

IndiGIS: Unlock the Future of Water Management

Actionable Insights, Powered
by Geospatial Intelligence



How can your city prepare for the next heavy rainfall or the long-term impacts of climate change?

In an era where urban flooding and water resource challenges are escalating, informed decision-making is more critical than ever. The **IndiGIS Hydrology Solution** is a robust, GIS-integrated platform that empowers you with **end-to-end hydrologic and hydraulic modeling capabilities**. From refining raw terrain data to running dynamic 2D flood simulations and comprehensive risk analyses, IndiGIS provides planners, hydrologists, and disaster managers with an unmatched suite of tools for data-driven, resilient water resource management.

Experience the IndiGIS Workflow: From Data to Decision

We've designed IndiGIS to streamline every step of your hydrologic analysis, ensuring accuracy and efficiency.

Foundational Data: Building Your Model on Solid Ground

Your analysis is only as good as your data. IndiGIS ensures you start with the most precise and battle-ready information.

Terrain & Digital Elevation Model (DEM) Processing:

- 01 Seamlessly combine vast datasets with our **DEM Mosaic & Composite Generator**.
- 02 Eliminate errors and refine your terrain with **Dynamic DEM Cleaning & Terrain Correction**.
- 03 Automatically prepare your landscape for accurate water flow simulation using **Flow-Conditioned DEM Generation**.

Rainfall Data Integration:

- 01 Craft custom storm scenarios with the **Design Rainfall & Synthetic Storm Generator**.
- 02 Integrate rainfall data from diverse sources using **Multi-Source Rainfall Data Fusion**.
- 03 Convert and disaggregate rainfall data to suit any scale with our powerful **Rainfall Disaggregation & Reformatting Tools**.

Core Functional Modules: Decoding Water's Journey

IndiGIS translates complex hydrologic and hydraulic processes into clear, actionable insights.



Watershed & Flow Network Modeling:

- 01 Precisely define catchment areas using **Stream & Pour Point-Based Watershed Delineation**.
- 02 Quantify flood susceptibility with **HAND (Height Above Nearest Drainage) Calculation**, revealing areas prone to inundation.
- 03 Visualize water's path and concentration points through **Flow Path & Accumulation Analysis**.
- 04 Gain spatial clarity with **Catchment-Wise Centroid & Area Mapping**.

Rainfall-Runoff Modeling:

- 01 Estimate runoff volumes accurately using the **SCS Curve Number-Based Runoff Estimation**.
- 02 Predict the timing and intensity of water flow with **Unit Hydrograph for Flow Generation**.
- 03 Simulate both individual storm events and continuous hydrologic patterns with **Event-Based & Continuous Runoff Simulation**.

Hydraulic & Flood Modeling (2D + Urban):

- 01 Create detailed computational grids for both urban and rural landscapes using our **Mesh Generator for 2D Flood Zones**.
- 02 Integrate crucial infrastructure like **culverts, drains, and embankments** for realistic urban flood behavior.
- 03 Run dynamic 2D flood simulations using advanced **Shallow Water Equations (SWE) or Kinematic Wave (KW) Models**, providing precise flood extent, depth, and velocity visualizations.

Core Functional Modules: Decoding Water's Journey

IndiGIS is designed for effortless integration into your existing workflows and IT infrastructure.

Universal Format Support

Work with your preferred data formats: GeoTIFF, KML, Shapefile, NetCDF, and more.

Built in Python, Built for You

Developed entirely in Python, IndiGIS ensures no dependency on expensive third-party software licenses, giving you full control and flexibility.

Modular & Adaptable:

Our modular codebase allows for plug-and-play integration into your current GIS systems, making adoption a breeze.

Scalable Architecture:

Whether on your local machine or a robust cloud platform, IndiGIS adapts to your computational demands.

Technical Compatibility: Seamless, Flexible, Future-Proof

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Advanced Modules: From Prediction to Preparedness & Resilience.

