

Performance Comparison: Vortex-Codec vs Baselines

Trade-off Analysis:
39% better compression
900-5600× slower speed

Ideal for:

- Archival storage
- One-time compression
- GPU-available environments
- Space > Time priority

Evaluation Metrics on ATLAS Data

Bits Per Byte (Lower is Better)

Gzip
5.02 BPD

Zstd
4.98 BPD

Vortex
3.04 BPD
★ 39% better ★

Compression Factor (Higher is Better)

Gzip
1.59×

Zstd
1.61×

Vortex
2.63×

★ 64% better ★

Throughput MB/s (Higher is Better)

Gzip
61.2 MB/s

Zstd
364.5 MB/s

Vortex
0.065 MB/s
(Trade-off)