

DMP Implementation Status of IPP

2025-04-30

IMAS versions updated on the TOK and Citrix systems

- No change

DD	AL	TOK cluster	Citrix system
3.38.1	4.11.4		2023-06-08
3.39.0	4.11.5	2023-07-26	2023-07-31
3.39.0	5.0.0	2023-10-10	
3.41.0	4.11.10	2024-04-17	
3.41.0	2024.07-foss-2023b		2024-08-11
3.42.0	2024.08-foss-2023b		2024-08-13
3.42.0	2024.08.1-foss-2023b	2024-08-23	2024-08-22
3.42.0	2024.08.1-intel-2023b	2024-08-23	2024-08-22
3.42.0	4.11.10		2024-10-09
3.42.0	2024.09-foss-2023b	2024-10-21	2024-10-21
3.42.0	2024.09-intel-2023b	2024-10-21	2024-10-21
4.0.0	2024.12-foss-2023b	2025-01-22	2025-01-22
4.0.0	2024.12-intel-2023b	2025-01-22	2025-01-22

Ongoing saga with simdb

- The dashboard was updated by PSNC (recommended by Olivier Hoenen) – many thanks!
- <https://jira.eufus.psnc.pl/browse/ACH04SUPP-223> : **simdb1 seems to have crashed yet again**
 - Reports crashes with error codes
 - An HTTP 504 Gateway Timeout error means a web server (acting as a gateway or proxy) hasn't received a response from an upstream server within a reasonable amount of time. Essentially, the website you're trying to visit is taking too long to load because one or more servers involved in delivering the page are not responding quickly enough
 - An HTTP 502 Bad Gateway error means a server, acting as a gateway or proxy, received an invalid response from another server. This indicates a problem with the server's communication with an upstream server, often due to temporary overload, network issues, or misconfigurations. It doesn't necessarily mean there's a problem with your device or internet connection.
 - Just had (after 13 hours and 41 minutes) in response to the command “time simdb sim push a9859812-210e-11f0-8231-0894ef442712”
 - ...
 - Uploading file
/gss_efgw_work/scratch/g2dpc/GIT/ets_paf_al5/run_ETS_MAIN_ENCAPSULATED_WITH_ETS_INIT_20250423_134143/instances/print_coreprof_final/workdir/0000000172/core_profiles.h5 Complete
 - Uploading file
/gss_efgw_work/scratch/g2dpc/GIT/ets_paf_al5/run_ETS_MAIN_ENCAPSULATED_WITH_ETS_INIT_20250423_134143/instances/print_coreprof_ets_out/workdir/0000000325/master.h5 .Error: HTTP error 502 returned from endpoint https://simdb1.eufus.eu/simdb/v1.2/files
 -
 - 5119.660u 236.730s 13:41:10.55 10.8% 0+0k 0+408io 0pf+0w

Started an activity to test the data available via UDA

It is all very well claiming to have made data available from the experiment, but the data needs to be tested to see if it can be used

- IDS-Validator can be used (not the focus of this work)
 - Might need additional tests
 - Automatic check to see that the COCOS is consistent
- Run some physics codes on the data to see if it is OK
 - Some failures show up on “get_slice” operations
 - Usually indicative of data inconsistencies that should in future be picked up at write time with AL5 (if the tests are not disabled)
 - Some failures show up on missing fields (extended IDS-Validator rules?)
 - Some questions arise on matching calculated heating with results provided by experiment
 - AUG TORBEAM stored by TRVIEW not yet perfectly matched by ETS-PAF TORBEAM)

Started an activity to test the data available via UDA

In order to test the data coming in from the experiments via UDA (or, for ITER, from other code runs), I have started a four pronged attack

- (1) For particular time points, run an ETS-PAF source workflow to calculate sources
- (2) With a simple analytical source model, run predictive psi, interpretative everything else ETS-PAF workflow
- (3) Perform (2) (interpretative run) with (1) (more complete sources)
- (4) Perform predictive runs using (1) (sources from the experiment)

Some results for (1) and (2) can be found under

https://ets.pages.eufus.psnc.pl/ets_paf/tutorial.html

Source workflow using the data available via UDA

Some examples:

