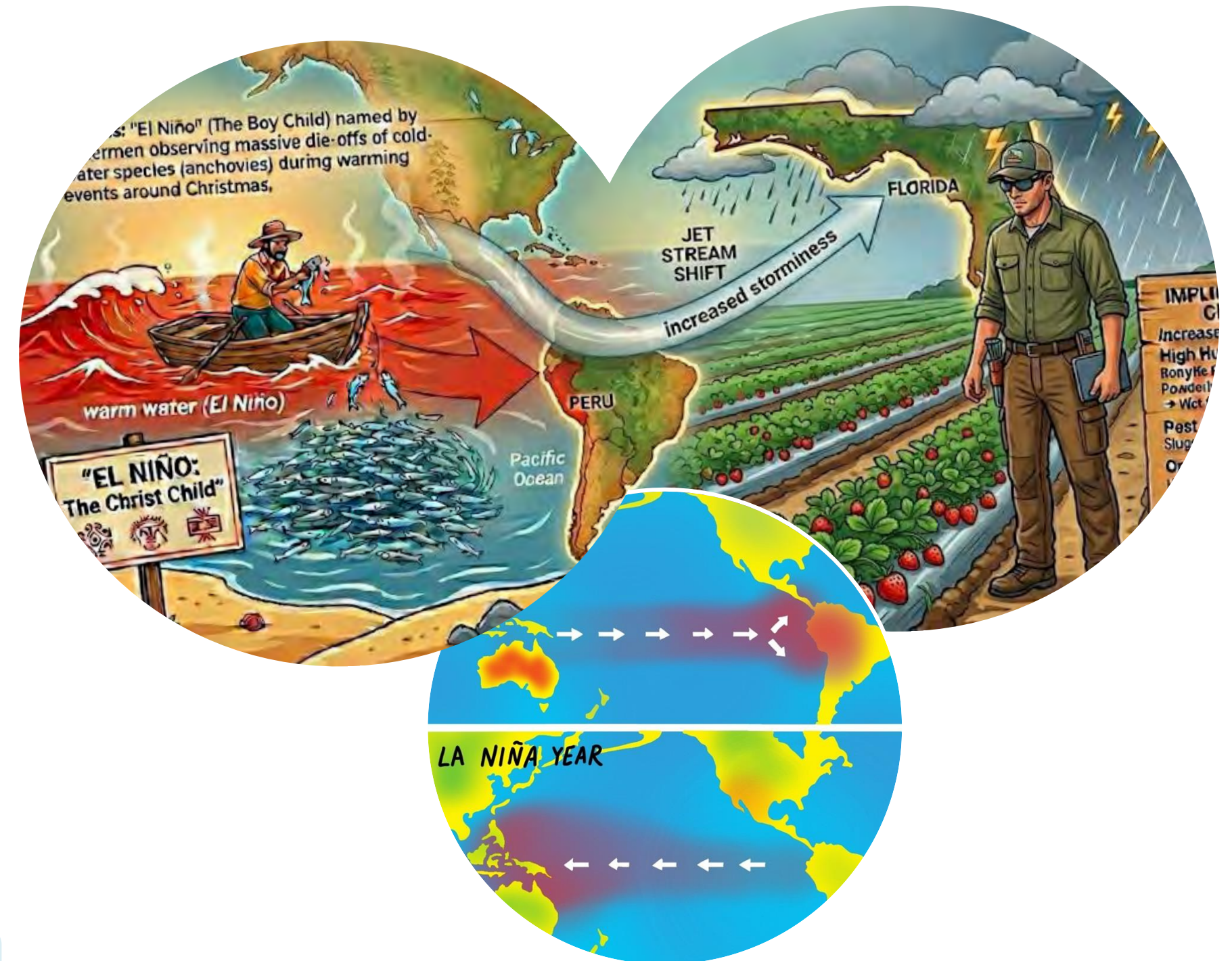
- ENSO-neutral conditions are present and favored through April-June 2026 (80% chance)
- In May-July 2026, El Niño is likely to emerge (61% chance) and persist through at least the end of 2026
- A strong El Niño typically increases wind shear across the Atlantic, disrupting hurricane formation





# ENSO: Florida Weather and Disease Risk

- From Peruvian Waters to Florida Strawberry Fields
- ENSO is a recurring climate pattern
- Describes surface temperatures and atmospheric conditions in the tropical Pacific Ocean
- Source of seasonal climate variability in Florida:
  - El Niño: wetter and cooler conditions
  - La Niña: drier and warmer conditions
  - Peak activity in December and January



How frequent and homogeneous are the effects of ENSO on disease occurrence in Florida?

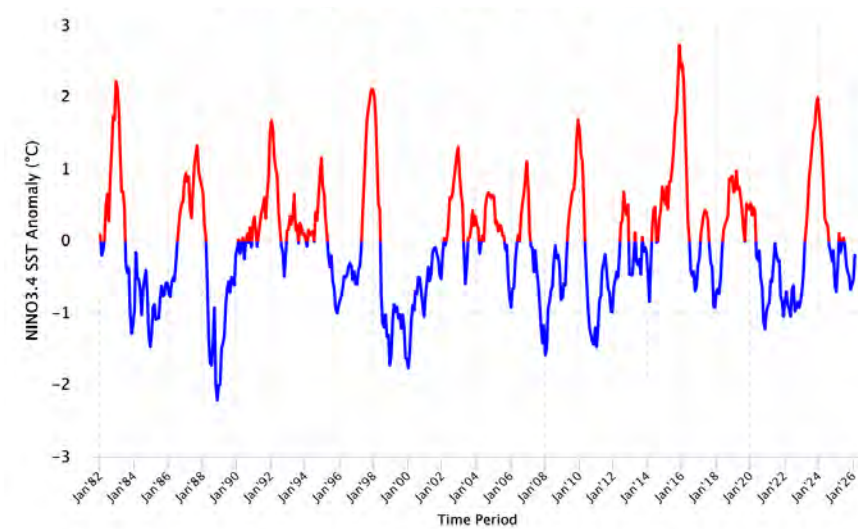


# ENSO: Florida Weather and Disease Risk

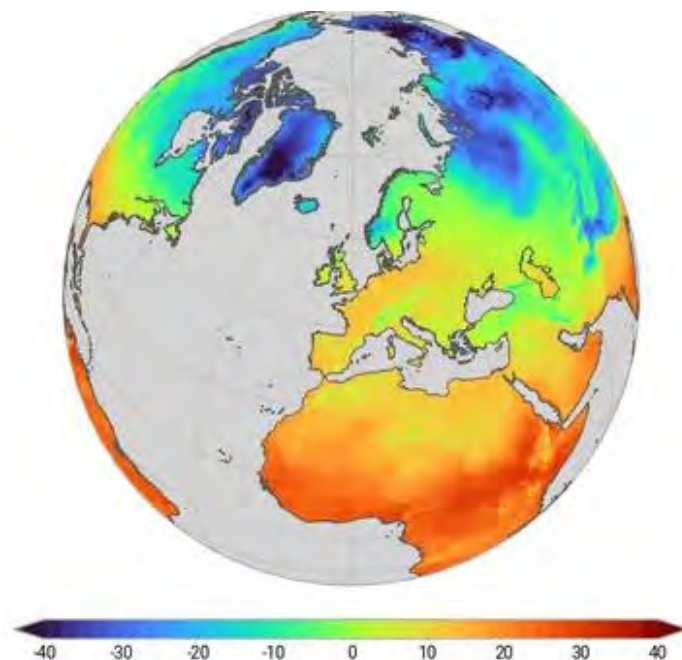
A 74-Year (1950-2024, Nov 1 to Mar 31) Analysis of Botrytis Occurrence Risk

## 1. DATA

**27 El Niño** **25 La Niña**



Climate Data: ERA5-Land  
( $\cong$  5.6 miles, Hourly)

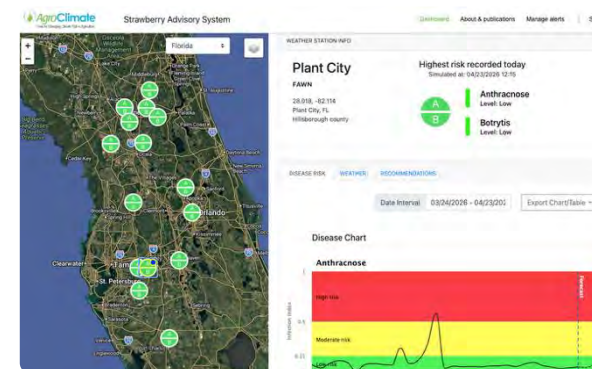


## 2. MODELING

Disease drivers



Strawberry Adv. Sys. Framework



Botrytis Infection Risk Model



## 3. SYNTHESIS & IMPLICATIONS

1. How does ENSO influence key disease drivers?

2. How does ENSO affect overall disease risk?

3. How does ENSO impact fungicide spray recommendations?



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Influence of the El Niño-Southern Oscillation on Botrytis infection risk in Florida

