



HELIOS[®] ENVIRONMENTAL INTELLIGENCE PLATFORM

Fast and accurate real-time ground weather analytics

Know the weather on the ground at all times and make better decisions. Helios environmental intelligence analytics from NV5 Geospatial detects the occurrence of ground weather road conditions and impacts to critical ground infrastructure. It uses existing traffic and surveillance camera networks and can also be deployed to use vehicle camera data. Helios provides alerts for changing conditions to support weather forecasting, emergency response and vehicle safety.

Helios sees hyperlocal weather conditions often missed by traditional weather sensors, radar and satellites due to dynamic effects of storms at a local scale. It uses a dense ground closed-circuit television (CCTV) camera network and real-time image analysis capabilities. Helios supports applications ranging from forecast validation, nowcasting and road condition messaging and can be deployed for advanced driver assistance systems (ADAS).

Helios detection analytics operate in both day and night conditions, turning any surveillance or video camera into a weather sensor with the power of machine learning. Helios instantly analyzes thousands of cameras and fuses other discrete data to provide accurate ground weather detection and warnings.

Helios analytics help weather forecasters with dense ground observations, transportation managers with real-time road conditions, and public safety officials and logistics managers with a clearer understanding of weather and its impact on critical infrastructure. This enables users to have a unique level of situational awareness that complements traditional weather data and fills the gap of uncertainty to improve driver safety, avoid costly delays and be better prepared to handle unplanned weather situations.

Helios is ideal for organizations that rely heavily on location-specific weather information to inform, react and protect:

- > Local and regional transportation authorities
- > Air and land transit agencies
- > Emergency response agencies
- > Local and national broadcast weather agencies
- > Telematics, connected car and autonomous system providers
- > Commercial transportation companies
- > Enterprise shipping and logistics managers



HIGHLIGHTS

- > Improves street-level situational awareness and short-term weather forecasting by validating real-time ground conditions day and night
- > Provides immediate access to weather condition analytics from an aggregated network of nearly 43,000 traffic, vehicle and surveillance cameras
- > Delivers 95% weather detection accuracy capturing hyperlocal extremes and short-lived severe events not detected by traditional methods

HELIOS WEATHER ANALYTICS

HELIOS ANALYTICS FRAMEWORK

Helios scalable cloud analytic services leverage a growing network of existing cameras to process imagery in real-time using machine learning to instantaneously identify and classify changes in ground weather conditions. Better hyperlocal ground weather information enhances operational efficiencies and ultimately helps the end-user make decisions that save time, money, property and even lives.

PATENTED ANALYTICS

Helios analytics turn any surveillance or video camera into a weather sensor. With 95% weather detection accuracy, Helios creates 24/7 alerts for phenomena such as road snow, road ice, wet roads, poor visibility and precipitation. Helios also provides alerts for transitioning and trending ground weather conditions, allowing users to quickly view corresponding camera imagery for closer monitoring.

There is no need to spend valuable man-hours monitoring hundreds of cameras; let the Helios service platform do it for you.

Browser-based interface users have an interactive mapping application that integrates multiple weather observations and data layers such as clouds or radar to get the most complete picture of weather events in a particular spot.

For integrators, a REST, JSON-based API is available for direct integration into any application.

NV5 is constantly adding new analytics, such as traffic congestion and vehicle detection, to the existing suite and can also add specific camera networks or build camera analytics to meet project requirements.

DYNAMIC WEATHER CONDITIONS ANALYTICS

HELIOS VISIBILITY ANALYTIC

The Helios Visibility analytic alerts users to real-time fog formation, dissipation and overall poor visibility conditions caused by fast-moving, localized fog, heavy rain, heavy snow (white-out condition) or even smoke. The Helios Discrete Distance Visibility analytic incorporates a discrete sight distance.

HELIOS PRECIPITATION ANALYTIC

The Helios Precipitation analytic detects moderate-to-heavy rain conditions that require reduced speed and could result in hydroplaning and localized flooding.

HELIOS TRANSITION ANALYTIC

The Helios Transition analytic identifies transitioning and trending ground conditions that are predictive of major incidents. For example, knowing exactly when snow begins to accumulate can help ensure safer travel and efficient deployment of resources.



ROAD CONDITIONS ANALYTICS

HELIOS ROAD WETNESS ANALYTIC

The Helios Road Wetness analytic provides confirmation of precipitation affecting road or pavement conditions. This analytic notifies users of wet or dry pavement and potentially dangerous areas during a storm event.

HELIOS ROAD SNOW ANALYTIC

The Helios Road Snow analytic provides visual confirmation of snow impacting road or pavement conditions. The Road Snow analytic identifies three specific road snow conditions: no snow, partially covered and totally covered.

HELIOS ROAD ICE ANALYTIC

The Helios Road Ice analytic provides warning for road icing conditions by combining information about precipitation on the ground, falling precipitation, fog and road temperature.

FOR MORE INFORMATION:

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Helios®

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