- https://ets.pages.eufus.psnc.pl/ets_paf/tutorial.html#source-module-example-rabbit-aug
- https://ets.pages.eufus.psnc.pl/ets_paf/tutorial.html#source-module-example-eqinput-and-rabbit-tcv

Interpretative workflow using the data available via UDA

Some examples:

- https://ets.pages.eufus.psnc.pl/ets_paf/tutorial.html#interpretative-modelling-aug-with-analytic-sources-saving-idses-locally-reduced-diagnostic-output
- https://ets.pages.eufus.psnc.pl/ets_paf/tutorial.html#interpretative-modelling-tcv-with-analytic-sources-saving-idses-locally
- https://ets.pages.eufus.psnc.pl/ets_paf/tutorial.html#interpretative-modelling-inter-with-analytic-sources-saving-idses-locally-reduced-diagnostics
- https://ets.pages.eufus.psnc.pl/ets_paf/tutorial.html#interpretative-modelling-inter-105082-1-with-analytic-sources-saving-idses-locally-reduced-diagnostics

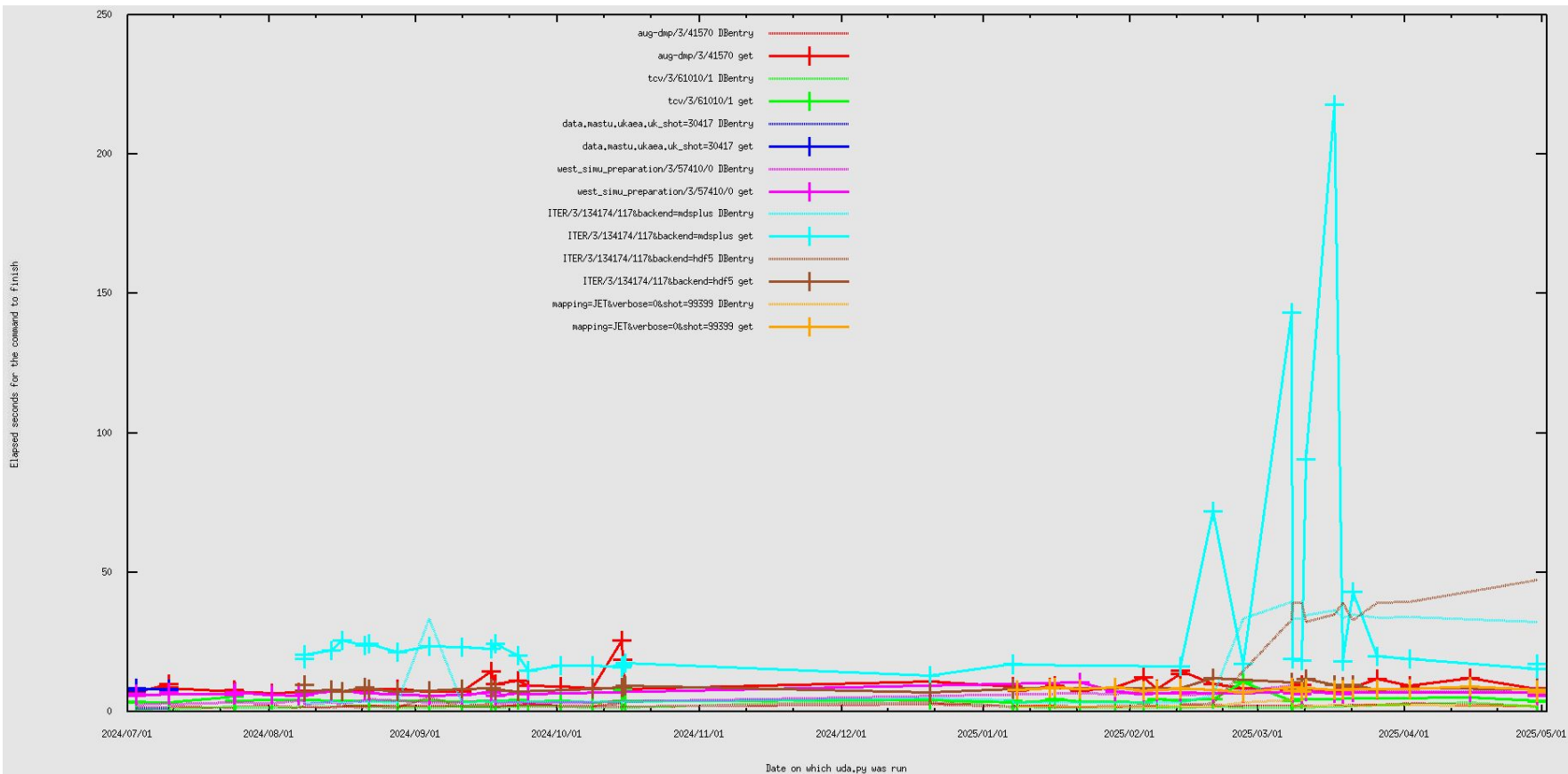
Have done, but need to be documented

- Source runs for AUG ECRH
- Interpretative runs for AUG using RABBIT and TORBEAM/GRAY

