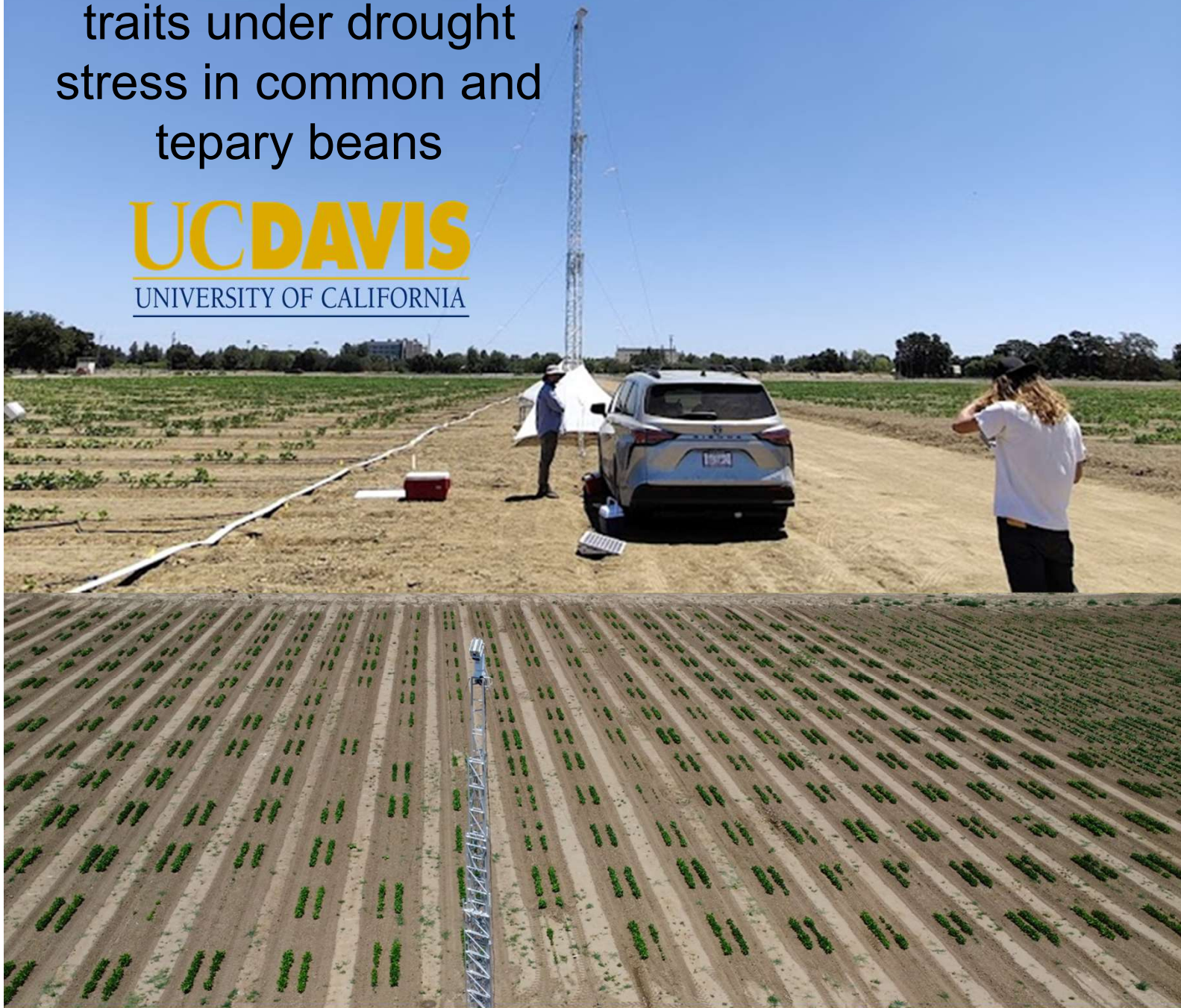


UC Dry Bean Field Day 2022

Remote sensing of plant
traits under drought