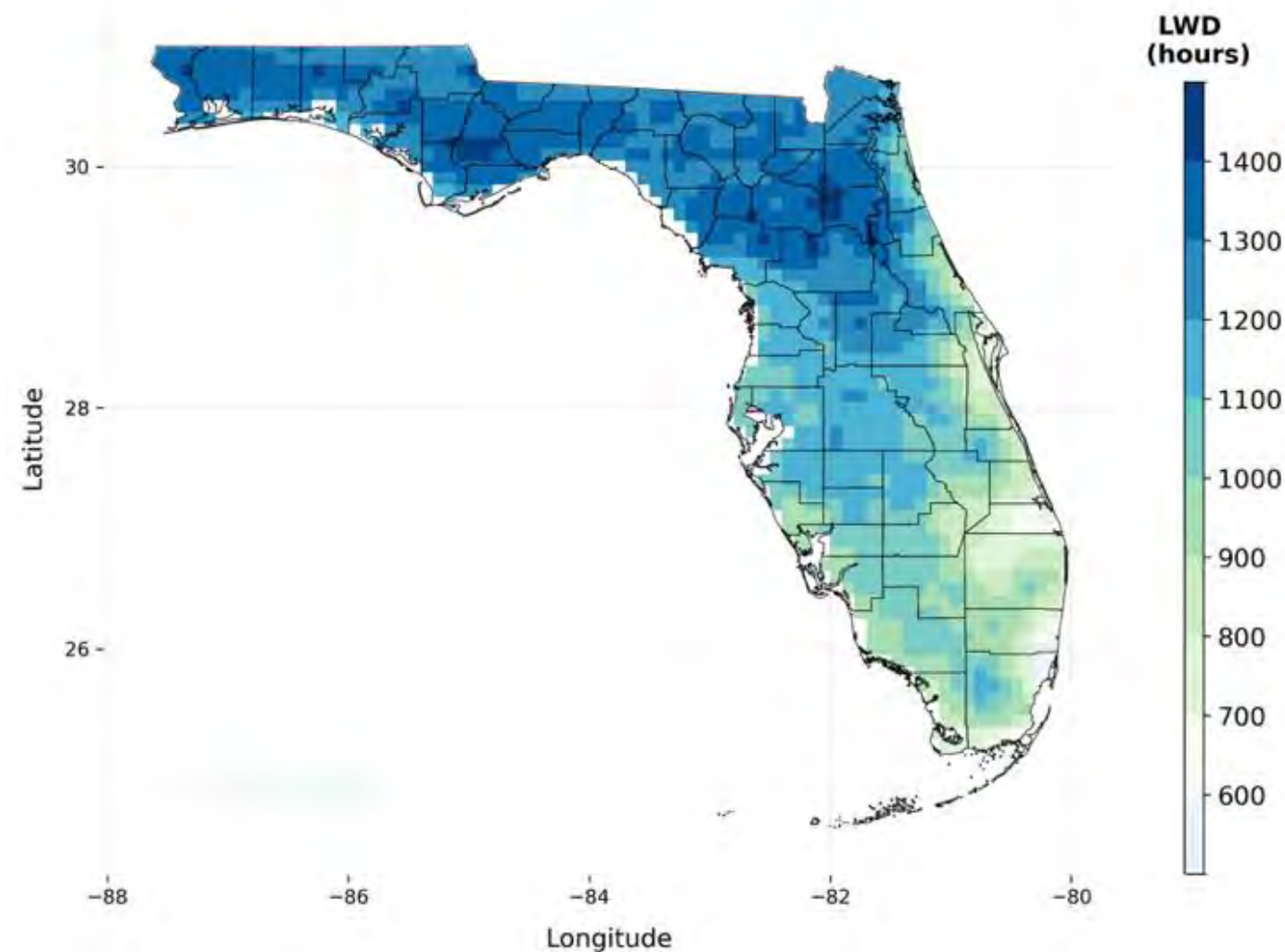
Vinicius A. Cerbaro <sup>a</sup>, Clyde W. Fraisse <sup>a</sup>, Jonathan A. Watson <sup>a</sup>, Natalia A. Peres <sup>b</sup>



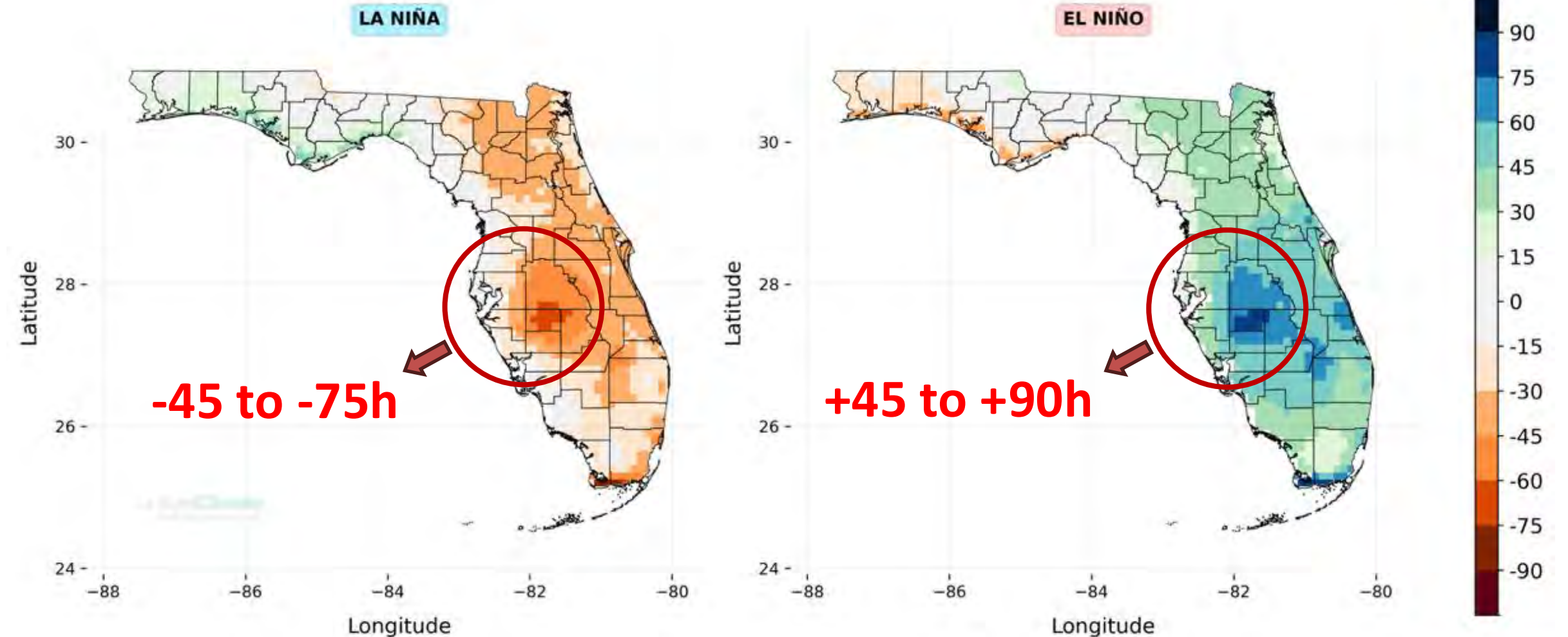
# Leaf wetness duration (hours)

Florida: November 1 to March 31 (1950 – 2024)