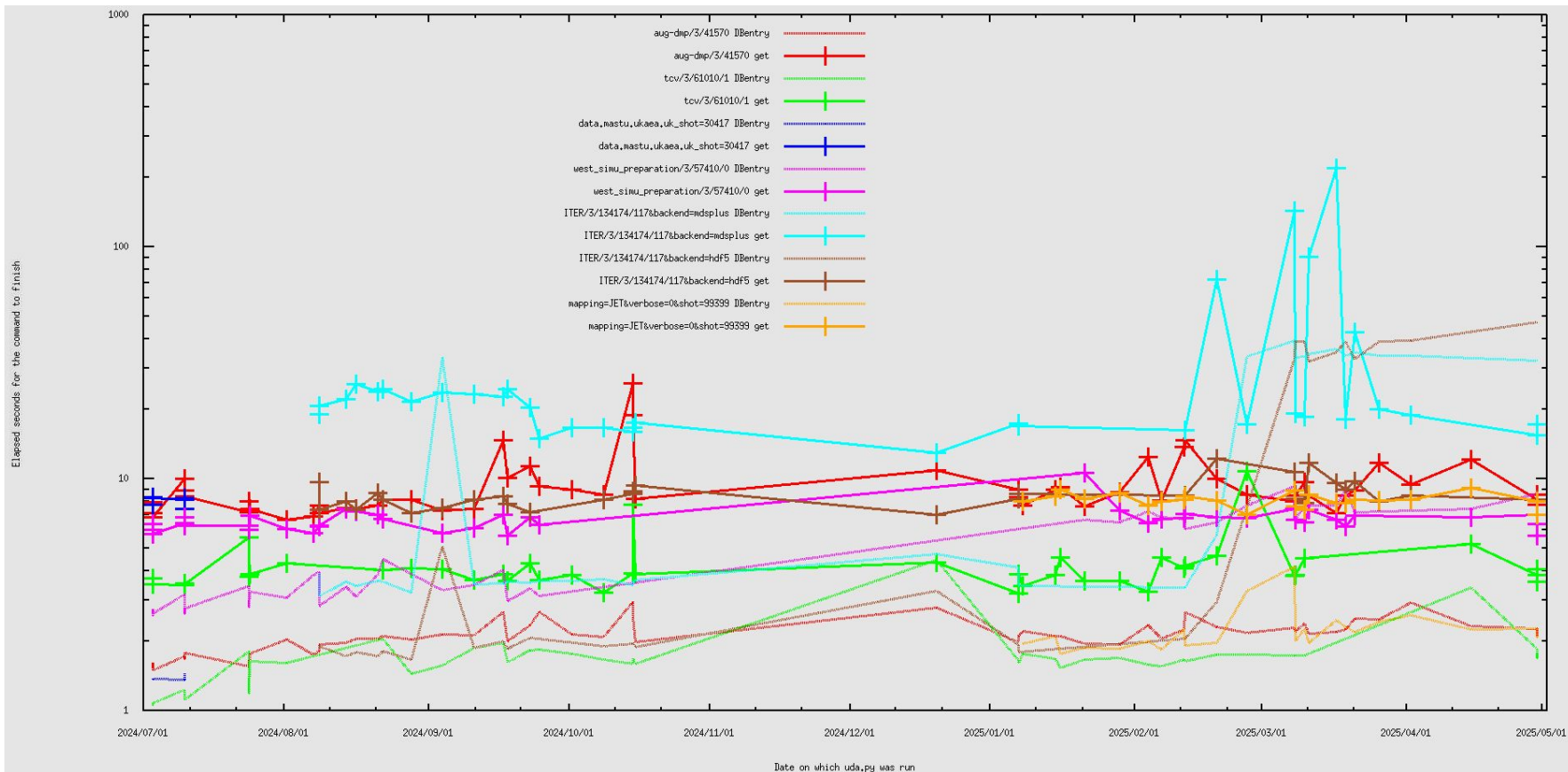
Still to be done

- Predictive runs using ECRH and/or NBI sources from the experiment
 - In steady state
 - From ramp-up to ramp-down

Data access times



Data access times



Had to implement a change in the time out in uda.py

- The db.open() times for ITER were routinely exceeding the time out I had chosen
 - Switched from 10 seconds to 60 seconds
- Code snippet
 - `times = [time.time()]`
 -
 - `# since the DBEntry call has no way of providing an error message if it fails, we have to engineer our way around this`
 -
 - `try:`
 - `TestDBEntry = subprocess.run([sys.executable, '-c', f'import imas; db = imas.DBEntry('{args.uri}', 'r')'], capture_output=True, timeout=60)`
 - `except subprocess.TimeoutExpired:`
 - `print(f'Timeout expired for {args.uri} after {time.time()-times[0]:6.3f} seconds')`
 - `exit()`
 -
 - `if len(TestDBEntry.stderr) != 0:`
 - `print(TestDBEntry.stderr.decode())`
 - `print(f'DBEntry failed after {time.time()-times[0]:6.3f} seconds')`
 - `exit()`
 -
 - `data = imas.DBEntry(args.uri, 'r')`
 - `times.append(time.time())`
- This time is reported as (3 accesses to
'imas://uda.iter.org:56565/uda?path=/work/imas/shared/imasdb/ITER/3/134174/117&backend=hdf5')
 - DBentry = 36.305 DBentry = 39.088 DBentry = 47.337

