Risk™
Thinking.ai

Sand Dunes #1
Sossusvlei, Namib Desert, Namibia, 2018 (detail)

We simulate the climate future so you can react and adapt now.

Introducing the Climate Digital Twin (CDT™), a global climate risk platform built for strategic decision-making.

RiskThinking.ai (RTai) has developed the **Climate Digital Twin (CDT)**, the first global stochastic climate simulator built for financial institutions, government agencies, corporates, and the communities they serve.

The CDT translates climate chaos into decision-ready intelligence. It simulates billions of climate futures–not just one–so you can see what's coming, gauge the risks, and act with foresight.

Our approach moves beyond scenario picking and deterministic pathways. We model extremes, reveal tail risks, and uncover compounding events others overlook.

Invest with clear visibility into climate uncertainty.

The CDT was built to answer one central question: how do we plan for what has never happened before in history?

RTAI enables investors and business leaders to adapt with precision. We do this by creating a dynamic twin of the future—built not on assumptions, but on probabilistic models, rigorous data, and a belief that proactive action can prevent loss and reveal upside in uncertainty.

Climate risk doesn't follow one path. Neither should your strategy. The CDT brings the full future into focus, so you can move before it moves you.

Oil Spill #4
Oil Skimming Boat, Near Ground Zero, Gulf of Mexico, June 24, 2010 (detail)

Serving Global Institutions

TMX · AON · DIAGEO · Scotiabank · TD · OSFI BSIF · SS&C · aws · Bloomberg

+1000 Institutions Worldwide

Enabling Regulatory Stress Testing

In 2024, more than 100 financial institutions were required to use the CDT to meet regulatory stress testing and reporting obligations set by the Canadian regulators OSFI and the AMF.

>100 Financial Institutions

Driving the Science

We're not just using climate science – we're shaping it. From actively authoring CMIP7 scenarios to influencing global standards, our team is helping define the future of climate risk.

CFRF Climate Financial Risk Forum · CMIP Coupled Model Intercomparison Project · GARP Global Association of Risk Professionals

Achieving Global Recognition

We are proud to have the CDT recognized ahead of global giants as the world leading climate risk platform.

Environmental Finance COMPANY Awards 2023 · Hong Kong Monetary Authority 香港金融管理局 · Chartis ClimateRisk50 2024 Category Winner – Climate Risk Modelling – Business Strategy Analytics

Railcuts #1
C.N. Track, Skihist Provincial Park, British Columbia, 1985 (detail)

RT ai

Building a mirror of the climate future

The CDT realistically simulates complex future risks—including those hiding in the tails. Built on a foundation of thousands of global climate models, our platform applies geospatial downscaling, scenario layering, and projection weighting to deliver the data needed to stress test any asset across all sectors and geographies. Users are enabled to:

- Stress test physical and financial exposure
- Design cost effective adaptation and hedging strategies
- Protect long-term asset value

Most systems choose a path and show you a forecast. We simulate multiple realities to reflect the full scope of uncertainty.

One platform. Global coverage. Precision impact.

RT ai

Tail Risk Visibility

Uncovering low-probability, high-impact climate events—before they become reality.

Compounding Risk Analysis

Modeling multi-hazard interactions and how climate risks accumulate across time and space.

Scenario Distribution Modeling

Supporting decision-making with a probabilistic view of climate futures, not single outcomes.