Leaf wetness duration - Historical average



Leaf wetness duration - Deviation from historical average



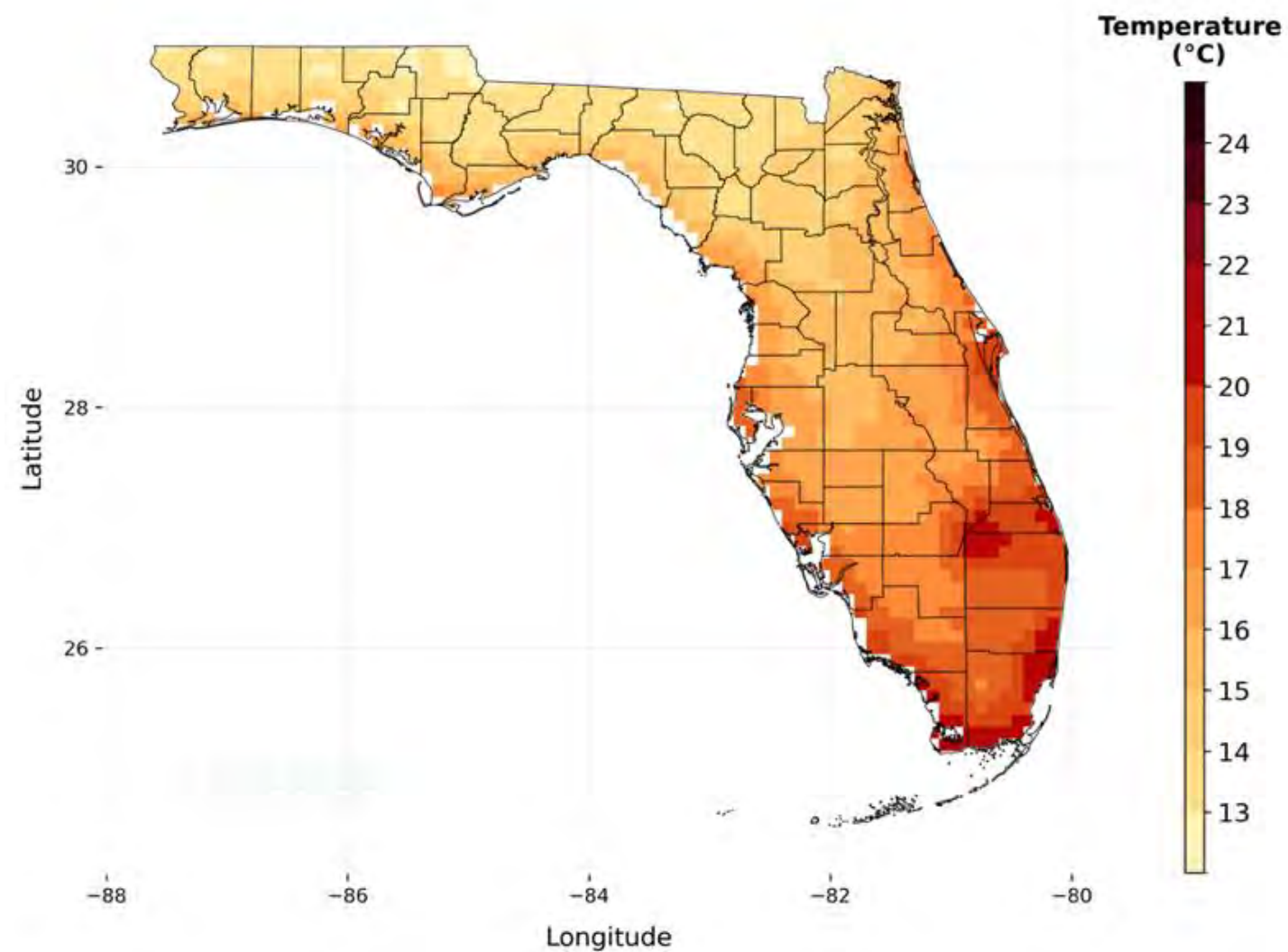
Despite the expectation that Panhandle would experience increased leaf wetness duration during El Niño due to increased rainfall, the anomaly maps reveal greater differences in the peninsula.



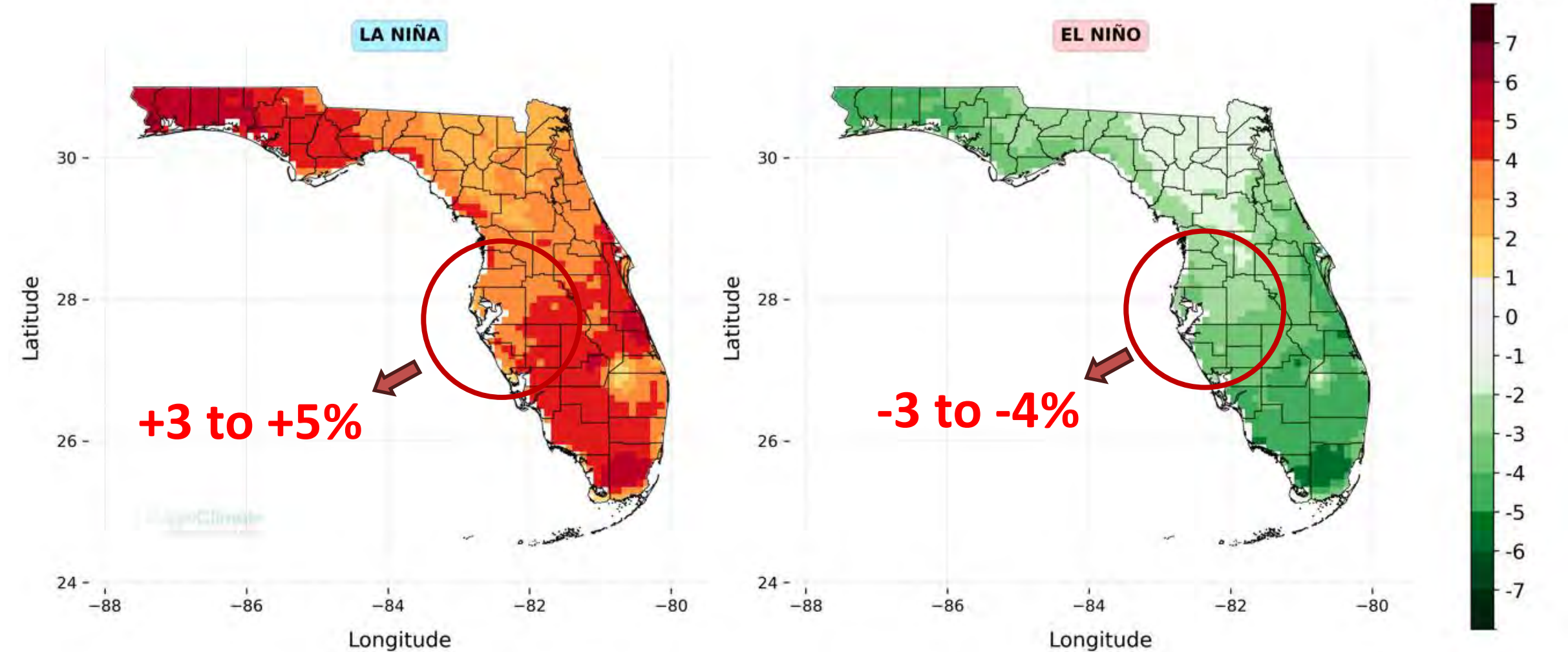
# Mean temperature during wet periods

Florida: November 1 to March 31 (1950 – 2024)

Mean temperature during wetness - Historical average



Percentage of hours between 15-22°C (59-72°F) - Deviation from average



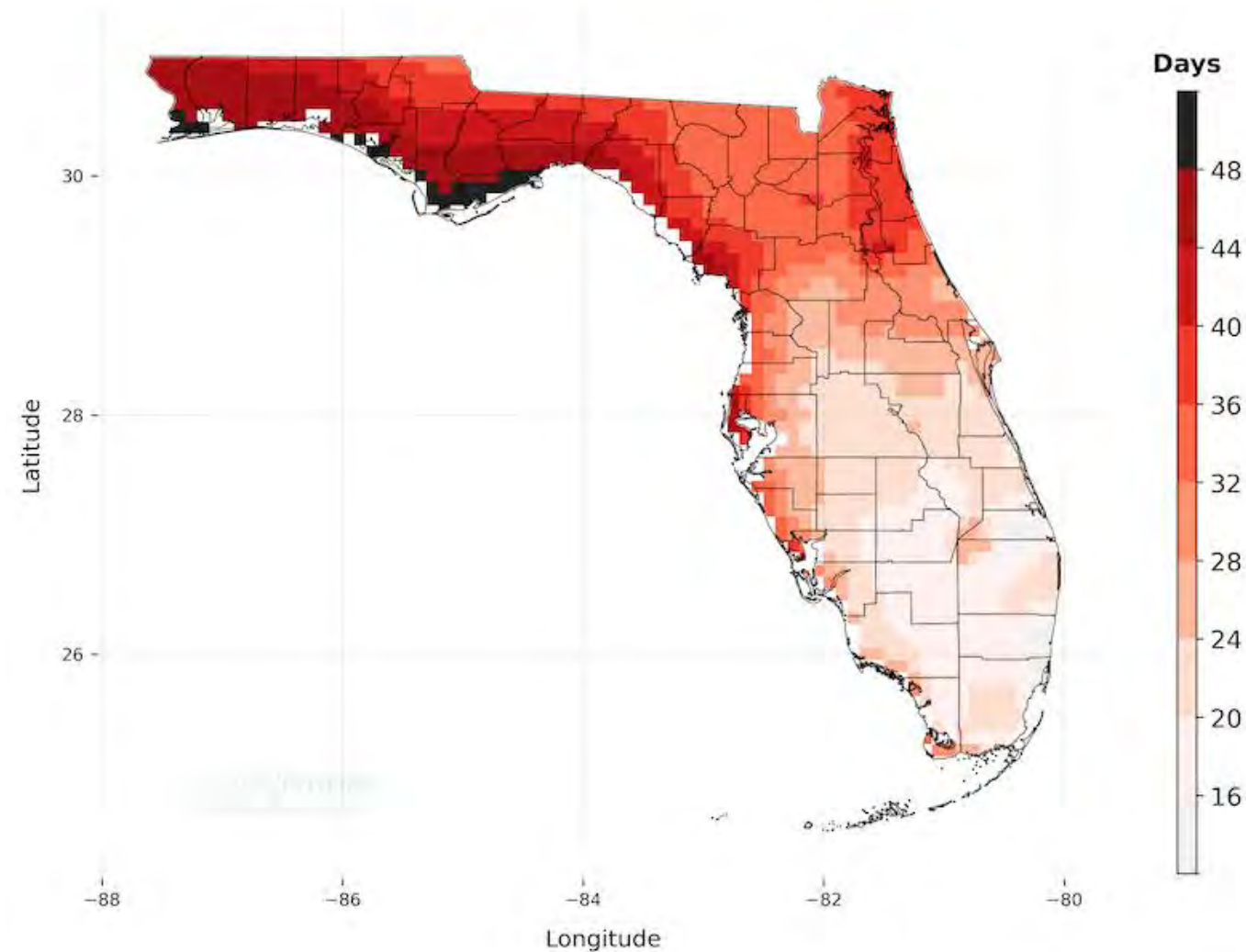
The increase in hours with conducive temperatures during La Niña seasons may partially offset the benefits of associated drier conditions.



