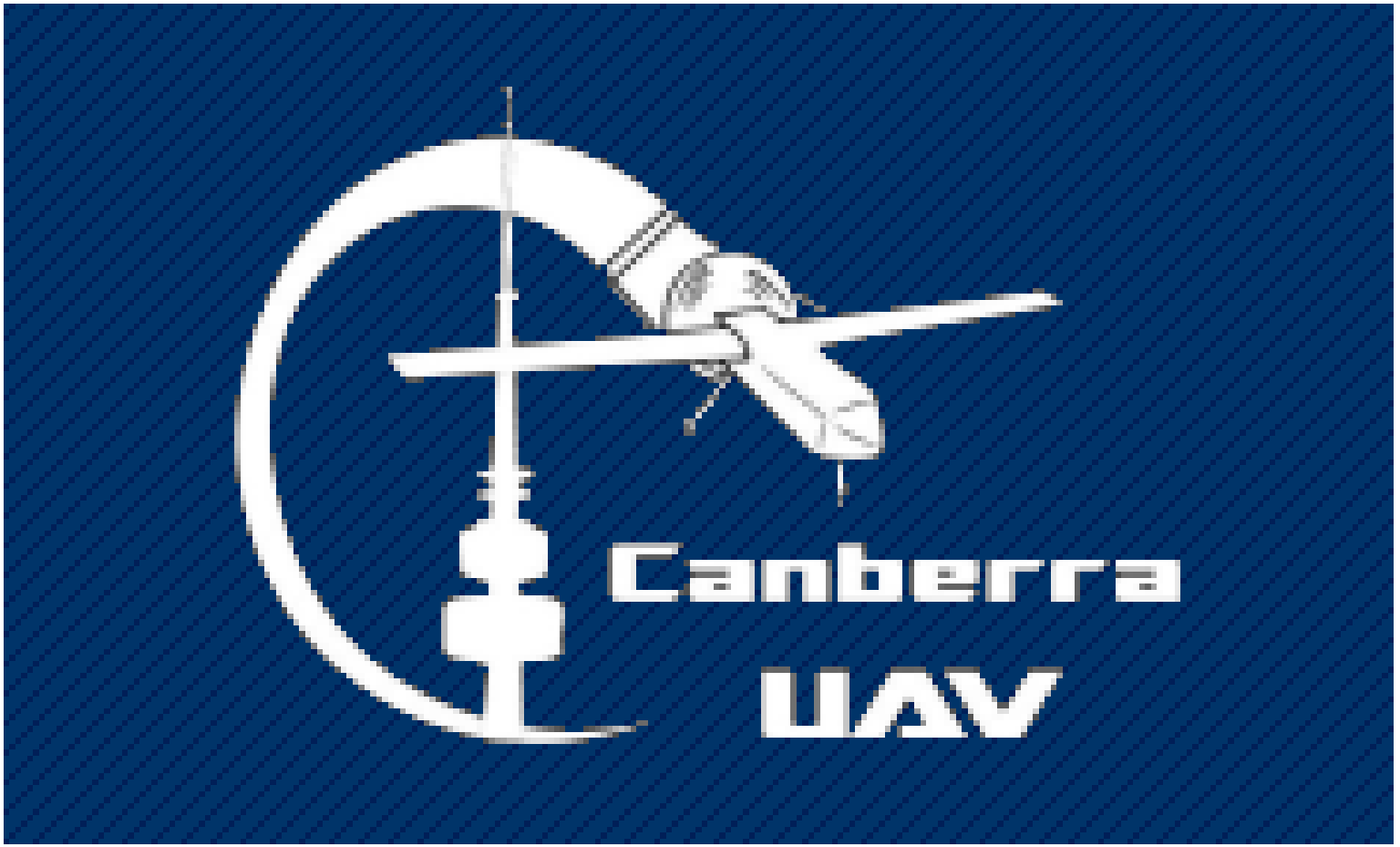


Belconnen SES presentation

Andrew Tridgell
CanberraUAV

Who is CanberraUAV?