Asset-Level Precision

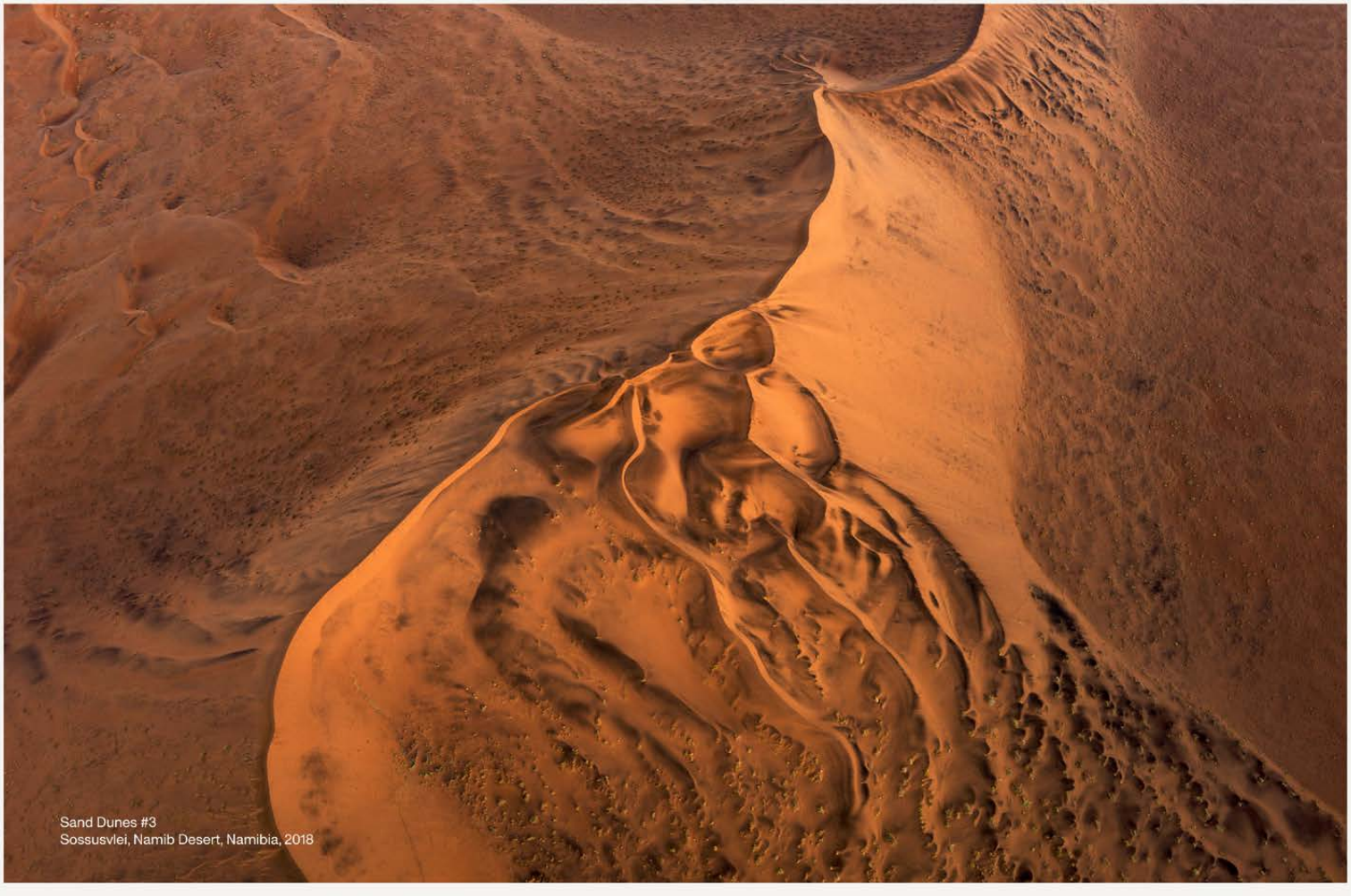
Zooming from global simulation down to specific value chains, assets, and properties.

Physical Asset Ready

Pre-configured with rich data on corporates, sovereigns, and physical assets-ready for analysis, ranking, and benchmarking.

Multi-Stakeholder Use

Trusted across functions—delivering consistent, enterprise-wide analysis for banks, asset managers, insurers, corporates, and public institutions.



Sand Dunes #3
Sossusvlei, Namib Desert, Namibia, 2018

Where deep climate data meets 6 million physical assets.

The CDT combines an extensive library of geospatial data with a powerful stochastic analytics engine.

Desert Spirals #4
Verneukpan, Northern Cape, South Africa, 2018 (detail)

Physical Asset Data

Access the world's most comprehensive physical asset database—covering 60+ asset types with materiality scores and rich metadata.

- 12K+ parent companies; 80K+ subsidiaries
- 6M+ physical assets
- Comprehensive Reference and Metadata

Climate Hazard Data

Explore globally consistent, high-resolution climate risk projections from 2025 to 2100 – delivered as probability-weighted distributions that capture the full spectrum of future climate risks.

- 50+ hazards
- All return periods, from frequent to rare extremes
- All IPCC-endorsed scenarios

Risk Analytics

Leverage our patented scenario generation algorithm to power risk identification, cash flow modeling, and cost-benefit analysis. Built at the physical asset level, the methodology enables both high-level aggregation and granular drill-downs—helping you pinpoint risk drivers and shape effective hedging strategies.

- Financial impact and hazard attribution
- Expected loss and tail risk analytics
- Enables cash flow and cost-benefit modelling

Ensembles of high-resolution hazard projections available for any location on Earth.

RT ai

Resolution varies by hazard, with examples including 30m for floods, 90m for wildfire, and 10km for extreme heat.