Comparison of DBentry times for a recent scan

Accessing data from imas://uda.ipp.mpg.de:56565/uda?path=/root/public/imasdb/test/3/1000/1000&backend=hdf5	DBentry = 2.181
Accessing data from imas://uda.ipp.mpg.de:56565/uda?path=/root/public/imasdb/aug-dmp/3/41570/0&backend=hdf5	DBentry = 2.274
Accessing data from imas://uda.ipp.mpg.de:56565/uda?path=/root/public/imasdb/aug/3/17151/1&backend=hdf5	DBentry = 2.112
Accessing data from imas://uda.ipp.mpg.de:56565/uda?path=/root/public/imasdb/aug/3/17151/3&backend=hdf5	DBentry = 2.250
Accessing data from imas://uda.ipp.mpg.de:56565/uda?path=/root/public/imasdb/aug/3/17151/4&backend=hdf5	DBentry = 2.129
Accessing data from imas://uda.ipp.mpg.de:56565/uda?path=/root/public/imasdb/aug/3/17151/5&backend=hdf5	DBentry = 2.136
Accessing data from imas://data.mastu.ukaea.uk:56560/uda?mapping=MAST&verbose=0&shot=30417&batch_size=20	DBentry failed
after 1.429 seconds	
Accessing data from imas://spcimasdata.epfl.ch:443/uda?path=/data/imas/public/imasdb/tcv/3/61010/1/&backend=mdsplus	DBentry = 1.779
Accessing data from imas://spcimasdata.epfl.ch:443/uda?path=/data/imas/public/imasdb/tcv/3/68340/2/&backend=mdsplus	DBentry = 1.657
Accessing data from imas://irfm-uda.partenaires.cea.fr:8083/uda?path=/Imas_public/imas_simulation/public/imasdb/west_simu_preparation/3/57410/0&backend=hdf5	
	DBentry = 6.637
Accessing data from imas://uda.iter.org:56565/uda?path=/work/imas/shared/imasdb/ITER/3/134174/117&backend=mdsplus	DBentry = 32.157
Accessing data from imas://uda.iter.org:56565/uda?path=/work/imas/shared/imasdb/ITER/3/134174/117&backend=hdf5	DBentry = 47.306
Accessing data from imas://uda.jetdata.eu:56565/uda?mapping=JET&verbose=0&shot=99399&batch_size=20	DBentry = 2.100
Accessing data from imas://uda.ipp.mpg.de:56565/uda?path=/root/public/imasdb/aug/3/32408/1&backend=hdf5	DBentry = 2.272
Accessing data from imas://uda.ipp.mpg.de:56565/uda?path=/root/public/imasdb/aug/3/32408/2&backend=hdf5	DBentry = 2.118
Accessing data from imas://uda.ipp.mpg.de:56565/uda?path=/root/public/imasdb/aug/3/32408/3&backend=hdf5	DBentry = 2.141
Accessing data from imas://uda.ipp.mpg.de:56565/uda?path=/root/public/imasdb/aug/3/32408/4&backend=hdf5	DBentry = 2.116
Accessing data from imas://uda.ipp.mpg.de:56565/uda?path=/root/public/imasdb/aug/3/32408/5&backend=hdf5	DBentry = 2.128
Accessing data from imas://uda.ipp.mpg.de:56565/uda?path=/root/public/imasdb/aug/3/32408/6&backend=hdf5	DBentry = 2.260
Accessing data from imas://uda.ipp.mpg.de:56565/uda?path=/root/public/imasdb/aug/3/32408/7&backend=hdf5	DBentry = 2.123
Accessing data from imas://uda.ipp.mpg.de:56565/uda?path=/root/public/imasdb/aug/3/32408/8&backend=hdf5	DBentry = 2.095
Accessing data from imas://uda.ipp.mpg.de:56565/uda?path=/root/public/imasdb/aug/3/32408/9&backend=hdf5	DBentry = 2.128
Accessing data from imas://uda.ipp.mpg.de:56565/uda?path=/root/public/imasdb/aug/3/32408/10&backend=hdf5	DBentry = 2.095
Accessing data from imas://uda.ipp.mpg.de:56565/uda?path=/root/public/imasdb/aug/3/32408/11&backend=hdf5	DBentry = 2.116
Accessing data from imas://uda.ipp.mpg.de:56565/uda?path=/root/public/imasdb/aug/3/32408/12&backend=hdf5	DBentry = 2.256

