Report Interpretation

Sunday, August 10, 2025 6:36 PM

Batch Analysis Output Interpretation Guide

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

Components:

- 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

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. Vegetation Analysis (NDVI) Columns

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

4. Built-up Area Analysis (NDBI) Columns

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)-	Statistical	Yes/No	Whether change is

Significance	significance	significant

5. Water/Moisture Analysis (NDWI) Columns

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

Detailed Interpretation Guide

Understanding NDVI (Vegetation Index)

What is NDVI?

- Normalized Difference Vegetation Index
- Measures vegetation health and density
- Range: 0-255 (higher = healthier vegetation)

Interpretation Values:

- **"Vegetation growth or improvement"**: NDVI increased significantly
- **"Vegetation loss or degradation"**: NDVI decreased significantly
- **"No significant vegetation change"**: NDVI change below threshold

Example Analysis:

Property 1: NDVI Before=102.5, After=118.25, Difference=+15.75
Interpretation: "Vegetation growth or improvement"
Significance: Yes (change > threshold)

Understanding NDBI (Built-up Index)

What is NDBI?

- Normalized Difference Built-up Index
- Detects built-up areas and construction
- Range: 0-255 (higher = more built-up areas)

Interpretation Values:

- **"Construction or development increase"**: NDBI increased significantly
- **"Demolition or clearing"**: NDBI decreased significantly
- **"No significant built-up area change"**: NDBI change below threshold

Example Analysis:

Property 2: NDBI Before=0.0, After=27.5, Difference=+27.5
Interpretation: "Construction or development increase"
Significance: Yes (change > threshold)

Understanding NDWI (Water Index)

What is NDWI?

- Normalized Difference Water Index
- Detects water bodies and moisture
- Range: 0-255 (higher = more water/moisture)

Interpretation Values:

- **"Water increase or flooding"**: NDWI increased significantly
- **"Water decrease or drying"**: NDWI decreased significantly
- **"No significant water change"**: NDWI change below threshold

Example Analysis:

Property 3: NDWI Before=0.0, After=0.0, Difference=0.0
Interpretation: "No significant water change"
Significance: No (change below threshold)

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
Vegetation (NDVI):
- Before: 102.5
- After: 118.25
- Change: +15.75
- Interpretation: Vegetation growth or improvement
- Significance: Yes
Built-up Area (NDBI):
- Before: 0.0
- After: 11.5
- Change: +11.5

- Interpretation: Construction or development increase
- Significance: Yes
Water/Moisture (NDWI):
- Before: 0.0
- After: 0.0
- Change: 0.0
- Interpretation: No significant water change
- Significance: No
Summary: This property shows significant vegetation growth and new construction activity, with no water changes.

Property 4 Analysis
Location: 14.381, 79.5235
Land Area: 180.75 acres
Time Period: Nov 2022 - Jan 2023 vs Jan 2025 - Mar 2025
Vegetation (NDVI):
- Before: 13.75
- After: 143.25
- Change: +129.5
- Interpretation: Vegetation growth or improvement
- Significance: Yes
Built-up Area (NDBI):
- Before: 2.75
- After: 0.0
- Change: -2.75
- Interpretation: Demolition or clearing
- Significance: Yes
Water/Moisture (NDWI):
- Before: 0.0
- After: 0.0
- Change: 0.0
- Interpretation: No significant water change
- Significance: No
Summary: This property shows dramatic vegetation growth and demolition of built-up areas, suggesting land clearing for redevelopment.

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

1. Agricultural Development

Vegetation: Significant increase (new crops)
Built-up: Moderate increase (farm infrastructure)
Water: No change or moderate increase (irrigation)

2. Urban Development

Vegetation: Significant decrease (clearing)
Built-up: Significant increase (construction)
Water: Decrease (drainage changes)

3. Natural Disaster Recovery

Vegetation: Decrease then recovery
Built-up: Decrease (damage)
Water: Increase (flooding) then decrease

4. Seasonal Changes

Vegetation: Moderate seasonal variations
Built-up: No change
Water: Seasonal variations