Resources Review Meeting: ATLAS 2022Q4

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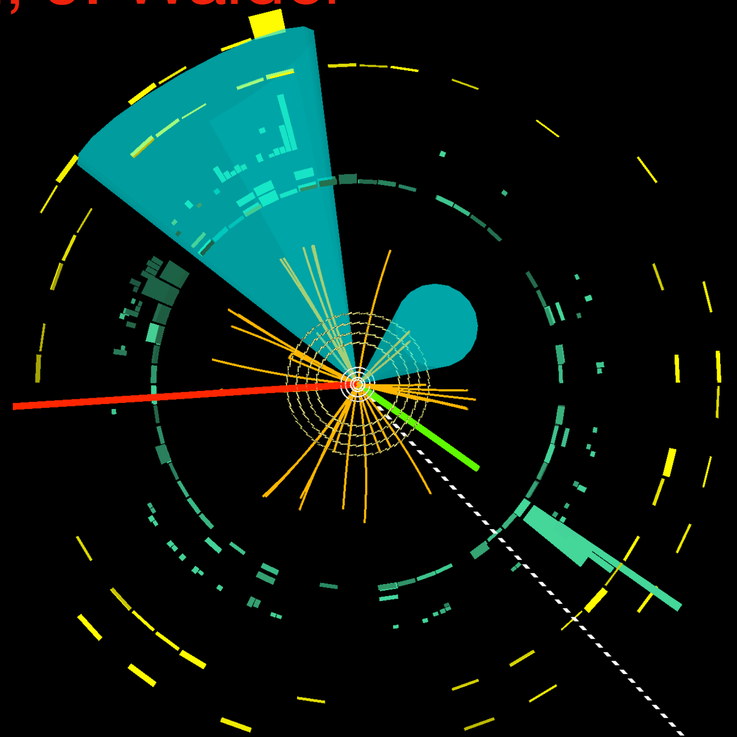
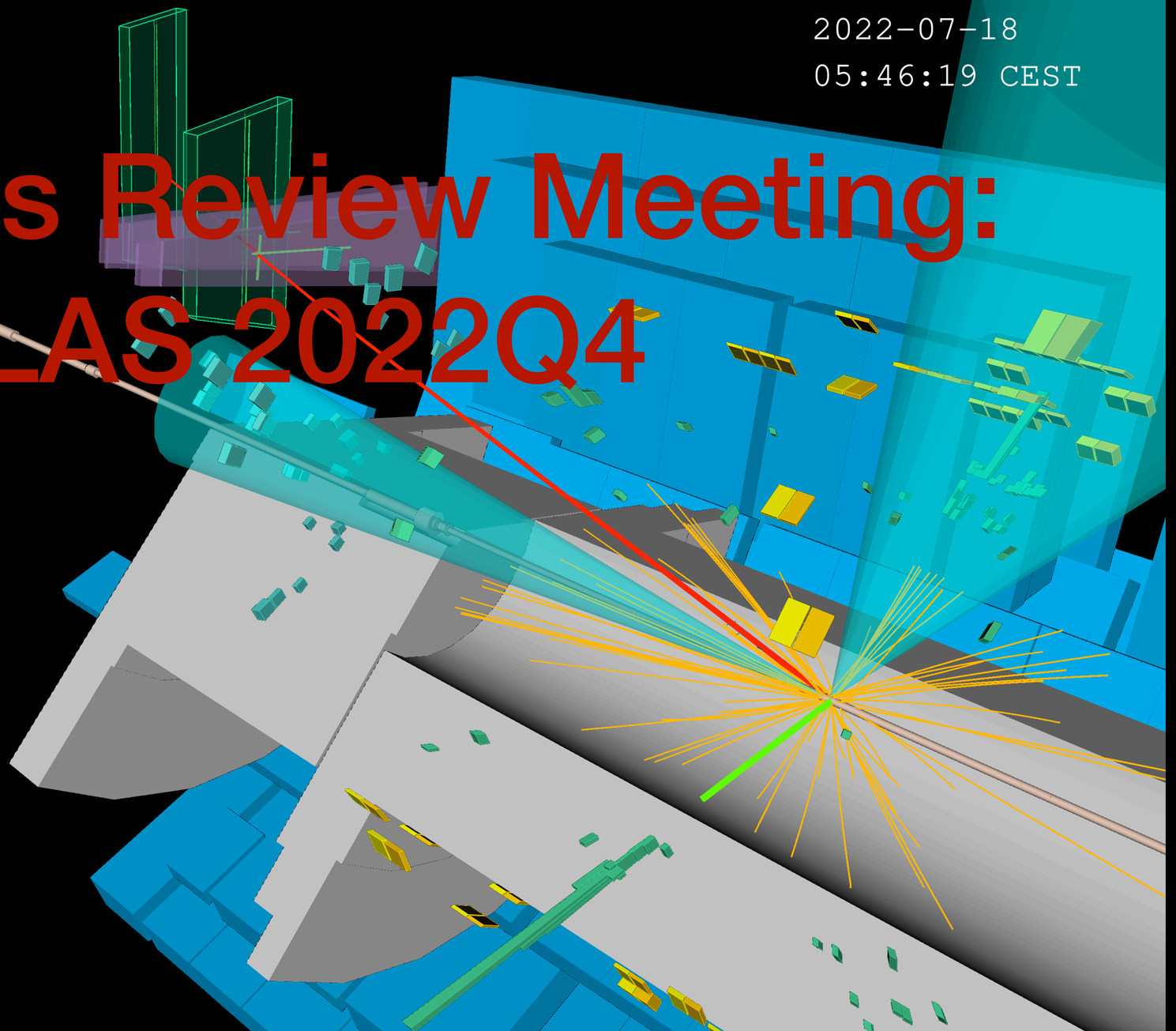




