The Spray Drift Conundrum
Critical challenge for cotton

- Cotton is sensitive to spray drift particularly 2,4-D
- 2018: $18 million in production losses Australian cotton
- Impacts go beyond yield loss
Global Ag problem

Sorghum: Darling Downs & Central QLD
Vines: Riverland and Clare SA
Almonds: Mallee VIC
Bees: VIC/NSW
Trees: Defoliation Dubbo NSW
Broad leaf herbages: Julia Creek N/QLD
Why is spray application difficult?
Complex process

Product choice, water quality & Tank mix

Spray operation (droplet size, nozzle choice, pressure, speed, boom height, weather)

Crop protection (pest target, time)

Requirements: Label, Training & accreditation, Awareness of sensitive areas, record keeping,

No feedback loop
Addressing the conundrum

- Capability/Awareness & training
- Understanding the people problem - Understanding motivational factors for improved spray application on farms (Dr Lynette McLeod, UNE, 2020)
- Technologies to help address the complexity
52 applications from small to medium enterprises with ideas on how to address this issue
6 x Feasibility studies
2 x proof of concept

~$2.6m
Inversion clues – can be unreliable
Neutral
- considered ideal for spraying

Unstable
- Uplift and dispersion into wider atmosphere

Hazardous inversion
- Undispersed drift moves long distances across the landscape

Stability controls turbulence

Turbulence controls dispersion

Presentation by Graeme Tepper:
MicroMeteorological Research and Education Services (MRES)
VERTICAL TURBULENCE
Compared to wind speed and vertical temperature difference (VTD)

Red/pink dots designate hazardous inversion conditions

Presentation by Graeme Tepper: MicroMeteorological Research and Education Services (MRES)
• Pilot footprint – 100 towers
• Installed from Emerald to MIA
• Focus on interface between cotton and dryland cropping
• 40-70km spacing
• Real-time weather conditions
• 24-hour forecast for hazardous inversion