MCP SERVER | NO CODE | CLOUD HOSTED

NOAA Full — Ultimate Weather & Climate Intelligence MCP

Track everything from tides and alerts to solar wind and climate history.

NOAA Full — Ultimate Weather & Climate Intelligence provides 36 tools spanning every facet of Earth science. It pulls together immediate weather forecasts, severe storm alerts, aviation reports (METAR/TAF), precise marine tide predictions, and decades of historical climate records. Plus, it tracks space weather from solar wind activity to the aurora forecast—all sourced directly from five official NOAA APIs.

A+ Quality Score 98.33/100

meteorology | marine-data | space-weather | environmental-monitoring | geospatial-data | real-time-data

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vinkius.com/mcp/noaa-full-ultimate-weather-climate-intelligence

SCAN TO VIEW

The connectivity layer between AI and the world's software.

Vinkius sits between AI and every application. All communication passes through Vinkius Cloud via the Model Context Protocol (MCP) — with governance, observability, and security at every layer.

Your AI Connections Run Through Vinkius Cloud

The world's largest managed MCP catalog

Vinkius is the connectivity layer where AI connects to the software your business already runs. We handle the hosting, the security, the credentials, the uptime — you get agents that actually do things.

We operate the world's largest managed MCP catalog. Major SaaS platforms, CRMs, databases, and cloud providers — running, monitored, production-ready. This MCP server is hosted and maintained by the Vinkius Cloud for AI Agents.

> *The agent doesn't manage credentials, doesn't manage uptime, doesn't manage security. Vinkius does.*
>
> — Architecture principle

Four Pillars of the Vinkius Runtime

01 — Security by design

Credentials stay encrypted at rest via AES-256. The AI agent never touches raw keys — they're injected into a sandboxed V8 isolate at runtime. Actions are logged, and connections have an emergency kill switch.

02 — Built on MCP Fusion

This MCP server was built with **MCP Fusion**, the open-source framework (Apache 2.0) that powers the entire Vinkius catalog. Schema-as-firewall strips undeclared fields, compiled PII redaction runs at zero overhead, and cryptographic lockfiles produce git-diffable audit trails.

03 — Deterministic observability

Eight immutable metrics per endpoint: request volume, p95 latency, error rate, active connections, cost attribution. A live payload feed logs every tool call with mutation detection.

04 — Autonomous operations

Servers are deployed, monitored, and patched autonomously. New capabilities and security patches ship weekly. Zero-downtime deployments ensure continuous availability across all managed MCP servers.

AES-256	Ed25519	24h TTL	V8 Isolate
Encryption at rest	PKI vault signatures	Ephemeral session keys	Sandboxed execution

One Token. Instant Access.

Every MCP server on Vinkius is accessed through a **Connection Token**. Tokens are generated in the cloud dashboard and produce a unique MCP endpoint URL. Paste this URL into any MCP-compatible client — no SDK required.

A single token can serve **multiple AI clients simultaneously**, or you can issue separate tokens per client for granular access control. Each token tracks its own request count, last activity timestamp, and can be individually enabled or revoked.

MCP ENDPOINT

```
https://edge.vinkius.com/{token}/mcp
```

Claude · Cursor · VS Code · Windsurf · Grok · Gemini

Security Is the Architecture

Security in Vinkius is not a feature — it's the foundation of the runtime. The gateway enforces multiple independent protection layers between AI agents and third-party APIs.

01 — Ed25519 PKI Vault

Every workspace has an Ed25519 Master Key. Session keys are generated ephemerally (24h TTL) and signed by the Master Key. Credentials never leave the vault boundary.

02 — V8 Isolate Sandboxing

Tool code runs inside isolated-vm V8 isolates with 64 MB memory caps and per-request timeouts. No filesystem access, no network access except through the SSRF-guarded fetch bridge.

03 — SSRF Guard

All outbound HTTP requests are DNS-resolved and validated before execution. Private IP ranges (10.x, 172.16-31.x, 192.168.x, AWS metadata 169.254.x) are blocked at the network layer.

04 — DLP & PII Redaction

A ResponseGuard pipeline intercepts every tool response. Configurable redaction patterns strip sensitive fields (emails, SSNs, card numbers) before data reaches the AI agent.