Notable events

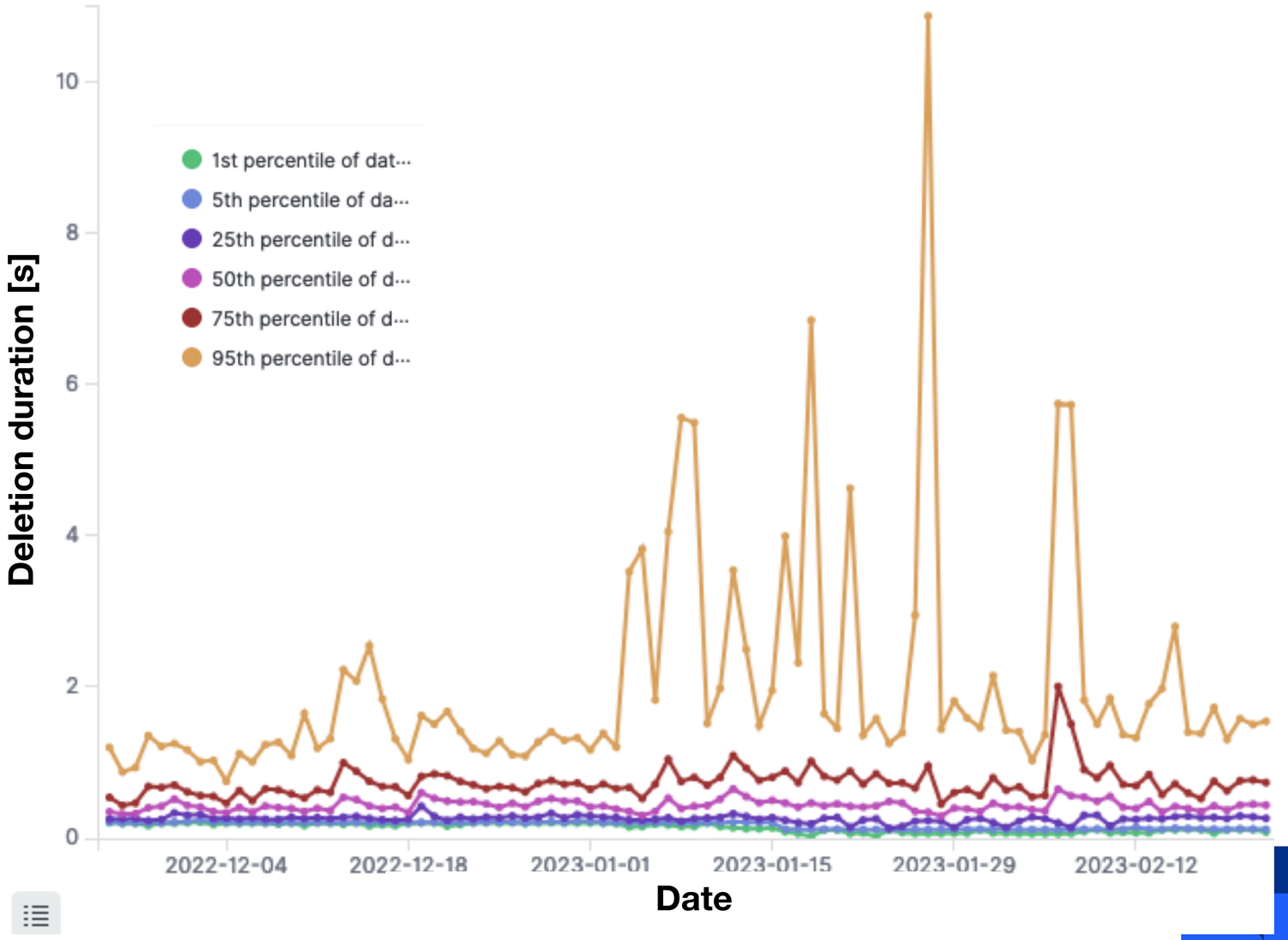
- ATLAS UK averaged 669 kHS06; including a few peaks above 1M HS06.
- Previous RR report for 22Q3

- Outages due to failure of core routers
- T0 export issues to Antares
- ‘Zombie’ containers identified (containers not terminating correctly)

- Updated the XrootD configuration on external Gateways (continuing process)
  - Several reasons / benefits but also to improve deletion rates:
  - Deletion durations since Dec.