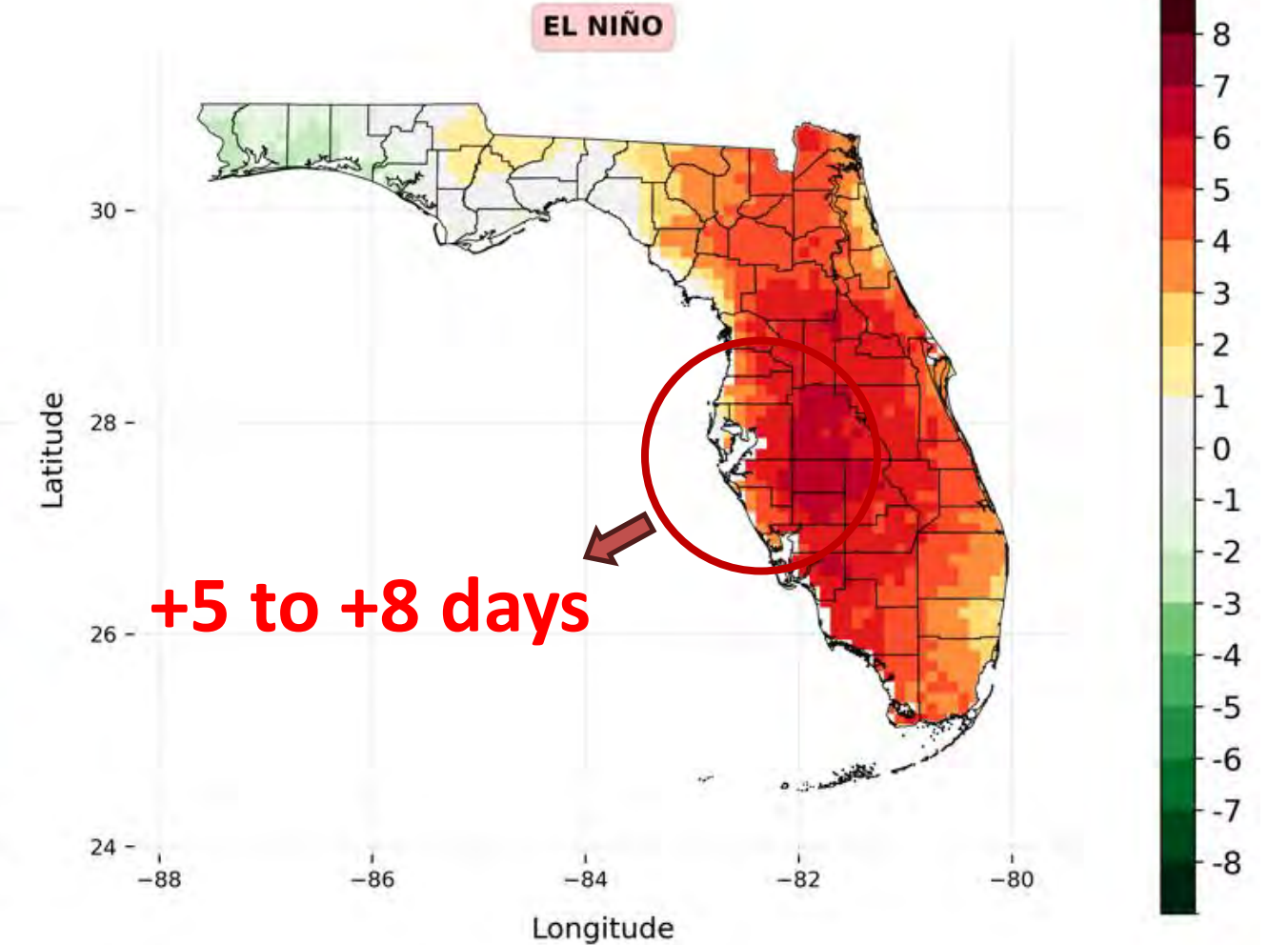
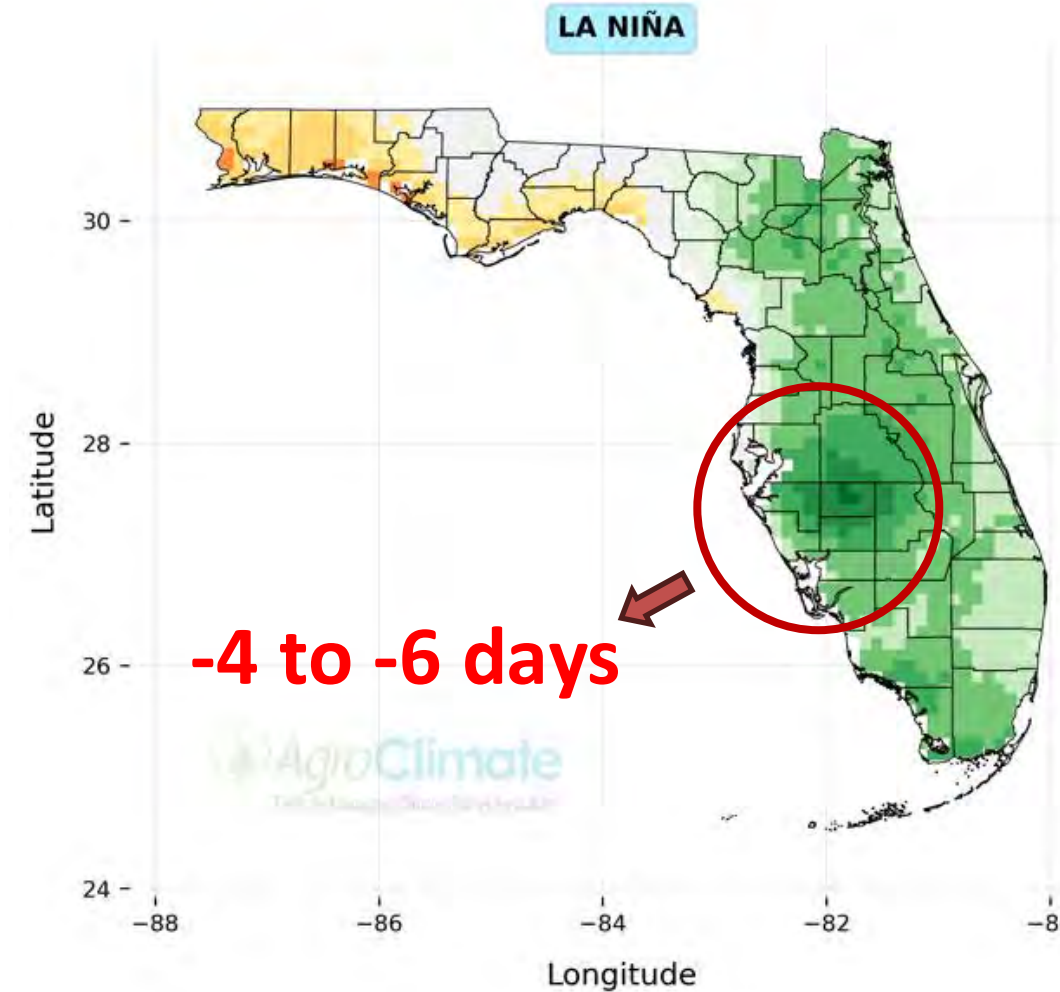
# Risk of Botrytis occurrence (days)

Florida: November 1 to March 31 (1950 – 2024)

Days with risk - Historical average



Days with risk - Deviation from historical average



How do risk days translate into fungicide spray recommendations?



