

NLDAS Chunk Performance Benchmark Results - RAINF Only

Complete Results Table (using 7 days out of 31)-with 4 worker

Configuration	Time Series	Climatology	Multi-Point	Overall Avg	Success Rate
(18, 1000, 1800)	1.16s	14.67s	0.29s	5.37s	100%
(12, 500, 900)	0.61s	17.31s	0.27s	6.06s	100%
(6, 500, 900)	0.55s	17.24s	0.28s	6.02s	100%
(24, 500, 900)	1.37s	86.03s	3.75s	30.38s	100%
(6, 1000, 1800)	2.83s	97.99s	8.69s	36.50s	100%
(24, 1000, 1800)	4.56s	122.51s	10.11s	45.73s	100%
(6, 2000, 3600)	10.30s	106.31s	32.11s	49.57s	100%
(1, 2500, 4500)	22.51s	129.02s	46.67s	66.07s	100%
(24, 100, 180)	1.34s	145.41s	1.29s	49.35s	100%
(1, 5000, 9000)	50.17s	150.50s	79.32s	93.33s	100%
(1, 250, 450)	2.41s	1300.05s [1]	6.10s	436.19s [1]	67% [2]
(12, 1000, 1800)	0.57s	3343.62s [1]	0.26s	1114.82s [1]	67% [2]
(24, 50, 90)	1201.49s [3]	1304.91s [3]	1300.00s [3]	1268.80s [3]	0% [3]
(1, 500, 900)	1300.00s [3]	1300.01s [3]	1300.00s [3]	1300.00s [3]	0% [3]
(6, 200, 360)	1300.00s [3]	1300.12s [3]	1300.00s [3]	1300.04s [3]	0% [3]
(6, 100, 180)	1300.00s [3]	FAILED	FAILED	FAILED	0% [3]

Footnotes:

- [1] Partial failure - Some operations timed out after 300s (memory/I/O errors)
- [2] Success rate < 100% due to memory/timeout errors
- [3] Complete failure - All operations timed out or failed (memory/I/O errors)

Complete Results Table (31 days)

Performance Summary using 4 workers (Average Time):

Configuration	Time Series	Climatology	Multi-Point	Overall Avg	Success Rate
(6, 500, 900)	3.14s	57.94s	0.83s	20.6s	100%
(12, 1000, 1800)	2.39s	380.04s	1.02s	127.8s	100%
(18, 1000, 1800)	4.54s	54.81s	2.32s	20.6s	100%
(12, 500, 900)	2.87s	739.62s	1.05s	247.9s	100%
(6, 1000, 1800)	15.78s	7099.34s*	34.64s	-	78%**

**Partial failure (33% success rate)*

***Failed climatology operation due to memory issues*

Performance Summary using 8 workers (Average Time):

Configuration	Time Series	Climatology	Multi-Point	Overall Avg	Success Rate
(12, 1000, 1800)	2.12s	30.17s	0.77s	11.0s	100%
(18, 1000, 1800)	6.30s	30.87s	0.72s	12.6s	100%
(6, 500, 900)	2.25s	36.31s	0.83s	13.1s	100%
(12, 500, 900)	2.08s	42.26s	0.84s	15.1s	100%
(6, 1000, 1800)	7.37s	195.71s	22.25s	75.1s	100%

Data Availability:

The data used in this analysis is publicly accessible on AWS S3 at:

s3://nasa-waterinsight/NLDAS3/forcing/rechunked_test/