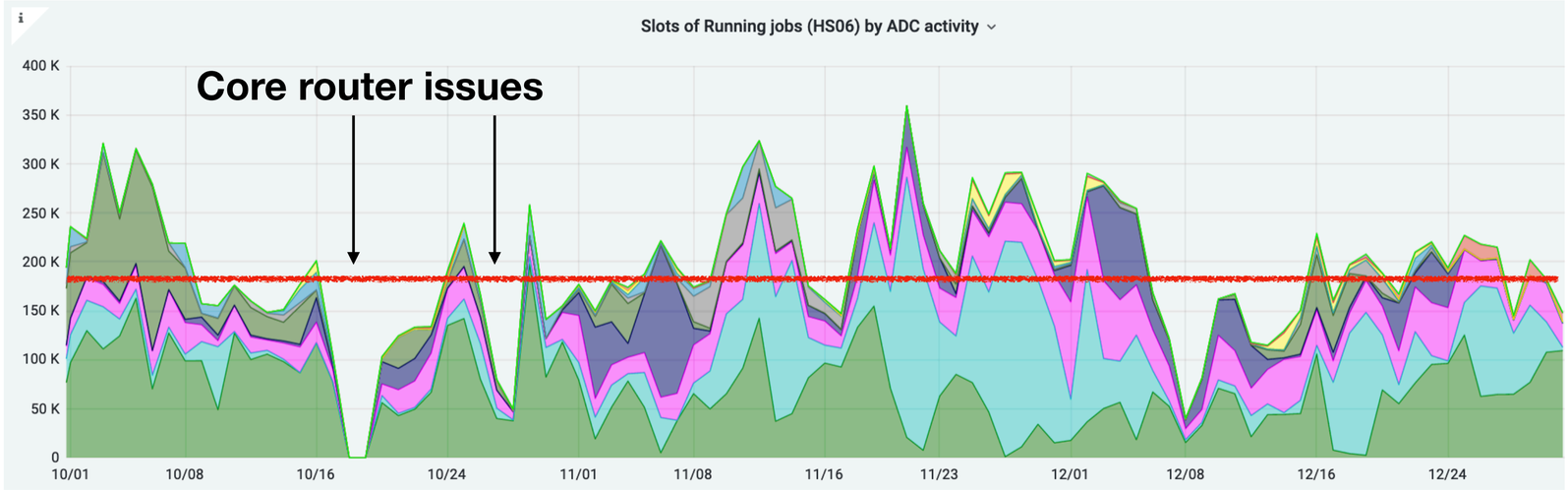
Percentiles of deletion duration [s]

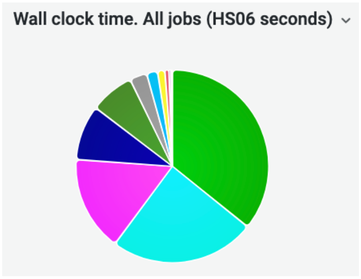
1st	5th	25th	50th	75th	95th	99th
0.11	0.13	0.27	0.43	0.71	1.6	6.0

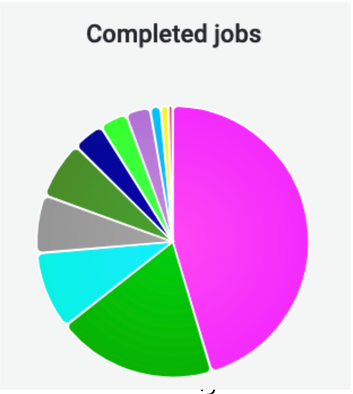


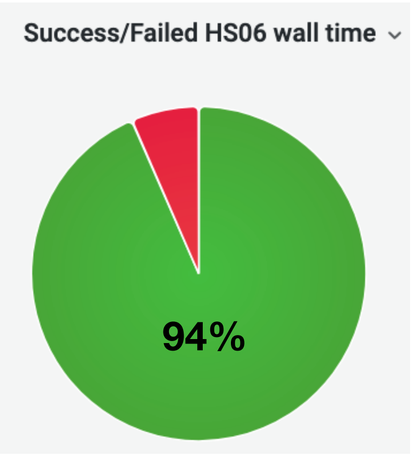
Compute

- Average 192k HS06 over period
  - (Pledge is 193k)
  - For the period 22Q2– current ~ 187kHS06 average.
- Downtimes as result of core router / network issues
- Good success rates:
  - 94% in walltime; 91% in running jobs
- User analysis form 46% of jobs, accounting for 16% of wall time.





