

# Wind machines for frost protection

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*Mark Battany*

*University of California  
Cooperative Extension*

*San Luis Obispo and  
Santa Barbara*

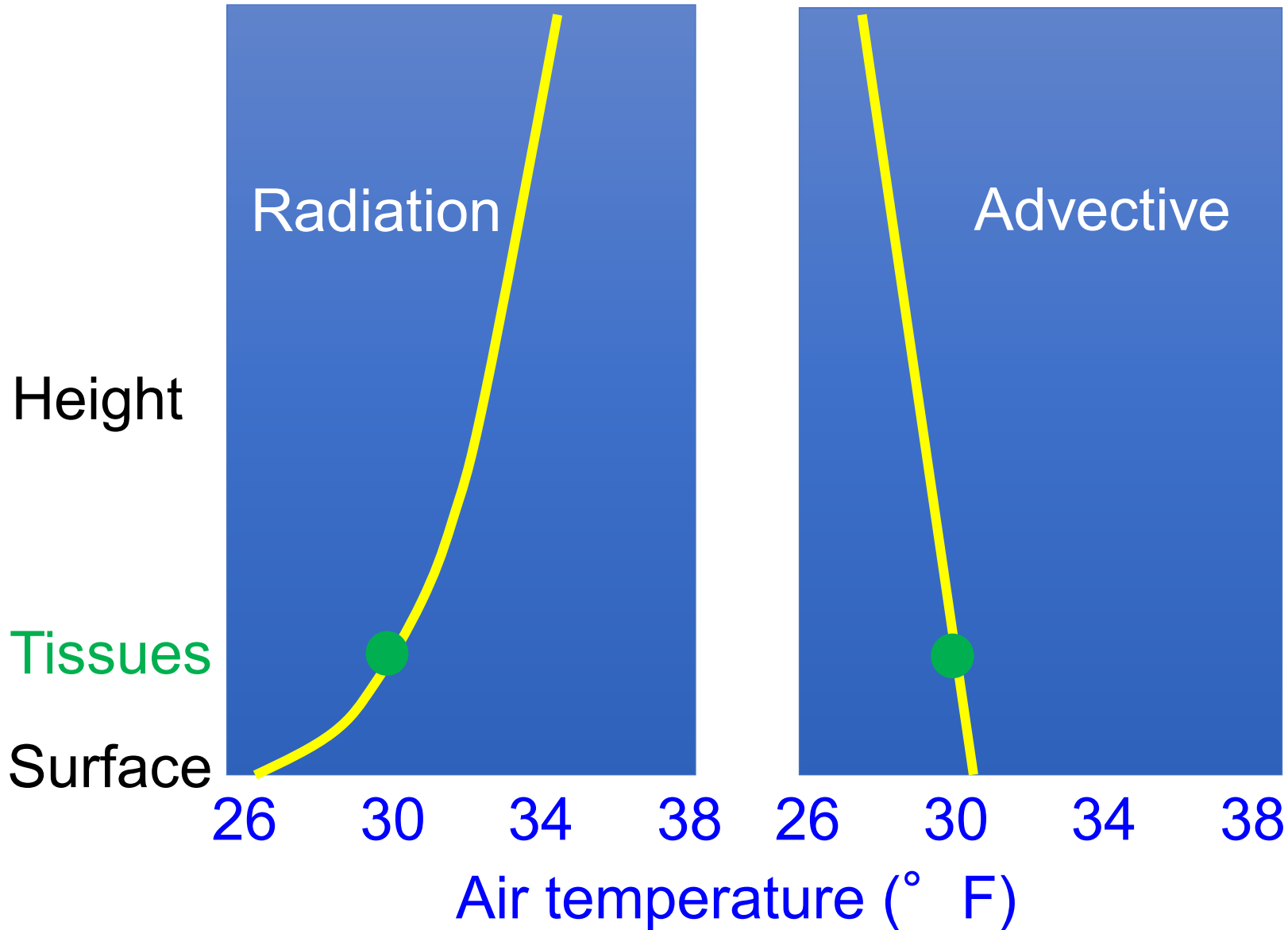
# Expect wind machine use to increase\*

- Water scarcity
- Fall frost
