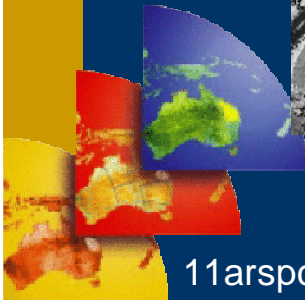
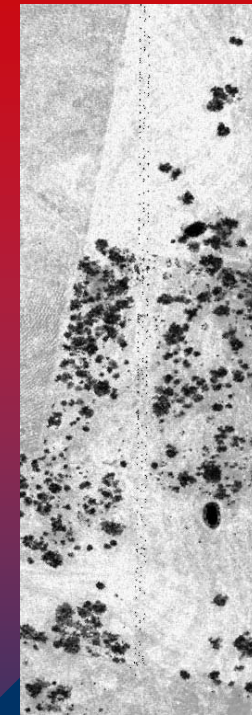
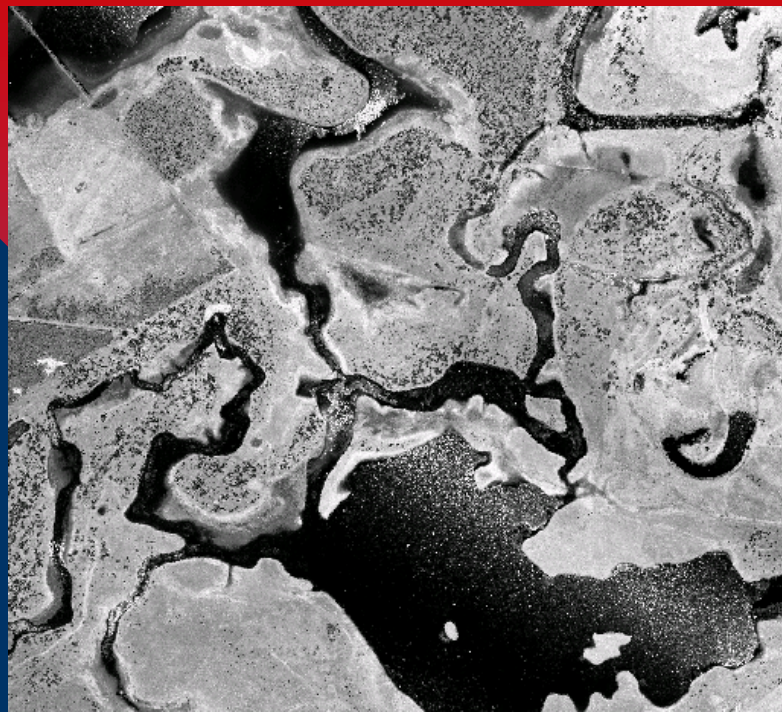