stress in common and
tepary beans

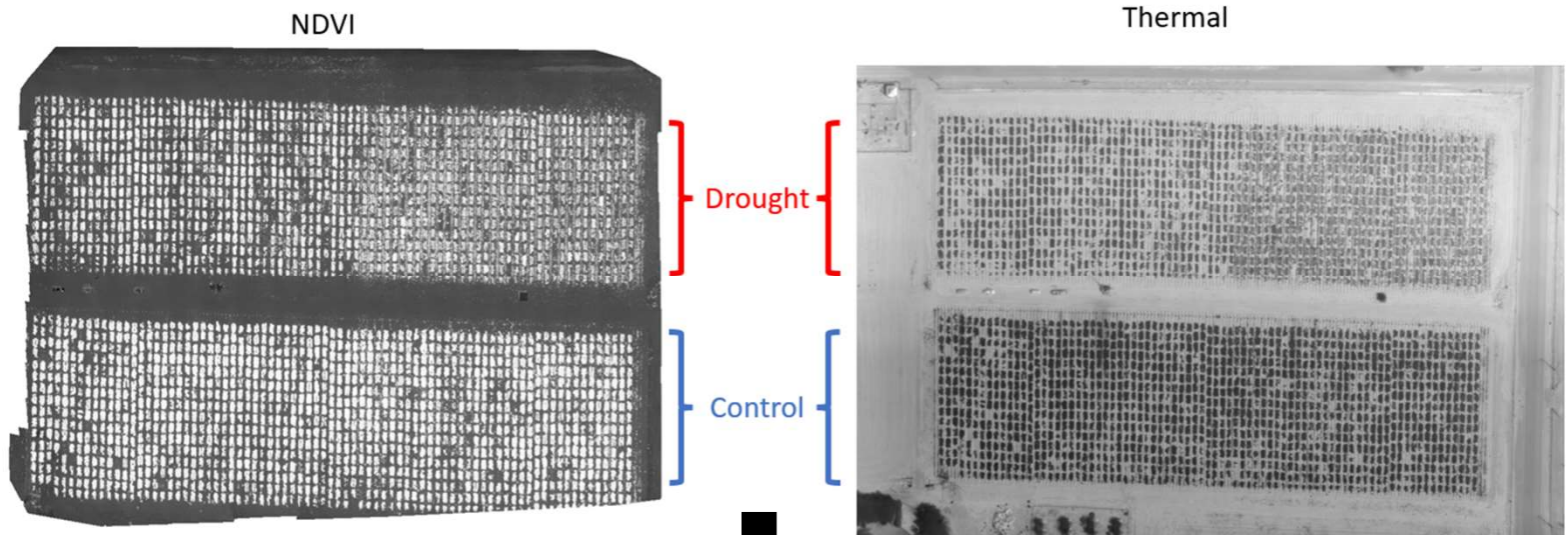
UCDAVIS
UNIVERSITY OF CALIFORNIA



