# P3-v5.3.13

HRDPS validation in GEM5.3.10-a10 and PA3a configuration Winter (40 cases) and summer (42 cases) 2022 series

#### v5.3.12 vs. v5.3.13

Note: Lookup table 1 for v5.3.13 are the same as for v5.4.3, it just reads in a few more dummy (columns) that are used for full3mom and prognostic aerosols.

#### Difference

- Bugfix to collection rates in all lookup tables.
- New lookup table version:
  - LT1: from 6.6-2moml, 6.6-3moml to 6.9-2moml and 6.9-3moml
  - LT2: from 6.1 to 6.2 (only bug for collection rates)

#### History of LT1:

- $6.6 \rightarrow \text{ for P3v5.3.6 to P3v5.3.12}$
- 6.7 → includes full3mom new columns
- 6.8  $\rightarrow$  bugfix for m6shd (full3mom) NaNs, also added 2 new columns for prognostic aerosols
- $6.9 \rightarrow$  bugfix for collection rates

Note: only winter 2022 (40 cases) is shown because changes were very small.

# winter

# Timing v5.3.12

```
HRnat_530a10_P3v5312_2022010100_M_4460116.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5763.9681 seconds (14.14 ms logging)
HRnat 530a10 P3v5312 2022010212 M 4460096.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5819.0732 seconds (13.85 ms logging)
HRnat 530a10 P3v5312 2022010400 M 4460078.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 6066.9926 seconds (13.94 ms logging)
HRnat_530a10_P3v5312_2022010512_M_4460129.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5880.7632 seconds (13.82 ms logging)
HRnat_530a10_P3v5312_2022010700_M_4460131.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5860.8474 seconds (13.54 ms logging)
HRnat 530a10 P3v5312 2022010812_M_4460094.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5666.5587 seconds (13.76 ms logging)
HRnat 530a10 P3v5312 2022011000 M 4460100.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5661.8371 seconds (13.70 ms logging)
HRnat 530a10 P3v5312 2022011112 M 4460126.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5690.5429 seconds (14.21 ms logging)
HRnat_530a10_P3v5312_2022011300_M_4460127.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5759.0225 seconds (13.73 ms logging)
HRnat_530a10_P3v5312_2022011412_M_4460098.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5835.0755 seconds (13.88 ms logging)
HRnat 530a10 P3v5312 2022011600 M 4460118.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5686,9297 seconds (13.65 ms logging)
HRnat_530a10_P3v5312_2022011712_M_4460091.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5938.9693 seconds (13.63 ms logging)
HRnat 530a10 P3v5312 2022011900 M 4460092.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5617.9270 seconds (13.87 ms logging)
HRnat_530a10_P3v5312_2022012012_M_4460097.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5673.4847 seconds (13.89 ms logging)
HRnat_530a10_P3v5312_2022012200_M_4460095.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5667.5945 seconds (13.67 ms logging)
HRnat_530a10_P3v5312_2022012312_M_4460101.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5750.1226 seconds (13.42 ms logging)
HRnat 530a10 P3v5312 2022012500 M 4460120.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5576.6843 seconds (13.86 ms logging)
HRnat 530a10 P3v5312 2022012612 M 4460128.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5604.0016 seconds (15.98 ms logging)
HRnat 530a10 P3v5312 2022012800 M 4460099.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5649.0058 seconds (13.61 ms logging)
HRnat_530a10_P3v5312_2022012912_M_4460113.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 6126.0723 seconds (13.75 ms logging)
HRnat_530a10_P3v5312_2022013100_M_4460572.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5450.5841 seconds (13.74 ms logging)
HRnat 530a10 P3v5312 2022020112 M 4460574.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5502.7478 seconds (13.62 ms logging)
HRnat_530a10_P3v5312_2022020300_M_4460577.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5608.7358 seconds (14.01 ms logging)
HRnat 530a10 P3v5312 2022020412 M 4460581.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5668.0327 seconds (13.56 ms logging)
HRnat_530a10_P3v5312_2022020600_M_4460597.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5615.1923 seconds (13.51 ms logging)
HRnat_530a10_P3v5312_2022020712_M_4460604.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5600.6923 seconds (13.97 ms logging)
HRnat_530a10_P3v5312_2022020900_M_4460603.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5603.3768 seconds (13.48 ms logging)
HRnat 530a10 P3v5312 2022021012 M 4460615.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5460.1118 seconds (13.55 ms logging)
HRnat 530a10 P3v5312 2022021200 M 4460620.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5495.2690 seconds (13.96 ms logging)
HRnat_530a10_P3v5312_2022021312_M_4460618.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5652.2249 seconds (13.63 ms logging)
HRnat_530a10_P3v5312_2022021500_M_4460621.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5522.3965 seconds (13.41 ms logging)
HRnat_530a10_P3v5312_2022021612_M_4460623.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5581.7122 seconds (13.96 ms logging)
HRnat 530a10 P3v5312 2022021800 M 4460630.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5677.9798 seconds (13.74 ms logging)
HRnat 530a10 P3v5312 2022021912 M 4460629.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5657.4381 seconds (13.82 ms logging)
HRnat_530a10_P3v5312_2022022100_M_4460634.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5493.3284 seconds (13.77 ms logging)
HRnat_530a10_P3v5312_2022022212_M_4460639.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5590.4960 seconds (14.34 ms logging)
HRnat 530a10 P3v5312 2022022400 M 4460640.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5587.9235 seconds (14.12 ms logging)
HRnat_530a10_P3v5312_2022022512_M_4460644.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5579.3092 seconds (13.89 ms logging)
HRnat 530a10 P3v5312 2022022700 M 4460647.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5519.0594 seconds (13.68 ms logging)
HRnat_530a10_P3v5312_2022022812_M_4460645.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5628.6587 seconds (13.77 ms logging)
```