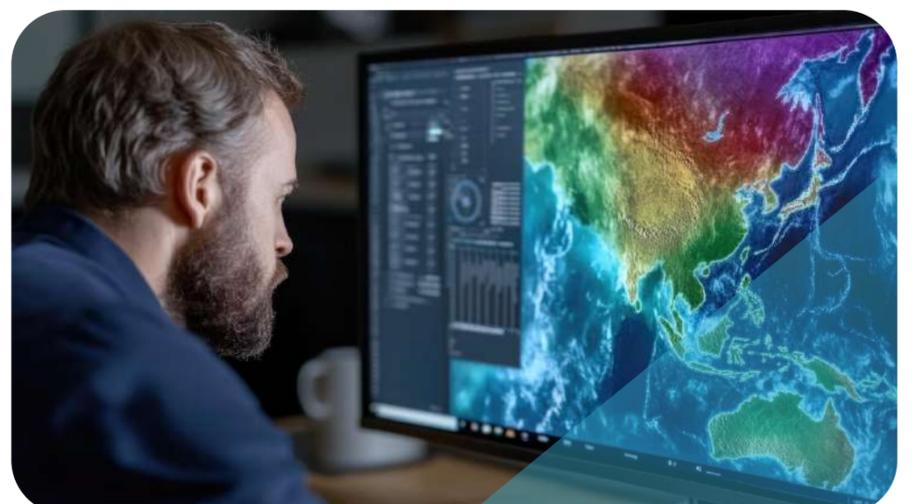
Beyond understanding water, IndiGIS empowers you to anticipate impacts and strategize for a resilient future.

Flood Impact Mapping & Risk Analysis:

- 01 Visualize the precise reach and severity of **floods with Flood Extent & Depth Mapping**.
- 02 Pinpoint dangerous flow conditions using **Velocity & Hazard Level Mapping**, crucial for public safety.
- 03 Quantify potential losses with **Asset Exposure & Damage Risk Estimation** for infrastructure and property.
- 04 Develop targeted interventions by creating a **Vulnerability Index**, highlighting communities most at risk.
- 05 Infrastructure risk maps: roads, hospitals, schools, power stations, residential density and flooding overlap, connectivity loss due to road submergence.

Climate Resilience & Scenario Simulation

- 01 Test resilience against various flood probabilities using the **Return Period-Based Flood Scenario Builder**.
- 02 Integrate future climate projections for **Climate Change-Adjusted Rainfall & Flood Impact Projections**, enabling long-term adaptation planning.
- 03 Develop strategic blueprints for immediate action with the **Emergency Response Layer for Planning**, optimizing evacuation routes and resource deployment.



Where IndiGIS Makes a Difference: Your Key Applications

Urban Drainage & Flood Management:

Optimize city planning for water flow.

Catchment Area Analysis & Watershed Planning:

Ensure sustainable land and water use.

Stormwater Simulation & Infrastructure Planning:

Design resilient urban infrastructure.

Emergency Management & Risk Mitigation:

Enhance preparedness and rapid response.



IndiGIS Informs Actions

- ✓ Identify **which zones need immediate intervention** before or after heavy rain
- ✓ Prioritize **maintenance and upgrades** of key drains and junctions
- ✓ Plan **diversion routes and temporary closures** where roads are flood-prone
- ✓ Allocate **resources ward-wise** based on flood exposure and population at risk
- ✓ Support the design of **new drainage infrastructure** or remodeling of existing drainage infrastructure with accurate runoff inputs



Why Choose IndiGIS? Core Benefits that Set Us Apart.

True End-to-End Workflow: Experience a seamless journey from raw data processing to decision-making. IndiGIS helps cities move from reactive response to proactive planning.

Fast Turnaround: Get rapid results from both real-time and historical data, enabling quicker, more confident decision-making.

Flexible Deployment: Run IndiGIS where it makes the most sense for you—locally, in the cloud, or integrated into your existing GIS.

Fully Customizable: Adapt the solution to any geography or administrative scale, ensuring it always fits your unique project needs.

IndiGIS is ideal for:



City and town
planning departments



Municipal
Corporations



Disaster risk management
authorities and climate
resilience teams



Water resource and
infrastructure companies

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