

ORGANIZATION / INITIATIVE LEAD

Latitudo40 (Italy), developer of the EarthDataInsights geospatial intelligence platform.

Latitudo40 specialises in Earth observation for urban and environmental applications. It combines satellite data, artificial intelligence and geospatial analytics to translate complex environmental information into operational tools for climate resilience, urban planning and infrastructure management.

TECHNICAL SOLUTION NAME

Geospatial Intelligence Platform for Urban Climate Risk & Sustainability Monitoring

HIGHLIGHT TITLE

Turning satellite Earth observation data into actionable urban intelligence for climate adaptation, resilience planning, and data-driven city management.

SHORT DESCRIPTION

Latitudo40 is a geospatial analytics company that uses Earth observation and satellite data to support cities in climate adaptation and urban planning. Its platform processes remote sensing data to generate insights on urban heat islands, land use change, vegetation health, flood risk, and environmental exposure (air quality at 25 meters resolution). The solution helps municipalities and organizations make evidence-based decisions to improve resilience, sustainability, and climate risk management. It matters because it bridges the gap between complex satellite data and practical urban decision-making tools.

EXTENDED DESCRIPTION

Latitudo40 addresses a growing challenge for cities: large volumes of environmental and spatial data are available, but converting them into information that planners can use remains complex.

Its EarthDataInsights platform processes Earth observation data from sources including Copernicus Sentinel and Landsat satellites using artificial intelligence and geospatial analytics. It generates urban indicators including land surface temperature, Surface Urban Heat Island, vegetation and tree cover, albedo, impermeable surfaces, flood risk and Heat Potential Risk. Land Surface Temperature can be mapped at 10-metre resolution, while the Heat Potential Risk index combines temperature, population exposure and urban morphology into a risk score from 0 to 100.

These layers can be combined to move from simply identifying environmental conditions to understanding where intervention may be most needed. The platform translates complex geospatial data into maps, indicators and dashboards that can support decisions on green infrastructure, cooling strategies, land-use planning and climate adaptation.

Because Earth observation can be repeated over time, the same approach can also be used to monitor environmental change and assess the performance of interventions after implementation.



DEMONSTRATED METRICS

- Active in 20+ countries across Europe, North America, Asia, and the Middle East
- Processes petabytes of Earth observation data from Copernicus Sentinel and other satellites
- Supports environmental monitoring at building, neighborhood, and city scale, with spatial resolutions from 10 m to sub-meter datasets depending on the source
- Generates indicators on land surface temperature, vegetation cover, impermeable surfaces, flood exposure, and land-use change
- Applied in 50+ climate adaptation and urban resilience projects with municipalities, utilities, and infrastructure operators
- Quantified CO₂ savings or avoided damages are project-specific and depend on actions implemented by municipalities

REAL IMPACT

Latitudo40 has enabled cities and organizations to integrate satellite intelligence into urban climate planning workflows that previously relied on low-resolution or fragmented data. By identifying urban heat island hotspots, flood-prone zones, vegetation deficits, and land-use changes, the platform enables targeted interventions such as tree planting, green corridors, reflective surfaces, and drainage improvements.

It reduces the time for environmental assessments from weeks to hours, improves the evidence base for planning decisions, and facilitates communication between technical teams and policymakers through intuitive dashboards. The solution strengthens data-driven governance and supports long-term urban adaptation and resilience planning.

IMPLEMENTATION LOCATION & DATE

Developed in Italy, with applications and projects in multiple international contexts. Implemented across multiple European cities, North America, the Middle East, and Asia since 2018–2019, with ongoing municipal and research projects in urban climate adaptation and smart city initiatives.

Examples include urban heat and vegetation monitoring in Gothenburg, Sweden, environmental monitoring in Chott el-Djerid, Tunisia, and European urban climate applications through the BeatTheHeat project.

SIMILAR CASES IMPLEMENTED ELSEWHERE

Comparable approaches include geospatial and Earth observation platforms such as Climate Engine, UP42, Digital Earth Africa and MapBiomass, which also transform satellite and environmental data into tools for territorial monitoring and decision-making.

Latitudo40's distinctive focus is the translation of multiple Earth observation layers into urban-scale climate intelligence and decision-support tools, particularly for heat risk, green infrastructure and environmental monitoring.

TECH LEVEL

High Tech



CO-BENEFITS

Environmental

- Improved monitoring of urban heat, vegetation, flood risk and land-use change.
- Identification of priority areas for climate adaptation and green infrastructure.
- Recurrent monitoring of environmental change and intervention performance.
- Better understanding of interactions between climate, vegetation and urban form.

Economic

- Reduced cost and time for some environmental monitoring activities.
- Better targeting of climate adaptation and infrastructure investments.
- Scalable monitoring across neighbourhoods, cities and larger territories.

Social

- Identification of populations and areas more exposed to heat and climate risks.
- Better evidence for prioritising adaptation measures where they are most needed.
- More accessible environmental information for non-specialist stakeholders.

Governance

- Evidence-based support for urban planning and climate decision-making.
- Integration of multiple environmental datasets into common decision-support tools.
- Improved communication between technical teams, planners and policymakers.

Spatial / Planning

- High-resolution identification of climate-risk hotspots and environmental inequalities.
- Support for green infrastructure, cooling, drainage and land-use strategies.
- Scenario analysis to compare potential interventions before implementation.
- Monitoring of urban transformations and their environmental performance over time.

COST OF THE SOLUTION

MEDIUM. The solution relies on cloud-based geospatial processing, Earth observation data and specialised AI algorithms rather than major physical infrastructure.

Costs depend on the geographical area, number of environmental layers, spatial and temporal resolution and level of integration required. Its SaaS model allows monitoring capabilities to be deployed without cities developing their own satellite-data processing infrastructure.

MITIGATION / ADAPTATION

Adaptation

MAIN CATEGORY

Primary: Enabling Technologies

Secondary: Energy & Environment

BASE INFORMATION SOURCES

- Documentation and technical materials from Latitudo40
- Copernicus Sentinel data portal
- Peer-reviewed literature on urban climate analytics