- A Canberra based non-profit
  - Dedicated to research and development of open source civilian UAV technology
  - Started as a team for the 2012 Outback Challenge
  - Ten volunteer members, with diverse backgrounds
  - Not a commercial UAS provider

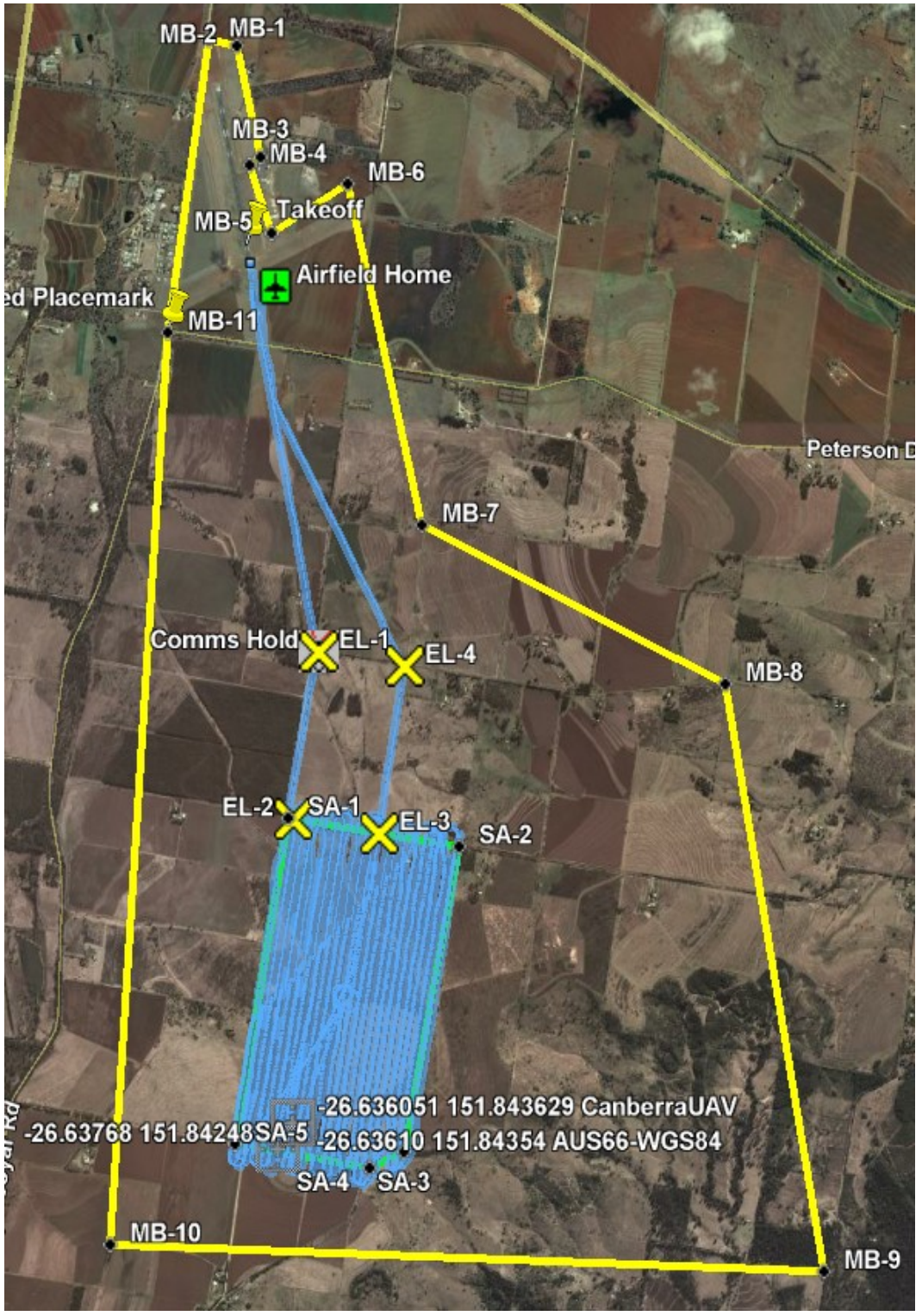
Why are we talking to the SES?