# Implications on spray recommendation

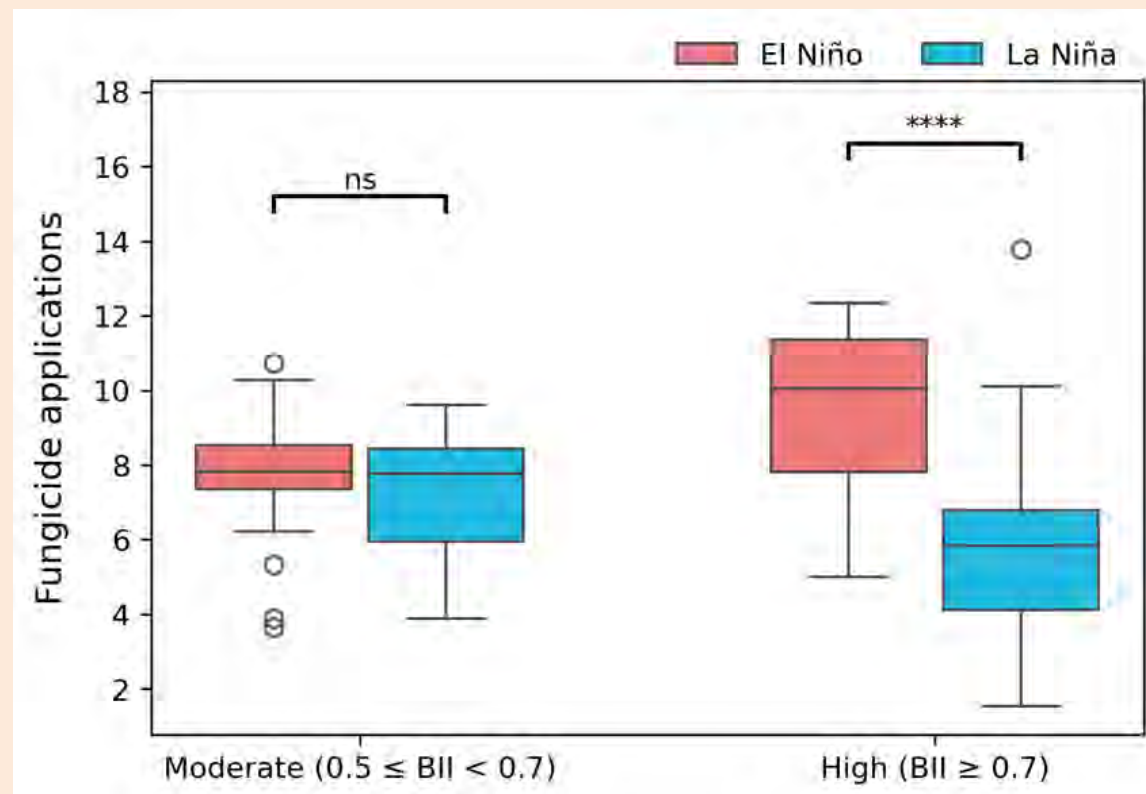
Florida: November 1 to March 31 (1950 – 2024)

- Fungicide sprays considering a 7-day window



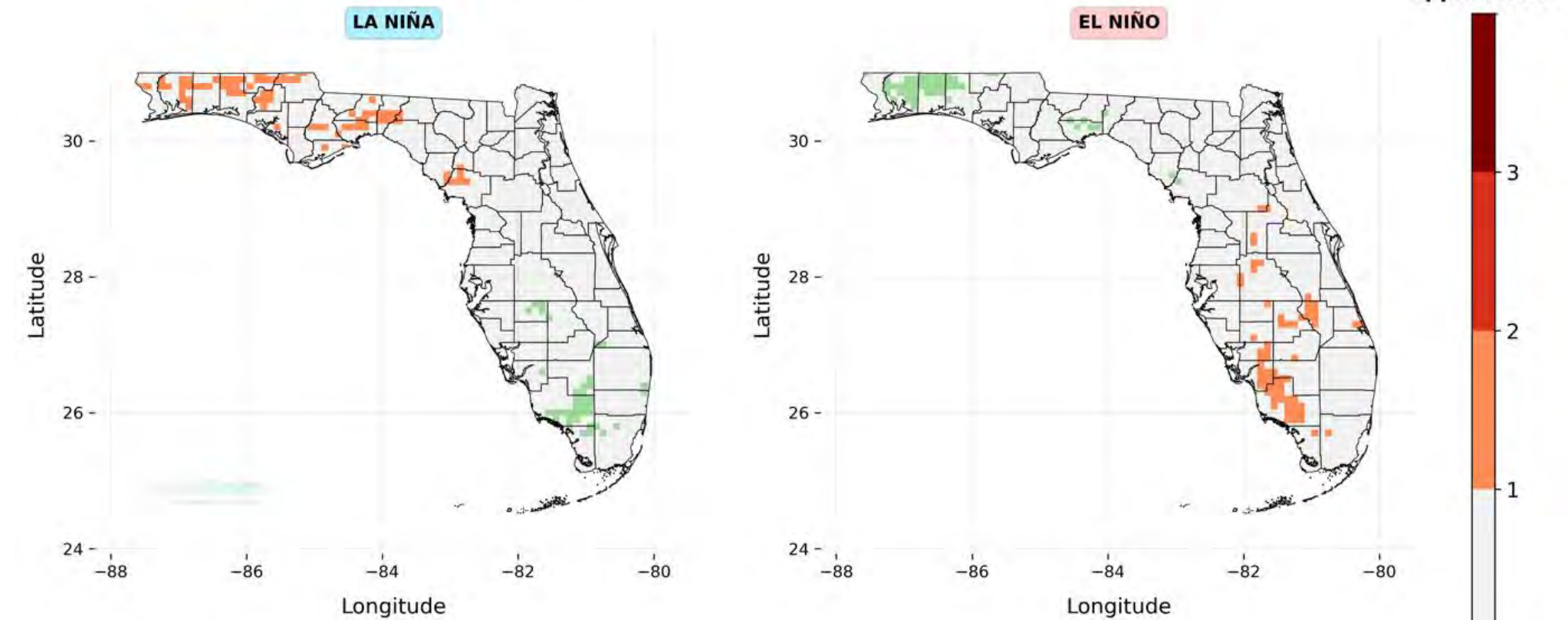
Significant differences appear under high-risk conditions.

Hillsborough County

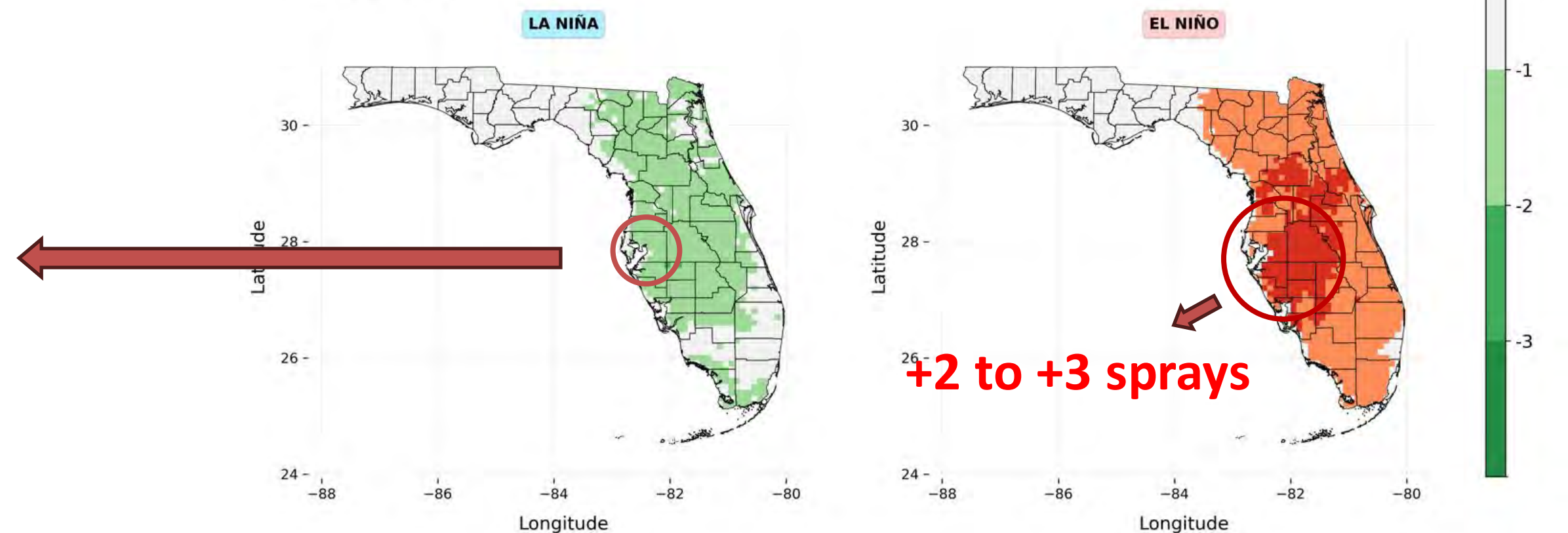


## Fungicide applications - Deviation from historical averages

(A) Moderate risk ( $0.5 \leq BII < 0.7$ )