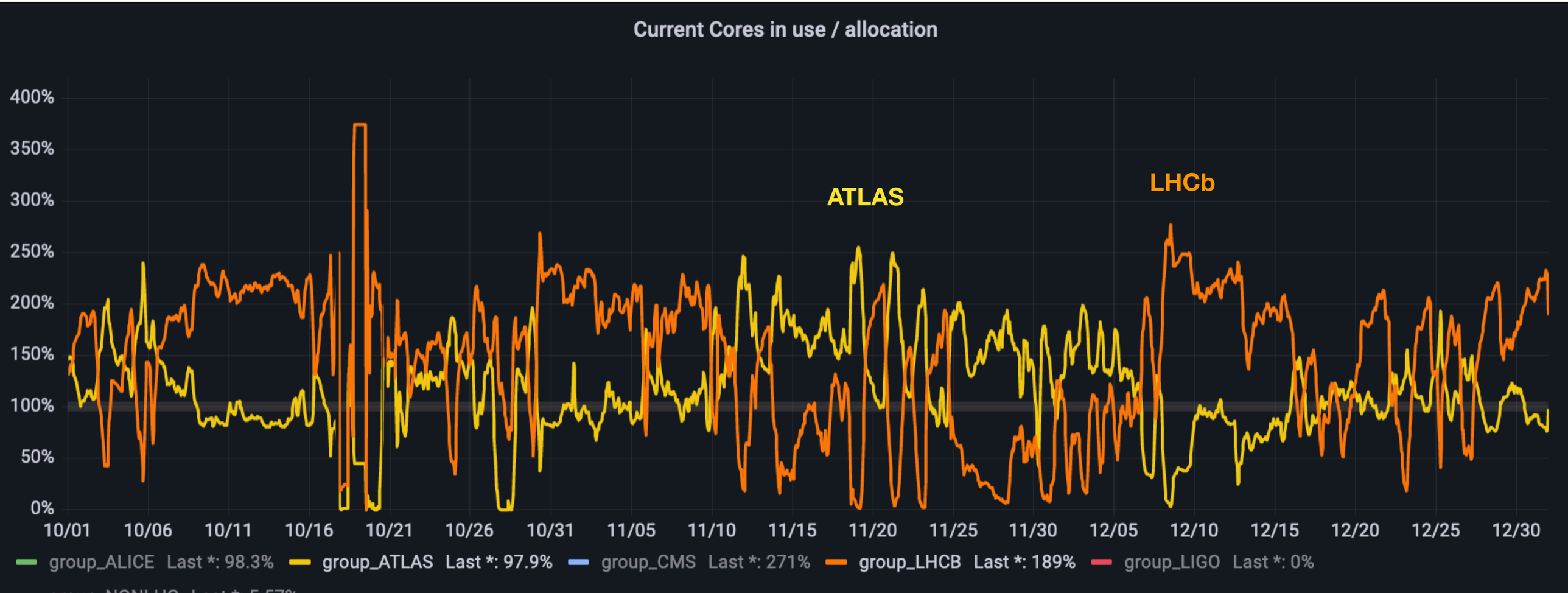




	max	avg	current
Group Production	198 K	69.0 K	109 K
MC Simulation Full	266 K	46.7 K	3.18 K
User Analysis	99.3 K	31.5 K	24.4 K
MC Reconstruction	156 K	17.6 K	345
MC Event Generation	167 K	14.3 K	0
Group Analysis	47.7 K	5.52 K	338
MC Simulation Fast	31.4 K	3.52 K	0
Data Processing	20.8 K	2.18 K	977
MC Resimulation	16.2 K	1.16 K	9.04 K
MC Merge	3.42 K	549	153
Testing	212	93.1	166

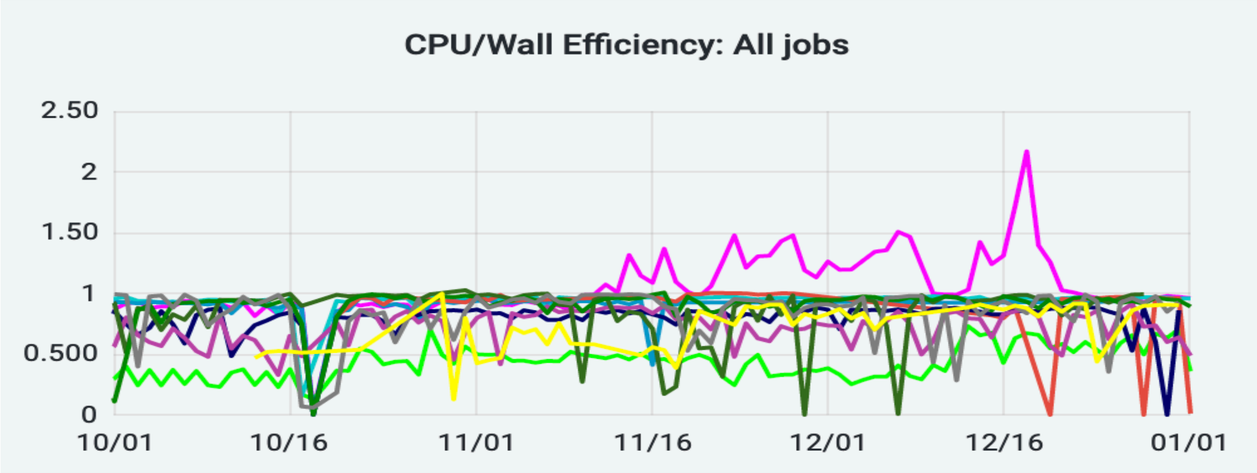
ATLAS job allocations

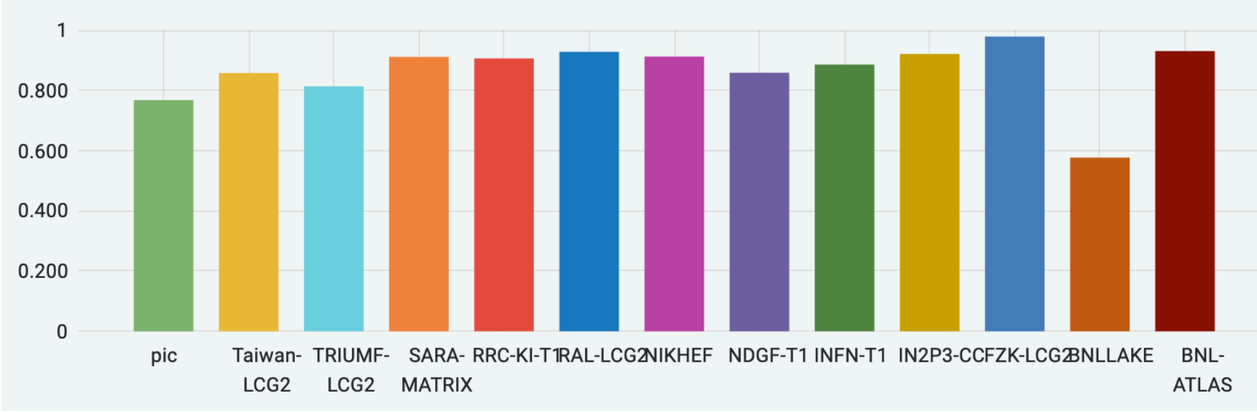
- ATLAS continues to have difficulties in staying at pledge with volatile changes of single- / multi-core jobs
  - Can be seen also as a strong anti-correlation against LHCb in contention for single-core job slots

