

M C P S E R V E R

N O C O D E

C L O U D H O S T E D

Cold Injury Risk Calculator MCP

Get precise safety limits for extreme cold environments.

Cold Injury Risk Calculator MCP uses heat balance models and wind chill factors to assess physiological risks. It calculates frostbite and hypothermia probabilities based on temperature, wind speed, and your clothing insulation to keep you safe in freezing conditions.

A+ Quality Score 100/100

weather

frostbite

hypothermia

safety

cold-exposure



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.

Cold Injury Risk Calculator MCP

4 tools available

Cloud-hosted on Vinkius

When you are working or playing in freezing temperatures, guessing your safety window isn't an option. This MCP uses physiological heat balance models to give you hard numbers on how long you can stay outside before injury occurs. You can check how specific wind speeds or temperature drops change your risk profile in real-time. If you're planning a trip, you can test different clothing setups to see how much extra insulation actually buys you in terms of safe exposure time. It's a practical way to turn environmental data into actionable safety limits for your extremities and your core temperature.

Core Capabilities

01 — Frostbite Estimation

Your agent uses this to predict injury timing for specific extremities.

02 — Hypothermia Monitoring

Your agent uses this to track core temperature drops based on environmental conditions.

03 — Insulation Comparison

Your agent uses this to model how adding layers changes your safety window.

04 — Exposure Limits

Your agent uses this to provide specific time limits for staying outdoors.

One Click on Vinkius — From Prompt to Execution

Available at vinkius.com/en/ai-agent-connect/cold-injury-risk-calculator — connect your AI agent in three steps.

- 01 Connect the MCP to Claude, Cursor, or Windsurf via Vinkius.
- 02 Provide environmental data like temperature, wind speed, and insulation levels.
- 03 The agent runs the data through heat balance and wind chill models.
- 04 You receive specific risk scores and time-to-injury estimates.

Connect the MCP to your client and start asking about thermal risks.

Built For

This MCP is built for anyone operating in sub-zero environments where thermal regulation is a life-safety issue.

Field Researchers

They hand off environmental data to the agent to set safety protocols for remote work.

Outdoor Professionals

They use the agent to determine how much gear is required for a specific shift.

Safety Officers

They use the agent to generate exposure recommendations for teams in the field.

What Changes When You Connect

- 01

Uses heat balance models instead of simple weather charts.
- 02

Provides specific time-to-injury estimates for extremities.
- 03

Models the impact of clothing insulation on safety windows.
- 04

Calculates risk based on wind chill and physiological factors.

Real-World Applications

Pre-trip Gear Planning

Test different clothing layers to see which setup provides the longest safe exposure time.

Safety Protocol Development

Establish conservative exposure limits for teams working in extreme cold.

Real-time Field Monitoring

Check current hypothermia risk as wind speeds and temperatures change during a task.

Extremity Protection

Determine how quickly frostbite might occur on fingers or ears in specific wind conditions.

Patterns to Avoid

Ignoring Wind Chill Factors

❌ AVOID

You only look at the air temperature and assume you're safe for three hours. You forget that a sudden gust of wind can strip your body heat much faster.

✓ INSTEAD

Always factor in wind speed to get an accurate reading. Use ``calculate_hypothermia_risk`` to see how the combination of temperature and wind affects your core stability.

Overestimating Gear Performance

⚠ AVOID

You assume your standard winter jacket is enough for a sub-zero trek without checking the insulation math. You end up stuck in the cold with insufficient protection.

✓ INSTEAD

Run a simulation before you head out. Use ``compare_clothing_scenarios`` to see exactly how much extra time different layers buy you.

Neglecting Extremity Vulnerability

⚠ AVOID

You focus entirely on your core temperature and ignore the fact that your fingers are freezing. You don't realize your hands are hitting frostbite levels while your core still feels fine.

✓ INSTEAD

Check specific body parts separately. Use ``calculate_frostbite_risk`` to determine the safety window for fingers, ears, or other exposed areas.

The Right Fit

Connect this MCP if you manage teams or individual operations in sub-zero environments where thermal regulation is a life-safety requirement. Do not connect it if you are only tracking general weather trends for casual outdoor activities. The decision rests on whether you need hard physiological limits rather than just a thermometer reading.

4 Essential Tools for Cold Injury Risk Assessment

These tools use physiological heat balance models to calculate frostbite risk, hypothermia levels, and safe exposure windows based on your gear and the environment.

#	TOOL	DESCRIPTION
01	calculate_frostbite_risk	This tool estimates the risk of frostbite for specific body parts like fingers or ears.
02	calculate_hypothermia_risk	This tool calculates hypothermia risk by analyzing environmental factors and physiological data.
03	compare_clothing_scenarios	This tool compares how different levels of clothing insulation change your safety profile.
04	get_exposure_limit_recommendation	This tool provides a conservative recommendation for your maximum safe exposure time.

See It in Action

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

U What is my hypothermia risk if it is -10°C with 5 m/s wind, wearing 1.5 clo, and I've been out for 30 minutes at a normal activity level?



Your hypothermia risk score is 0.45, with an estimated core temperature of 36.2°C. Your recommended maximum exposure is 120 minutes.

U How long until I get frostbite on my fingers at -15°C with 10 m/s wind and 0.5 clo insulation?



Frostbite on your fingers is estimated to occur in 12 minutes, which is an Extreme risk level.

U What happens to my safety limit if I add 1.0 clo of insulation at -5°C and 2 m/s wind?



Adding 1.0 clo of insulation will reduce your risk by 35% and increase your safe exposure time from 45 minutes to 75 minutes.

Frequently Asked Questions

01 How does this MCP calculate risk?

It uses heat balance models and wind chill factors to determine physiological risks like hypothermia and frostbite.

02 Can I check risk for specific body parts?

Yes, you can use the frostbite tool to estimate how long it takes for specific extremities like fingers or ears to reach injury levels.

03 Does clothing insulation matter in these calculations?

Yes, you can use the comparison tool to see exactly how adding insulation changes your safety profile and exposure limits.

04 What clients can I use this with?

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

05 Is this for general weather forecasting?

No, this is specifically for calculating physiological safety risks and exposure limits in cold environments.

06 How accurate are these risk assessments?

The assessments use standard physiological heat balance models and wind chill formulas to provide estimates for safety planning.

07 How does activity level affect the results?

Higher activity levels increase metabolic heat production, which can mitigate some risks, but the tool accounts for this in all calculations.

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>"cold-injury-risk-calculator": { "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

Cold Injury Risk Calculator 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

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Platform	Vinkius Cloud for AI Agents
Endpoint	<code>https://edge.vinkius.com/{token}/mcp</code>

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