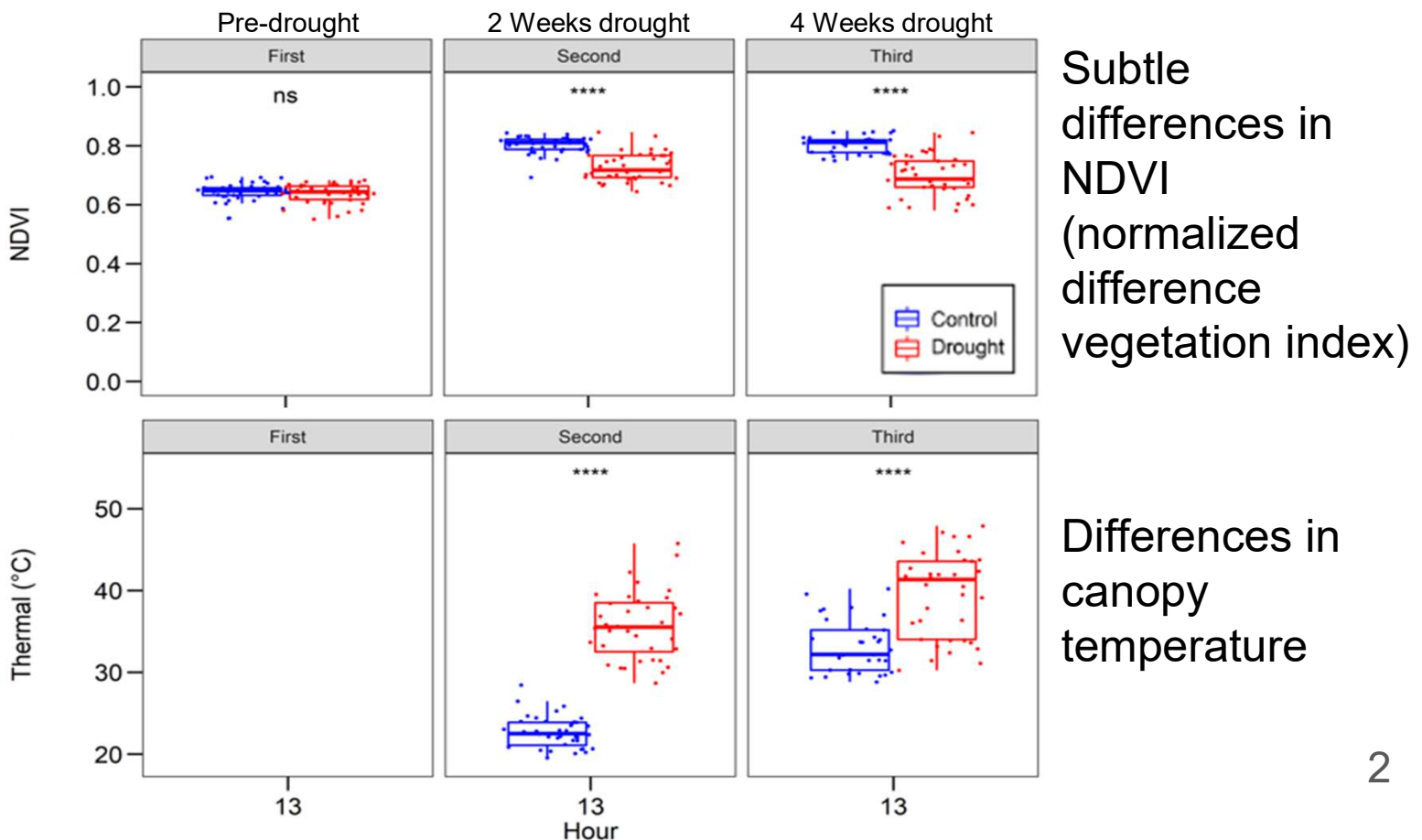
Chris Wong, Tom Buckley, Travis Parker,
Matthew Gilbert, Antonia Palkovic,
Paul Gepts, Troy Magney