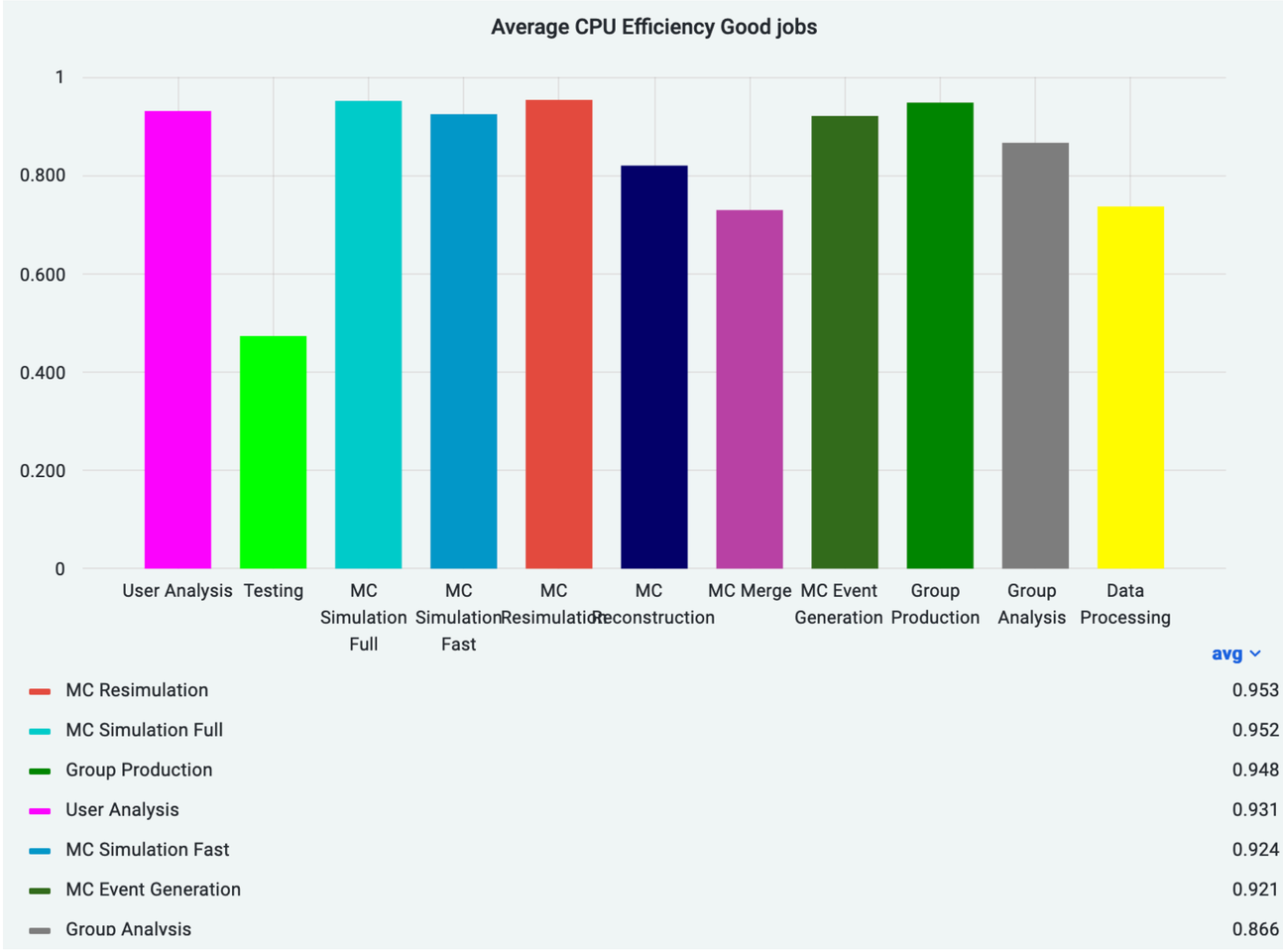


CPU efficiency

- Efficiencies per job type reasonable;
  - Exception of user analysis jobs with some periods of some user jobs using significant resources, over those they submit with