- We would like to:
  - learn more about how UAVs could help with real life S&R missions
  - work out if we could usefully contribute to SES activities
  - if we can contribute, work out what sort of airframe and capabilities would be most useful

Outback Challenge 2012

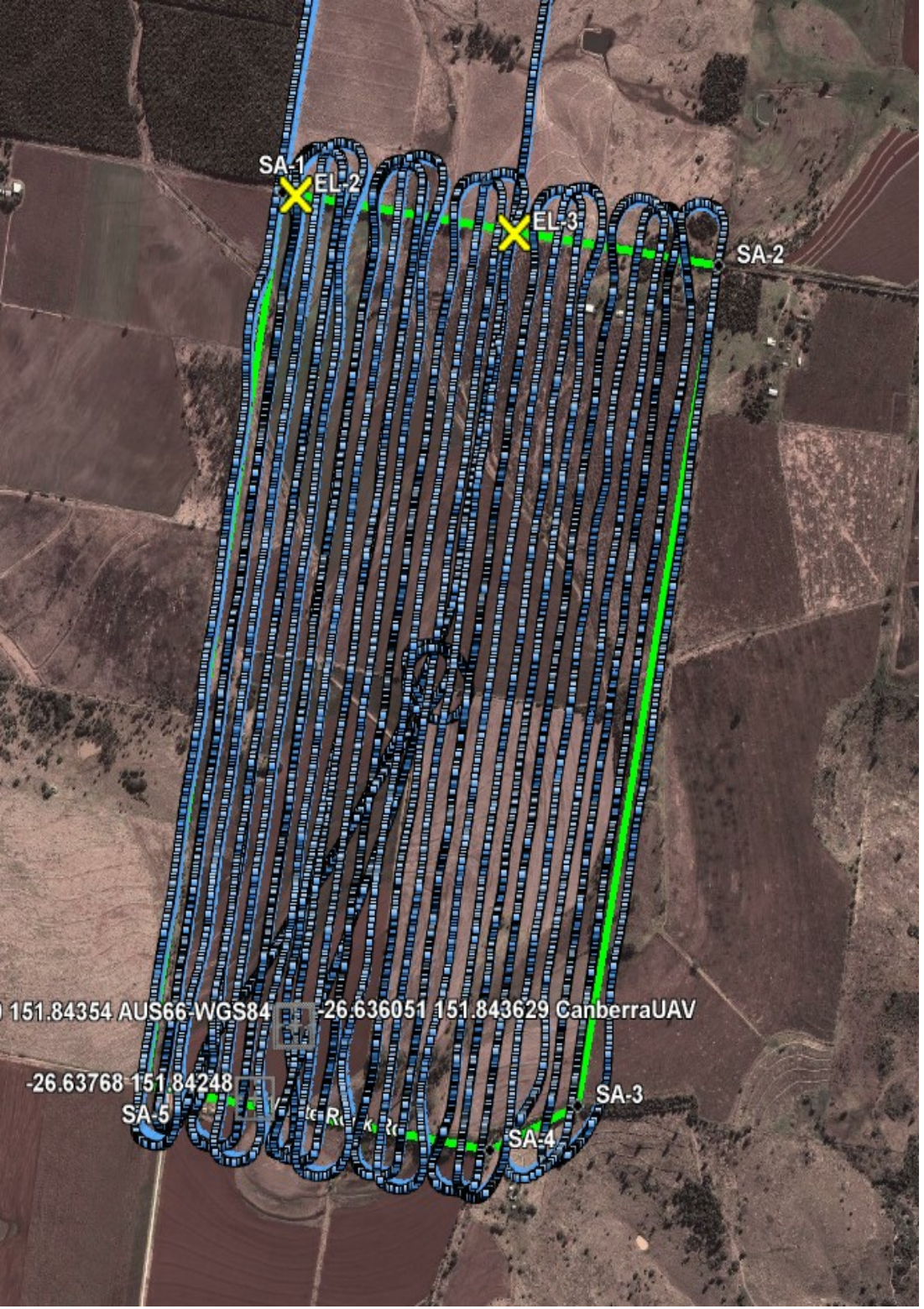
Our OBC UAV

- A medium range UAV for S&R
  - based on 'Mugin' airframe with 50cc petrol engine
  - around 17kg takeoff weight
  - range of around 120km
  - on-board stabilised S&R imaging system
  - fully autonomous missions
  - automatic search and target recognition
  - two ground station comms systems (915Mhz and 5.8GHz)
  - needs 120m runway for takeoff/landing



