Active & Passive L-band observations for corn and soybean during SMAPVEX16-MicroWEX

U. Florida: Jasmeet Judge, Subit Chakrabarti, Pang-Wei Liu, Tara Bongiovanni, Pat Rush, Daniel Preston, & Samantha Allen

U. Michigan: Roger DeRoo & Tony England

TU-Delft: Susan Steele-Dunne & Jaime Polo Bermejo

Iowa State: Brian Hornbuckle, James Bragdon, & Victoria Walker

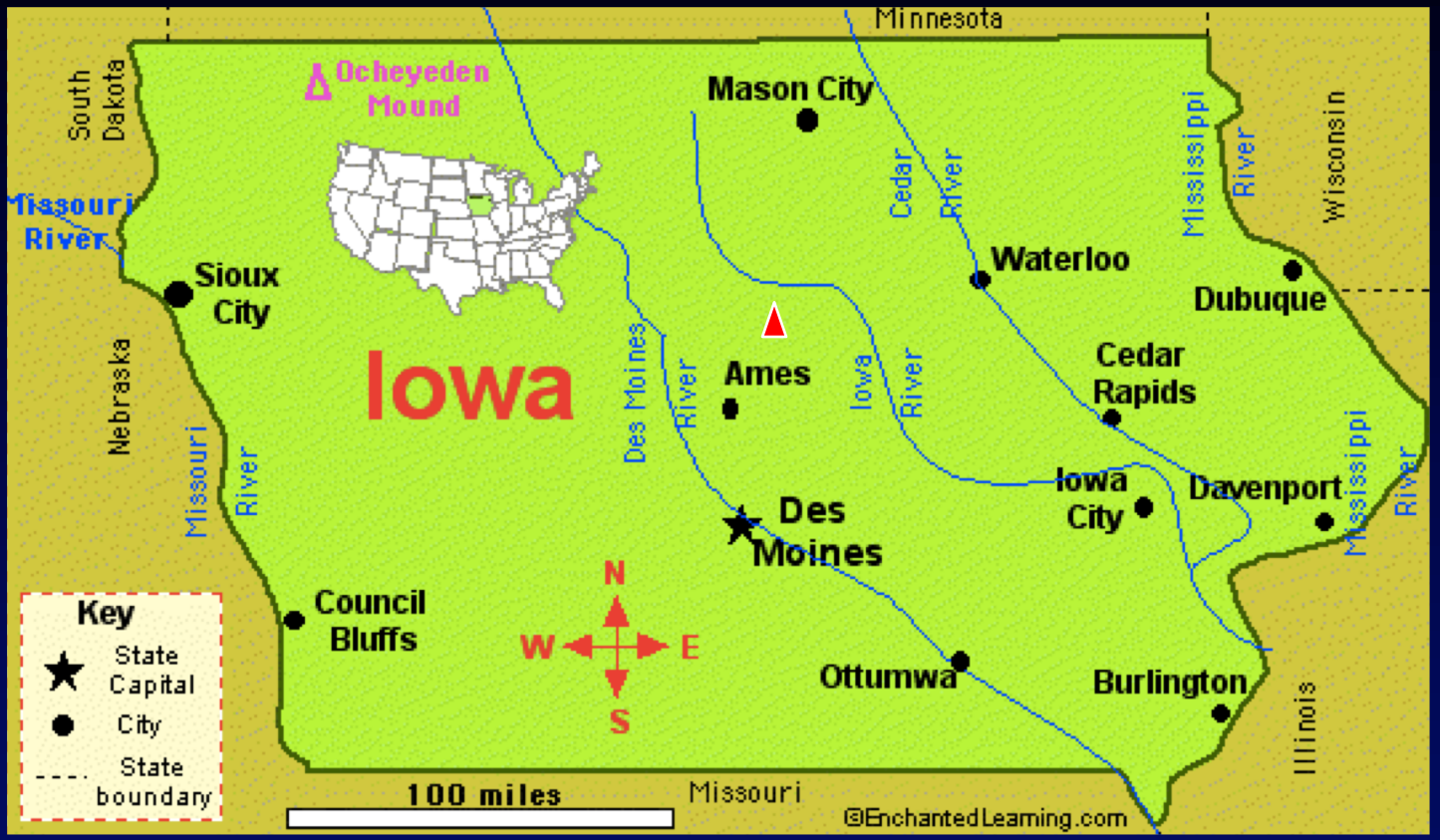
NPI: Alejandro Monsivais-Huertero

USDA-ARS: John Prueger & Forrest Goodman

NASA/JPL: PALS Team

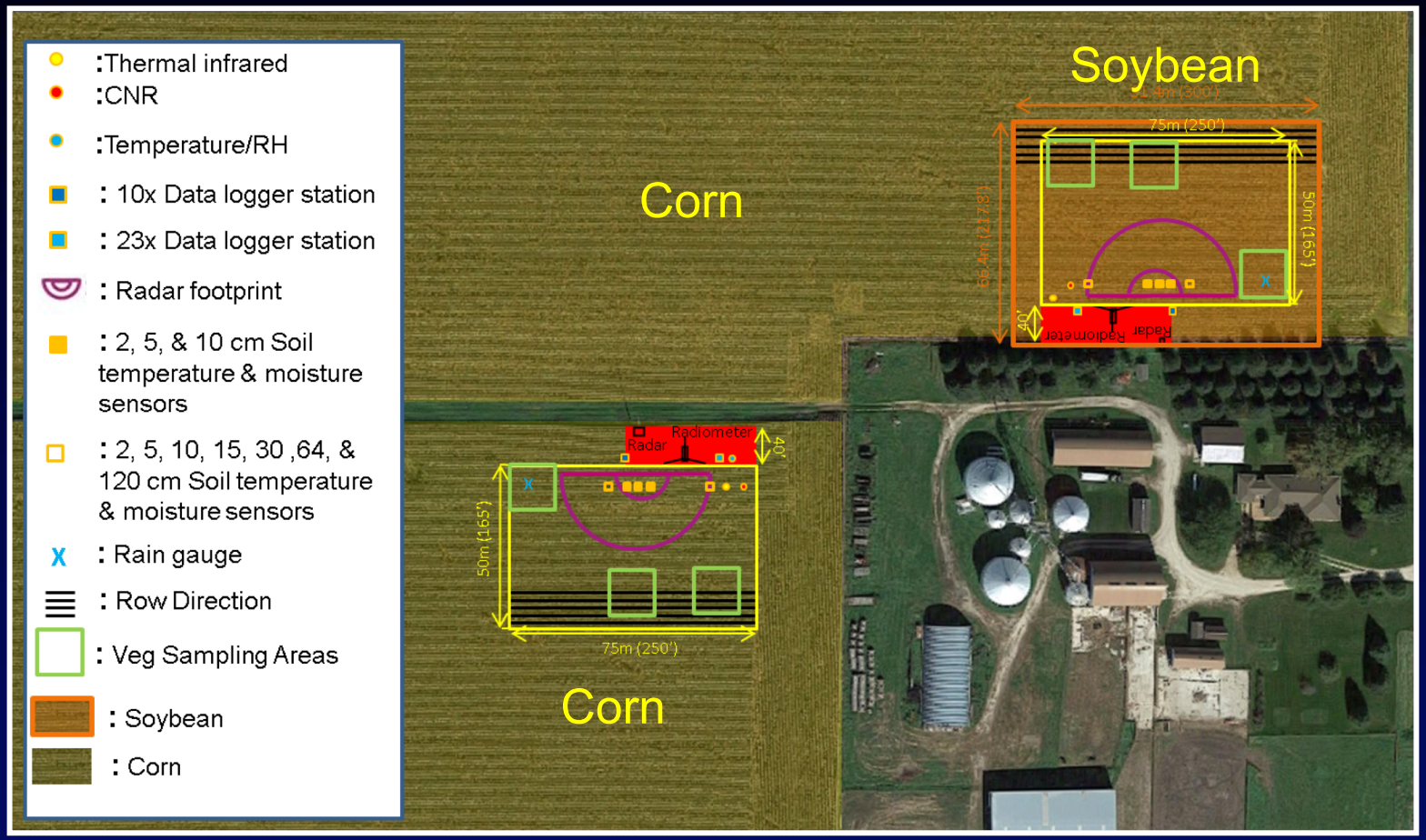
Supported by NASA-THP-NNX13AD04G

SMAPVEX16-IA



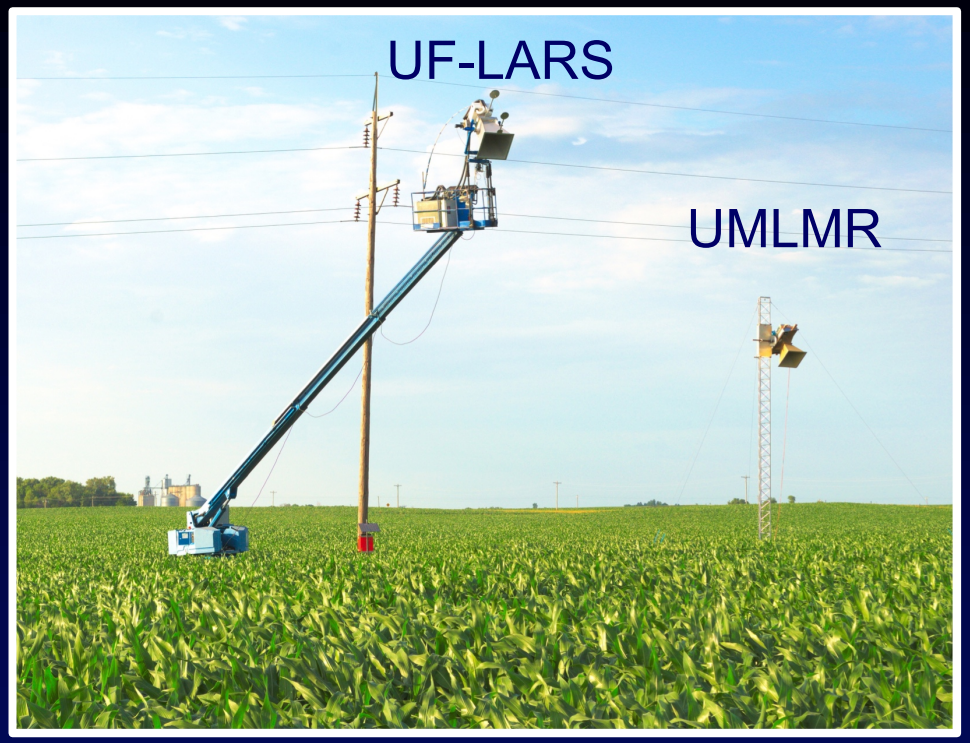
- South Fork in IA
- SM and vegetation sampling; Airborne measurements with PALS
- IOP-1 May 25 - June 5, 2016
- IOP-2 Aug 2 - 16, 2016

SMAPVEX16-MicroWEX



- Site ~65 km NE from Ames, IA
- 5 SM/ST locations; TIR; micromet
- Corn & soybean: May 23 – Sep 9, 2016
- 3 Vegetation sampling areas