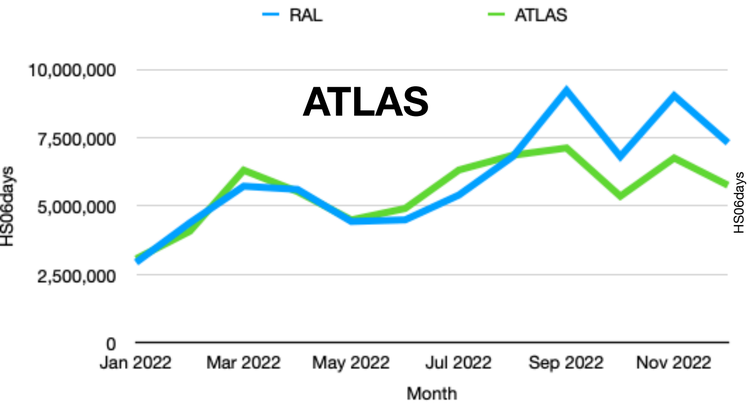


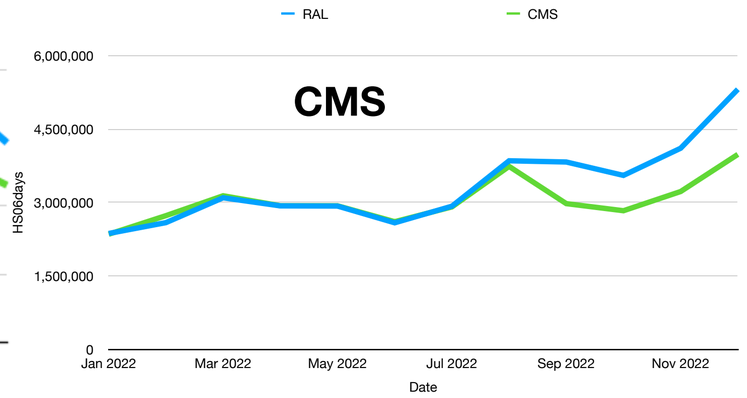


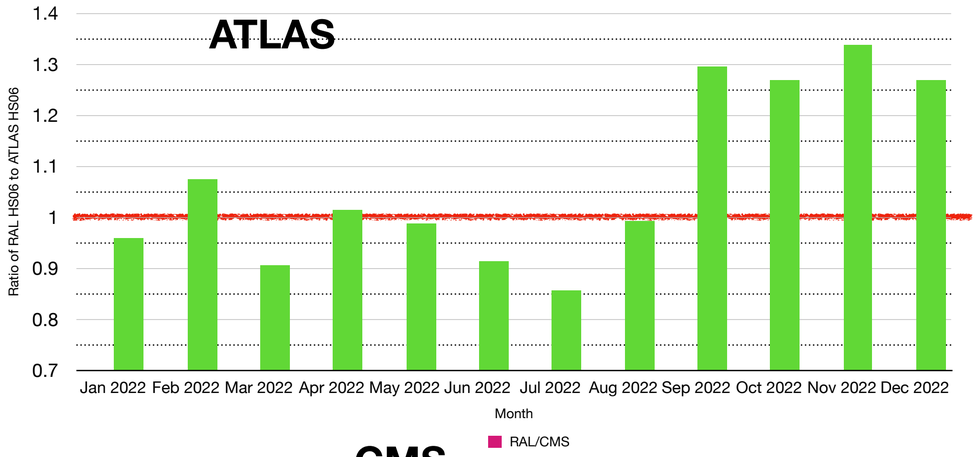
- RAL-LCG2 performing well compared to the other T1s

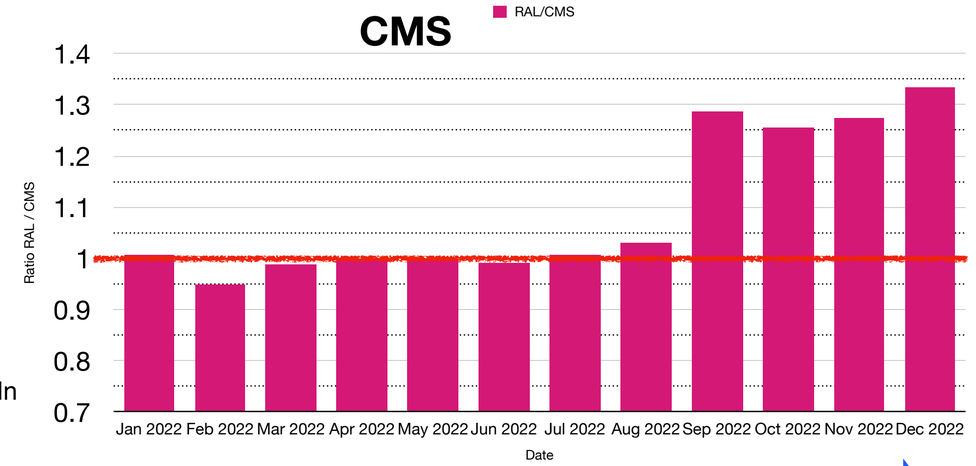
WLCG / VO Accounting

- Data from 2022 - reasonable agreement until ~ September.
- Left: HS06days by month, either from VO monitoring, or WLCG accounting: Right; ratio of RAL to VO values









- Possible due to differences between condor and arc-ce numbers ?

condor_history -l 2160831.0 -af RemoteSysCpu RemoteUserCpu RemoteWallClockTime CpusProvisioned
CpusProvisioned = 1
RemoteSysCpu = 95.0
RemoteUserCpu = 4740.0
RemoteWallClockTime = 4867.0

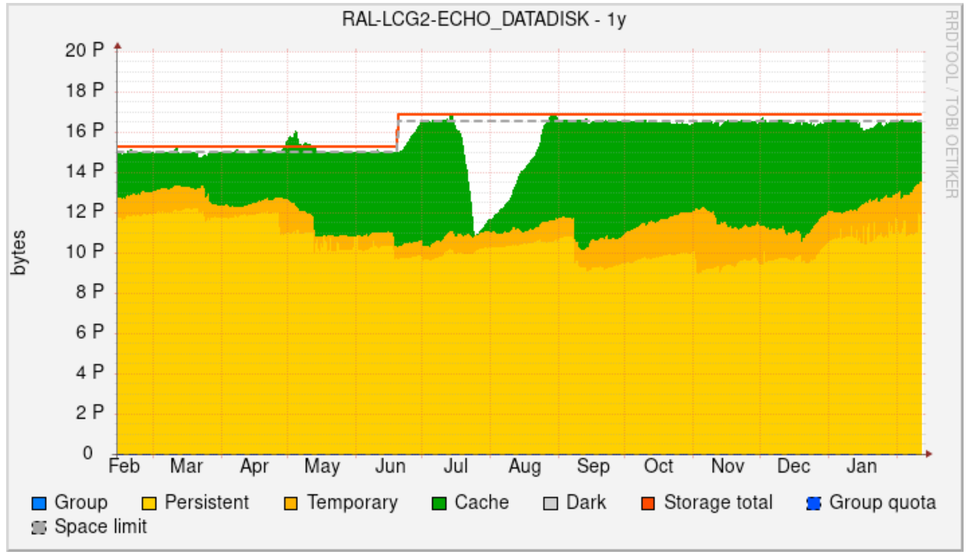
[root@arc-ce01 ~]# arcctl accounting job info O1mNDme2kl2nCIXDjqiBL5XqABFKDmABFKDmwpaZDmABFKDm9PHONn