Cyclone Index	90th percentile of daily maximum temperature	Liquid Precipitation Accumulation	Seal Level Rise
Dry Days	90th percentile of minimum daily temperature	Maximum 1-Day Total Precipitation	Maximum Diurnal Temperature Range
Maximum Consecutive Dry Days	Apparent Temperature	Maximum 5-Day Total Precipitation	Mean Daily Mean Temperature
Potential Evapotranspiration	Cooling Degree Days	Solid Precipitation Accumulation	Daily Temperature Range Variability
Standardized Precipitation Evapotranspiration Index	Heat Wave Frequency	Total Daily Precipitation	Extreme Temperature Range
Water Budget	Heat Wave Index	Maximum Daily Maximum Wind Speed	Mean Diurnal Temperature Range
Cold Spell Days	Heat Wave Maximum Length	Maximum Daily Mean Wind Speed	Build Up Index
Cold Spell Frequency	Heat Wave Total Length	Coastal Flood	Drought Code
Consecutive Frost Days	Heat Spell Frequency	Riverine Flood	Duff Moisture Code
Frost Days	Hot Spell Maximum Length	Daily Freeze-Thaw Cycles	Fine Fuel Moisture Code
Heating Degree Days	Humidex	Maximum Consecutive Wet Days	Fire Weather Index
Ice Days	Maximum Daily Maximum Temperature	Simple Precipitation Intensity Index	Landslide
Minimum Daily Minimum Temperature	Wet Bulb Globe Temperature	Wet Days	Soil Subsistence

Flamingos #1, Lake Bogoria, Kenya, 2017 (detail)

Clarity on future risk, delivered how you need it.

Built for enterprise use, the CDT is accessed via secure, intuitive tools that transform complex data into cost-effective climate risk solutions.

VELO® App

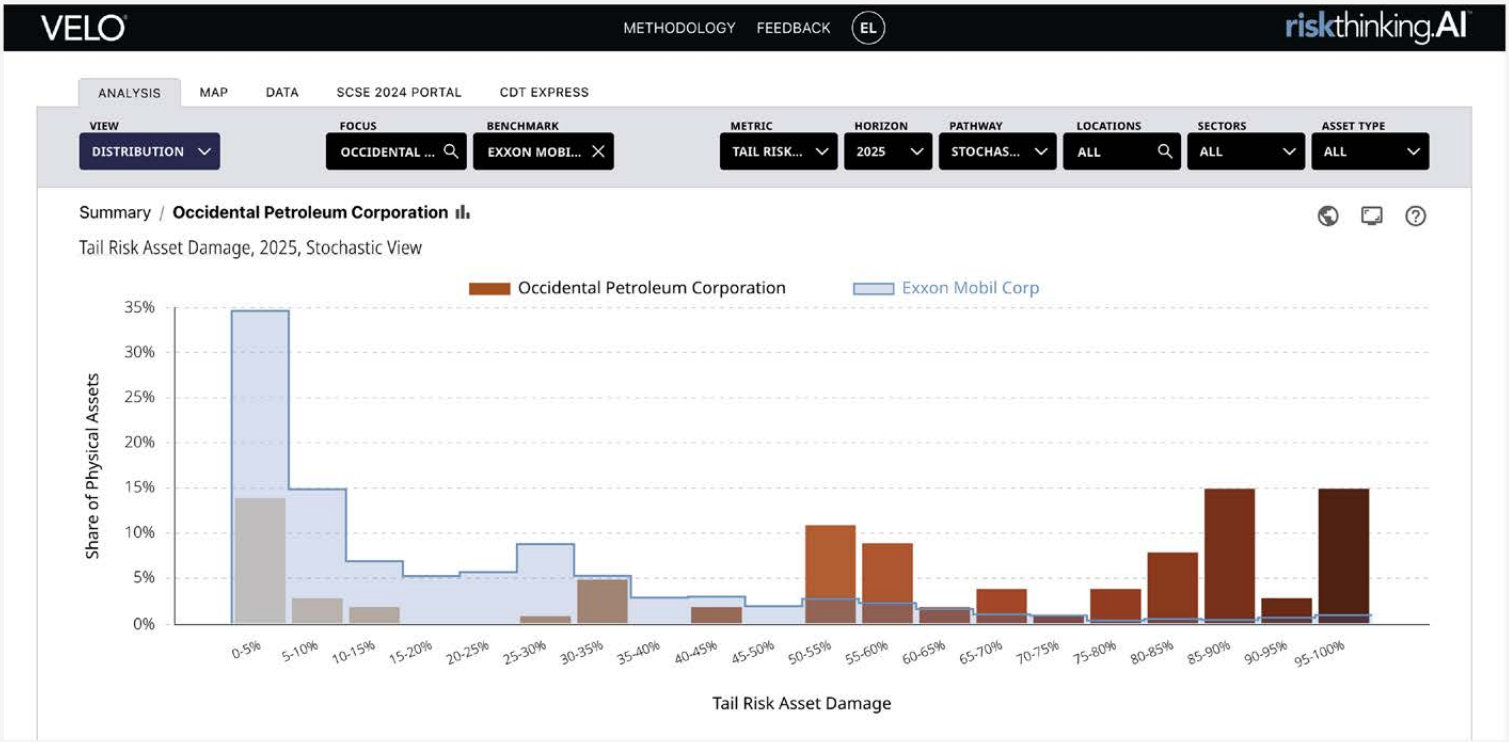
Use a web-based interface to connect with the CDT – browse, map, analyze, upload, and download climate risk data. The VELO App supports users from early exploration to advanced, enterprise-level use cases.