Airborne Laser Scanning Intensity

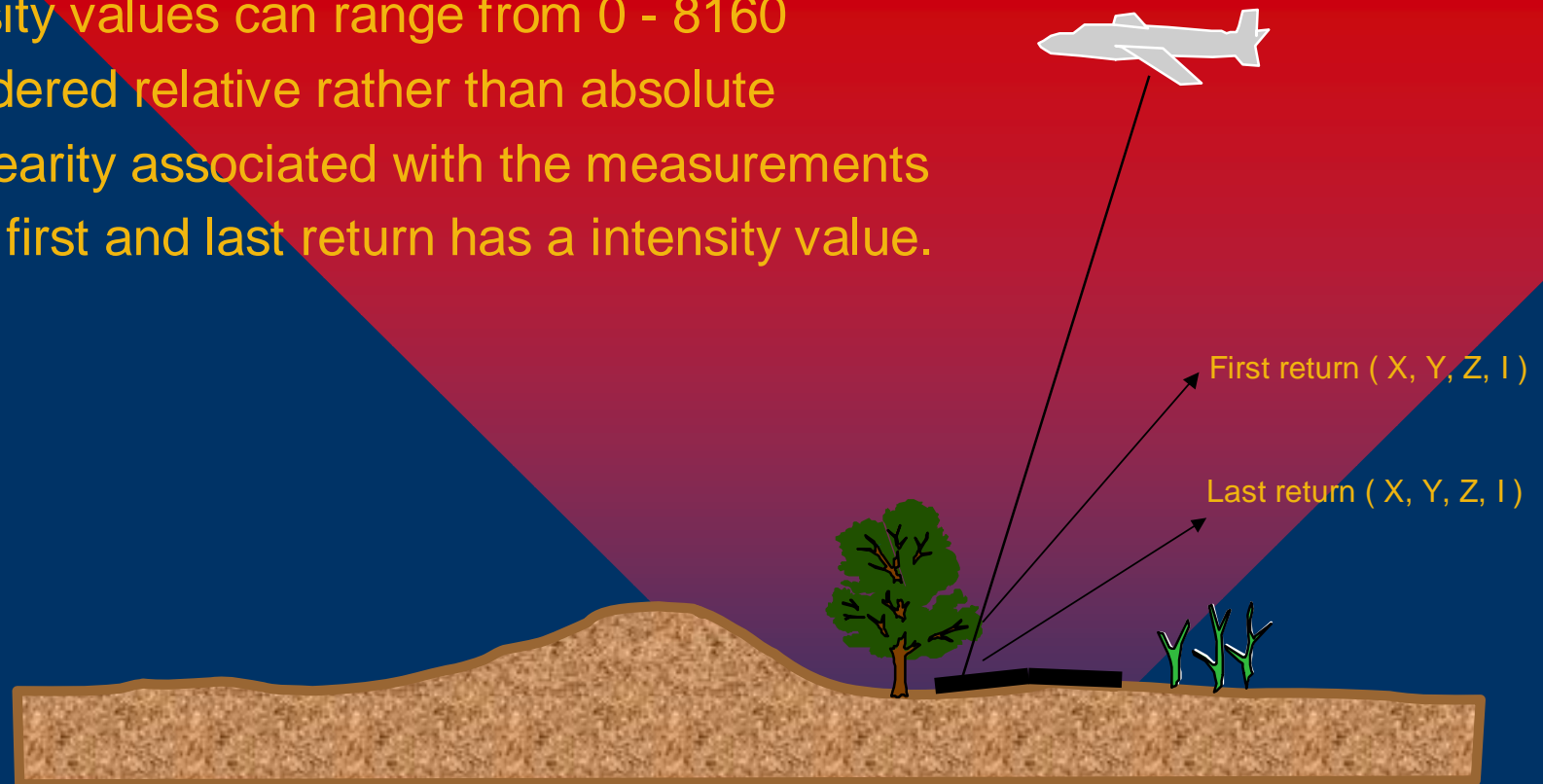
Brett O'Hagan,

Spatial Information Technologist, AAM GeoScan



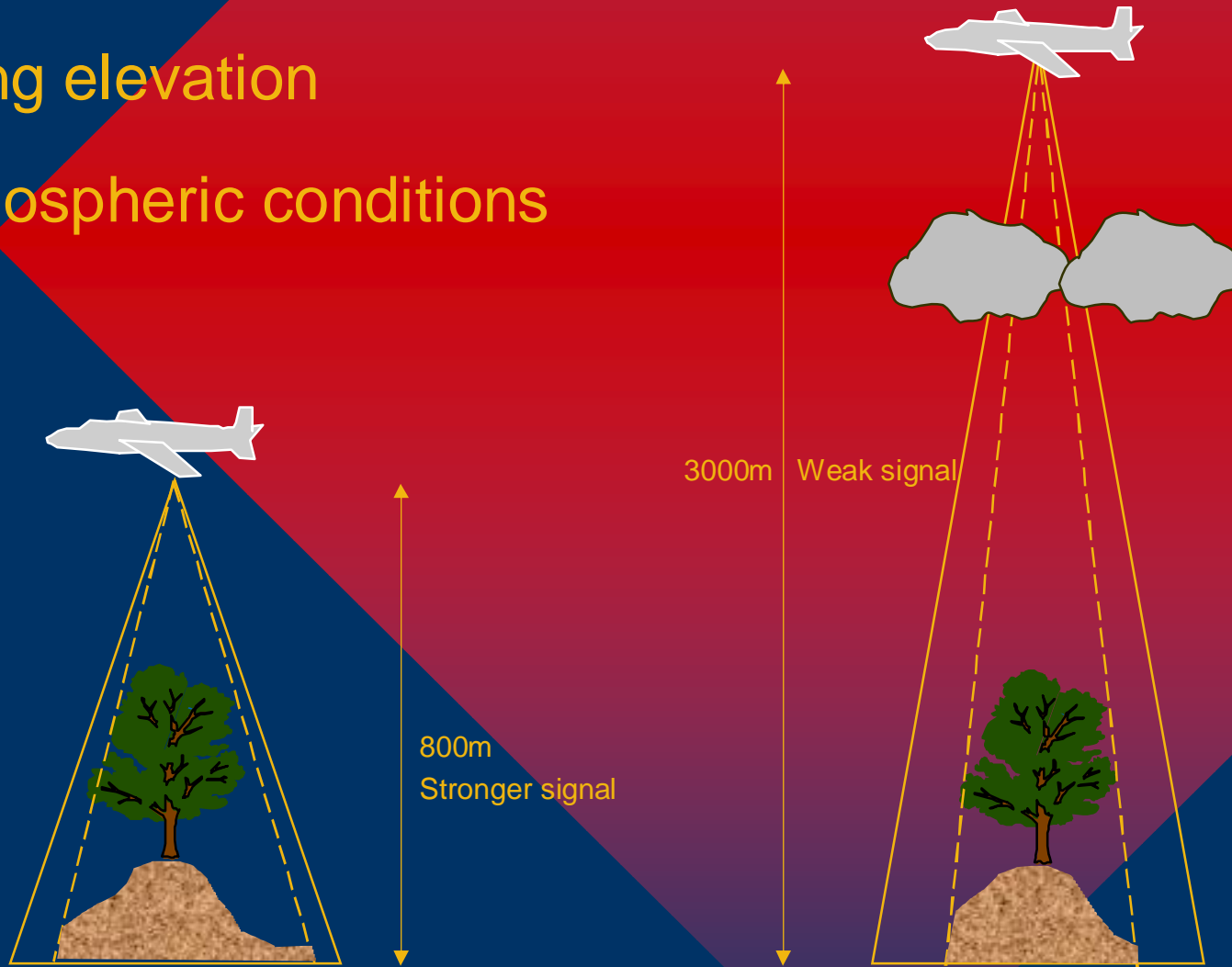
Concept of ALS Intensity Values

- is a function of the return signal strength
- produced by the intensity module which measures the peak amplitude of first and last returns
- intensity values can range from 0 - 8160
- considered relative rather than absolute
- no linearity associated with the measurements
- every first and last return has a intensity value.