Looking for all cases where the DBentry time was > 10

```
2024-09-04_08:39:47 imas://uda.iter.org:56565/uda?path=/work/imas/shared/imasdb/ITER/3/134174/117&backend=mdsplus 33.443
2025-02-25_19:22:25 imas://uda.iter.org:56565/uda?path=/work/imas/shared/imasdb/ITER/3/134174/117&backend=mdsplus 33.564
2025-03-08_08:14:04 imas://uda.iter.org:56565/uda?path=/work/imas/shared/imasdb/ITER/3/134174/117&backend=mdsplus 39.424
2025-03-08_08:14:04 imas://uda.iter.org:56565/uda?path=/work/imas/shared/imasdb/ITER/3/134174/117&backend=hdf5 33.044
2025-03-08_11:07:06 imas://uda.iter.org:56565/uda?path=/work/imas/shared/imasdb/ITER/3/134174/117&backend=mdsplus 33.479
2025-03-08_11:07:06 imas://uda.iter.org:56565/uda?path=/work/imas/shared/imasdb/ITER/3/134174/117&backend=hdf5 39.163
2025-03-10_09:42:56 imas://uda.iter.org:56565/uda?path=/work/imas/shared/imasdb/ITER/3/134174/117&backend=mdsplus 33.572
2025-03-10_09:42:56 imas://uda.iter.org:56565/uda?path=/work/imas/shared/imasdb/ITER/3/134174/117&backend=hdf5 39.187
2025-03-11_09:16:51 imas://uda.iter.org:56565/uda?path=/work/imas/shared/imasdb/ITER/3/134174/117&backend=mdsplus 34.564
2025-03-11_09:16:51 imas://uda.iter.org:56565/uda?path=/work/imas/shared/imasdb/ITER/3/134174/117&backend=hdf5 32.098
2025-03-17_08:21:20 imas://uda.iter.org:56565/uda?path=/work/imas/shared/imasdb/ITER/3/134174/117&backend=mdsplus 36.416
2025-03-17_08:21:20 imas://uda.iter.org:56565/uda?path=/work/imas/shared/imasdb/ITER/3/134174/117&backend=hdf5 35.025
2025-03-19_07:58:28 imas://uda.iter.org:56565/uda?path=/work/imas/shared/imasdb/ITER/3/134174/117&backend=mdsplus 33.833
2025-03-19_07:58:28 imas://uda.iter.org:56565/uda?path=/work/imas/shared/imasdb/ITER/3/134174/117&backend=hdf5 39.108
2025-03-21_09:30:55 imas://uda.iter.org:56565/uda?path=/work/imas/shared/imasdb/ITER/3/134174/117&backend=mdsplus 35.019
2025-03-21_09:30:55 imas://uda.iter.org:56565/uda?path=/work/imas/shared/imasdb/ITER/3/134174/117&backend=hdf5 32.760
2025-03-26_13:15:21 imas://uda.iter.org:56565/uda?path=/work/imas/shared/imasdb/ITER/3/134174/117&backend=mdsplus 33.841