(B) High risk ( $BII \geq 0.7$ )





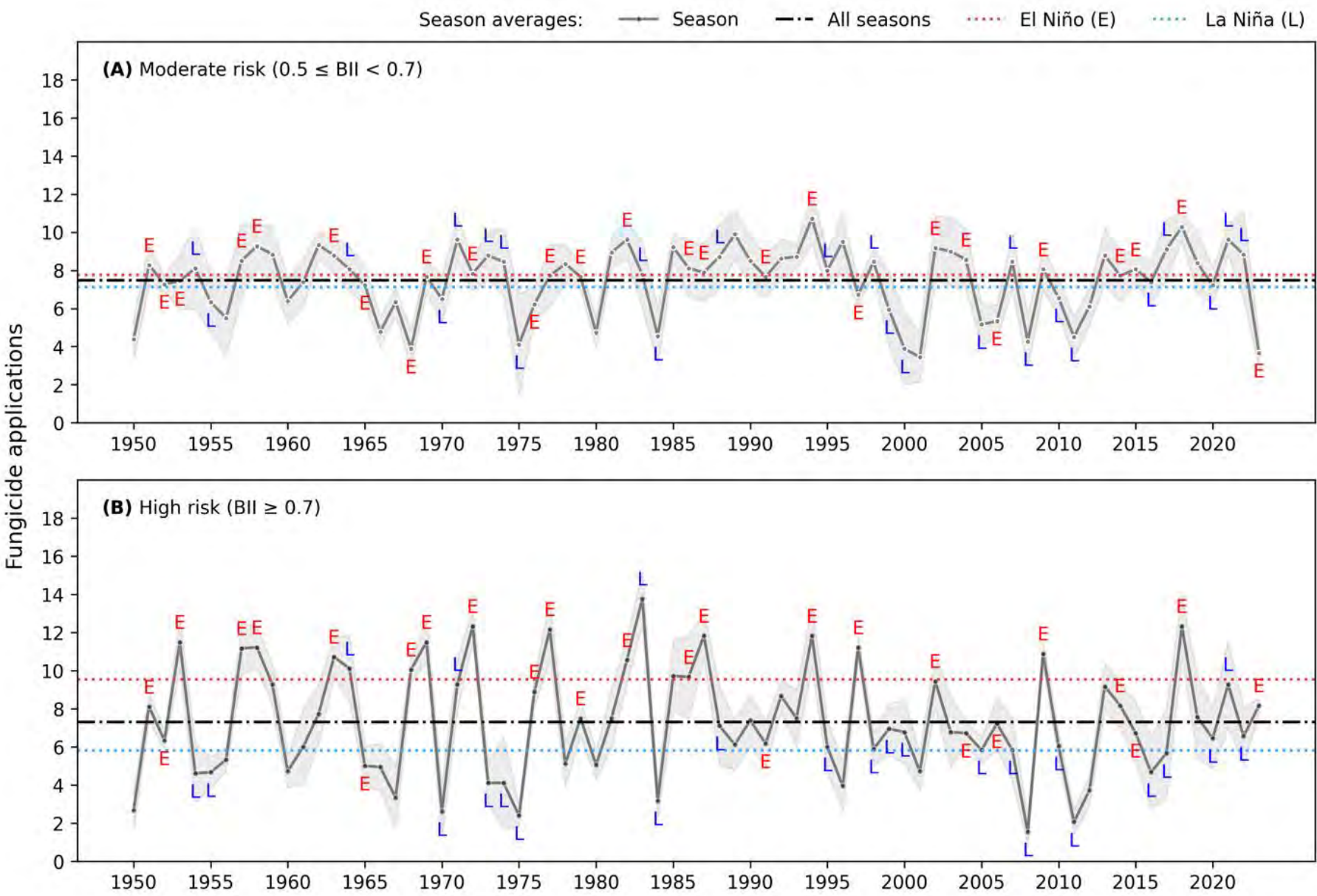
# Probability of occurrence

Florida: November 1 to March 31 (1950 – 2024)

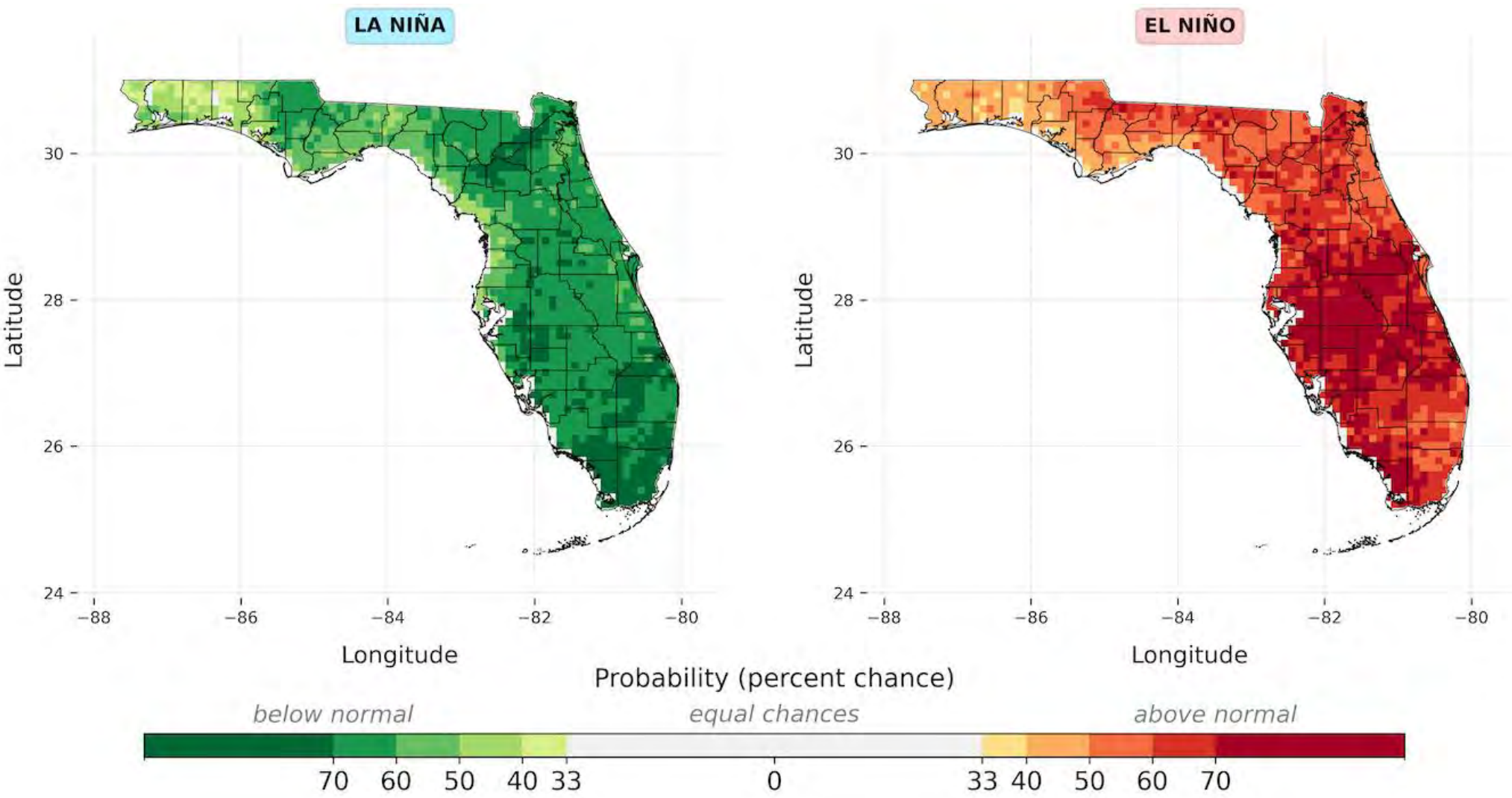


70% of El Niño seasons resulted in above-average number of days with risk for BFR occurrence.

