

WTH01: Enterprise Weather Data Study

Technical Analysis Report | February 01, 2026

1. Data Overview

Subject: IBM Weather (IBM)
Analysis Period: 2016-02-03 to 2026-01-30 (~10.0 years)
Total Observations: 1,495 rows
Stock Data: 0 daily OHLCV observations
Data Sources: Yahoo Finance API (yfinance), synthetic operational metrics

2. Methodology

2.1 Risk Analytics (CFA Standards)

- **Sharpe Ratio:** $(\text{Return} - R_f) / \text{Volatility}$ ($R_f = 0$)
- **Sortino Ratio:** $\text{Return} / \text{Downside Deviation}$
- **Value at Risk (VaR):** Historical 95% and 99% confidence
- **Maximum Drawdown:** Peak-to-trough decline

2.2 Technical Indicators

- **Moving Averages:** SMA/EMA (20, 50, 200 day)
- **Volatility:** Rolling standard deviation (20, 60, 252 day)
- **Momentum:** RSI-14, Price momentum (20-252 day)

3. Risk Metrics Summary

Ticker	Total Return	Ann. Return	Volatility	Sharpe	Max DD
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4. Detailed Risk Profile

Return Distribution		Value at Risk	
Metric	Value	Confidence	Daily VaR
Positive Days	0.0%	95%	0.00%
Best Day	0.00%	99%	0.00%
Worst Day	0.00%		
Sortino Ratio	0.00		

5. Data Quality Assessment

Completeness: All trading days covered
Adjustments: Prices adjusted for splits/dividends
Validation: Stock data from Yahoo Finance
Processing: Pandas/NumPy calculations
Disclaimer: Operational metrics are synthetic/illustrative

6. Key Observations

- Sector volatility characteristics relative to market indices
- Risk-adjusted return profile (Sharpe, Sortino)
- Drawdown behavior during market stress periods
- Volume and liquidity patterns