VELO® Data

Access scheduled, machine-readable data files from the CDT. Specify needs – like asset locations, investment universes, climate pathways, and time frames – to receive tailored datasets with physical asset data, climate projections, and risk metrics.

CDTexpress

Access the CDT via on-demand API and ready-to-use Jupyter Notebooks for fast exploration and analysis. Ideal for discovery, advanced modelling, and prototyping before moving to scheduled delivery with VELO Data.



Built for ease, security, and speed

Instant Deployment

Talk to us in the morning. Be up and running by the afternoon. The CDT delivers data and analytics through multiple easy-access options – designed for fast, flexible adoption.

Enterprise-Grade Privacy

Upload sensitive data like loan portfolios with full confidence. Your information stays fully secure, visible only to you, always.

High Scalability

Built for institution-wide scalability, bringing consistent, high-performance across business units, regions, and asset classes.

Precision-Ready

Access the specific data you need – from a single property to global scale data.

Use Cases

Public Markets

- Identify and benchmark portfolio climate risks against market and peers
- Embed climate risk into research and valuation models
- Uncover hidden vulnerabilities that defy market expectations

In practice
A global asset manager uses the CDT to rate climate risk across 25,000 equities, delivering insights to portfolio managers firm-wide.

Private Markets

- Create value by optimizing adaptation and insurance investments across global real asset portfolios
- Integrate climate risk into fund strategy, due diligence, and cash flow forecasting
- Understand the value and liquidity of collateral underlying private credit

In practice
A REIT uses the CDT to automate climate risk reporting on prospective global properties during deal due diligence.

Banking

- Uncover climate-related concentration risks and the exposure of collateral
- Embed climate analytics into credit models, stress testing, and enterprise risk management
- Identify physical risk across retail, commercial, and SME loan portfolios

In practice
A risk manager uses the CDT to assess climate risk in a 2M-property mortgage portfolio across five countries – informing loss estimates and capital planning.

Insurance

- Enhance underwriting with forward-looking climate analytics that quantify the full range of asset-level impacts
- Design innovative insurance products, such as parametric and resilience-linked policies
- Conduct climate stress tests to evaluate impacts on capital planning and risk management

In practice
A P&C insurer uses the CDT to underwrite 20-year contracts with stable pricing and improved risk alignment.

Corporate Strategy

- Layer climate analytics into operational decision-making to position assets for long-term performance
- Identify markets poised for climate-driven growth and innovation
- Simplify climate disclosures (e.g., IFRS S2, CSRD)

In practice
An operations manager uses the CDT to quantify the ROI of a $500M adaptation initiative across the company's manufacturing facilities.

Supply Chain

- Identify climate risks across raw materials, production inputs, and transport networks
- Embed climate risk into supply chain optimization models
- Quantify supply shortfalls to inform procurement and hedging strategies

In practice
A Director of Agricultural Sourcing uses the CDT to identify climate-related yield shortfalls, guiding hedging strategies that enhance supply resilience and cost predictability.

Public Policy

- Pinpoint infrastructure upgrades that maximize climate resilience and public benefit
- Conduct extreme weather stress tests to reveal vulnerabilities in critical infrastructure and services
- Design data-driven policies to enable climate-resilient, insurable, and affordable housing

In practice
A policy analyst uses the CDT to assess extreme weather impacts on low-income populations and design targeted programs that promote health equity.

Climate Science

- Collaborate with financial, corporate, and policy teams using traceable, scientifically rigorous data
- Leverage advanced modeling built on 50+ derived, normalized, and weighted climate indexes
- Keep models current with annually updated, globally consistent climate baselines

In practice
A scientist at a national research institute uses the CDT to validate climate models and inform improvements to regional forecasting accuracy.

Open Data. Expert Support. True Partnership.

Traceable by Design

Drill into raw index data and the building blocks of impact estimates

Detailed Technical Docs

Full transparency: from data sources to model methodologies and validation

Expert Support, Always Available

Expert support in climate science and financial risk to ensure confident integration

Collaborative Knowledge Hub

Access shared tools and code to accelerate your own climate analytics.