- Climate change

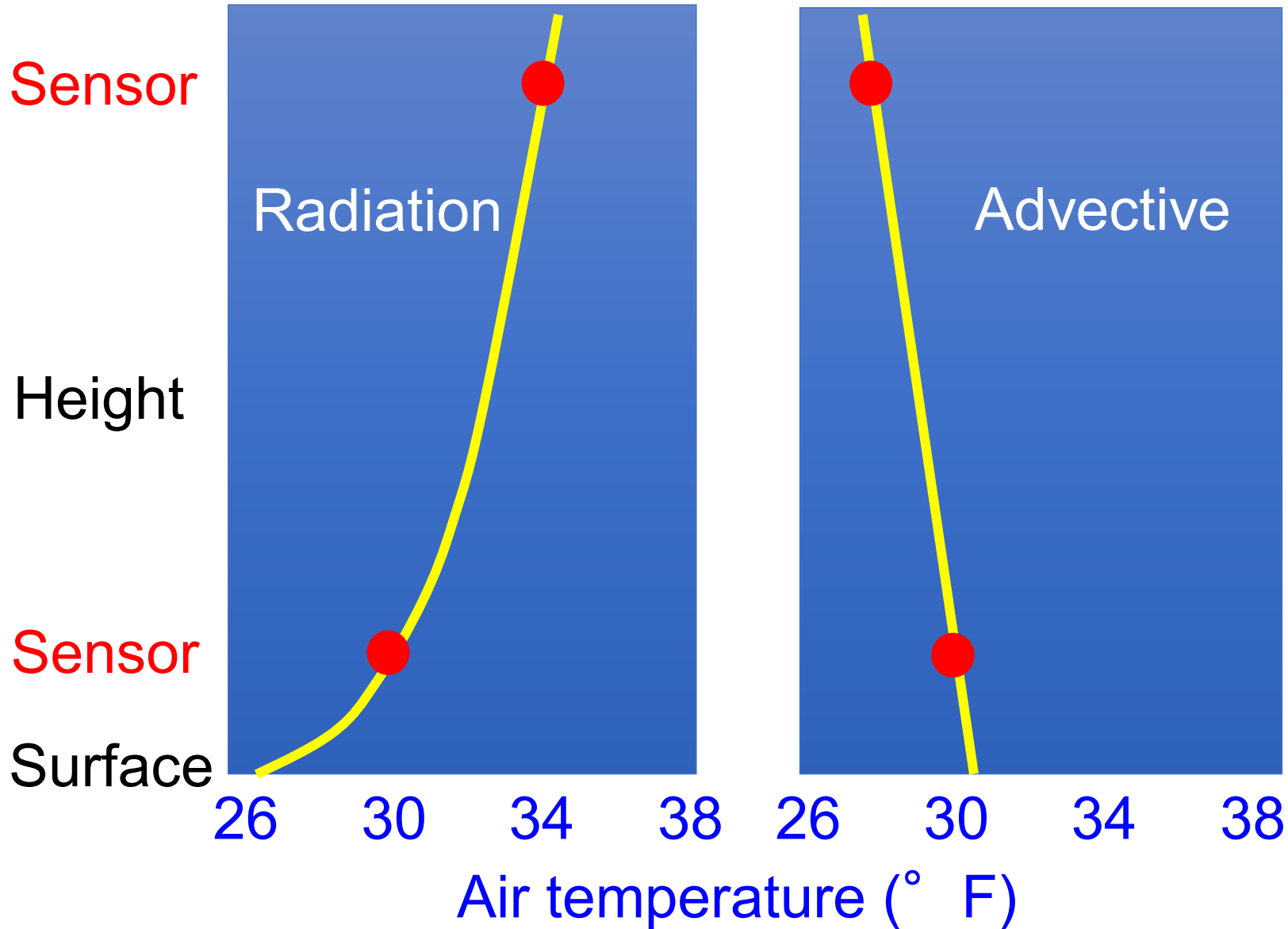


\* Where feasible

# How inversions affect frost response



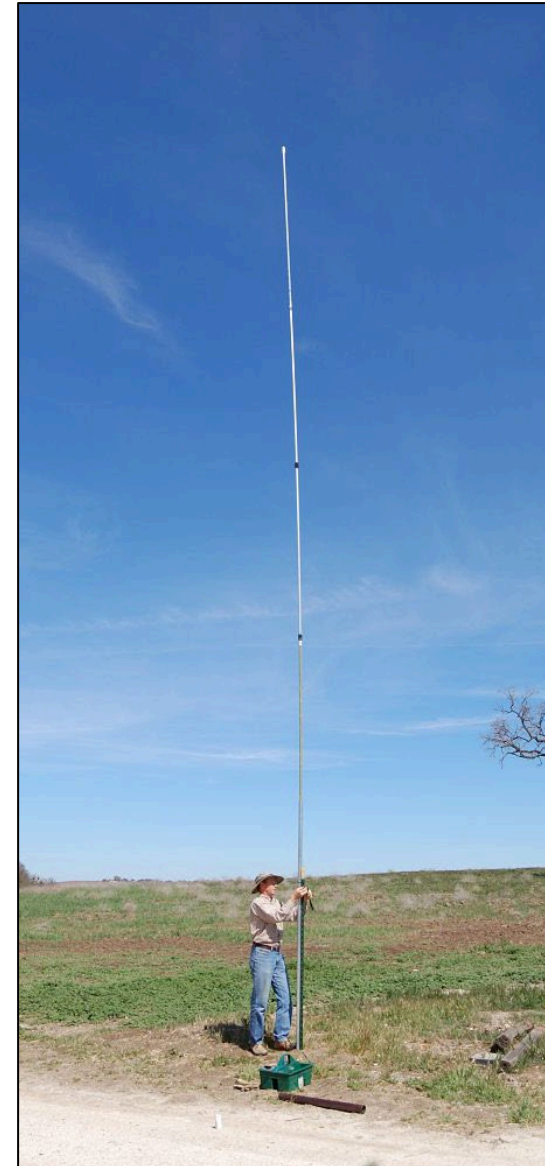
# How inversions affect frost response



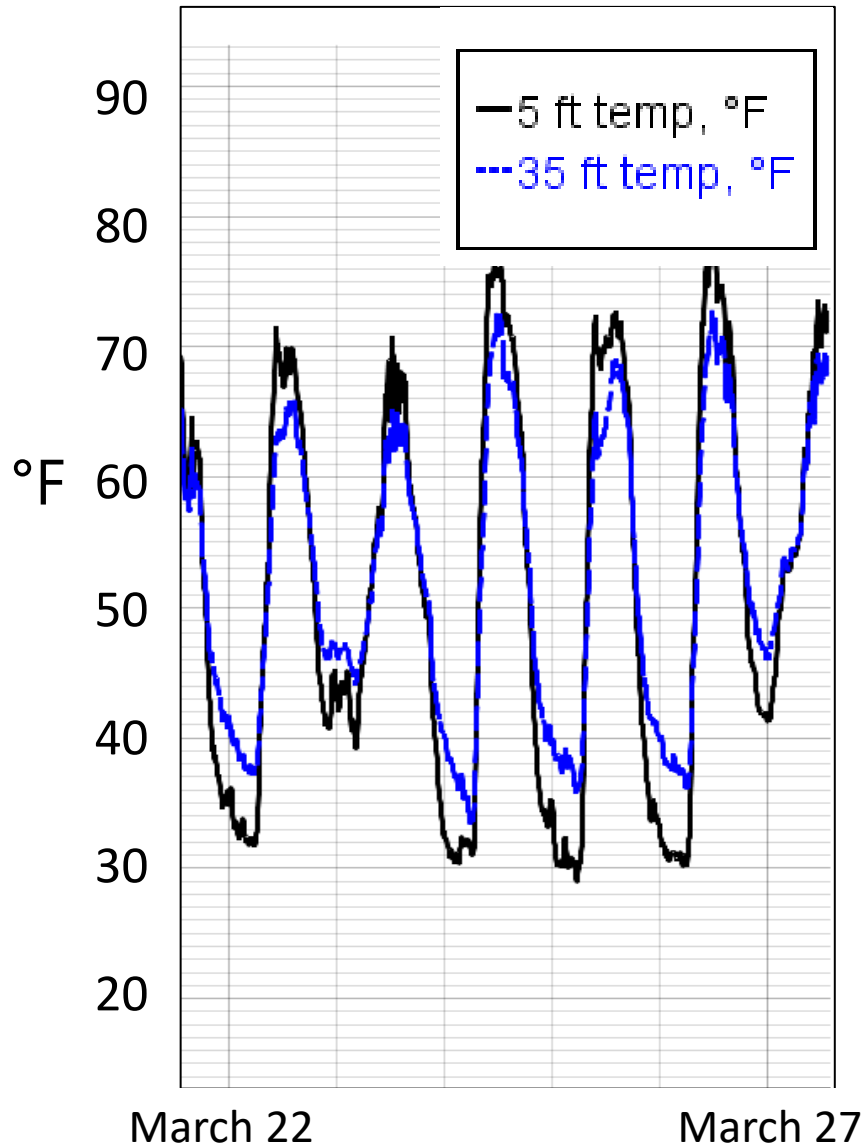
# Two approaches to measuring inversions

- Short-term, site-specific, dense measurements
  - Cheap and easy to do
  - Data not available in real time
  - How representative is the limited time frame studied?
- Permanent, regional, real-time data
  - Real time data for decision-making
  - Expensive to install
  - Expensive to operate
  - Data can be used for other purposes