Mean (2MOM\_noLF\_n1): 221111/40 = 5527 seconds

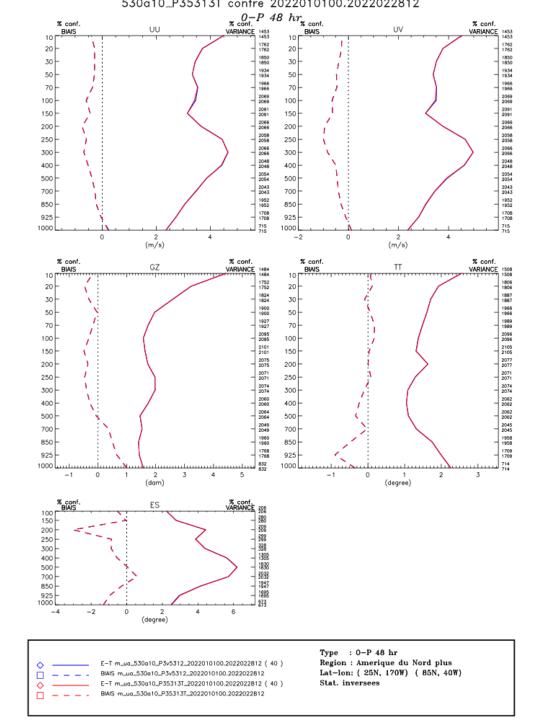
# Timing v5.3.13

```
HRnat_530a10_P35313T_2022010100_M_4528735.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5560.1555 seconds (15.18 ms logging)
HRnat 530a10 P35313T 2022010212 M 4528739.sc6pbs-001-ib.out.000;oe-00000-00000; Execution time: 5752.3228 seconds (13.72 ms logging)
HRnat 530a10 P35313T 2022010400 M 4528741.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5648.3596 seconds (13.20 ms logging)
HRnat 530a10 P35313T 2022010512 M 4528742.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5520.5966 seconds (13.73 ms logging)
HRnat 530a10 P35313T 2022010700 M 4528753.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5689.7638 seconds (13.49 ms logging)
HRnat_530a10_P35313T_2022010812_M_4528732.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5545.0855 seconds (13.62 ms logging)
HRnat 530a10 P35313T 2022011000 M 4528774.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5515.8902 seconds (13.75 ms logging)
HRnat_530a10_P35313T_2022011112_M_4528760.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5482.2256 seconds (13.60 ms logging)
HRnat 530a10 P35313T 2022011300 M 4528756.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5532.4383 seconds (13.36 ms logging)
HRnat 530a10 P35313T 2022011412 M 4528781.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5553.5756 seconds (13.50 ms logging)
HRnat 530a10 P35313T 2022011600_M_4528782.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5565.1400 seconds (13.77 ms logging)
HRnat_530a10_P35313T_2022011712_M_4528783.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5574.8783 seconds (13.97 ms logging)
HRnat 530a10 P35313T 2022011900 M 4528772.sc6pbs-001-ib.out.000;oe-00000-00000; Execution time: 5515.2706 seconds (13.97 ms logging)
HRnat_530a10_P35313T_2022012012_M_4528749.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5530.6225 seconds (13.66 ms logging)
HRnat 530a10 P35313T 2022012200 M 4528744.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5550.3684 seconds (13.88 ms logging)
HRnat 530a10 P35313T 2022012312 M 4528771.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5428.5591 seconds (14.09 ms logging)
HRnat 530a10 P35313T 2022012500_M_4528736.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5384.5051 seconds (13.68 ms logging)
HRnat 530a10 P35313T 2022012612 M 4528729.sc6pbs-001-ib.out.000;oe-00000-00000; Execution time: 5444.5608 seconds (13.65 ms logging)
HRnat 530a10 P35313T 2022012800 M 4528780.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5574.4600 seconds (13.41 ms logging)