Time series of fungicide applications for Hillsborough County



Probability of occurrence of above- or below-normal Botrytis risk





# Overall Conclusions

- Evident spatial differences across Florida with greater anomalies in the peninsula
- La Niña generally reduces Botrytis risk
  - Drier conditions lower disease pressure, but gains can be partially offset by more conducive temperatures
- Up to 70% of El Niño seasons had above-average Botrytis risk in Central Florida
  - In Hillsborough County: 40 to 50% increase in fungicide spray recommendations for high-risk conditions



**How does the link between El Niño and high-risk Botrytis conditions influence your management decisions?**

# Beyond Diseases



- Lack of sunshine slows ripening cycle
- Some varieties cannot handle a lot of rain

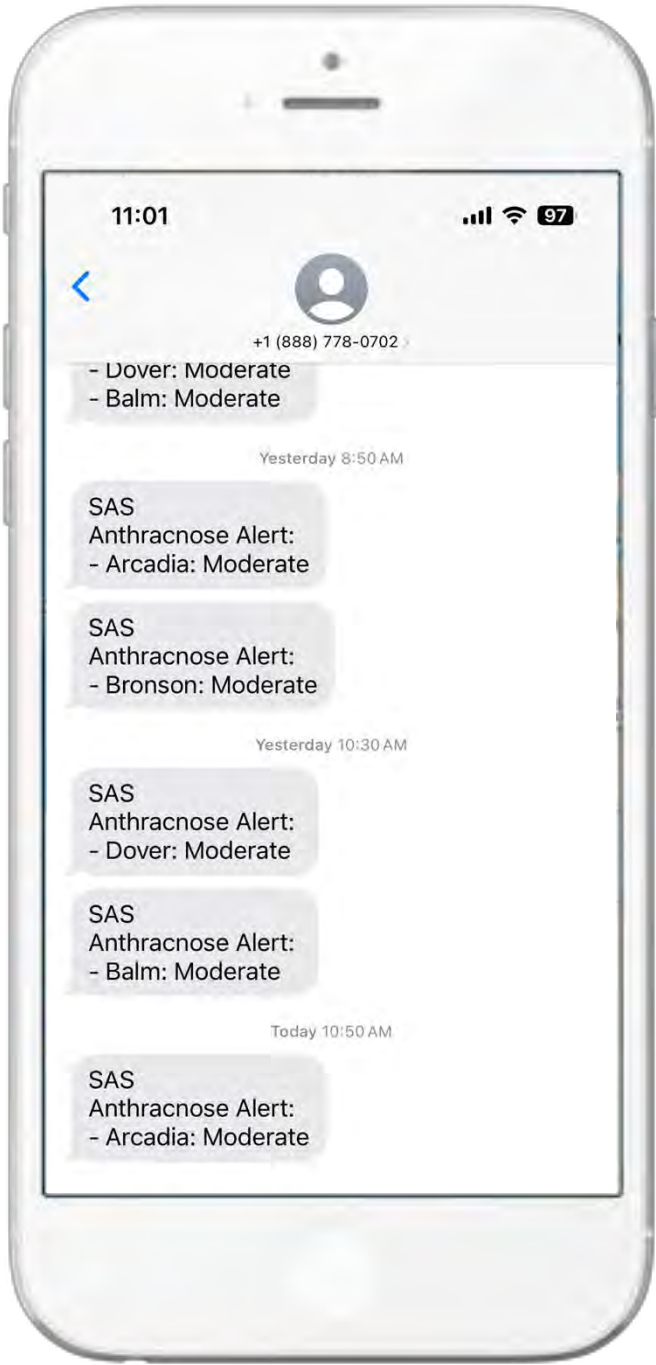
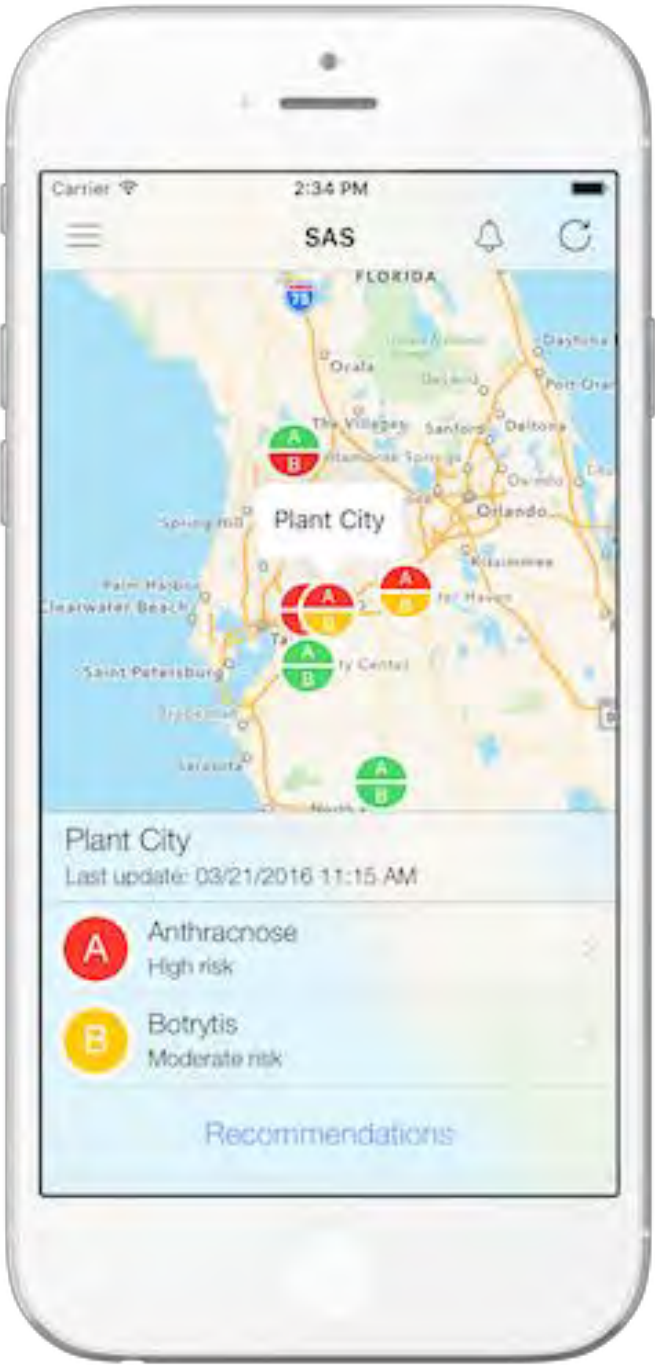
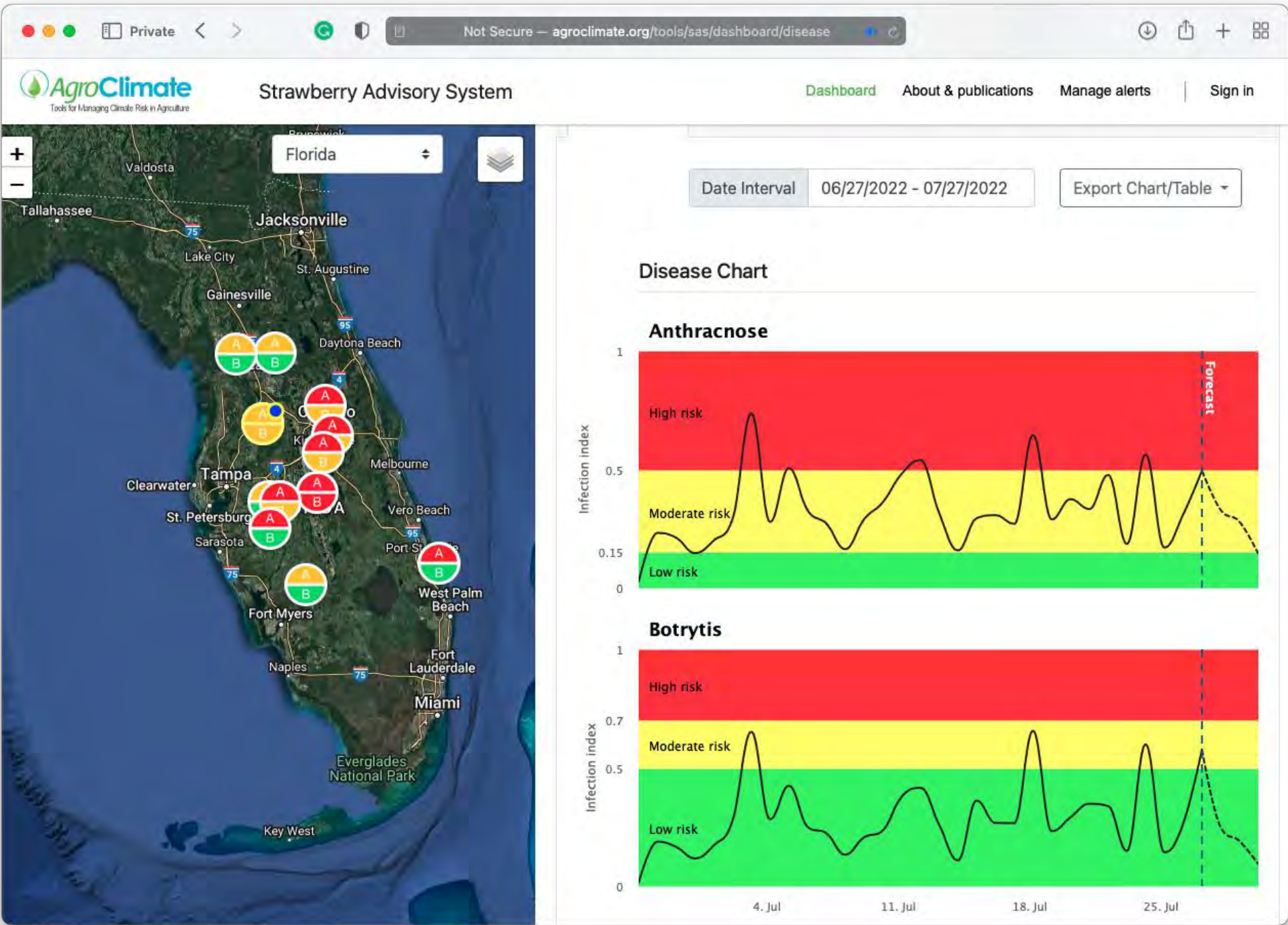
## "El Niño delays Mexican strawberry harvests"