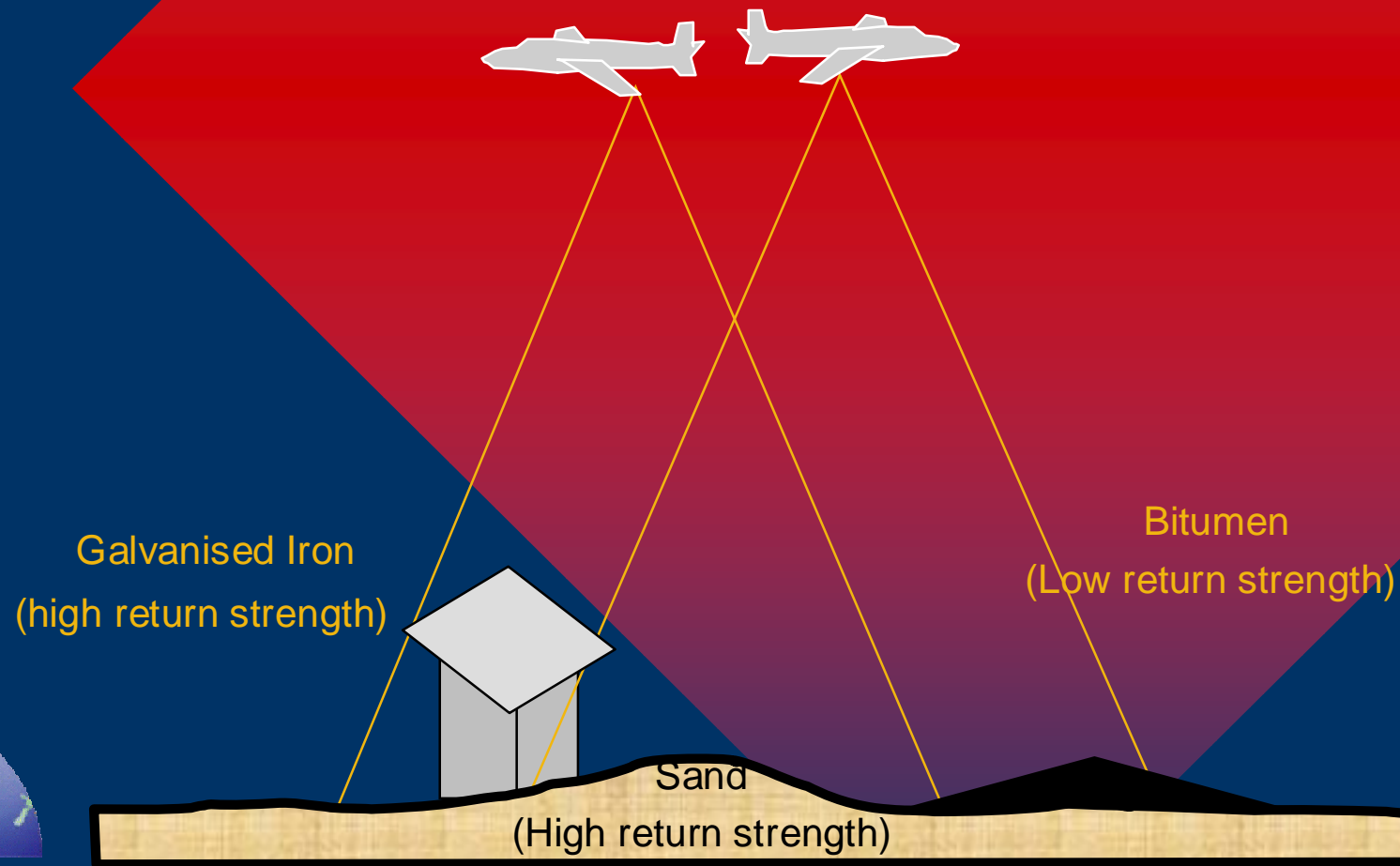


The return intensity is based on several factors

- flying elevation
- atmospheric conditions



- directional reflectance properties
- reflectivity of the return target



Reflecting Target Ranges

- asphalt surfaces are ranging between 0 - 100 (approx)