320 bean genotypes (300 Common & 20 Tepary) varying in drought resilience

- 3 field campaigns to assess water status
- Drone-based remote sensing

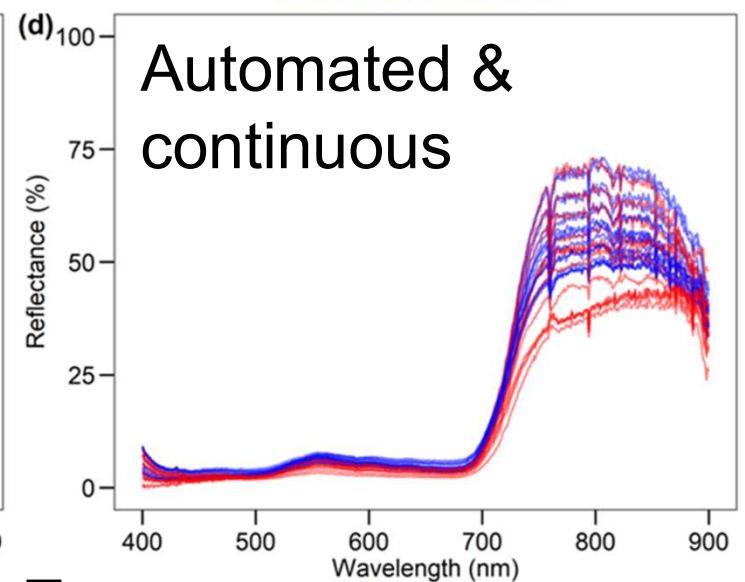
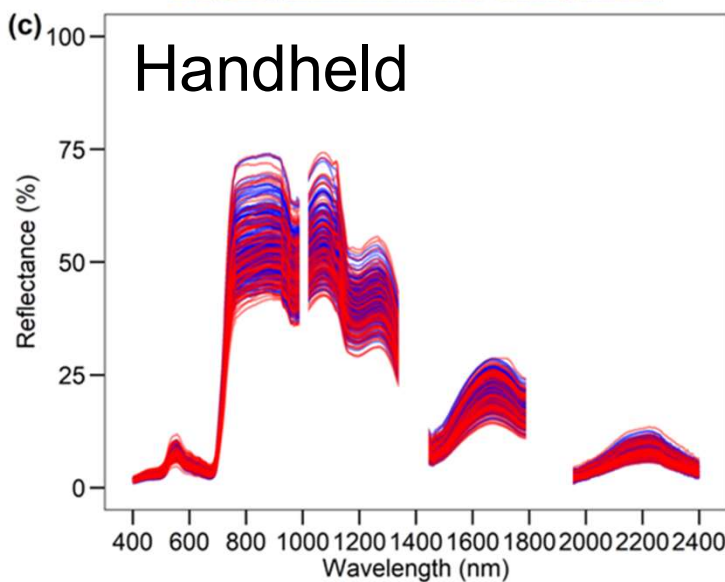
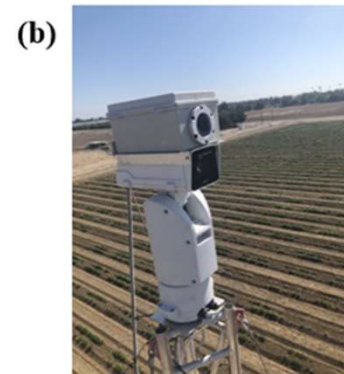