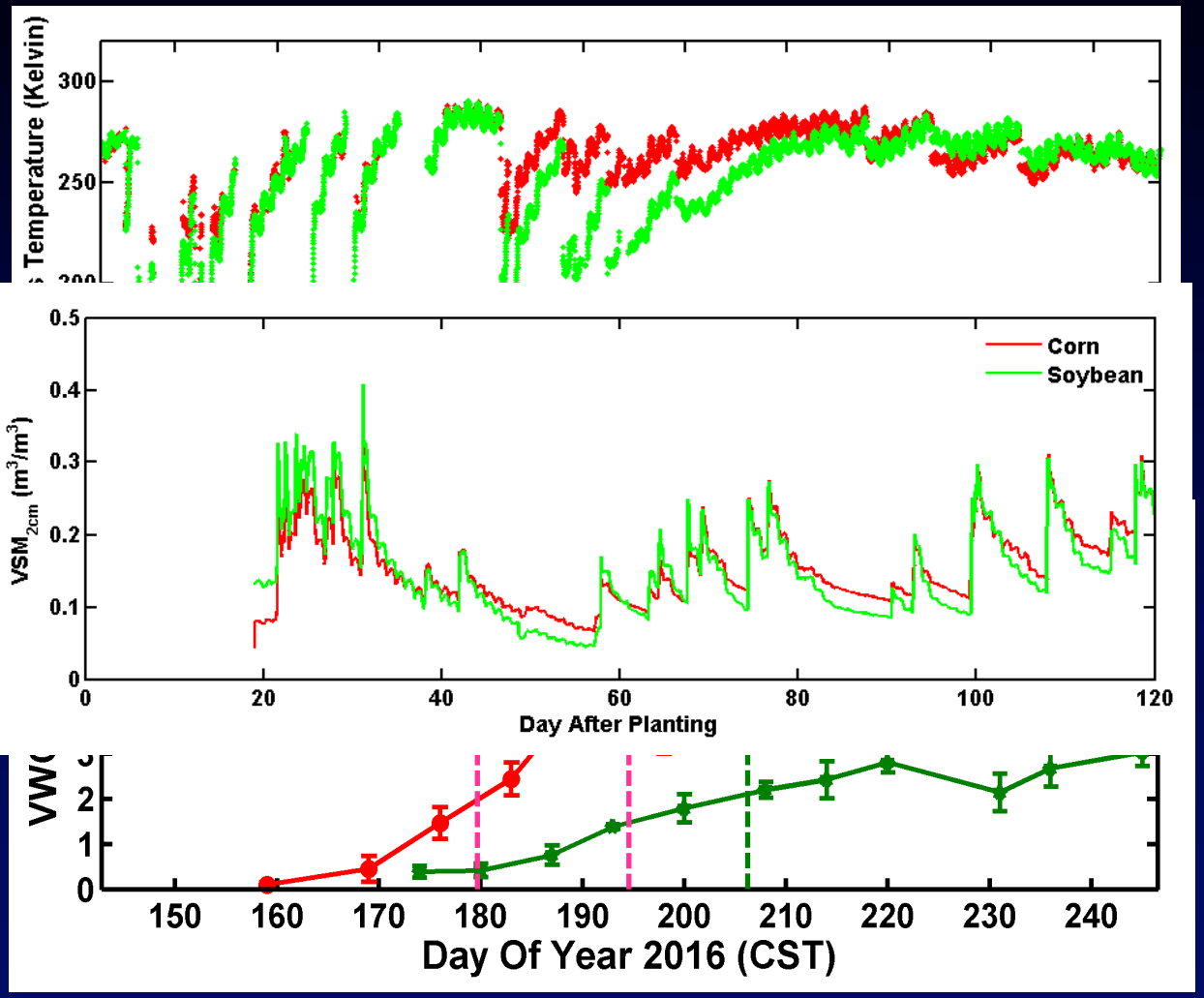
Ground-based Microwave Sensors



- T_B: Corn (dual pol) & soybean (H-pol) – every 15 min (7000-8200 observations)
- σ^0: Corn (14 weeks) & soybean (2 weeks) – every 30 min (3300 observations)
- VSM, ST, TIR, micromet – every 15 min
- Veg structure, water content, phenology – weekly
- Veg water content (TU-Delft) twice-a-day during SMAP