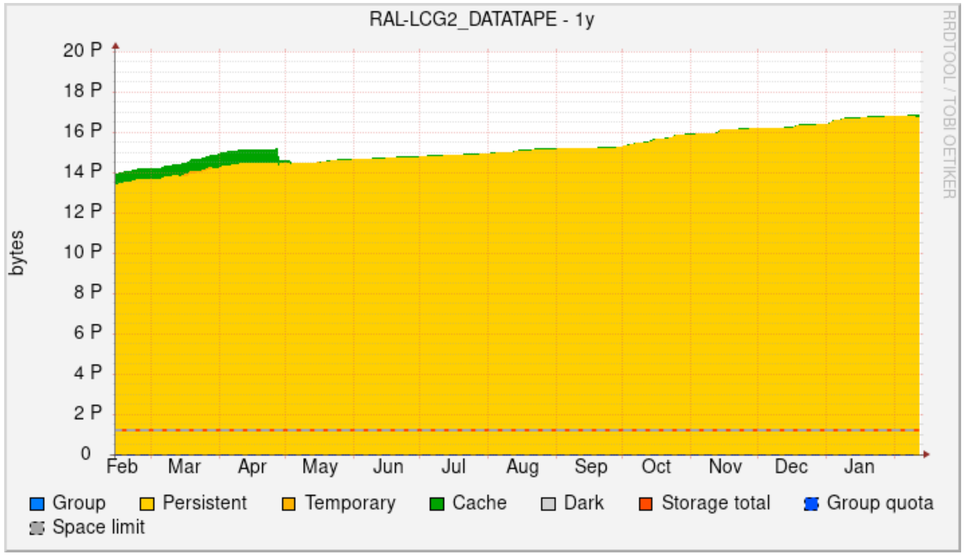
- Job O1mNDme2kl2nCIXDjqiBL5XqABFKDmABFKDmwpaZDmABFKDm9PHONn accounting info:
  Used WallTime: 5719
  Used CPUTime: 5681 (including 111 of kernel time)

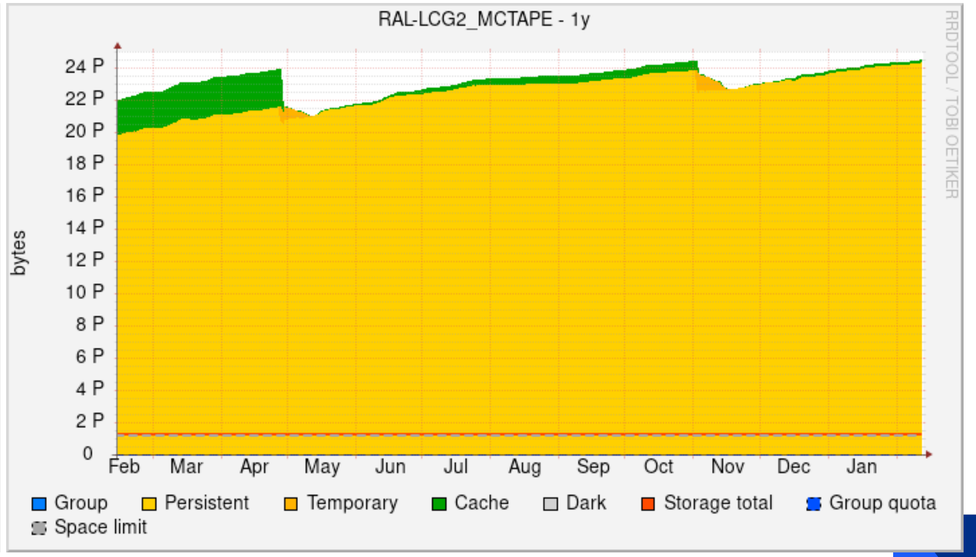
- WLCG (ATLAS)
- ATLAS Monit

Storage

- Disk: Continuing to utilise deployed pledged value (17.2 PB)
  - Increases to 20.8PB in April.
- Tape: ~ constant increase in datatape usage (now 16.9PB);
  - MC: Deletion campaign in Oct to recover space (now 24.5PB)
- T1s asked and agreed to deploy (some of) 2023 (53.1PB) pledge early to manage expected (small) excess on 2022 pledged values (40.3PB)
  - ~41.4PB currently written.





