

3D LASER SCANNING OF SEDIMENT MOVEMENT FOLLOWING BUSHFIRE AT MOUNT BOLD RESERVOIR

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Aim

- Trial the use of 3D laser scanning to quantify and model sediment movement along differing slopes after a bushfire at Mount Bold Reservoir, South Australia



Location: Mount Bold

Study site

- Mount Bold Reservoir, southeast of Adelaide, South Australia
- Soils are predominantly shallow on rock, with native vegetation cover or pine plantations



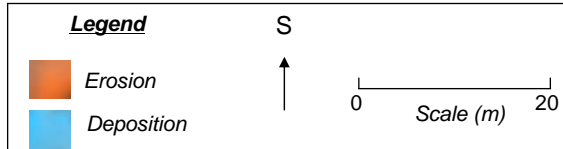
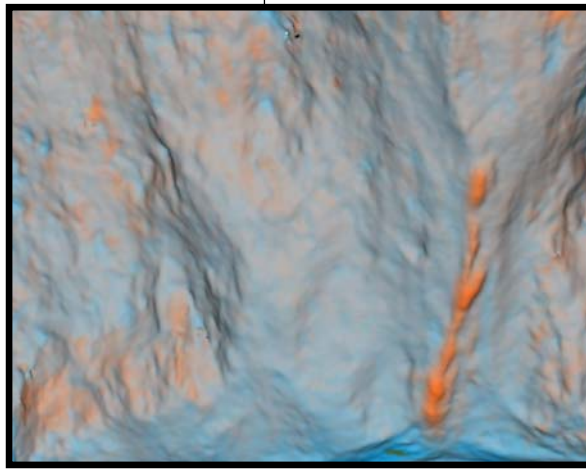
Above: I-SITE 4400LR laser scanner

Methods

- Measure sediment movement using metal erosion pins and I-SITE 4400LR scanner
- Capture images and measurements from both steep and gentle terrains
- Model and analyse images using I-SITE Studio
- Measure erosion pins using rulers and callipers

Key findings

- Measurement of sediment displaced and deposited on steep slopes was possible using 3D scanned images
- Sediment was derived predominantly from gully systems along the slopes
- Colluvial fans formed at the footslopes feeding directly into the tributary



Above: Using 3D triangulation the volumetric difference map was generated using data scanned on 6 February and 22 May 2007. This data enabled volume calculations of both eroded and deposited sediment.



Above: Steep slope after the first rainfall February 2007



Above: Steep slope after the second major rainfall May 2007. This rainfall resulted in surface change of over 1m.

Potential Applications

- 3D laser scanning allows technical users to visualise, measure and process rich scan data
- Volume measurements are possible in previously inaccessible steep terrain
- Improved detail enables researchers to understand the erosion processes occurring along hill slopes
- Improved information will assist the decision process of where to construct post-fire sediment control structures

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