05 — Cryptographic Audit Trail

Every request is signed into a SHA-256 hash chain with Ed25519 signatures. Events form a tamper-proof, SIEM-exportable forensic record.

06 — Honeytoken Trap System

Phantom credentials are injected into isolated environments. If a honeytoken is used outside Vinkius infrastructure, the server is quarantined instantly.

Emergency Kill Switch

EU AI Act Art. 14(1) Compliant

The kill switch is an **emergency halt** mechanism — not a simple toggle. When triggered, it executes three actions atomically:

01 — Server deactivated

The MCP server is immediately taken offline across the entire cluster.

02 — All tokens revoked

Every connection token is invalidated. Total lockout — reconnection blocked until new tokens are issued.

03 — WebSocket connections killed

Active connections terminated via Redis pubsub broadcast. Propagates to every runtime node in the cluster.

Full Visibility. Zero Guesswork.

The Vinkius cloud dashboard includes a full MCP Governance suite — real-time analytics and security controls for production AI operations.

Control Plane

KPI dashboard with request volume, latency, success rate, token consumption, and AI-generated operational briefings.

Agent Activity

Which AI clients are connecting, how often, and what they're doing — real-time session tracking.

FinOps

Cost tracking per tool, payload compression savings, budget optimization signals, and consumption trends.

Tool Health

Slowest and most error-prone tools, with actionable root-cause insights and performance baselines.

Firewall & DLP

PII redaction activity, sensitive data protection counters, and security event timeline.

Incident Log

Error trends, failure rates, status-code breakdowns, and forensic audit trail access.

> Get started at **cloud.vinkius.com** — connect your AI agent in under 60 seconds.

NOAA Full — Ultimate Weather & Climate Intelligence MCP

36 tools available
Cloud-hosted on Vinkius

Need a complete picture of the environment? This MCP connects your agent to 36 data tools covering everything from day-to-day forecasts to global climate trends and even deep space phenomena. Whether you're tracking water levels for coastal development, predicting severe weather alerts across a state, or modeling long-term sea level rise, this connection handles it. You don't have to jump between multiple government websites or use separate services; all the data lives here. For example, an agent can check current airport conditions using METARs and then instantly pull up predicted tides for that location. If you're building a complex environmental model, Vinkius hosts this MCP right alongside thousands of others, making it easy to connect multiple sources into one unified intelligence layer. You simply ask your agent what you need—a 7-day forecast combined with the Kp index forecast—and it delivers everything in one pass.

Core Capabilities

01 — Get current severe weather alerts

Filter active warnings by US state, zone ID, or specific event type like a Tornado Warning.

02 — Analyze local and historical climate trends

Retrieve yearly summaries, monthly averages, and the 30-year baseline data needed to calculate climate change metrics.

03 — Forecast marine activities

Predict high and low tides, measure water temperature, and track ocean currents at specific coastal stations.

04 — Get real-time aviation conditions

Fetch current airport weather reports (METAR) or future flight forecasts (TAF) using ICAO codes.

05 — Monitor space and geomagnetic activity

Check the Kp index, solar wind speed, and Dst index to predict chances of auroras and geomagnetic storms.

One Click on Vinkius — From Prompt to Execution

Available at **vinkius.com/mcp/noaa-full-ultimate-weather-climate-intelligence** — connect your AI agent in three steps.

01 You specify what you need: for example, 'I need a full report on Miami.'

02 Your AI client uses the MCP to simultaneously query multiple specialized tools—like getting the 7-day forecast, checking current water levels, and retrieving active alerts.

03 The agent compiles all data points into one cohesive briefing, giving you actionable intelligence across meteorology, marine science, and space weather.

The bottom line is that this MCP acts as a single dashboard for every major environmental system on Earth.

Built For

Anyone whose job depends on knowing what the environment will do—from maritime operations to infrastructure planning. This means coastal engineers, commercial pilots, climate researchers, and disaster response coordinators.

Coastal Planner

Determines ideal construction sites by comparing historical sea level rise trends with current tide predictions and water temperature data.

Aviation Meteorologist

Prepares pre-flight briefings by cross-referencing the latest METAR reports, TAF forecasts, and active SIGMETs for multiple global airports.