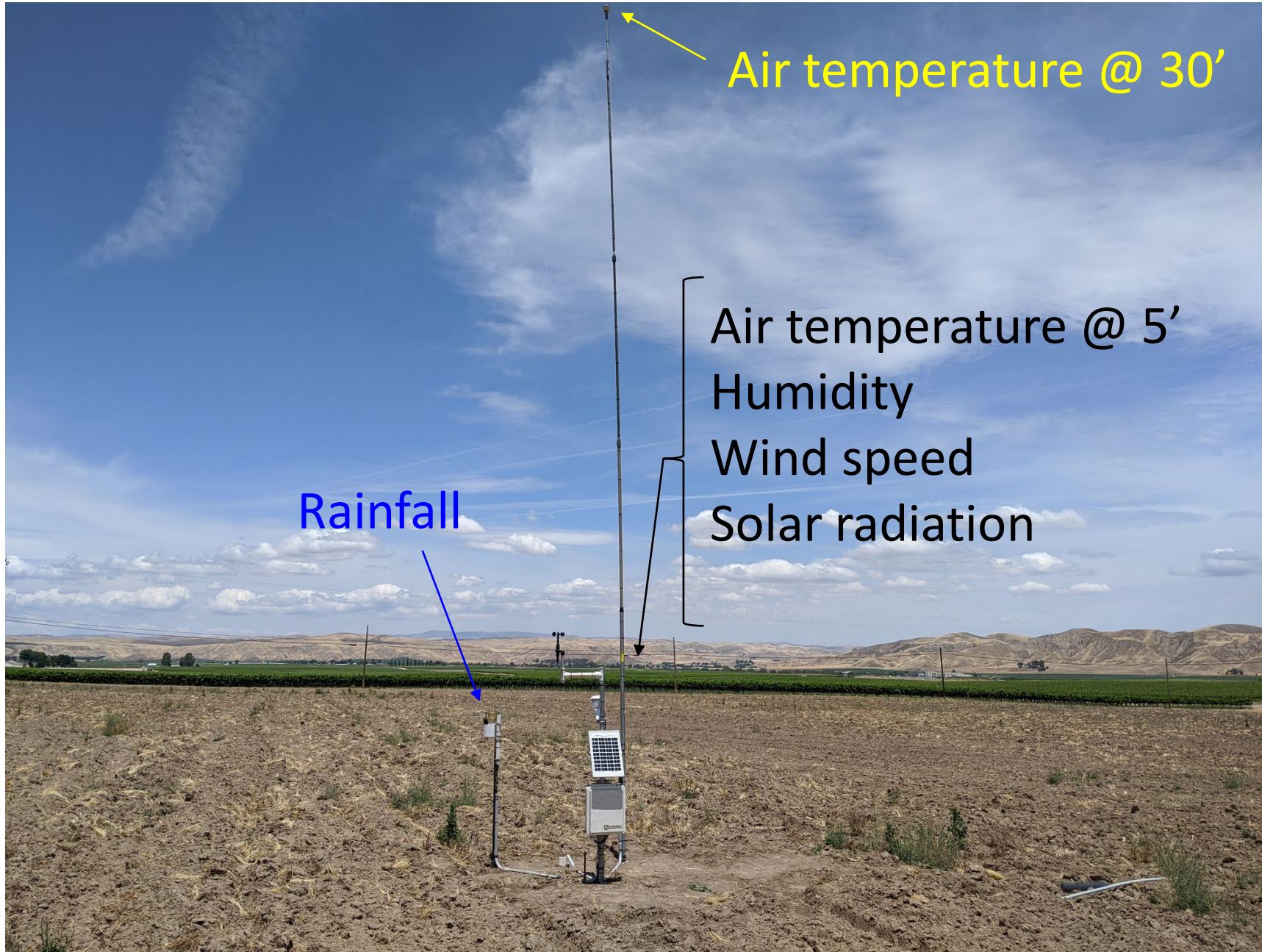
# Example of a short-term assessment



# Example of a short-term assessment



# Example of a permanent network





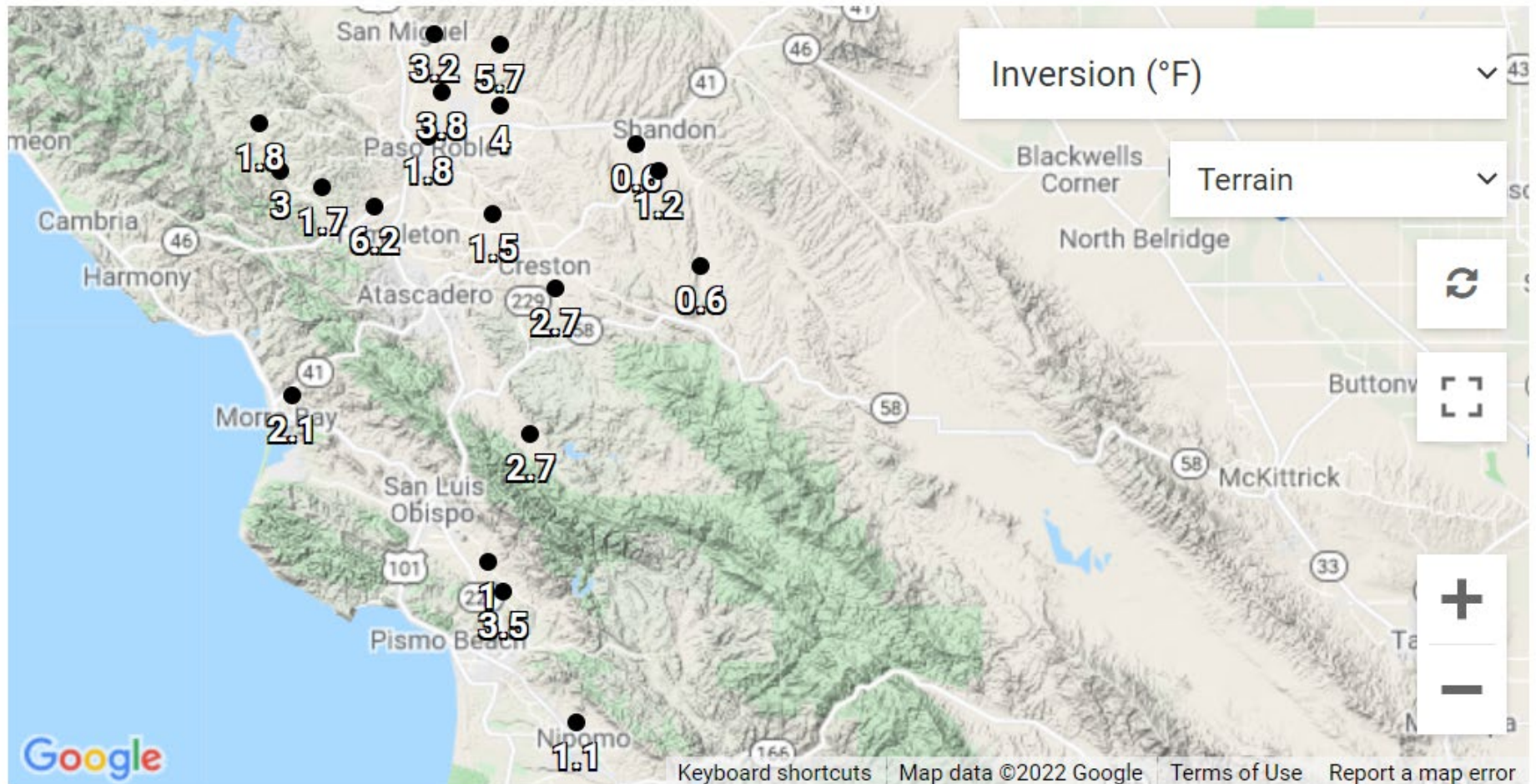