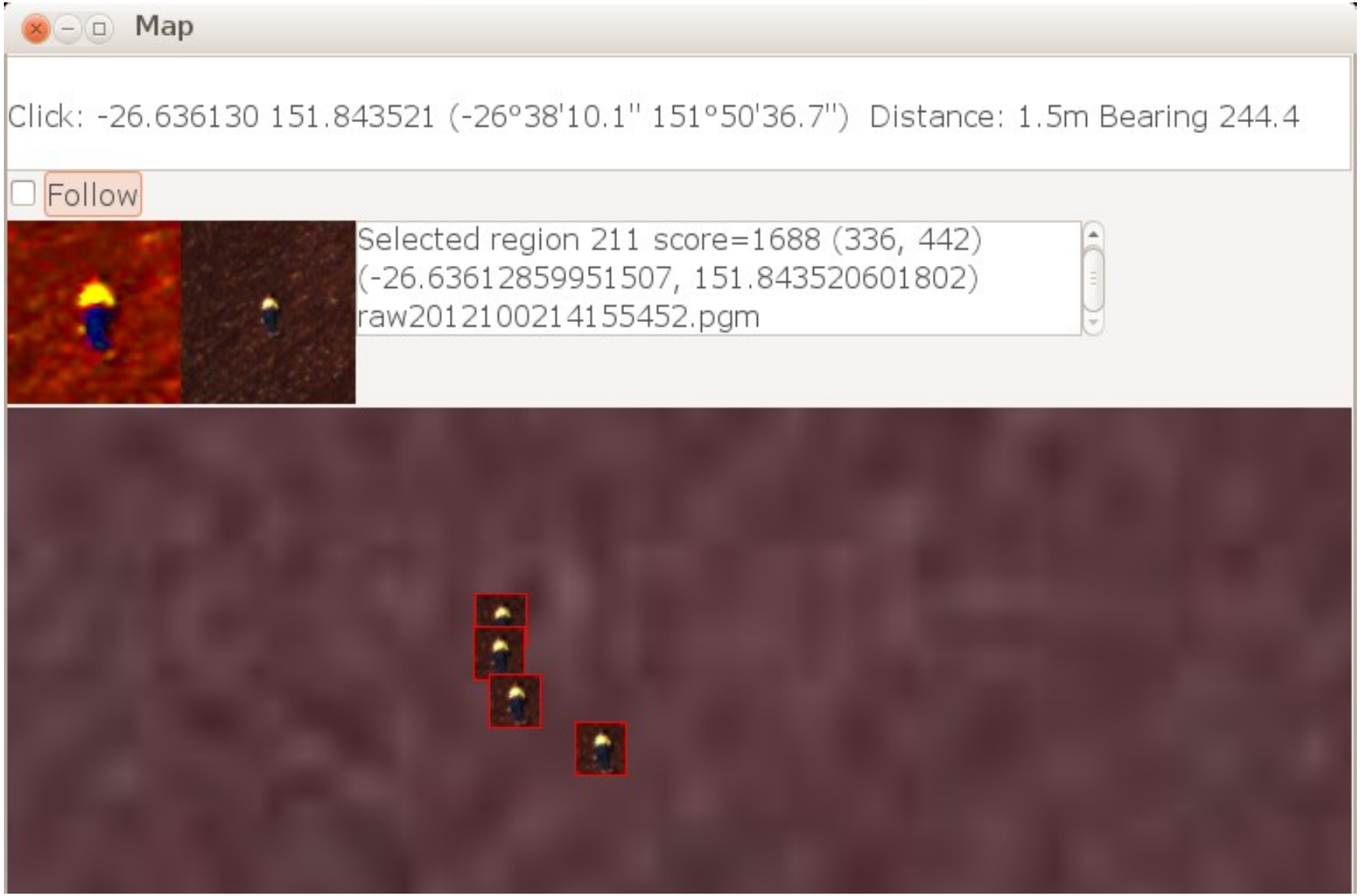
- OBC 2012
  - one hour limit
  - find 'Joe' lost walker
  - drop water bottle
  - autonomous flight
  - auto search
  - auto takeoff
  - auto land
  - strict safety rules