Treatment differences

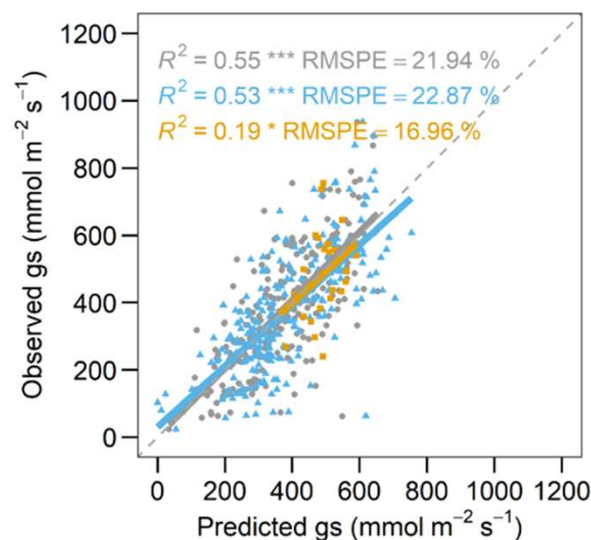


Ground- & tower-based remote sensing

➤ Hyperspectral reflectance



Predicting physiological traits indicative of plant water status



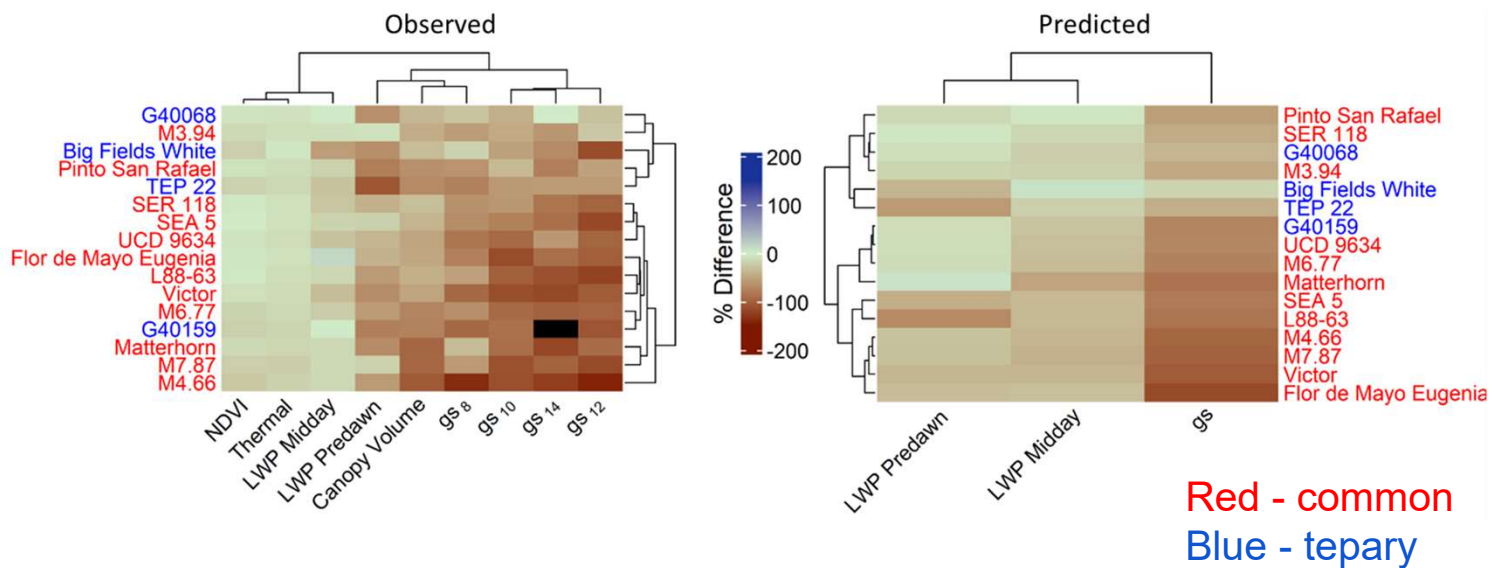
Can predict an array of plant traits with respective calibrations

• Ground_{VISNIR} ▲ Ground_{Fullrange} ■ Tower

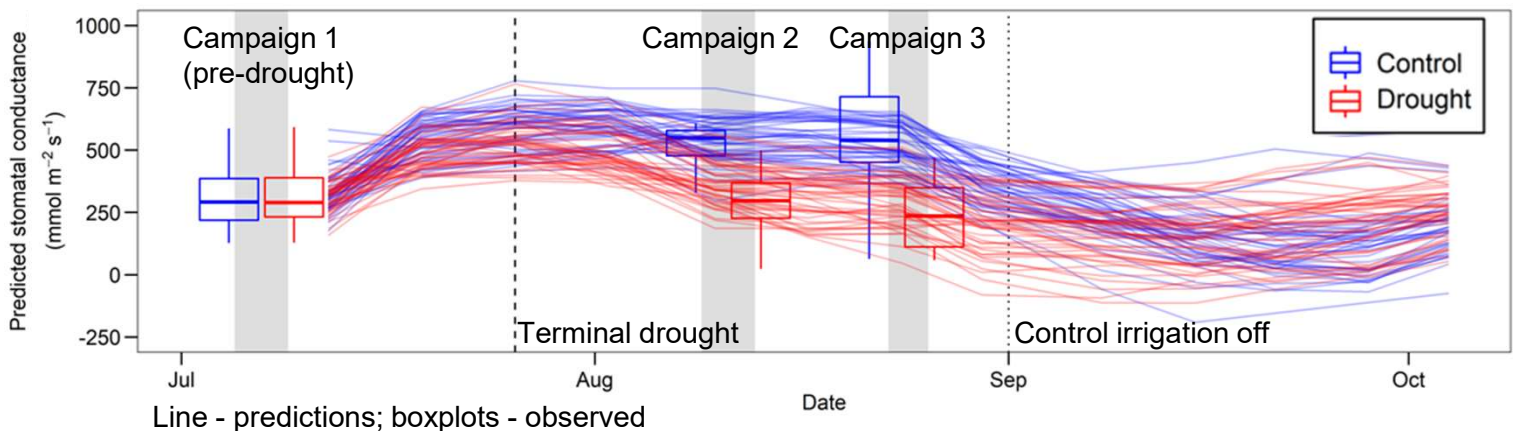
Potential applications

Phenotyping drought response across populations

★ % difference closer to zero indicates less drought response (ie. more drought resilient)



Extrapolating across populations and for continuous monitoring



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