Greyscale Intensity image



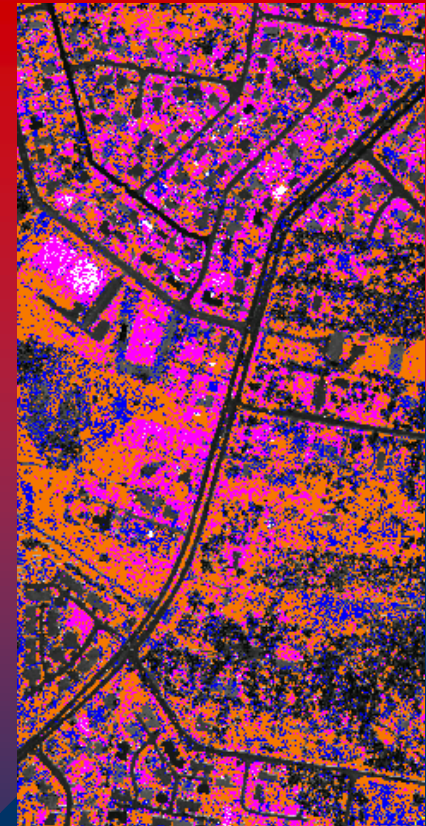
•Intensity strikes 0 to 100



Intensity strikes 101 to 200

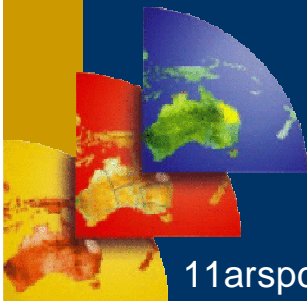
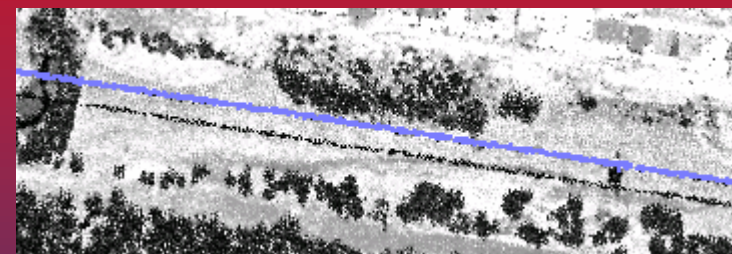
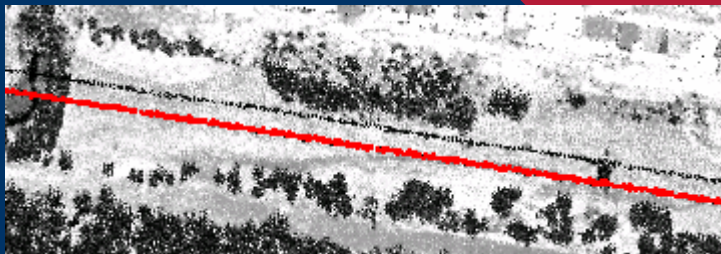
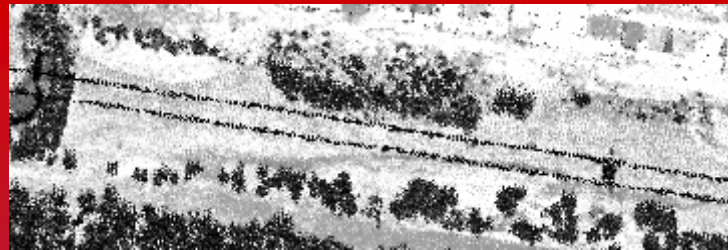


