**SEAGLASS FOUNDRY**

*Forged For Speed. Refined by Craft.*

# ForgeGIS™

## *GPU-Accelerated Geospatial Compute for the Agent Era*

As of May 2026, the only commercially-supported GPU-accelerated geospatial MCP server we have been able to identify. 220 operations spanning the working surface of professional GIS analysis. Distributed as pure-Java Maven artifacts with no first-party native code. Designed from the start for both programmatic pipelines and AI-agent-driven workflows.

**220**

**user-facing operations**

*across 11 categories*

**218** / 220

**accessible to AI agents via MCP**

*62 MCP tools · 133-op pipeline DSL*

**14×–40×**

**multi-stage pipeline speedup vs. GDAL CLI**

*May 2026 validation run, 4096² rasters*

### What it is

ForgeGIS is the GPU-accelerated compute substrate for geospatial analysis, distributed as pure-Java Maven artifacts with no first-party native code and no GDAL native bindings. It exposes 220 operations across terrain, bathymetry, hydrology, RF/visibility, spectral and ML, spatial geometry, filtering, raster I/O, routing, point cloud, and temporal analysis — callable directly from Java for programmatic pipelines, and exposed to AI agents through a dual-surface MCP server.

### Why it matters

Today's geospatial stack was built for a human analyst at a desktop. Agents need different primitives — composable, callable, fast enough that a multi-step pipeline doesn't time out. ForgeGIS provides those primitives without forcing organizations to choose between agentic workflows and the deterministic, scripted control their environments require.

### How it's built differently

Data stays GPU-resident across operations rather than round-tripping through host memory or disk between stages. The deployment artifact is a single shaded Java jar with no first-party native code and no GDAL native bindings — no separate native install step, no multi-vendor shared-library coordination for ForgeGIS itself.



CONTINUED ON REVERSE →

# ForgeGIS™ Sales Brief

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## WHO FORGEGIS IS FOR

### Defense, intelligence, and aerospace contractors

A pure-Java Maven distribution with no first-party native code and no GDAL native bindings means ForgeGIS drops into existing JVM environments — including air-gapped and classified deployments — without coordinating separate native library distribution or shared-library signing for ForgeGIS itself. Numerical outputs are verified deterministic across surfaces, preserving audit and reproducibility guarantees when operations are invoked by AI agents.

### Builders of AI agents for geospatial workflows

The dual-surface MCP server exposes a pipeline DSL that composes 133 operations into multi-step workflows agents construct dynamically, plus 54 curated intent tools for typed single-call analytical tasks. Agents reach professional-grade GIS analysis through MCP without needing to know geospatial internals.

### Mid-market geospatial SaaS, climate, and agtech platforms

GPU-accelerated geospatial compute at server-class performance on commodity laptop hardware — the entire May 2026 validation run was measured on a single laptop with an RTX 5070. Drop ForgeGIS into existing Java services without replatforming on CUDA or coordinating native binary distribution.

## PERFORMANCE HIGHLIGHTS

**6.88×**

geometric mean across 143 catalog comparison records vs. GDAL CLI

*(127 wins of 143; op × scale measurements; format-conversion round-trips excluded)*

**14.46×–39.75×**

multi-stage GPU-resident pipelines at $2048^2$–$4096^2$ rasters

*(TerrainPipeline, WarpPipeline, AlgebraPipeline)*

**13.76×–36.94×**

per-op median speedups across five real-world DEM datasets

*(Copernicus and ETOPO, $2048^2$–$4096 \times 4096$ cells)*

## WHAT'S IN THE CATALOG

Terrain · Bathymetry & Ocean · Hydrology · Visibility & RF · Spectral & ML · Spatial Geometry · Filtering, Focal, & Morphology · Raster Management, Vectorize, & I/O · Routing · Point Cloud · Temporal

*220 operations total. 218 accessible via the MCP server (62 tools — 54 intent tools, 5 primitive handle and session tools, 3 pipeline-escape tools). The complete enumerated catalog and per-operation validation oracles are documented in the full Technical Brief.*

## Get the full Technical Brief

A 21-page technical brief with the complete 220-operation catalog, validation methodology, per-category benchmark breakdowns, and architectural deep-dive is available on request.

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