# Example of a permanent network

## Latest Observations

15 Minute Data

Map

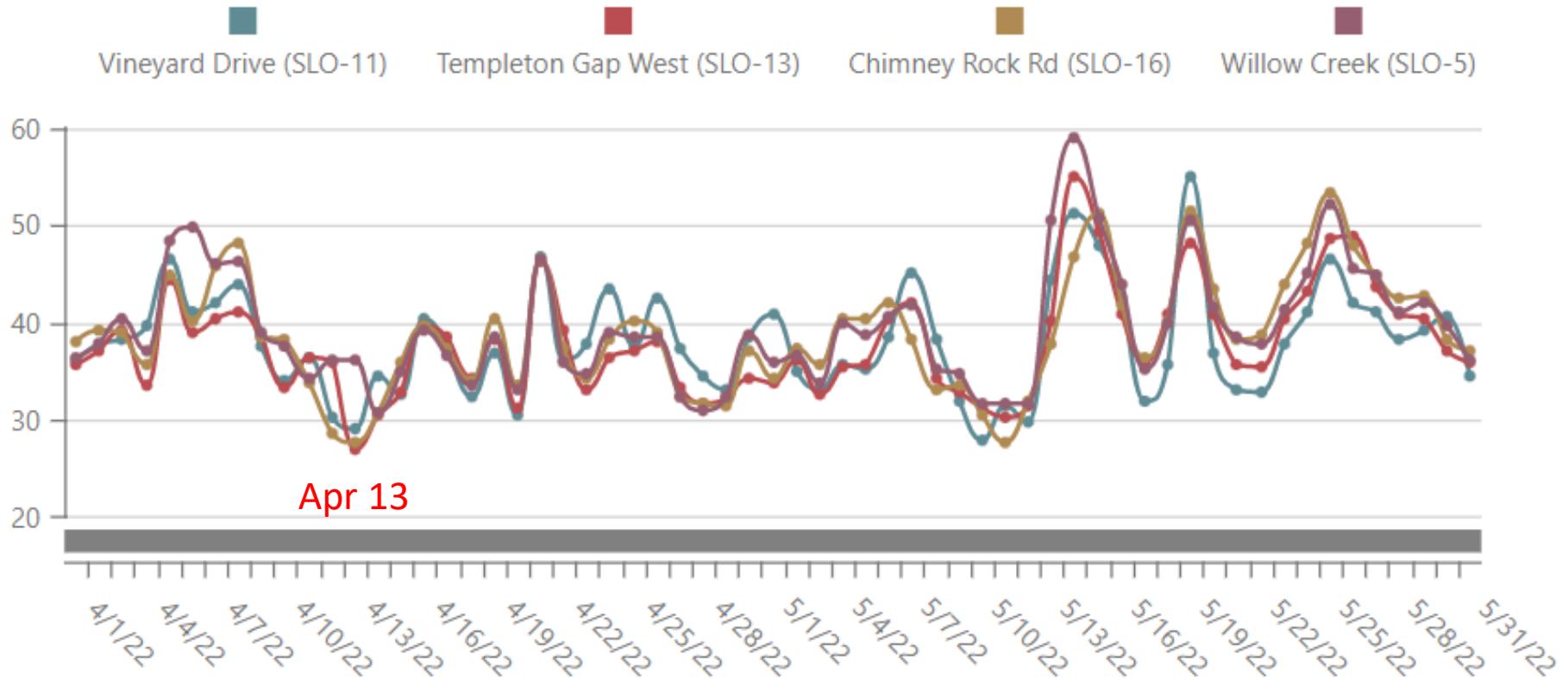
as of 1/19/22 9:27 PM PST



# 2022 April-May Paso Westside

## Daily Minimum Temperature (°F)

4/1/2022 - 5/31/2022



