VH-MDX Search

Sensing Technologies Under Investigation

Technologies Under Investigation:

- Satellite Imagery
- Aerial Photography and canopy analysis
- LIDAR
- Magnetometry
- Chemical sampling
- Synthetic Aperture Radar (SAR)
- Hyperspectral Imaging

Satellite Imagery
Brett Ferrari

- Shortwave Infrared (SWIR)
- Can see through smoke
- Used extensively in bushfire monitoring

Rescue & Bomb Disposal Unit

- Digitalglobe
  - Assisting AMSA with MH 370
  - Short wave infared sensors (has a sensor that can identify minerals (eg aluminium.
  - Penetrates smoke & haze
  - February next year (meeting pending)

Rescue & Bomb Disposal Unit

Other ongoing initiatives:

1. Yearly SAREX (lagoon Pinch 2015)

Issues with access (trail destruction)

2. On going searching by other organisations (DATA COLLATION)

3. Mattsons consensus

4. AMSA (review case)

Aerial Photography
Grahame Price and Ben Taylor

- Aerial photography run over Barrington Tops by the military just after the crash
  - Ben is investigating getting these photographs
- Canopy Analysis:
  - Uses image processing techniques to spot differences in the tree canopy between two images.

Images source:
http://www.forestry.gov.uk/fr/lidar

LIDAR

- Laser ranging device fitted to an aircraft
- Data processing can remove canopy, leaving ground returns only

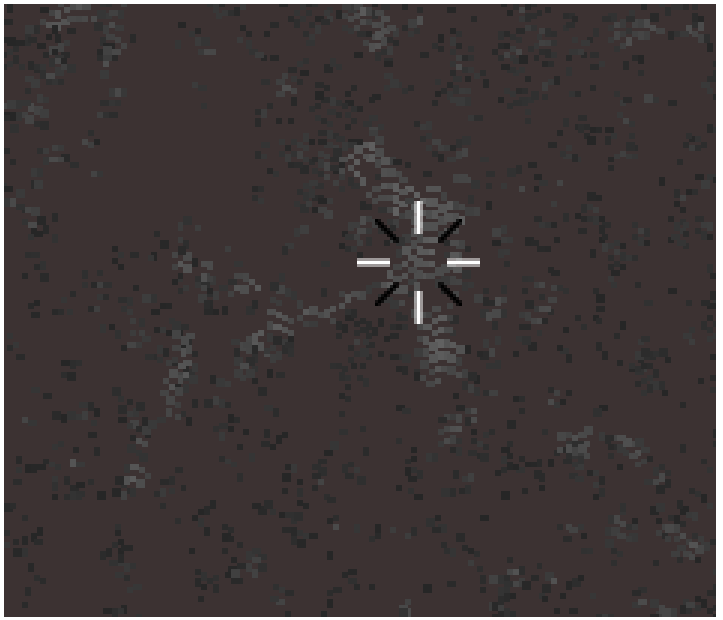
Photograph

Raw LIDAR returns

Ground returns only

LIDAR

- LPI has done a LIDAR sweep over the Allyn and Williams River valleys in Oct 2013.
- Analysis of this data set is on-going.
- We have already checked one site found on this LIDAR sweep:
  - It was not VH-MDX ☹



Magnetometry
Garry Chalmers

Chemical Sampling Compton Allen

- Aircraft contain a number of heavy metals
- They should leach over time and be carried into watercourses
- In Oct 2014 we did soil samples at lots of watercourses