Climate Scientist

Runs long-term analyses by comparing monthly climate summaries against 30-year historical normals to calculate regional deviation.

What Changes When You Connect

01 Immediate situational awareness: Get current conditions, active warnings (get_active_alerts), and detailed airport reports (get_metar) in one query, saving time compared to checking multiple government sites.

02 Long-term planning accuracy: Instead of relying on a single forecast, you can calculate risk by comparing the get_monthly_summary data against the 30-year baseline from get_climate_normals.

03 Marine and coastal intelligence: You don't have to guess. Get predicted tides (get_tide_predictions), current speeds (get_currents), and water temperature readings instantly for operational decisions.

04 Space weather forecasting: Plan for high-stakes operations by checking the Kp index, solar wind data (get_solar_wind), and Dst index to know if an aurora or geomagnetic storm is coming.

05 Comprehensive coverage: If it involves atmospheric conditions in the US—whether local or global—this MCP has a dedicated tool. You get 7-day forecasts (get_forecast) alongside hourly details (get_hourly_forecast).

06 No more hopping between weather, oceanography, and space portals. This single connection delivers every piece of data needed to understand a complex environment.

Real-World Applications

Planning a deep-sea research dive

A researcher needs to know if the site is safe and when the water will be optimal. They ask their agent for 'a full dive report.' The agent uses get_water_levels, get_currents, and get_water_temperature simultaneously, giving a single readiness score.

Managing flight logistics in a storm zone

A dispatcher needs to know if an airport is safe for landing. They request the status by calling get_metar and checking get_sigmet reports. The agent confirms the current conditions and identifies any significant hazards immediately.

Modeling climate vulnerability

A city planner wants to know if a low-lying area will be impacted decades from now. They use get_sea_level_trends combined with get_climate_normals to build a robust risk model that accounts for long-term change.

Preparing for satellite operations

A tech company needs to schedule a sensitive uplink window. The agent first checks the Kp index and then cross-references it with get_solar_flux to ensure geomagnetic activity won't interfere with their data transmission.

Patterns to Avoid

Mixing up climate and weather scope

✗ AVOID

Asking the agent for 'the yearly forecast.' This is vague; it mixes long-term averages (climate) with short-term predictions (weather).

✓ INSTEAD

Be specific. If you want a 7-day prediction, use get_forecast. If you need to compare this year's rainfall to the historical average, use get_yearly_summary.

Ignoring location specificity for alerts

✗ AVOID

Simply asking 'Are there weather warnings?' without specifying a region means getting too much noise or missing the specific area entirely.

✓ INSTEAD

Always narrow it down. Use get_alerts_by_point if you have coordinates, or get_alerts_by_zone if you know the NWS zone ID.

Assuming all data is real-time

✗ AVOID

Thinking that 'historical' means immediate access. Some data requires specific tool calls.

✓ INSTEAD

Check your needs. To get historical weather, use get_daily_data or get_monthly_summary. For the absolute latest reading, call get_latest_observation.

The Right Fit

Use this MCP if your required data set crosses multiple domains: marine + aviation + climate OR space + weather + local observation. You need a single source of truth that can compare short-term events to long-term trends.

Don't use it if you only need one type of data, like just historical stock prices or traffic flow. For those singular needs, look for dedicated financial or GIS MCPs instead. If your requirement is purely localized and basic (e.g., 'What is the temperature right now?'), a simple single-point weather API might suffice, but this NOAA connection gives you the essential layer of complexity—the historical context, the severe alert structure, and the space factor—that makes planning accurate.

Sifting through disconnected environmental reports is exhausting.

Today, getting a complete picture requires clicking between three or four separate portals: one for weather forecasts, another for tide charts, and maybe a third dedicated to space activity. You copy coordinates from the forecast site into the marine site, then you manually cross-reference that data with a separate page showing current Kp index values. It's slow, it’s error-prone, and it takes hours just to compile one comprehensive briefing.

With this MCP, your agent handles all those handoffs automatically. You simply ask for the 'full picture.' The system runs get_forecast, gets_water_levels, checks active alerts, and pulls in the Kp index forecast—all before you finish reading the prompt. It gives you one single, unified answer.