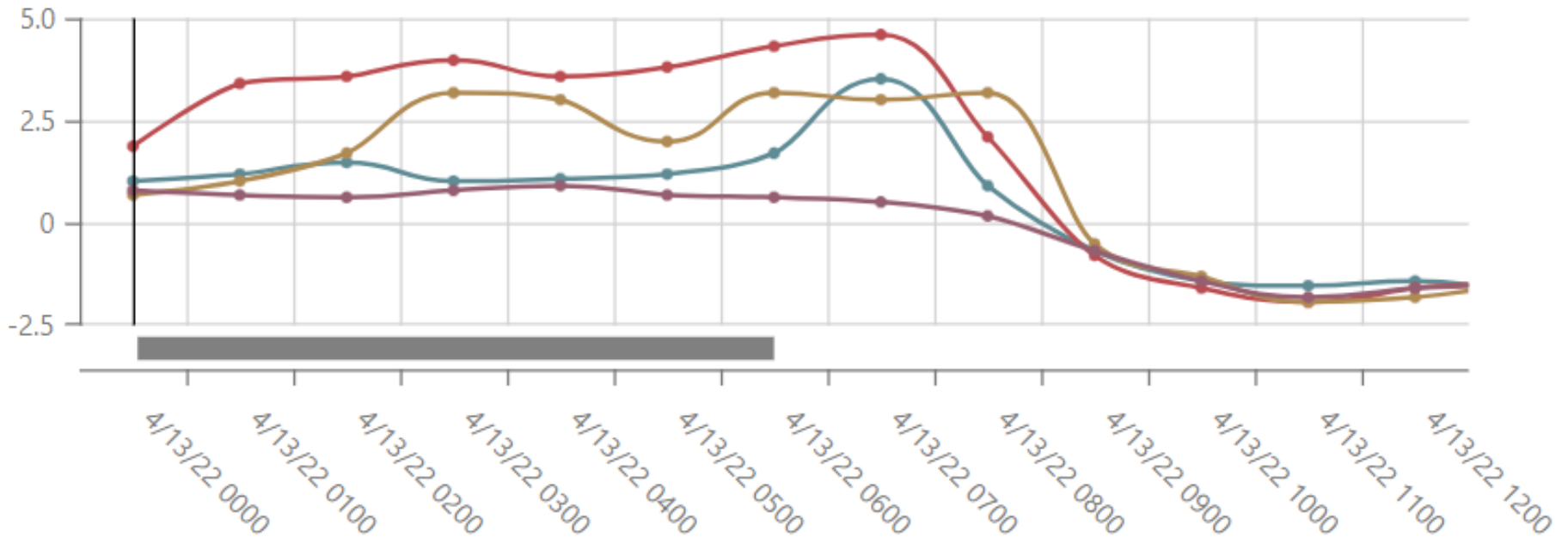
# Apr 13, 2022 inversion strength

## Inversion strength (°F)

4/13/2022

Vineyard Drive (SLO-11)    Templeton Gap West (SLO-13)    Chimney Rock Rd (SLO-16)    Willow Creek (SLO-5)

