

■ Batch Analysis Output Interpretation Guide

Datalegos Tech Solutions Pvt. Ltd. Land Monitoring System

Comprehensive Guide for Interpreting CSV Analysis Results

Generated on: August 10, 2025 at 06:28 PM

Overview

This guide explains how to interpret the comprehensive CSV output generated by the Datalegos Tech Solutions Pvt. Ltd. Batch Property Analyzer. The output provides detailed land cover change analysis for multiple properties over specified time periods.

File Naming Convention

Example: 20250810_153259_batch_analysis_before2022-11-01-2023-01-31_after2025-01-01-2025-03-31.csv

Component	Description
20250810_153259	Timestamp (YYYYMMDD_HHMMSS)
batch_analysis	Analysis type
before2022-11-01-2023-01-31	Before period (baseline)
after2025-01-01-2025-03-31	After period (current)

CSV Structure and Columns

The CSV output contains comprehensive analysis results organized into five main column groups:

1. Property Identification Columns

Column	Description	Example	Notes
lp_no	License Plate/Project Number	2.0	Property identifier
extent_ac	Land Area in Acres	206.49	Used for bounding box calculation
POINT_ID	Point Identifier	1.0	Sequential point number
EASTING-X	Easting Coordinate	340751.55	Projected coordinate system
NORTHING-Y	Northing Coordinate	1590485.86	Projected coordinate system
LATITUDE	Latitude	14.382015	Geographic coordinate (decimal degrees)
LONGITUDE	Longitude	79.523023	Geographic coordinate (decimal degrees)

2. Time Period Columns

Column	Description	Format	Example
Before Period Start	Baseline period start	YYYY-MM-DD	2022-11-01
Before Period End	Baseline period end	YYYY-MM-DD	2023-01-31
After Period Start	Current period start	YYYY-MM-DD	2025-01-01
After Period End	Current period end	YYYY-MM-DD	2025-03-31

3. Analysis Indices

The CSV contains three main analysis indices, each with 5 columns (Before Value, After Value, Difference, Interpretation, Significance):

Vegetation Analysis (NDVI)

Normalized Difference Vegetation Index - Measures vegetation health and density

Column	Description	Range	Interpretation
Vegetation (NDVI)-Before Value	NDVI before period	0-255	Higher = more vegetation
Vegetation (NDVI)-After Value	NDVI after period	0-255	Higher = more vegetation
Vegetation (NDVI)-Difference	Change in NDVI	Any value	Positive = growth, Negative = loss
Vegetation (NDVI)-Interpretation	Human-readable result	Text	Growth, loss, or no change
Vegetation (NDVI)-Significance	Statistical significance	Yes/No	Whether change is significant

Built-up Area Analysis (NDBI)

Normalized Difference Built-up Index - Detects built-up areas and construction

Column	Description	Range	Interpretation
Built-up Area (NDBI)-Before Value	NDBI before period	0-255	Higher = more built-up
Built-up Area (NDBI)-After Value	NDBI after period	0-255	Higher = more built-up
Built-up Area (NDBI)-Difference	Change in NDBI	Any value	Positive = construction, Negative = demolition
Built-up Area (NDBI)-Interpretation	Human-readable result	Text	Construction, demolition, or no change
Built-up Area (NDBI)-Significance	Statistical significance	Yes/No	Whether change is significant

Water/Moisture Analysis (NDWI)

Normalized Difference Water Index - Detects water bodies and moisture

Column	Description	Range	Interpretation
Water/Moisture (NDWI)-Before Value	NDWI before period	0-255	Higher = more water
Water/Moisture (NDWI)-After Value	NDWI after period	0-255	Higher = more water
Water/Moisture (NDWI)-Difference	Change in NDWI	Any value	Positive = more water, Negative = less water
Water/Moisture (NDWI)-Interpretation	Human-readable result	Text	Water increase, decrease, or no change
Water/Moisture (NDWI)-Significance	Statistical significance	Yes/No	Whether change is significant

Sample Data Analysis

Property 1 Analysis

Location: 14.382015, 79.523023

Land Area: 206.49 acres

Time Period: Nov 2022 - Jan 2023 vs Jan 2025 - Mar 2025

Analysis Type	Before	After	Change	Interpretation	Significance
Vegetation (NDVI)	102.5	118.25	+15.75	Vegetation growth or improvement	Yes
Built-up Area (NDBI)	0.0	11.5	+11.5	Construction or development increase	Yes
Water/Moisture (NDWI)	0.0	0.0	0.0	No significant water change	No

Summary: This property shows significant vegetation growth and new construction activity, with no water changes.

Statistical Significance

Threshold System:

- Default Threshold: 0.1 (10% change)
- Significance: Changes above threshold are marked 'Yes'
- Non-significance: Changes below threshold are marked 'No'

Why Significance Matters:

- Significant Changes: Require attention and monitoring
- Non-significant Changes: Normal variations or measurement noise
- Multiple Significant Changes: Indicate major land use transformation

Common Scenarios and Interpretations

Scenario	Vegetation	Built-up	Water
Agricultural Development	Significant increase (new crops)	Moderate increase (farm infrastructure)	No change or moderate increase (irrigation)
Urban Development	Significant decrease (clearing)	Significant increase (construction)	Decrease (drainage changes)
Natural Disaster Recovery	Decrease then recovery	Decrease (damage)	Increase (flooding) then decrease
Seasonal Changes	Moderate seasonal variations	No change	Seasonal variations

Actionable Insights

For Property Managers:

- Monitor Significant Changes: Focus on properties with 'Yes' significance
- Track Trends: Compare multiple time periods
- Validate Results: Cross-reference with ground truth

For Planners:

- Identify Hotspots: Areas with multiple significant changes
- Assess Impact: Environmental and development implications
- Plan Interventions: Based on change patterns

For Analysts:

- Statistical Analysis: Use difference values for quantitative analysis
- Trend Analysis: Compare across multiple properties
- Risk Assessment: Identify areas of concern

Technical Notes

Data Processing:

- Resolution: 10m Sentinel-2 imagery
- Cloud Filtering: Maximum 20% cloud coverage
- Temporal Aggregation: Multi-date composites for each period
- Powered by Datalegos Tech Solutions Pvt. Ltd. analysis engine

Limitations:

- Weather Dependent: Cloud coverage affects data availability
- Resolution Limits: Small changes may not be detected
- Temporal Gaps: Data availability varies by location

Recommendations:

- Use Multiple Periods: Compare several time periods for trends
- Validate Results: Cross-reference with other data sources
- Consider Context: Account for local conditions and events
- Monitor Continuously: Regular analysis for ongoing changes

Conclusion

The batch analysis output provides comprehensive land cover change information for multiple properties. Understanding the column structure, interpretation values, and significance thresholds enables effective use of this data for property monitoring, planning, and decision-making. This analysis is powered by Datalegos Tech Solutions Pvt. Ltd.

Key takeaways:

- Focus on significant changes (marked 'Yes')
- Consider the full context of all three indices
- Validate results with ground truth when possible
- Use for trend analysis across multiple time periods