

User's Manual - GeoPulse

GeoPulse User Documentation

Welcome to GeoPulse! This comprehensive guide will walk you through every aspect of using the GeoPulse application, from registration to interpreting your results. This is the final demo version with all features implemented.

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Getting Started

What is GeoPulse?

GeoPulse is a property analysis tool that helps you understand how properties and their surroundings have changed over time. It uses satellite images to show you what has changed in terms of vegetation, water, and development around your properties. This demo version includes all production features with enhanced UI and comprehensive analysis capabilities.

System Requirements

- **Browser:** Any modern web browser (Chrome, Firefox, Safari, Edge)

- **Internet:** Stable internet connection
- **File Format:** CSV files only
- **File Size:** Maximum 50MB per file

Supported File Format

- **CSV (.csv)** - Comma-separated values file

User Registration

Step 1: Access the Registration Page

1. Open your web browser
2. Navigate to the GeoPulse application URL <https://geopulse.data-legos.com/>
3. You'll see the GeoPulse login screen with the official logo
4. Click on the "**Register**" button or link

GeoPulse Application Login Screen

Step 2: Fill in Registration Form

Complete the registration form with the following information:

Field	Description	Requirements
Organization Name	Your company or organization name	Required, 2-255 characters
User Name	Your full name	Required, 2-255 characters
Contact Phone	Your phone number	Required, valid phone format
Email Address	Your email address	Required, valid email format, unique
Password	Your account password	Required, minimum 8 characters with mix of letters, numbers, and symbols

Step 3: Submit Registration

1. Review all information for accuracy
2. Check the terms and conditions box (if applicable)

3. Click "**Register**" button

Registration Success

Upon successful registration, you will:

- Receive a confirmation message
- Be automatically logged in
- Be redirected to the dashboard
- Receive 50 free property analyses

Registration Troubleshooting

Issue	Solution
Email already exists	Use a different email address or try logging in
Password too weak	Ensure password meets all requirements
Invalid phone number	Use standard format: +91-98765-412345
Organization name too short	Use at least 2 characters

User Login

Step 1: Access Login Page

1. Navigate to the GeoPulse application
2. You'll see the login screen with the official logo
3. Click "**Login**" button or link
4. You'll be redirected to the login page

GeoPulse Application Login Screen

Step 2: Enter Credentials

Provide your login information:

Field	Description
Email Address	The email you used during registration

Password Your account password

Step 3: Login

1. Double-check your credentials
2. Click "**Login**" button
3. You'll be redirected to your dashboard

Login Troubleshooting

Issue	Solution
Invalid email/password	Check spelling and ensure caps lock is off
Account locked	Contact support if multiple failed attempts
Forgot password	Use "Forgot Password" link (if available)
Account expired	Contact support to reactivate your account

Session Management

- **Session Duration:** 30 minutes of inactivity
- **Auto-logout:** You'll be logged out after 30 minutes
- **Remember Me:** Option to stay logged in (if available)

Dashboard Overview

Dashboard Layout

The dashboard is your central hub for managing your GeoPulse account and data.

GeoPulse Application Dashboard

Header Section

- **Logo:** GeoPulse branding
- **Navigation Menu:** Access to different sections
- **User Profile:** Your name and account options

- **Logout:** Secure logout option

Main Dashboard Components

1. Account Summary

Organization: [Your Organization Name]

User: [Your Name]

Email: [your.email@example.com]

Account Status: Active

Analyses Remaining: [X] / 50

Account Expires: [Date]

2. File Management

- **Total Files:** Number of files uploaded
- **Processed Files:** Files that have been analyzed
- **Pending Files:** Files waiting for processing
- **Failed Files:** Files that encountered errors

3. Recent Activity

- **Last Upload:** Date and time of your most recent file
- **Last Processing:** When your last file was analyzed
- **System Status:** Current processing queue status