- Increase botrytis and powdery mildew
- Not enough light hours to the plants
- **"The US market luckily has Florida strawberries"**



# The Strawberry Advisory System (StAS)



[SAS.AGROCLIMATE.ORG](http://SAS.AGROCLIMATE.ORG)

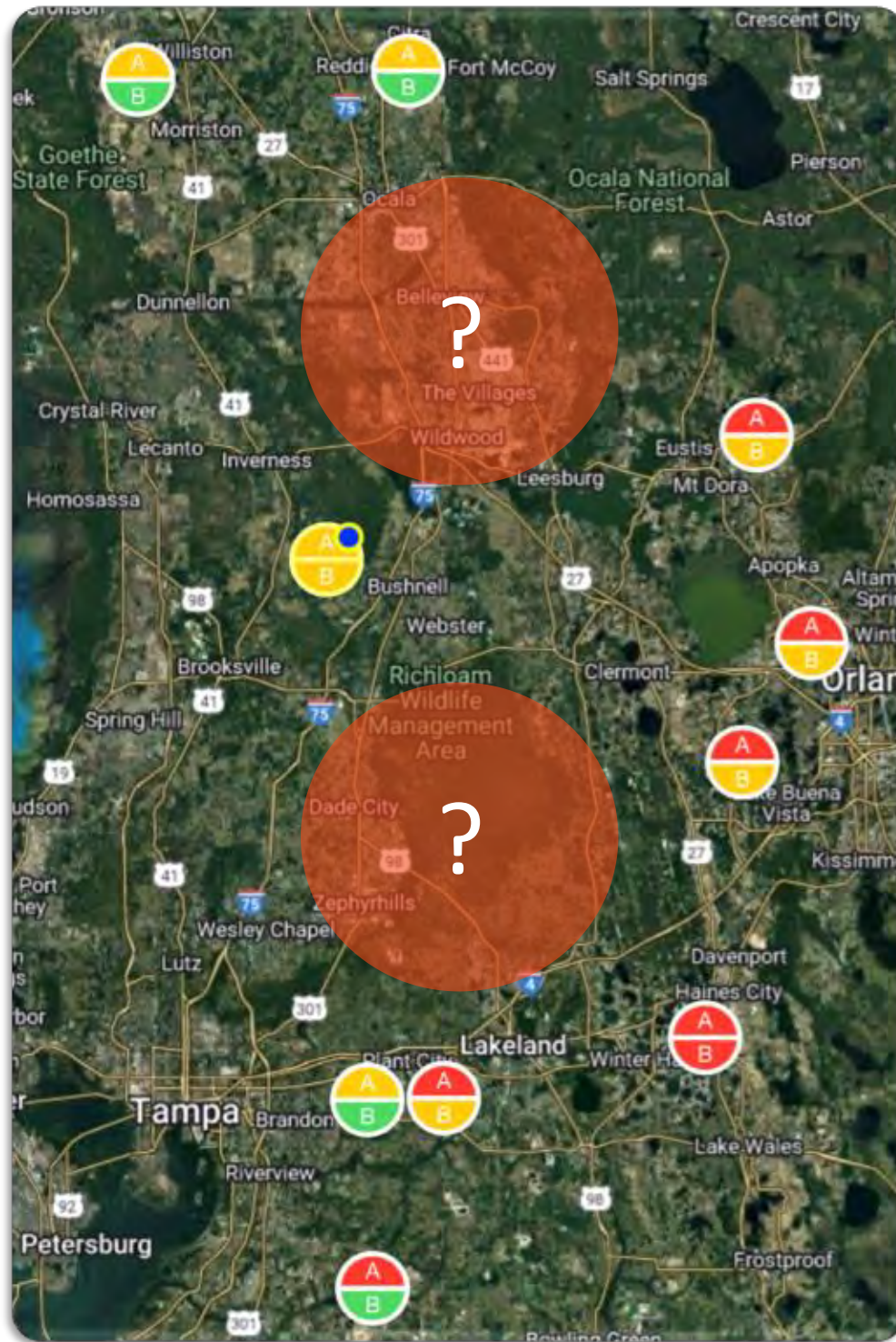


# What if you are not near a FAWN station?

## AgroClimate Virtual Weather Stations

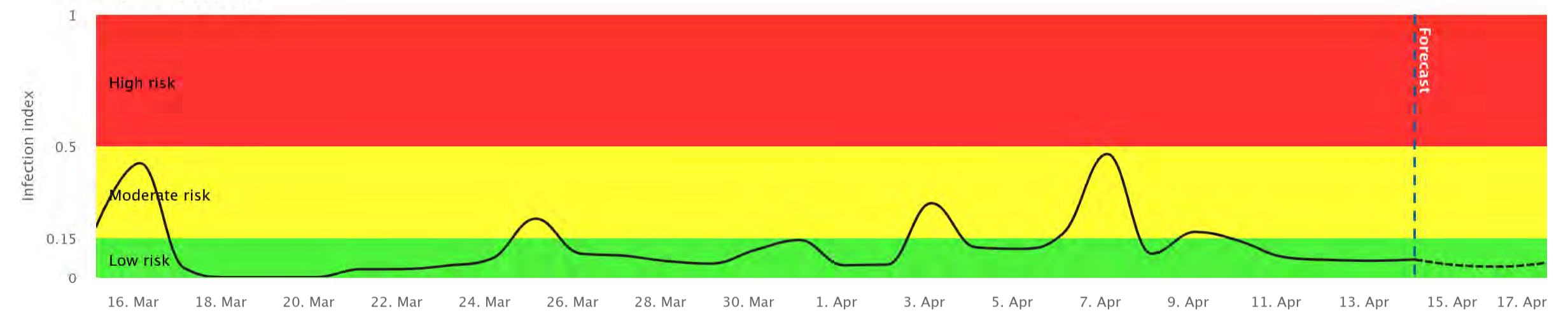


FIELD NAME, LATITUDE, LONGITUDE  
to [cerbaro@ufl.edu](mailto:cerbaro@ufl.edu)



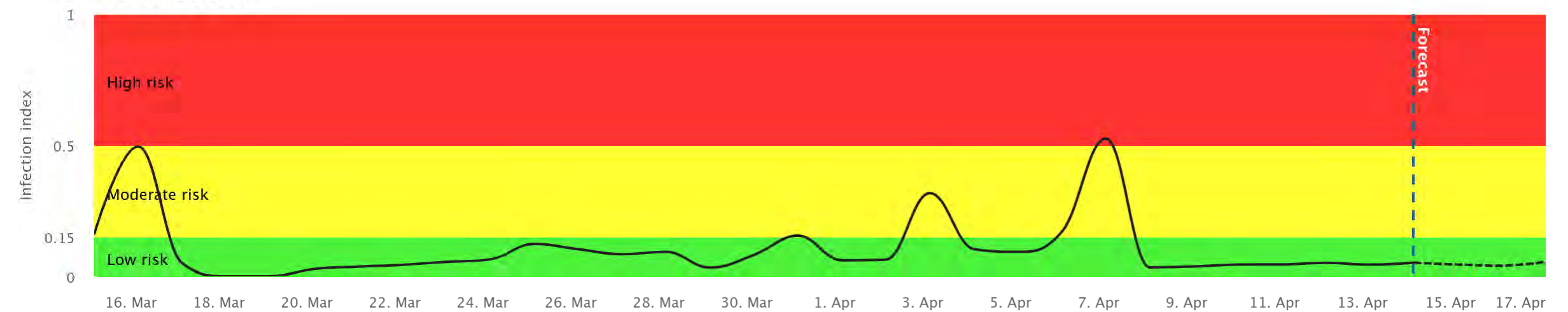
### Virtual Balm station

#### Anthracnose



### FAWN Balm station

#### Anthracnose





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Thank you!

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[SAS.AGROCLIMATE.ORG](https://sas.agroclimate.org)