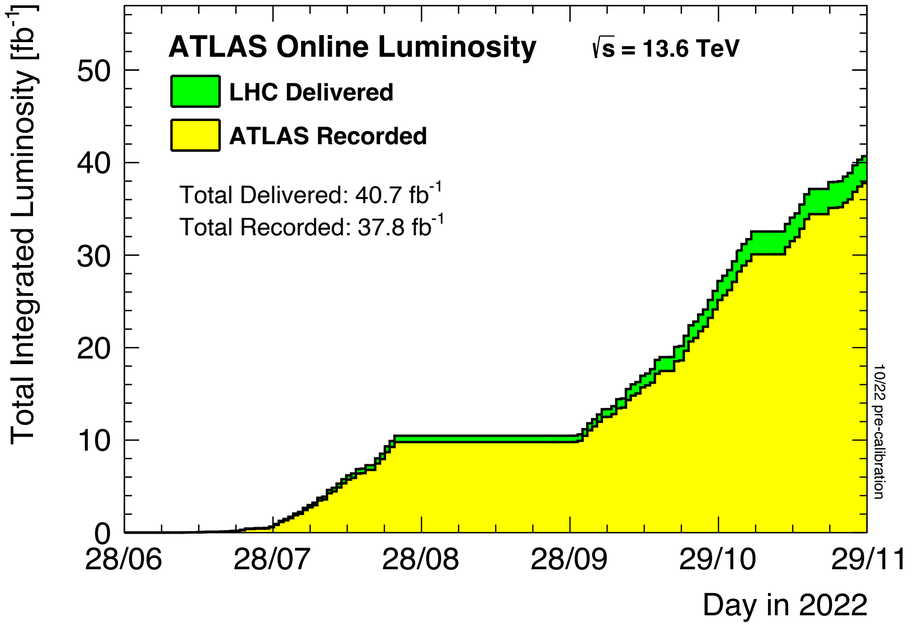


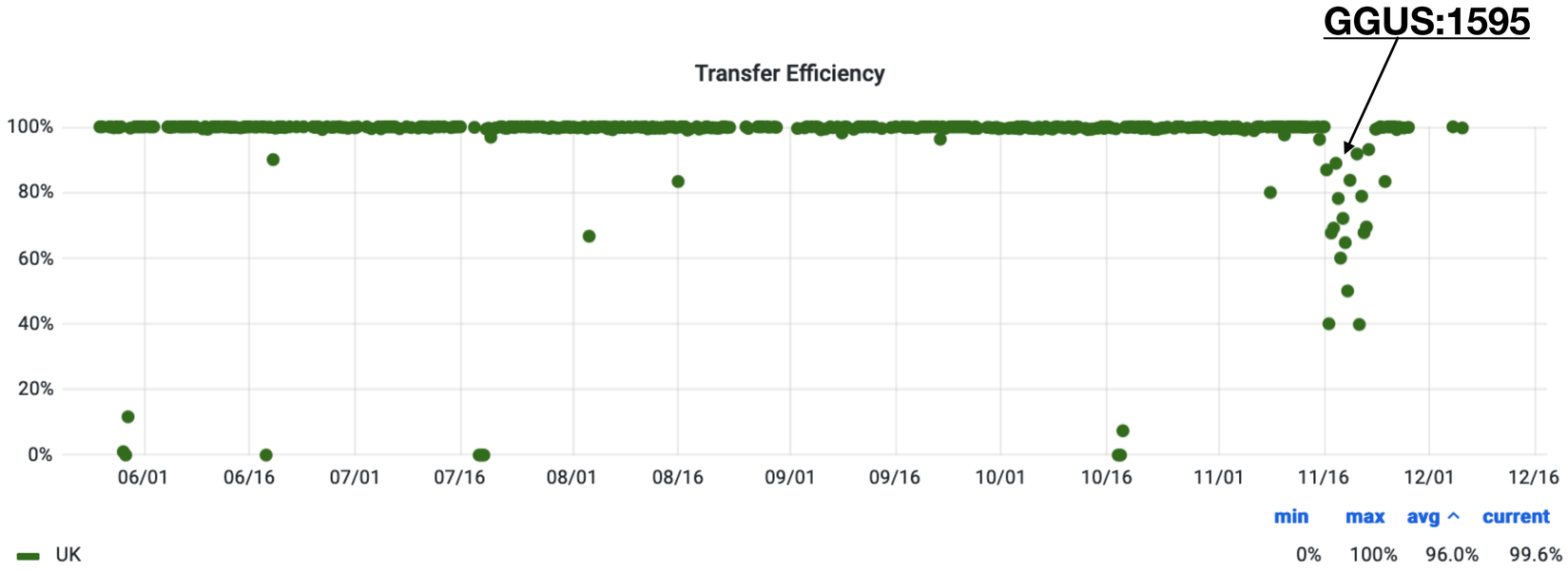
Pledge

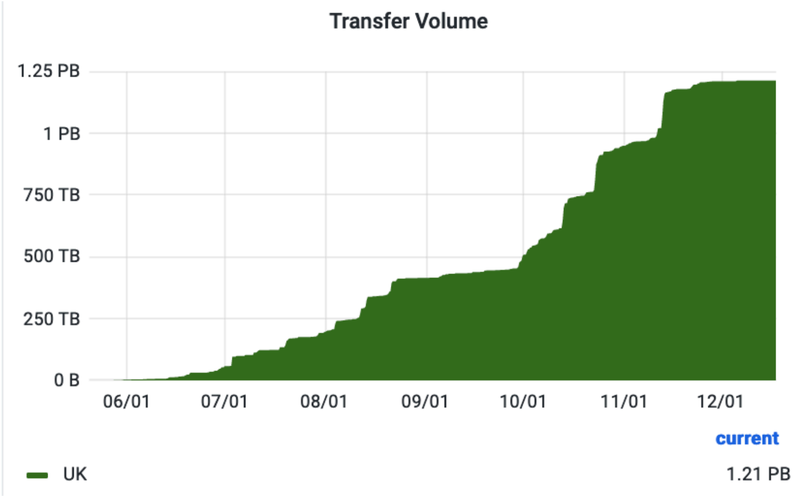
Year	22	23
Disk[PB]	17.2	20.8
Tape[PB]	40.3	53.1

T0 export

- 2022 data taking: ~ 40fb^{-1} pp data collected.
- ~ 1.2PB of RAW data exported to RAL (including calibration, etc.)
- Generally good efficiency; period of problems with data transfers to the EOS storage nodes is stalling.
  - Situation resolved, but without a conclusive explanation.
  - Did overlap with upgrades to Cern ATLAS FTS (potentially related?)







- Peak throughput ~ 1.2GB/s (likely limited by volume of data to transfer).