4. Quick Actions

- **Upload New File:** Direct link to file upload
- **View All Files:** Access to file management
- **Download Results:** Access to processed data
- **Account Settings:** Manage your profile

File Upload Process

Step 1: Prepare Your Data File

Required File Format

Your data file must contain the following columns:

Column Name	Description	Required	Format
property_id	Unique identifier for each property	Yes	Text/Number
address	Property address	Yes	Text
city	City name	Yes	Text
state	State or province	Yes	Text
zip_code	Postal/ZIP code	Yes	Text/Number
latitude	Property latitude (optional)	No	Number
longitude	Property longitude (optional)	No	Number

Sample Data Format

property_id,address,city,state,zip_code,latitude,longitude
1,123 Main Street,Mumbai,Maharashtra,400001,19.0760,72.8777
2,456 Oak Avenue,Delhi,Delhi,110001,28.7041,77.1025
3,789 Pine Road,Bangalore,Karnataka,560001,12.9716,77.5946

Step 2: Upload Your File

Method 1: Drag and Drop

1. Open the **Upload** page
2. Drag your file from your computer to the upload area
3. Drop the file in the designated zone
4. The file will automatically upload

Method 2: Browse and Select

1. Click "**Choose File**" or "**Browse**" button
2. Navigate to your file location
3. Select the file
4. Click "**Open**"
5. Click "**Upload**" button

Step 3: Configure Project Details

Project Information

After file validation, configure your analysis parameters:

Field	Description	Example	Default Value
Project Name	Name for your analysis project	"Mumbai Property Analysis 2025"	(User input required)
Baseline Period Start	Start date for baseline period	01/01/2025	01/01/2025
Baseline Period End	End date for baseline period	31/03/2025	31/03/2025
Current Period Start	Start date for current period	01/07/2025	01/07/2025
Current Period End	End date for current period	31/07/2025	31/07/2025

Date Selection Tips

- **Baseline Period:** 3-month period for comparison (Jan-Mar 2025)
- **Current Period:** 1-month period for analysis (Jul 2025)
- **Gap:** 3-month separation between periods for better change detection
- **Format:** All dates in DD/MM/YYYY format (Indian standard)

Step 4: File Validation

The system will automatically validate your file:

Validation Checks

- **File Format:** Ensures file is CSV format
- **File Size:** Confirms file is under 50MB
- **Required Columns:** Verifies all required columns are present
- **Data Quality:** Checks for basic data completeness

Validation Results

- ✓ File format: CSV
- ✓ File size: 2.5MB (under 50MB limit)

- ✓ Required columns: All present
- ✓ Data quality: Good
- 📊 Properties found: 1,250
- 🕒 Estimated processing time: 15 minutes

Step 5: Processing Confirmation

After successful upload:

- **File Status:** "Uploaded - Processing"
- **Processing Queue:** Your file joins the processing queue
- **Estimated Time:** System provides processing time estimate
- **API Calls:** System calculates required API calls

Processing Information

File: properties_data.csv

Properties: 1,250

Required Analyses: 2,500 (2 analyses per property)

Your Remaining Analyses: 50

Status: Insufficient analyses

Action: Contact support to purchase additional analyses

Understanding Your Results

Processing Stages

Stage 1: Data Check

- **File Check:** Verifies your file format and data
- **Address Processing:** Converts addresses to map locations (if needed)
- **Quality Review:** Checks data accuracy

Stage 2: Satellite Image Collection

- **Before Images:** Collects satellite photos from the "before" period
- **After Images:** Collects satellite photos from the "after" period
- **Image Processing:** Analyzes the differences between periods

Stage 3: Analysis and Report Creation

- **Change Detection:** Identifies what has changed
- **Calculation:** Measures the amount of change
- **Report Creation:** Creates your analysis report

Output Files

1. Main Analysis Report (CSV)

Contains detailed analysis for each property:

Column	Description
property_id	Original property identifier
address	Property address
before_period	Analysis period (before)
after_period	Analysis period (after)
vegetation_change	Vegetation change percentage
water_change	Water body change percentage
urban_change	Urban development change percentage
confidence_score	Analysis confidence (0-100)
processing_status	Success/Error status
error_message	Error details (if any)

2. Summary Report

High-level statistics and insights showing:

- Total number of properties analyzed
- How many were successfully processed
- Average changes in vegetation, water, and development
- Breakdown of change categories
- Processing time and date

3. Visual Reports

- **Maps:** Interactive maps showing your properties and changes
- **Charts:** Easy-to-read graphs showing change patterns
- **Visual Summaries:** Color-coded maps showing change intensity

Understanding Change Metrics

Vegetation Change

- **Positive Values:** Increase in vegetation (reforestation, growth)
- **Negative Values:** Decrease in vegetation (deforestation, development)
- **Range:** Typically -100% to +100%
- **Interpretation:**
 - -50% to -100%: Significant vegetation loss
 - -10% to -50%: Moderate vegetation loss

- -10% to +10%: Minimal change
- +10% to +50%: Moderate vegetation gain
- +50% to +100%: Significant vegetation gain

Water Change

- **Positive Values:** Increase in water bodies (flooding, new water features)
- **Negative Values:** Decrease in water bodies (drying, drainage)
- **Range:** Typically -100% to +100%
- **Interpretation:**
 - -50% to -100%: Significant water loss
 - -10% to -50%: Moderate water loss
 - -10% to +10%: Minimal change
 - +10% to +50%: Moderate water gain
 - +50% to +100%: Significant water gain

Urban Change

- **Positive Values:** Increase in urban development
- **Negative Values:** Decrease in urban development (rare)
- **Range:** Typically 0% to +100%
- **Interpretation:**
 - 0% to 10%: Minimal development
 - 10% to 30%: Moderate development
 - 30% to 60%: Significant development
 - 60% to 100%: Major development

Confidence Score

- **90-100:** High confidence in analysis
- **70-89:** Good confidence in analysis
- **50-69:** Moderate confidence in analysis
- **30-49:** Low confidence in analysis
- **0-29:** Very low confidence, results may be unreliable

Dashboard Interpretation

File Management Dashboard

File Status Indicators

 Uploaded Files

- Processed (Success)
- Processing (In Progress)
- Failed (Error)
- Pending (Waiting)


Dashboard Connection Status

The dashboard shows connection status indicators:

- Live Data:** Green badge when connected to API and showing real data
- Demo Mode:** Yellow badge when API is unavailable and showing demo data
- Connection Issues:** Error messages appear if authentication fails or server is down


File Details View

Click on any file to see detailed information:

File: properties_analysis_2024.csv
Upload Date: 15/01/2024, 10:30 AM
File Size: 2.5 MB
Properties: 1,250
Status:  Completed
Processing Time: 1h 15m
API Calls Used: 2,400
Results: Available for download

Results Dashboard

Summary Statistics

-  Analysis Summary
- Total Properties: 1,250
 - Successfully Processed: 1,200 (96%)
 - Failed Processing: 50 (4%)
 - Average Processing Time: 45 seconds per property
 - Total API Calls Used: 2,400

Change Analysis Overview

Vegetation Changes

- └— Significant Decrease: 150 properties (12%)
- └— Moderate Decrease: 300 properties (24%)
- └— No Change: 500 properties (40%)
- └— Moderate Increase: 250 properties (20%)
- └— Significant Increase: 50 properties (4%)

Water Changes

- └— Significant Decrease: 25 properties (2%)
- └— Moderate Decrease: 100 properties (8%)
- └— No Change: 1,000 properties (80%)
- └— Moderate Increase: 100 properties (8%)
- └— Significant Increase: 25 properties (2%)

Urban Development

- └— No Development: 800 properties (64%)
- └— Minimal Development: 300 properties (24%)
- └— Moderate Development: 100 properties (8%)
- └— Significant Development: 50 properties (4%)

