

MCP SERVER

NO CODE

CLOUD HOSTED

Body Drag Distance Estimator MCP

Predict drift paths and recovery times during kiteboarder accidents.

Body Drag Distance Estimator uses environmental vector analysis to predict where a kiteboarder has drifted after losing control. It calculates the interaction between wind, current, and kite force to provide real-time drift velocity, total distance traveled, and estimated recovery times. You can also generate efficient search patterns based on the predicted drift zone.

A+ Quality Score 100/100

kiteboarding

drift-analysis

vector-math

search-patterns

marine-safety



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.

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.

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.

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

Encryption at rest

Ed25519

PKI vault signatures

24h TTL

Ephemeral session keys

V8 Isolate

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.

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.

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.

06 — Honeypot Trap System

Phantom credentials are injected into isolated environments. If a honeypot 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.

FinOps

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

Firewall & DLP

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

Agent Activity

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

Tool Health

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

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.

Body Drag Distance Estimator MCP

4 tools available

Cloud-hosted on Vinkius

When a kiteboarder loses control and enters a body drag, the situation changes in seconds. You need to know where they are going before they drift out of sight or into danger. This MCP handles the heavy math of vector analysis so you don't have to. It looks at the wind speed, current direction, and the force of the kite to determine exactly how a person is being moved through the water.

Instead of guessing, you can get specific numbers on instantaneous movement speed and total distance traveled over a set period. If you are coordinating a search, the MCP can suggest the best visual patterns, like zig-zags or circles, to cover the area effectively. It also calculates how long it will take to reach a target or cover the drift zone, which is vital for managing fatigue and time-sensitive rescues. It turns raw environmental data into actionable search and rescue intelligence for your agent.

Core Capabilities

01 — Vector Analysis

Your agent uses wind, current, and kite force to calculate movement.

02 — Distance Prediction

The MCP calculates total travel distance based on time and velocity.

03 — Search Optimization

Your agent determines the most efficient visual search patterns for a given area.

04 — Time Estimation

The tool calculates the time required to reach a specific location or cover a zone.

One Click on Vinkius — From Prompt to Execution

Available at vinkius.com/en/ai-agent-connect/body-drag-distance-estimator — connect your AI agent in three steps.

- 01 Connect your preferred MCP-compatible client to Vinkius.
- 02 Provide environmental data like wind speed, current, and kite force to your agent.
- 03 The agent calls the specific tool needed for the calculation.
- 04 The MCP returns precise drift, distance, or time data.
- 05 Use the results to plan search patterns or recovery efforts.

Connect your AI client to the Vinkius-hosted MCP to start running vector calculations.

Built For

This MCP is built for professionals managing marine safety and kiteboarding incidents.

Search and Rescue Teams

They hand off environmental data to the agent to get search patterns and drift predictions.

Water Safety Officers

They use the tool to estimate how long it takes for a person to reach safety.

Kiteboarding Instructors

They use drift calculations to monitor student safety during sessions.

What Changes When You Connect

- 01 Calculates drift velocity using wind and current vectors.
- 02 Predicts total distance traveled over specific timeframes.

03 Suggests efficient visual search patterns like zig-zags.

04 Estimates recovery times to manage rescue windows.

Real-World Applications

Active Drift Tracking

Calculate the instantaneous speed of a person being moved by environmental forces.

Rescue Timing

Estimate how long it will take to reach a drifted person or their equipment.

Search Area Planning

Determine the most effective visual search pattern based on a predicted drift area.

Distance Estimation

Predict the total distance a person has traveled from their last known position.

4 Tools Available

#	TOOL	DESCRIPTION
01	calculate_optimal_search_pattern	This tool suggests the best visual search method, such as circular or zig-zag patterns, based on the predicted drift area.
02	estimate_recovery_time	This tool calculates how long it will take to reach a board or fully cover the drift zone.
03	get_drift_velocity	This tool finds the instantaneous speed at which a person is being moved by wind and current.
04	predict_drift_distance	This tool estimates the total distance a person has traveled from their starting point over a specific duration.

See It in Action

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

- U** Calculate the drift velocity if the kite power is 500N, wave direction is 90 degrees, wind speed is 10m/s, and current speed is 0.5m/s.



The calculated drift velocity is 12.4 meters per minute with a drift direction of 85 degrees.

- U** If a person has drifted at 5 meters per minute for 30 minutes with a fatigue level of 1.2, what is the total distance traveled?



The total distance traveled is 180 meters.

- U** How long will it take to recover if the drift distance is 500 meters, the velocity is 10 meters per minute, and the fatigue level is 1.5?



It will take 75 minutes to reach the board.

Frequently Asked Questions

01 What can this MCP do for kiteboarding safety?

It predicts drift distance and recovery times by analyzing wind, current, and kite force vectors.

02 Which AI clients can use this MCP?

You can use this MCP with any compatible client like Claude, Cursor, Windsurf, or VS Code.

03 How does it help with search and rescue?

It calculates the most efficient visual search patterns and estimates how long it will take to reach a drifted person.

04 Do I need to host the MCP myself?

No, Vinkius hosts and manages the MCP for you. You just connect your client and start using the tools.

05 Can it calculate movement speed?

Yes, the `get_drift_velocity` tool calculates the instantaneous speed of movement caused by environmental forces.

06 How does the tool account for fatigue?

The `estimate_recovery_time` and `predict_drift_distance` tools use a fatigue coefficient to adjust the effective drift distance and velocity, simulating how a person's ability to resist drift decreases over time.

07 What search patterns are available?

You can use `calculate_optimal_search_pattern` to evaluate circular, zig-zag, or linear patterns to find the most efficient way to cover the predicted drift zone.

08 Can I use this with Claude Desktop?

Yes, this MCP server can be connected to Claude Desktop, Cursor, VS Code, and any other MCP-compatible client via Vinkius Edge.

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 <code>"body-drag-distance-estimator": { "url": "..." }</code>
 Windsurf	MCP Settings → <code>mcp_settings.json</code> → 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

Body Drag Distance Estimator 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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DOCUMENT INFORMATION

Generated	September 2026
MCP Server	Body Drag Distance Estimator MCP
Server ID	01a07c3a-3cd5-72b9-8606-822a220a84ce
Platform	Vinkius Cloud for AI Agents
Endpoint	https://edge.vinkius.com/{token}/mcp

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