Intensity strikes 201 to 500



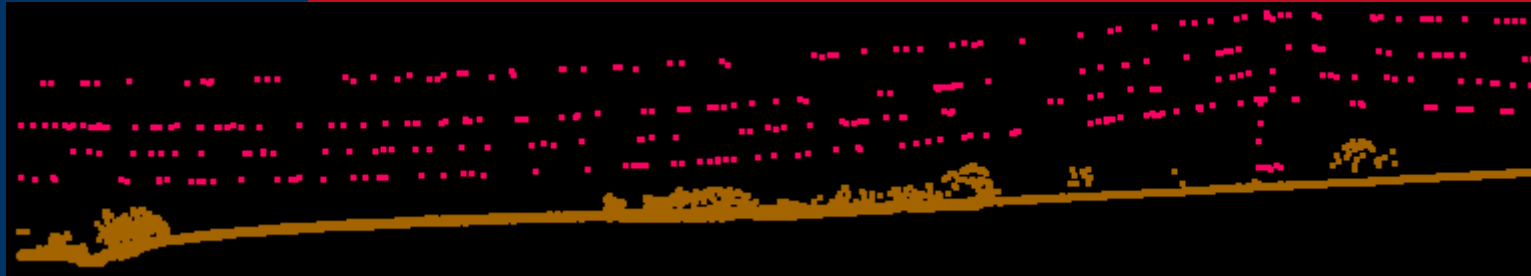
Reflecting Target Ranges

- Transmission lines

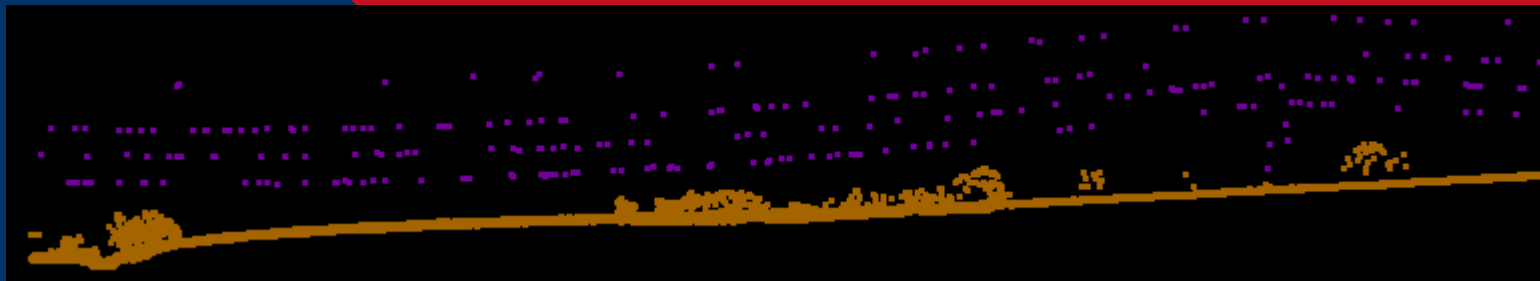


Reflecting Target Ranges

Red : Conductor strikes between 0.0 - 5.0 intensity



Purple : Conductor strikes between 6.0 - 10.0 intensity



Conductor strikes between 10.0 - 50.0 intensity

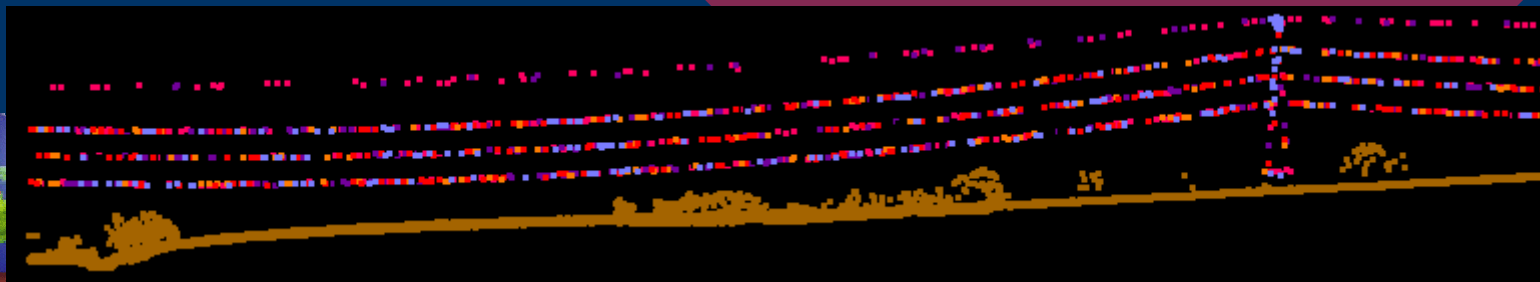


Image generation using intensity

- generated using a 256 greyscale table
- rasterised image typically at 1m pixel's
- use the lowest, average, highest intensity hit
- typical point density of 1- 2m spacing

Combine all this
What do we get ?

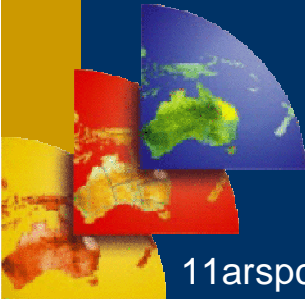


Image generation using intensity

- Orthorectified image (x , y , z position relative to a map grid)
- feature identification clearly visible
- overlaying of terrain definition