2025-03-26_13:15:21 imas://uda.iter.org:56565/uda?path=/work/imas/shared/imasdb/ITER/3/134174/117&backend=hdf5 39.243
2025-04-02_12:25:04 imas://uda.iter.org:56565/uda?path=/work/imas/shared/imasdb/ITER/3/134174/117&backend=mdsplus 33.957
2025-04-02_12:25:04 imas://uda.iter.org:56565/uda?path=/work/imas/shared/imasdb/ITER/3/134174/117&backend=hdf5 39.311
2025-04-29_22:26:48 imas://uda.iter.org:56565/uda?path=/work/imas/shared/imasdb/ITER/3/134174/117&backend=mdsplus 32.201
2025-04-29_22:39:48 imas://uda.iter.org:56565/uda?path=/work/imas/shared/imasdb/ITER/3/134174/117&backend=mdsplus 32.157
2025-04-29_22:39:48 imas://uda.iter.org:56565/uda?path=/work/imas/shared/imasdb/ITER/3/134174/117&backend=hdf5 47.306
```

Only uda.iter.org!

Digging deeper into the ITER hdf entries

```
2024-08-08_16:27:41 1.874 9.664 0.042
2024-08-08_16:36:03 1.899 7.341 0.040
2024-08-14_10:05:53 1.723 8.020 0.044
2024-08-16_13:16:51 1.786 7.337 0.037
2024-08-21_10:17:14 1.722 8.704 0.042
2024-08-22_09:24:04 1.814 8.102 0.041
2024-08-28_13:02:01 1.660 7.112 0.035
2024-09-04_08:39:47 5.122 7.507 0.038
2024-09-11_06:26:35 1.865 8.106 0.040
2024-09-17_13:05:46 2.003 8.433 0.043
2024-09-18_11:26:25 1.856 7.813 0.039
2024-09-23_10:12:44 2.071 7.193 0.035
2024-10-09_08:57:59 1.900 8.151 0.040
2024-10-15_16:54:25 1.943 8.619 0.042
2024-10-15_18:03:20 1.965 8.826 0.044
2024-10-16_06:44:01 1.888 9.344 0.046
2024-12-20_15:47:21 3.294 6.988 0.033
2025-01-07_09:47:01 1.932 8.183 0.037
2025-01-07_09:47:01 1.797 8.609 0.049
2025-02-12_10:35:46 2.048 8.448 0.040
2025-02-19_09:18:58 2.955 12.214 0.039
2025-03-08_08:14:04 33.044 10.684 0.036
2025-03-08_11:07:06 39.163 8.187 0.038
2025-03-10_09:42:56 39.187 7.855 0.036
2025-03-11_09:16:51 32.098 11.718 0.041
2025-03-17_08:21:20 35.025 9.631 0.040
2025-03-19_07:58:28 39.108 9.017 0.038
2025-03-21_09:30:55 32.760 9.751 0.043
2025-03-26_13:15:21 39.243 7.960 0.039
2025-04-02_12:25:04 39.311 8.500 0.039
2025-04-29_22:39:48 47.306 8.147 0.039
```

Change between 2025-02-19_09:18:58 and 2025-03-08_08:14:04