The NOAA Full — Ultimate Weather & Climate Intelligence MCP delivers comprehensive data streams.

Manual checks on tide predictions and observed water levels are now unnecessary. Instead of

What's different is that you move from compiling reports to asking questions. You aren’t just looking

opening two different browser tabs, you ask for the 'coastal briefing.' The system instantly uses get_tide_predictions alongside get_currents to give you a single read on boating safety.

at data; you're getting integrated, actionable intelligence across every physical domain.

NOAA Full — Ultimate Weather & Climate Intelligence: 36 Tools

Use these specialized tools to fetch everything from real-time airport weather reports (METAR) to long-term climate trends and geomagnetic forecasts.

#	TOOL	DESCRIPTION
01	get_active_alerts	Retrieves all current weather alerts by US state, severity level, or specific event type.
02	get_alerts_by_zone	Checks for active weather warnings targeting a precise NWS zone ID for focused monitoring.
03	get_alerts_by_point	Finds and reports on current alerts using specific US latitude and longitude coordinates.
04	get_alert_types	Lists all available weather event types so you know which filters to use when checking alerts.
05	get_metar	Gets the current, detailed airport weather report for any global location using its ICAO code.
06	get_taf	Provides a forecasted set of conditions—including wind and visibility—for an airport over time by ICAO code.
07	get_pirep	Retrieves pilot reports detailing unusual weather, icing, or turbulence encountered in the air.
08	get_sigmet	Lists significant areas of severe aviation hazards like intense turbulence or IFR conditions.
09	get_aviation_station	Fetches basic operational information about a specific airport weather station using its ICAO code.
10	get_daily_data	Accesses the largest archive of daily records, providing temperature and precipitation totals for any worldwide station.
11	get_monthly_summary	Provides aggregated monthly data including average temperatures and total heating degree days for trend analysis.
12	get_yearly_summary	Generates annual averages and extreme values, ideal for long-term climate record comparison.
13	get_climate_normals	Retrieves the 30-year statistical baseline that defines what 'normal' weather looks like at a location.

#	TOOL	DESCRIPTION
14	search_stations	Finds NWS station IDs and names near a specific geographical area or keyword search.
15	get_forecast	Delivers the 7-day weather forecast for any US location using its latitude and longitude.
16	get_hourly_forecast	Provides detailed hour-by-hour forecasts, including wind and humidity, for a US location over five days.
17	get_forecast_discussion	Reads the Area Forecast Discussion (AFD) to understand the forecaster's full context on upcoming weather patterns.
18	get_grid_data	Extracts raw, array-based NWS grid data for programmatic analysis of temperature or precipitation fields (US only).
19	get_point_metadata	Retrieves technical metadata about a US location, including its responsible weather office and zone coordinates.
20	get_water_levels	Gets the observed water level (tides) at a specific US coastal station using a CO-OPS ID.
21	get_tide_predictions	Calculates future high and low tide times and heights for boating or fishing activities near a US coast.
22	get_currents	Measures the observed speed and direction of ocean currents at select deep-water stations.
23	get_water_temperature	Provides the current water temperature reading for marine biology or recreational use at a US coastal station.
24	get_meteorological	Gathers air temperature, pressure, and wind data to complement tidal readings for a full coastal picture.
25	get_sea_level_trends	Tracks long-term relative sea level changes at a US station using decades of historical tide gauge data.
26	get_stations	Locates and lists nearby NWS weather observation stations by providing latitude/longitude coordinates.
27	get_latest_observation	Pulls the most recent, raw weather conditions from a specific NWS station ID like KJFK or KLAX.
28	get_observation_history	Retrieves a timeline of recent observations to track how temperature and wind have changed over several hours.
29	get_station_metadata	Provides technical details about an NWS station, including its geographic location and data types available.
30	get_radar_stations	Lists all active NWS radar stations and their current operational status.