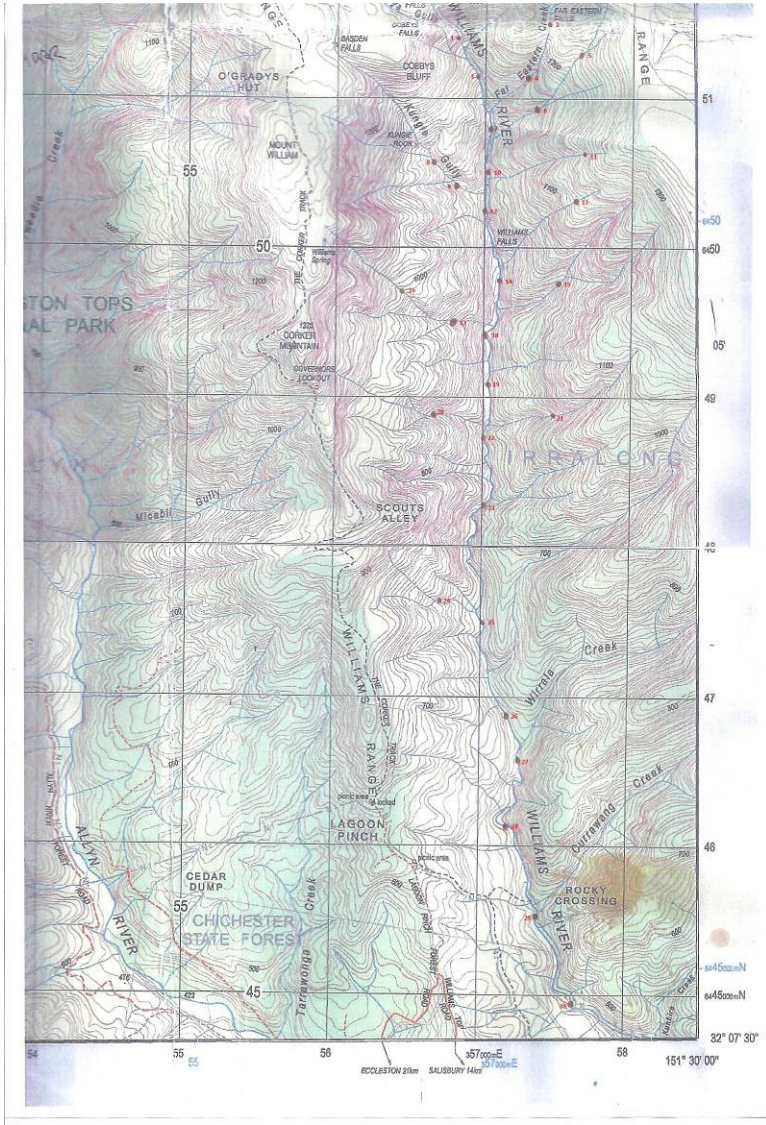


Image source: Sandia National Laboratory's Ka band airborne SAR system

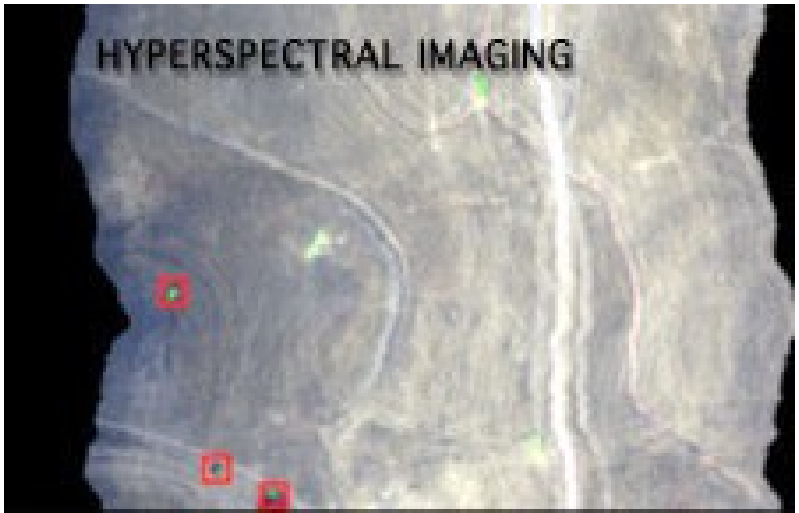
Synthetic Aperture Radar (SAR)

- Advanced radar technique to get very high definition images
  - Correct choice of radio band can make foliage transparent
- R&D stage technology
  - NASA developed the basic technology in 1997-2000
  - But project funding got cut, never progressed to a practical system
    Link to Project Page
- It is unlikely we are going to get access to this technology

This is a SAR image, not a photograph!

Hyperspectral Imaging

- The human eye sees visible light in 3 channels (wavelengths 400-700nm)
- Hyperspectral imaging uses 10s or 100s of channels covering 400-2500nm
  - So goes well into infra-red bands
- US Civil Air Patrol has ARCHER for locating aircraft crashes (Airborne Realtime Cueing Hyperspectral Enhanced Reconnaissance)



Any other ideas?

- We are open to ideas on any other technologies