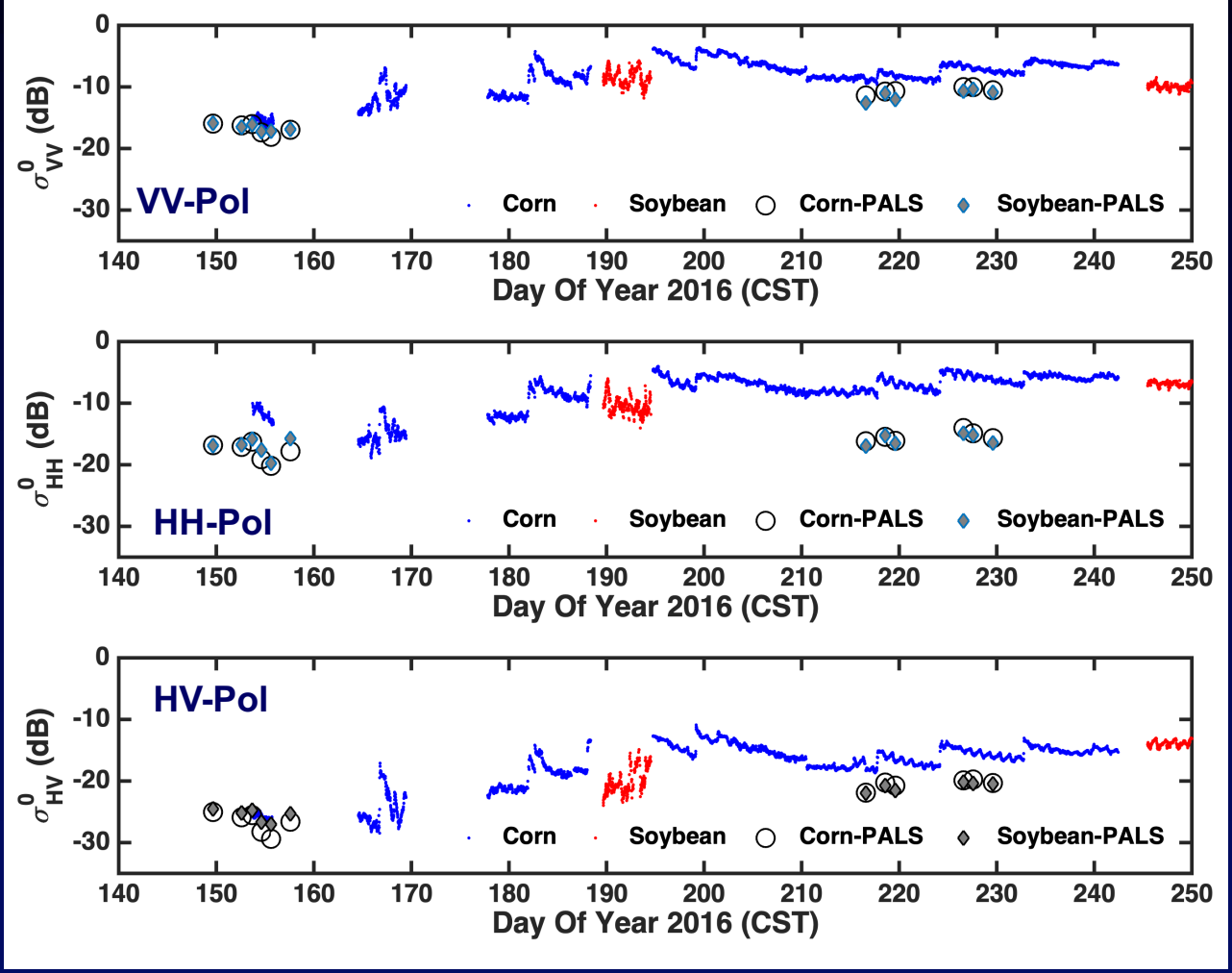
Vegetation Sampling

Passive Observations



- Early season both corn and soybean signatures similar
- T_B diverge at onset of tassels
- Corn VWC ~2kg/m^2
- T_B similar again in the late season at the onset of pods
- Soybean VWC ~2kg/m^2
- Max VWC of corn twice as soybean
- Soybean growth was unusually high
- SM at 2cm very similar for corn and soybean
- SM at 5 cm for soybean > corn

Active Observations – Corn & Soybean



- Corn:
  - ✓ VV from -12 to -7 dB
  - ✓ HH from -16 to -6 dB
  - ✓ HV from -25 to -15 dB
- Soybean signals lower than corn by about 3 dB in late season
- IOP-1 → IOP-2 w/ PALS
  - ✓ VV & HV closer than HH
  - ✓ Later season differences higher

Thank You!!

Supported by NASA-THP-NNX13AD04G