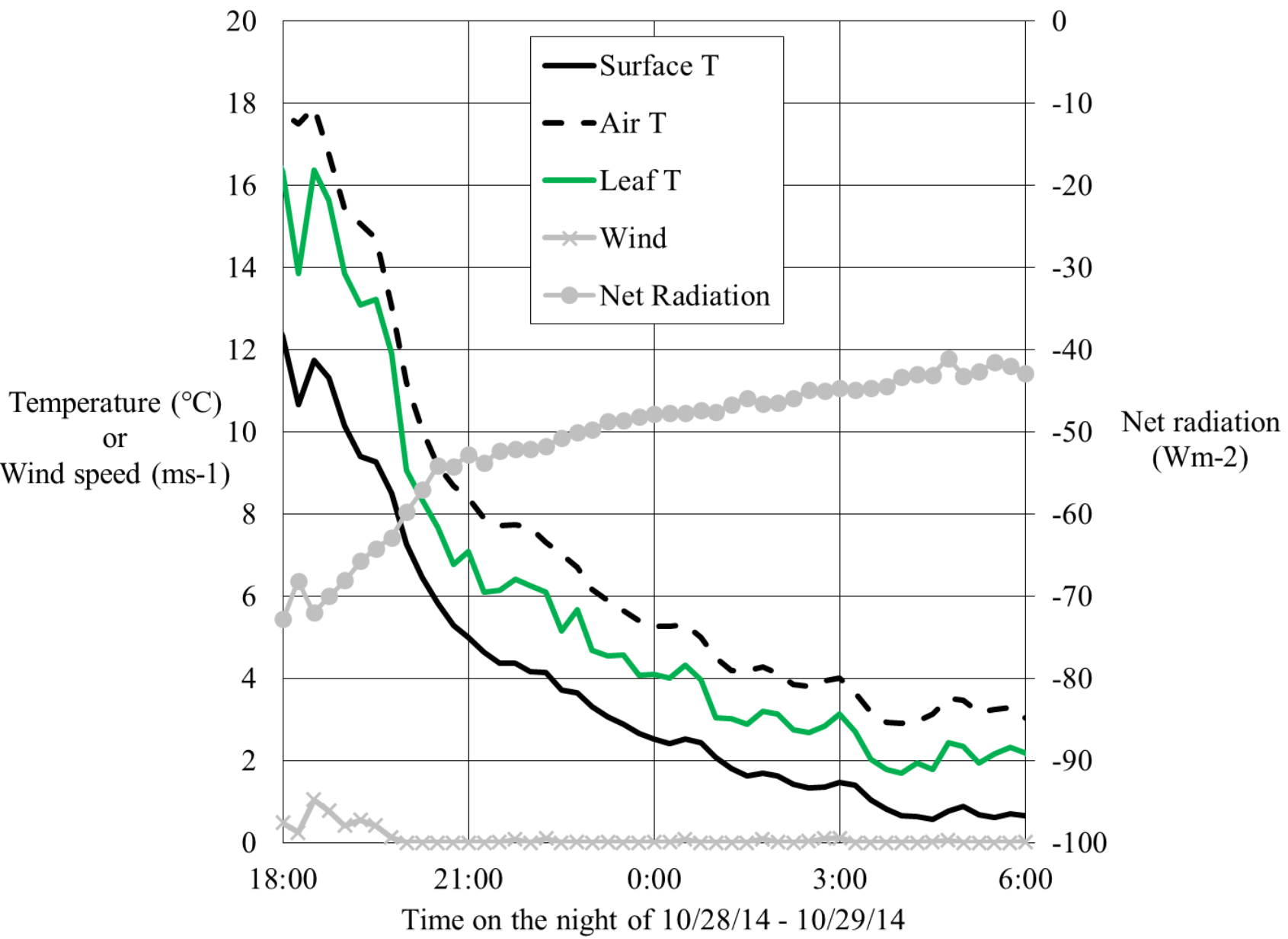
4/13

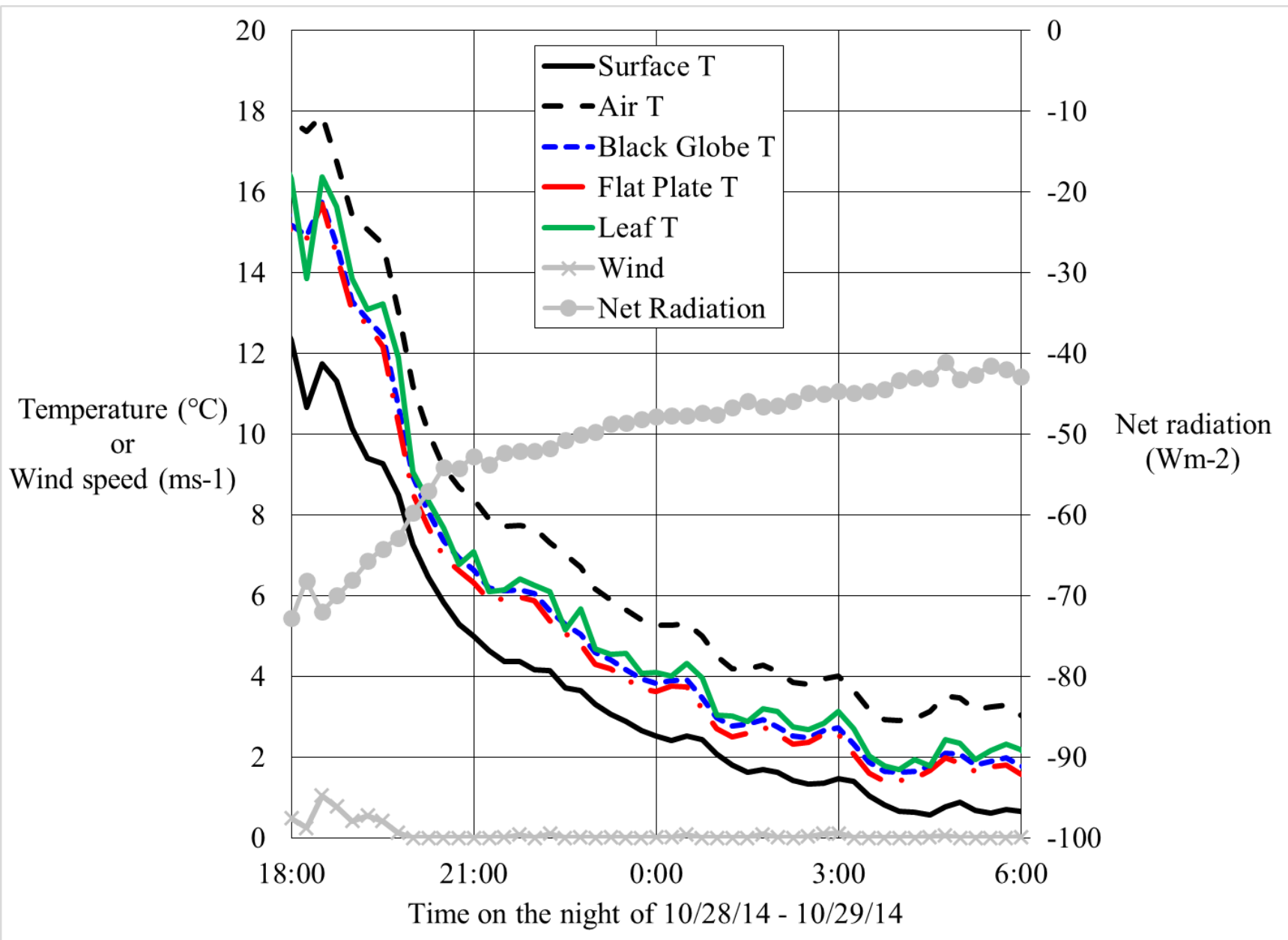


# Wind machine types

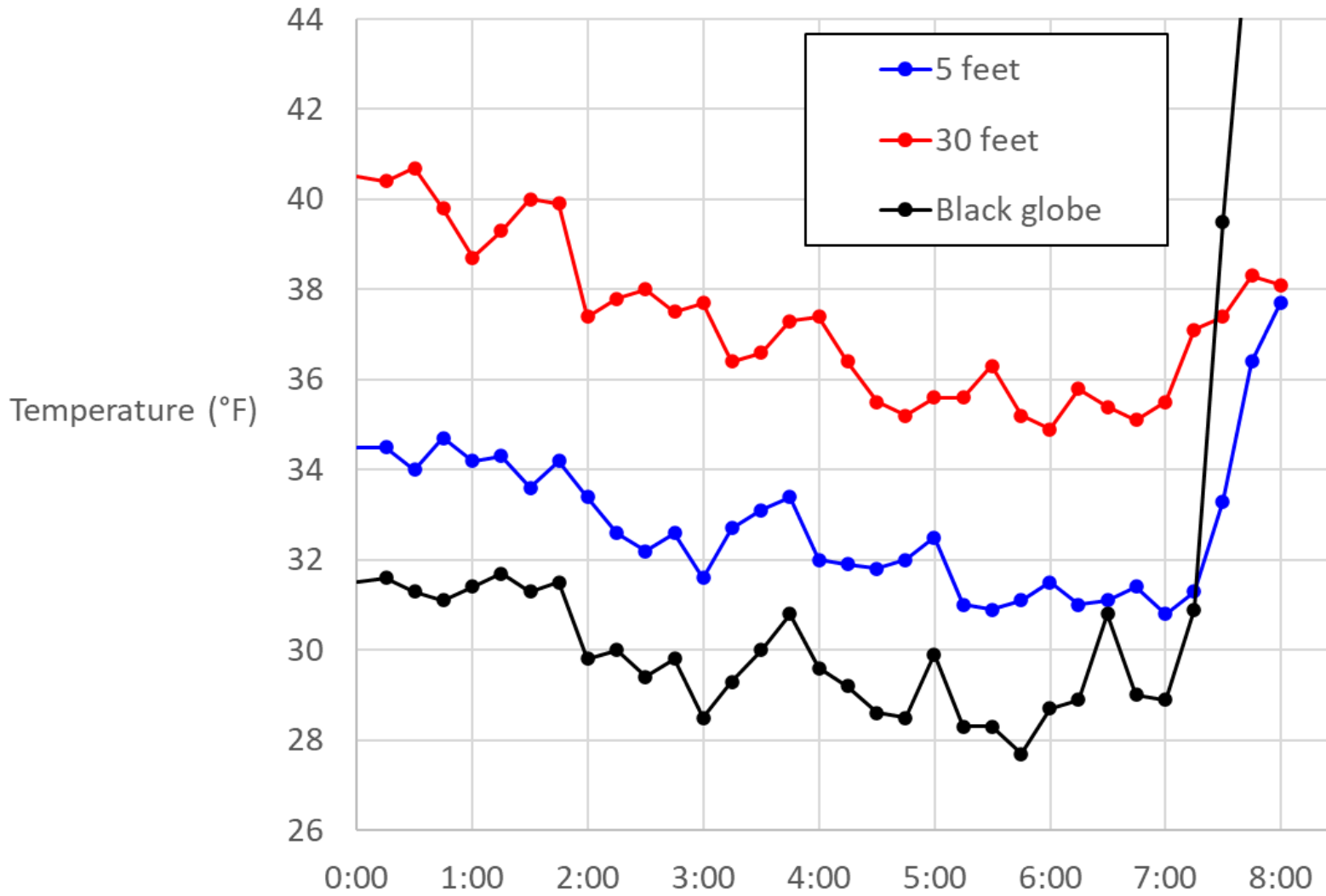








Oakville station November 14, 2022





# UCCE frost weather data

SLO weather station network:

<https://ucce-slo.westernweathergroup.com/>

Napa weather station:

<https://ucce-napa.westernweathergroup.com/>