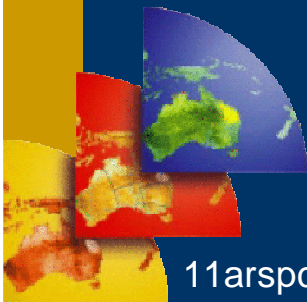
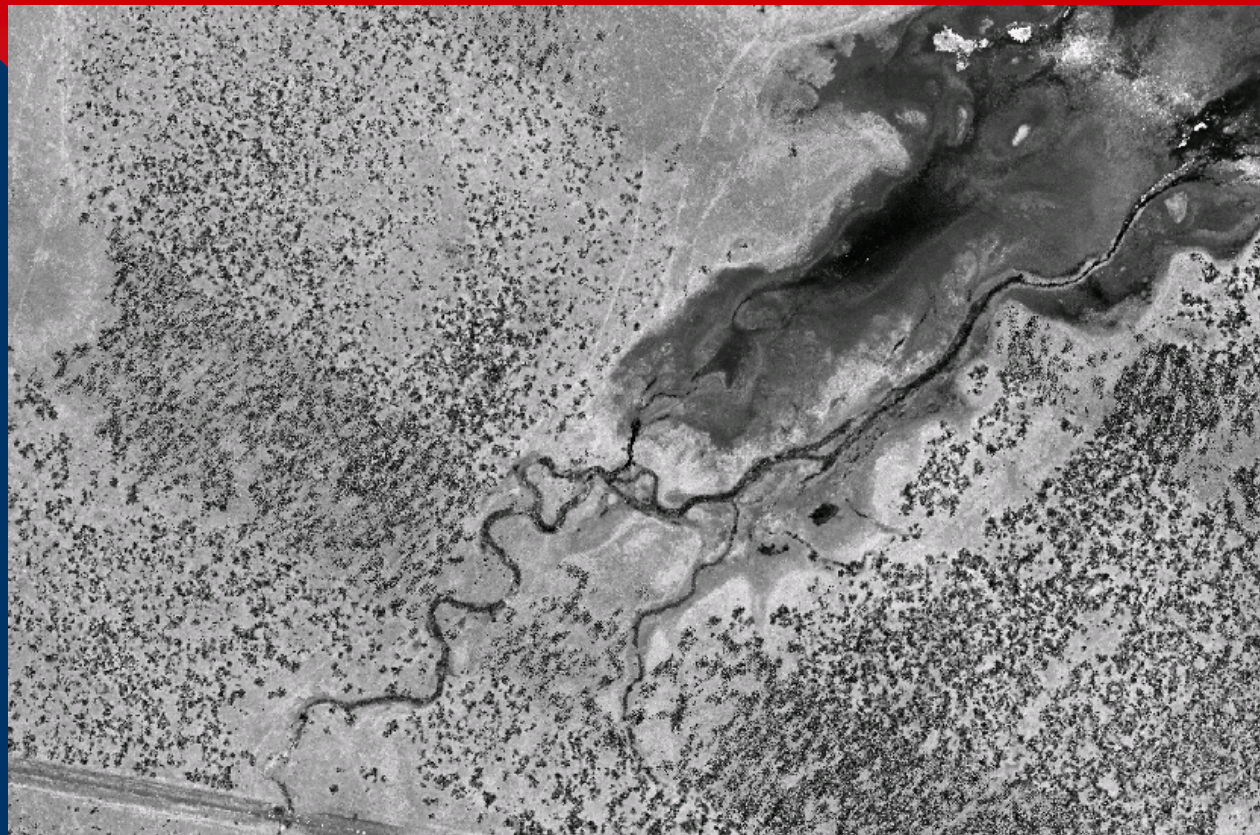
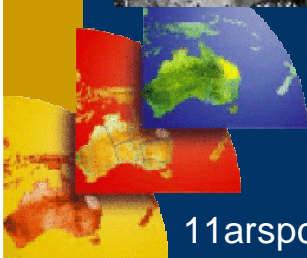
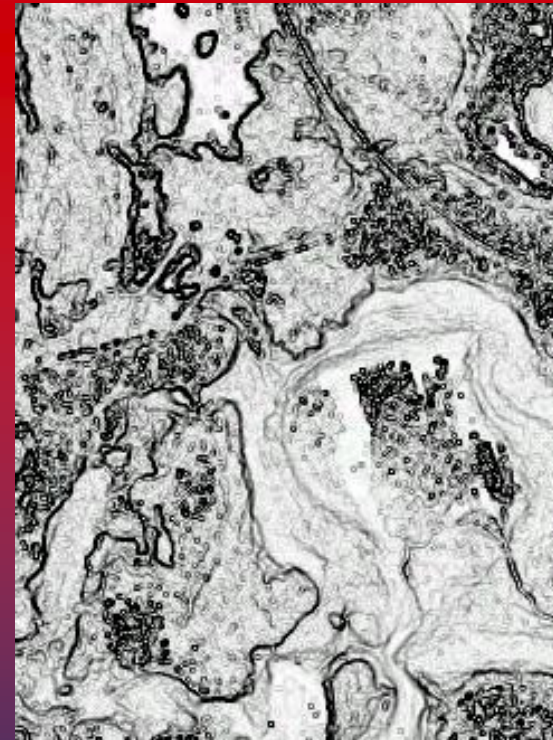
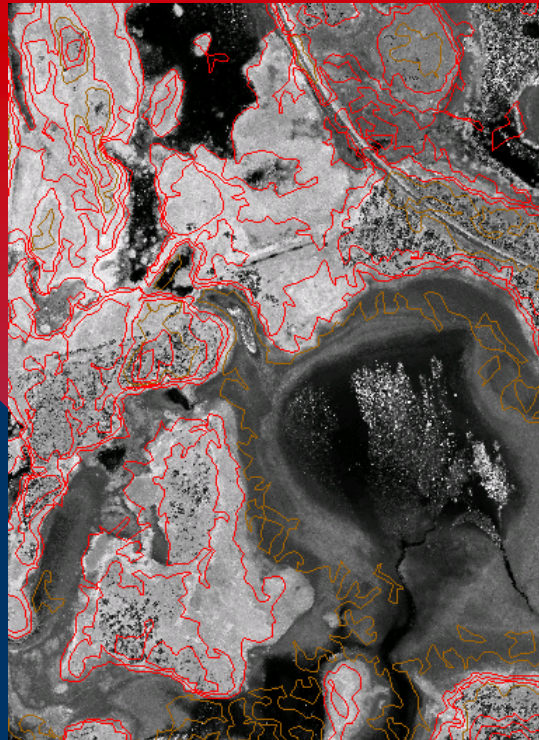
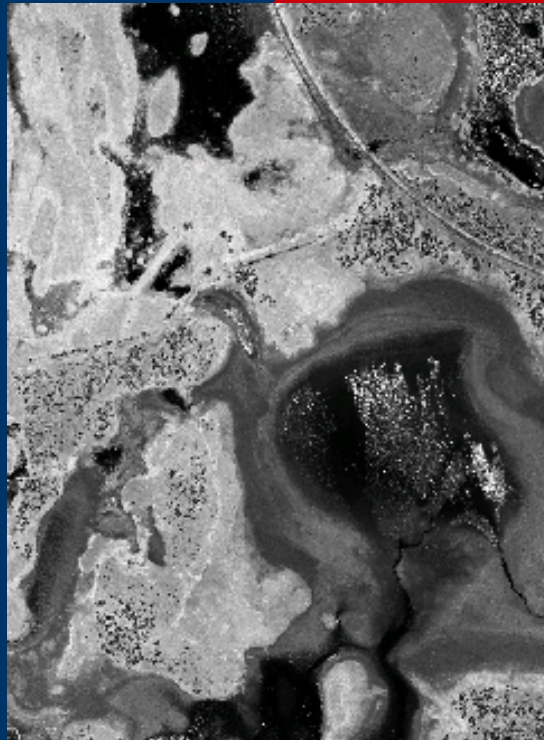


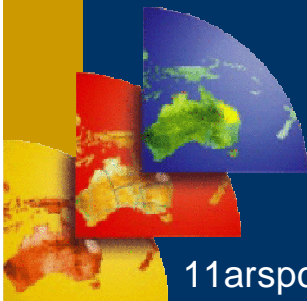
Image generation using intensity

- overlaying of terrain definition



Industry Applications

- useful in remote areas
- true to scale, allowing prominent features to be used
- as ground control for conventional photography



Industry Applications

- What can you use intensity for ?
- Who is using intensity at the moment and for what applications ?
- How does it need to be presented ?
- What does AAM need to work towards in making the intensity readings more versatile within the industries ?