#	TOOL	DESCRIPTION
31	get_planetary_k_index	Reports the NOAA Planetary K-index, which measures geomagnetic activity levels for aurora prediction.
32	get_k_index_forecast	Predicts the geomagnetic activity level over a three-day window to plan for space weather impacts.
33	get_solar_wind	Gathers real-time data on solar wind speed and magnetic field strength, indicators of approaching storms.
34	get_aurora_forecast	Calculates the probability map for visible auroras based on current solar wind inputs.
35	get_solar_flux	Provides the 10.7cm radio flux index, which acts as a proxy for overall solar activity levels and sunspot count.
36	get_dst_index	Measures the current intensity of Earth's magnetic field disturbance (Dst Index) to warn about severe geomagnetic storms.

See It in Action

Real prompts you can use once this MCP is connected to your AI agent through Vinkius Cloud.

U Full weather briefing: NYC forecast, alerts, airport conditions, and tides

🗽 NYC Full Briefing

🌤️ Forecast: Partly cloudy, High 72°F, T-storms Thursday
⚠️ Alerts: None active for NYC metro
✈️ KJFK METAR: 22°C, SW 12kt, SCT030, VIS 10+
🌊 Battery Tide: High 1.52m at 11:58 AM

4 NOAA systems queried simultaneously.

U Is there any space weather activity and can I see the aurora?

🌌 Space Weather + Aurora Check

Kp: 4 (Active), Forecast: 5 tonight
Solar Wind: 520 km/s, Bz: -6 nT ✅
Dst: -42 nT (mild disturbance)
F10.7 Flux: 155 SFU (elevated)

Aurora visible tonight from northern US states and southern Canada.

Frequently Asked Questions

01 **How do I check for current severe weather warnings using get_active_alerts?**

You filter the alerts by US state (like TX or FL), severity level (Extreme, Severe, Moderate), or a specific event type to narrow down what you need. You'll get a list of all active, immediate threats.

02 **Can I predict high and low tides for my boat using get_tide_predictions?**

Yes, this tool predicts the expected times and heights for both high and low tide at any specified US coastal station. It's perfect for planning boating routes or fishing trips.

03 **What is the difference between get_forecast and get_hourly_forecast?**

The standard get_forecast gives you a general 7-day summary (high/low temps, probability). The get_hourly_forecast provides a much deeper dive, giving temperature, wind speed, and humidity for every single hour over five days.

04 **How do I check the current status of an airport using get_metar?**

You provide the airport's 3-letter ICAO code (like KJFK). The tool returns a detailed, raw report covering temperature, wind direction/speed, visibility, and cloud cover at that moment.

05 **Is get_planetary_k_index useful for space weather planning?**

Absolutely. It measures geomagnetic activity from 0 to 9. A high Kp value means increased chances of visible auroras or potential disruptions to satellites and power grids.

06 **Can I compare current sea level to historical trends using get_sea_level_trends?**

Yes, this tool calculates long-term relative sea level changes at a US coastal station by analyzing decades of recorded tide gauge data. This is critical for climate research.

Go Live in 60 Seconds

Get your connection token from **cloud.vinkius.com**, then paste the endpoint URL into any MCP-compatible client.

YOUR MCP ENDPOINT

```
https://edge.vinkius.com/[TOKEN]/mcp
```

CLIENT	WHERE TO CONFIGURE
Claude AI	Profile → Customize → Connectors → "+" → Add custom connector → Paste endpoint
Cursor	Settings → Features → MCP Servers → "+ Add New MCP Server" → Type: SSE → Paste endpoint
VS Code	Ctrl/Cmd+Shift+P → "MCP: Add Server" → add `"noaa-full-ultimate-weather-climate-intelligence": { "url": "…" }`
Windsurf	MCP Settings → `mcp_settings.json` → Add endpoint URL
ChatGPT	Settings → Tools & plugins → Add MCP server → Paste endpoint
Gemini	Extensions → Add MCP Server → Paste endpoint URL

ASK AN AI ABOUT THIS

Let your preferred AI explain this MCP server

- Ask ChatGPT
- Ask Claude
- Ask Perplexity
- Ask Gemini
- Ask Grok

READY TO CONNECT

NOAA Full — Ultimate Weather & Climate Intelligence is live on Vinkius Cloud.

Get your connection token, paste it into your AI agent, and start building. No SDK. No deployment. Just results.

Start at cloud.vinkius.com →

vinkius.com · support@vinkius.com

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