

AireonVECTOR™ Map

Global GNSS interference mapped hourly and integration-ready.



AireonVECTOR Map turns aircraft into a distributed sensing network, detecting GNSS interference, spoofing, and jamming with precision — hourly and globally. Built on Aireon's unmatched space-based ADS-B infrastructure, it delivers standardized geospatial intelligence to support smarter route planning, pattern-of-life analysis, and situational awareness — even in remote and oceanic regions.

Designed for operational continuity in a complex signal environment, AireonVECTOR Map transforms the global fleet of ADS-B equipped aircraft into a distributed sensor network for GPS interference and spoofing detection. By continuously monitoring aircraft transmissions worldwide, the system leverages aviation itself to create the world's most comprehensive GPS interference map. When anomalies are detected—like jamming or spoofing—they're mapped to precise

geographic areas using industry-standard hexagonal grids. Each area includes key metrics: aircraft count, interference event types, severity ratios, and trend analysis to track evolving patterns. The system delivers data only where GPS/GNSS events occur, ensuring every data point is relevant and actionable.

Key benefits of AireonVECTOR Map

Operational continuity
enabling proactive route planning around interference to minimize disruptions

Global coverage
maintaining visibility across remote regions worldwide

Seamless integration
delivering structured data to customer-managed storage hourly

Aviation-grade reliability
operating on proven infrastructure with 99.9% availability

Data delivery & integration

AireonVECTOR Map publishes structured JSON files hourly to your blob storage, typically within 15 minutes after the hour. Daily summaries arrive within 15 minutes of UTC midnight, and all data is retained for 21 days. This is a fully headless product with no UI, so you can drop the data directly into your existing tools and workflows. Global coverage is uninterrupted, including polar, oceanic, and sparsely monitored regions.

For optimal detection at scale, aircraft should use RTCA DO-260B or EUROCAE ED-102A-compliant ADS-B transponders with top-mounted omnidirectional antennas and a minimum output of 125 W (equipage class A1/B1 or higher). The system is backed by aviation-grade infrastructure with 99.9% uptime.

Unique indicators

AireonVECTOR Map leverages three critical GPS/GNSS integrity indicators that provide unparalleled insight into navigation system reliability. Independent Position Check (IPC) flags reveal when aircraft-reported positions diverge from Aireon's independently calculated locations. Position Integrity Category (PIC) values indicate GPS signal quality degradation, with low PIC readings exposing areas where jamming or interference compromises navigation accuracy. Field Type Code O events capture 'unknown position' reports where aircraft transponders broadcast location data but lack GPS-derived coordinates, often indicating complete GPS denial or navigation failure. Together, these three indicators create a comprehensive interference detection framework that distinguishes between different types of GPS threats. This multi-dimensional approach enables AireonVECTOR Map to differentiate between atmospheric interference, intentional jamming, and sophisticated spoofing attacks providing

aviation stakeholders with the precise intelligence needed to assess threat severity and respond appropriately.

What's ahead

AireonVECTOR Map's core enables continuous innovation and capability expansion. Building on the foundation of interference detection and mapping capabilities, future enhancements may add granular aircraft impact analysis, identifying specific tail numbers and flight identifiers affected by interference/spoofing. The platform's proven architecture could support advanced predictive analytics using historical patterns to anticipate interference trends. Integration of direct feedback such as NOTAMs and PIREPs represent a natural extension of today's solution. These innovations will enhance Aireon's already industry-leading platform, ensuring customers benefit from both immediate operational value and long-term technological advancement.

Use cases

AireonVECTOR Map supports a wide range of critical operations by delivering global, real-time aircraft positioning and contextual insights map-based environment. Typical users include:

- ▶ **Air Navigation Service Providers (ANSPPs):** When GPS interference disrupts aircraft navigation — especially in non-radar or cross-border airspace — AireonVECTOR Map delivers real-time visibility into interference zones, enabling proactive traffic management and rerouting to maintain airspace integrity.

- ▶ **Civil Aviation Authorities:** Without insight into GPS disruption patterns, it's difficult to monitor airspace integrity or investigate anomalies. AireonVECTOR Map overlays interference hotspots onto existing surveillance systems, supporting thorough airspace audits and traffic impact assessments.

- ▶ **Commercial Airline Operations Centers (AOCs):** GPS interference threatens route optimization and can lead to costly diversions. AireonVECTOR Map integrates into flight planning systems to highlight interference along planned routes, supporting proactive adjustments and fuel-saving alternatives.

- ▶ **Emergency Response & Disaster Relief Organizations:** In crisis zones with damaged infrastructure or intentional jamming, GPS reliability is critical. AireonVECTOR Map helps teams monitor interference in real time, ensuring aircraft can safely navigate and coordinate during life-saving missions.

- ▶ **National Security & Defense Agencies:** Adversarial GPS jamming endangers mission success in contested environments. AireonVECTOR Map equips mission planners with real-time interference intelligence to inform route selection, asset deployment, and timing of GPS-reliant activities.