Interactive Features

1. Filtering and Sorting

- **Filter by Change Type:** View only properties with specific changes
- **Filter by Confidence:** Show only high-confidence results
- **Sort by Change Magnitude:** Order by most significant changes
- **Search by Address:** Find specific properties

2. Export Options

- **Download XLSX:** Full analysis results in Excel format with conditional formatting
- **Download CSV:** Full analysis results in CSV format
- **Download JSON:** Summary statistics
- **Download Maps:** Visual representations
- **Download Report:** Comprehensive PDF report

3. Visualization Tools

- **HTML Results:** Click "View" to open color-coded results in new tab
- **Interactive Maps:** Click on properties to see details
- **Change Charts:** Visual representation of change distributions
- **Time Series:** View changes over time (if multiple analyses)
- **Comparison Tools:** Compare different analysis periods

HTML Results View

- **Color-Coded Significance:** Green for "No changes", Red for "Significant changes"
- **Professional Formatting:** Clean, readable table with styling
- **New Tab Display:** Results open in separate browser tab
- **Real-time Data:** Shows actual analysis results with significance indicators

Key Metrics to Monitor

1. Processing Success Rate

- **Target:** >95% successful processing
- **Action if Low:** Check data quality and file format

2. Average Confidence Score

- **Target:** >70% average confidence
- **Action if Low:** Review data quality and coordinate accuracy

3. Change Distribution

- **Expected:** Most properties show minimal change (-10% to +10%)
- **Action if Unusual:** Investigate data quality or environmental events

4. Analysis Efficiency

- **Target:** 2 analyses per property (before + after comparison)
- **Action if High:** Check for duplicate processing or errors

Troubleshooting

Common Issues and Solutions

File Upload Issues

Issue	Cause	Solution
File too large	File exceeds 50MB limit	Compress file or split into smaller files

Invalid file format	File not CSV format	Convert file to CSV format
Missing required columns	Required columns not present	Add missing columns to your file
Upload timeout	Slow internet connection	Try uploading during off-peak hours

Processing Issues

Issue	Cause	Solution
Low confidence scores	Poor address quality	Improve address accuracy and completeness
High failure rate	Invalid coordinates	Verify latitude/longitude data
Processing delays	High system load	Wait for processing to complete
Insufficient analyses	Exceeded analysis limit	Purchase additional analyses

Account Issues

Issue	Cause	Solution
Cannot login	Wrong credentials	Reset password or contact support
Account expired	30-day trial expired	Contact support to extend or upgrade
Analyses depleted	Used all allocated analyses	Purchase additional analyses
Session timeout	Inactive for 30 minutes	Log in again

Dashboard Issues

Issue	Cause	Solution
Demo data showing	API connection failed	Check internet connection and try refreshing

Authentication error	Token expired or invalid	Log out and log in again
No files visible	No files uploaded yet	Upload your first file to see results
Connection timeout	Server is slow or down	Wait and try again, or contact support

Getting Help

Information to Provide

When contacting support, please provide:

- **Account Email:** Your registered email address
- **File Name:** Name of the file you're working with
- **Error Message:** Exact error message received
- **Steps Taken:** What you were doing when the error occurred
- **Screenshot:** Visual evidence of the issue (if applicable)

FAQ

General Questions

Q: How much does GeoPulse cost? A: GeoPulse offers a free trial with 50 property analyses. Additional analyses can be purchased based on your needs.

Q: How long does processing take? A: Processing time depends on the number of properties. Typically, 1,000 properties take 15-30 minutes.

Q: Can I upload multiple files? A: Yes, you can upload multiple files. Each file is processed independently.

Q: What happens if my file fails to process? A: Failed files are marked with error details. You can review the errors and re-upload corrected files.

Technical Questions

Q: What map system does GeoPulse use? A: GeoPulse uses standard latitude

Q: What map system does GeoPulse use? A: GeoPulse uses standard latitude and longitude coordinates that work with most mapping systems.

