

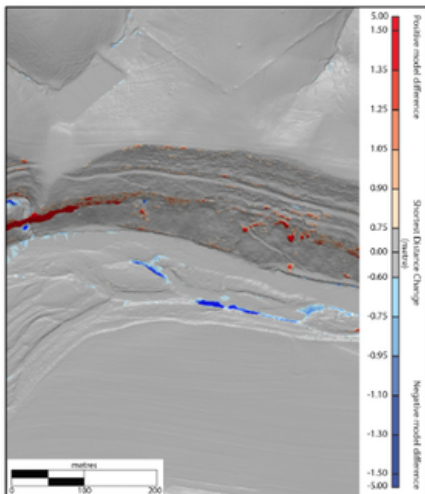
## CAMBIO™ LIDAR CHANGE DETECTION



## Detect Subtle Terrain Change Early Before it Becomes Operational Risk

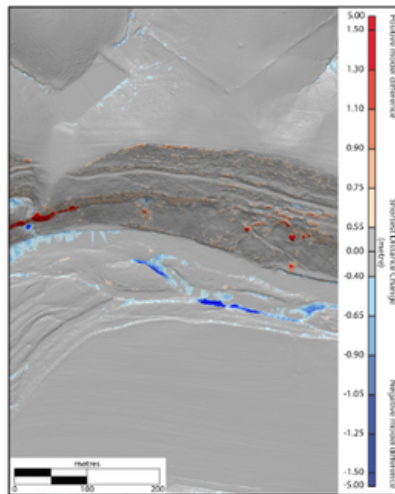
Cambio™ Lidar Change Detection (LCD) combines 3D ICP methodologies with a patented, GPU-accelerated 3D processing workflow to turn multi-vintage lidar into a reliable, repeatable tool for monitoring landslides, settlement, deposition, erosion, and earthworks activities.

Method 1: **DoD**



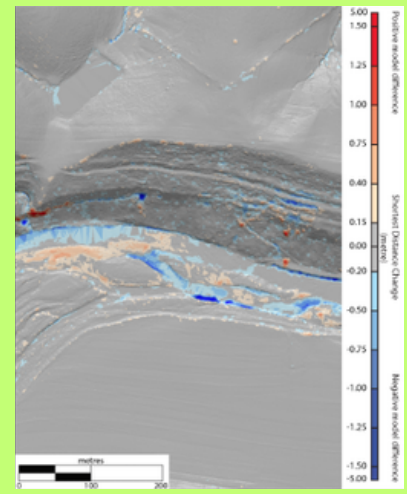
Time to detect: **12 years**  
LOD: **-0.60m to +0.75m**

Method 2: **3D, no ICP**



Time to detect: **8 years**  
LOD: **-0.40m to +0.55m**

Method 3: **3D ICP**



Time to detect: **4 years**  
LOD: **-0.20m to +0.15m**

## FROM RAW LIDAR TO RELIABLE CHANGE INTELLIGENCE

Traditional 2D differencing methods struggle with spatial noise and misalignment for wide area screening — limiting their ability to detect subtle early-stage movement. Cambio LCD achieves a very low limit of detection (LOD), enabling earlier identification of centimeter-scale surface change before visible distress or failure.

- Iterative Closest Point (ICP) alignment to reduce spatial offsets between datasets
- Advanced 3D comparison techniques (M3C2) to measure true surface displacement
- Noise reduction and filtering prior to change quantification

The workflow has been successfully applied across **500,000+ km<sup>2</sup> (310,000+ mi<sup>2</sup>)** of infrastructure terrain.



## REGIONAL & CORRIDOR- SCALE SCREENING

**Build or update geohazard inventories** prior to field campaigns

**Identify previously unmapped or reactivated landslides**

**Screen entire corridors** for active terrain change

**Support post-event response** following storms, floods, or seismic events

## SITE-SCALE MONITORING & ASSET PROTECTION

**Measure movement** on suspected geohazards identified in the field

**Monitor slopes** near critical crossings or facilities

**Quantify settlement or deformation** at tailings facilities

**Track grading progress** on haul roads and engineered earthworks

## DELIVERABLES DESIGNED FOR OPERATIONS

Results can be delivered as standalone GIS layers or integrated into Cambio to support inspection planning and risk updates.

Quantified 3D Change Surfaces Visualized in Cambio

Elevation Profiles and Change Statistics for Investigation

GeoTIFF Change Rasters for GIS Integration

### Why teams choose Cambio LCD

Reliable Early Detection

Smarter Field Deployment

Scalable Monitoring

**Earth science intelligence for building and operating resilient infrastructure**