Ground station

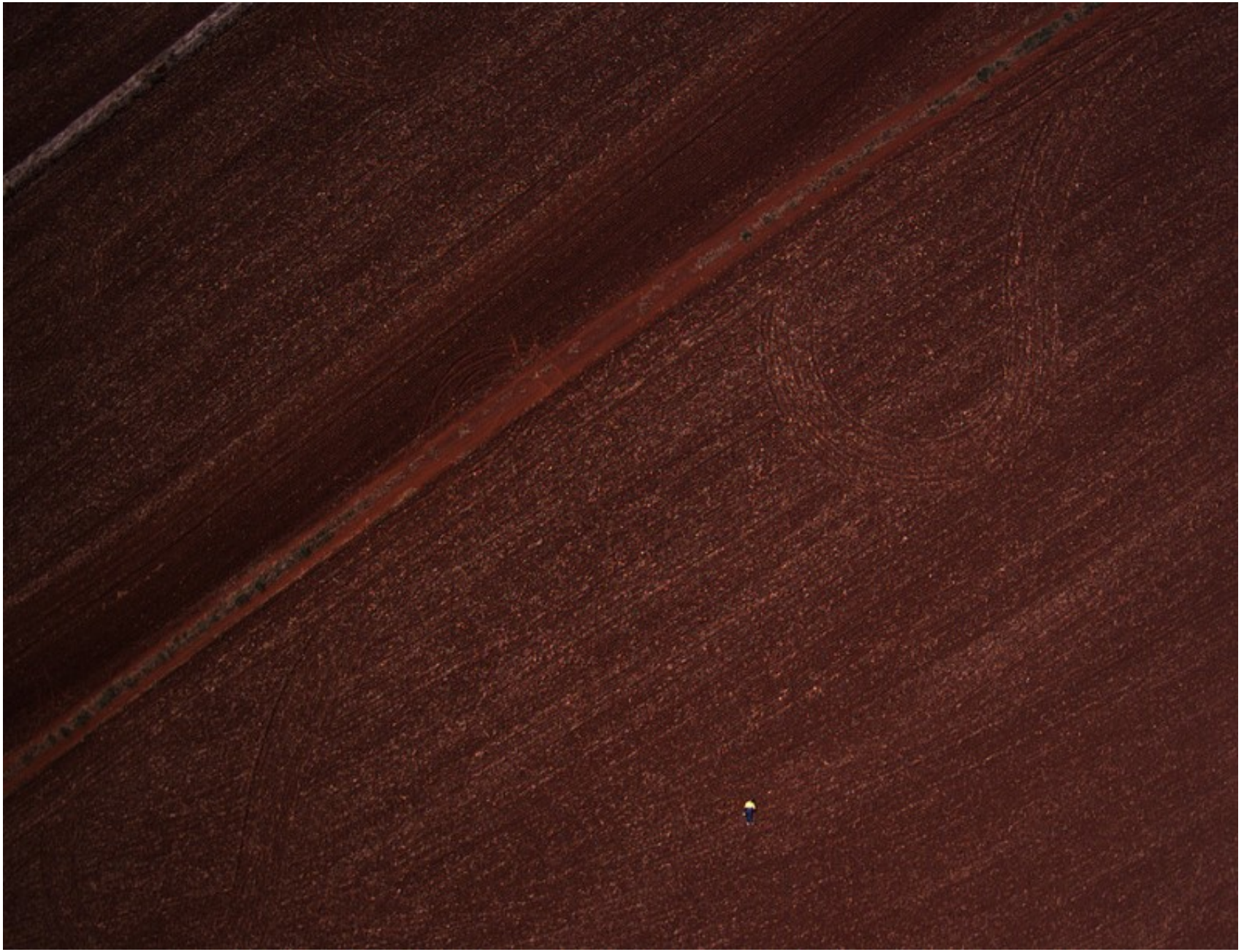


- Competition flight
  - flew for 52 minutes
  - all but 10s in automatic
  - found Joe after 31 min
  - coped well with 50km/h winds

Imaging system



Joe from the air



Challenges for real S&R

- OBC was great, but ….
  - 'Joe' was 10km from an airport with runway available for takeoff/landing
  - Joe was on open ground, and wore bright clothing
  - Search area was only 2.5 square kilometers
  - terrain was fairly flat (height change of 60m over area)
  - search area was known weeks in advance, allowing for extensive search preparation

Real S&R continued...

- New challenge is to develop a real S&R system
  - What endurance and range is needed?
  - What search area needs to be covered?
  - What sort of terrain?
  - What imaging capabilities are needed?
  - What launch and recovery options are practical?
  - What communications capabilities are needed?
  - What transport options are possible?

Some thoughts to discuss

- Some of the things we are considering
  - Do we need IR imaging?
  - Do we need realtime images? Or return to launch and post-processing?
  - Do we aim for car boot sized, or trailer sized?
  - Is slow and high for a long time better? Or low and fast for shorter times?
  - Does engine technology matter? (petrol, electric etc and fire risks)
  - Do we need to be able to fly at night?
  - How will we address safety and insurance concerns?

Thanks to our sponsors!

Make Hack Void

- Terry Porter
- Grant Morphett
- Ron Graham
- Paul Tridgell