Q: How accurate are the satellite analyses? A: Accuracy depends on the quality of your data and weather conditions. The confidence score tells you how reliable the results are.

Q: Can I analyze historical data? A: Yes, GeoPulse can analyze changes between different time periods using available satellite images.

Q: What satellite images are used? A: GeoPulse uses multiple satellite sources to provide comprehensive analysis of your properties.

Data Questions

Q: How do I interpret negative vegetation change? A: Negative values indicate vegetation loss, which could be due to development, deforestation, or seasonal changes.

Q: What does a high confidence score mean? A: High confidence (90-100%) means the analysis is very reliable. Low confidence suggests potential data quality issues.

Q: Can I export my results? A: Yes, you can download results in XLSX format (with conditional formatting), CSV, JSON, and PDF formats.

Q: How do I view my analysis results? A: Click the "View" button next to any processed file to open color-coded HTML results in a new tab.

Q: What do the dashboard status badges mean? A: Green "Live Data" means you're viewing real data, Yellow "Demo Mode" means you're viewing sample data due to connection issues.

Q: How long are my results stored? A: Results are stored for 12 months from the processing date.

Account Questions

Q: How do I reset my password? A: Use the "Forgot Password" link on the login page or contact support.

Q: Can I share my account with others? A: Accounts are for individual use. Contact support for team or enterprise solutions.

Q: How do I purchase additional analyses? A: Contact support or use the "Purchase Credits" option in your dashboard.

Q: What happens when my account expires? A: You'll need to contact support to extend your account or upgrade to a paid plan.

Demo Features

Final Demo Version Highlights

This demo version includes all production features with enhanced capabilities:

Enhanced User Interface

- **Modern Design:** Clean, professional interface with improved UX
- **Responsive Layout:** Works seamlessly on desktop, tablet, and mobile
- **Indian Localization:** All dates in DD/MM/YYYY format, Indian phone number examples
- **Brand Integration:** GeoPulse logo and branding throughout the application

Advanced Dashboard Features

- **Real-time Updates:** Live status updates during file processing
- **File Management:** View, download, and manage all uploaded files
- **Download Options:** Download processed files in XLSX format with proper formatting
- **View Results:** Open HTML results in new tab with color-coded significance indicators
- **Search & Filter:** Advanced filtering by date, status, and file type

Comprehensive Analysis

- **Multi-Index Analysis:** NDVI (vegetation), NDBI (built-up areas), NDWI

(water/moisture)

- **Color-Coded Results:** Visual indicators for significance fields
- **Statistical Significance:** Automatic calculation of change significance
- **Interpretation Guide:** Human-readable explanations of changes

File Processing Enhancements

- **CSV Support:** Optimized for CSV file processing
- **Large File Handling:** Support for files up to 50MB
- **Progress Tracking:** Real-time upload and processing progress
- **Error Handling:** Comprehensive error messages and validation

Security & Authentication

- **JWT Authentication:** Secure token-based authentication
- **User Management:** Individual user accounts with API usage tracking
- **File Ownership:** Users can only access their own files
- **Session Management:** Automatic session handling and timeout

API Usage Control

- **Usage Tracking:** Monitor API calls and remaining allocations
- **Quota Management:** 50 free analyses per user
- **Usage Analytics:** Detailed breakdown of API consumption
- **Billing Integration:** Ready for commercial usage tracking

Visual Enhancements

- **HTML Reports:** Professional HTML output with styling
- **Excel Formatting:** Automatic Excel file generation with conditional formatting
- **Color Coding:** Green for "No changes", Red for "Significant changes"
- **Professional Styling:** Clean, readable output formats

Demo Configuration

Default Settings

- **Baseline Period:** January 1, 2025 - March 31, 2025 (3 months)
- **Current Period:** July 1, 2025 - July 31, 2025 (1 month)
- **File Format:** CSV only
- **Max File Size:** 50MB
- **API Calls:** 50 free analyses per user