HRnat_530a10_P35313T_2022012912_M_4528789.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5749.0651 seconds (13.54 ms logging)
HRnat 530a10 P35313T 2022013100 M 4529159.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5386.6415 seconds (14.13 ms logging)
HRnat 530a10 P35313T_2022020112_M_4529161.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5424.0181 seconds (13.62 ms logging)
HRnat_530a10_P35313T_2022020300_M_4529163.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5566.8092 seconds (13.78 ms logging)
HRnat 530a10 P35313T 2022020412 M 4529166.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5596.9427 seconds (13.66 ms logging)
HRnat 530a10 P35313T 2022020600 M 4529168.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5491.9851 seconds (14.23 ms logging)
HRnat 530a10 P35313T 2022020712 M 4529167.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5485.8368 seconds (13.52 ms logging)
HRnat_530a10_P35313T_2022020900_M_4529165.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5555.7424 seconds (13.67 ms logging)
HRnat 530a10 P35313T 2022021012 M 4529170.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5386.0668 seconds (13.94 ms logging)
HRnat_530a10_P35313T_2022021200_M_4529171.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5374.7710 seconds (13.89 ms logging)
HRnat 530a10 P35313T 2022021312 M 4529169.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5526.7886 seconds (13.53 ms logging)
HRnat 530a10 P35313T 2022021500 M 4529175.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5419.7554 seconds (14.11 ms logging)
HRnat_530a10_P35313T_2022021612_M_4529173.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5496.8354 seconds (13.64 ms logging)
HRnat 530a10 P35313T 2022021800 M 4529177.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5636.6898 seconds (13.70 ms logging)
HRnat_530a10_P35313T_2022021912_M_4529178.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5543.5745 seconds (13.71 ms logging)
HRnat_530a10_P35313T_2022022100_M_4529183.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5425.1493 seconds (13.56 ms logging)
HRnat 530a10 P35313T 2022022212 M 4529181.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5494.9121 seconds (13.80 ms logging)
HRnat 530a10 P35313T 2022022400 M 4529184.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5517.2154 seconds (13.67 ms logging)
HRnat_530a10_P35313T_2022022512_M_4529180.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5442.1864 seconds (13.66 ms logging)
HRnat 530a10 P35313T 2022022700 M 4529187.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5477.2324 seconds (14.03 ms logging)
HRnat 530a10 P35313T 2022022812 M 4529189.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5474.7376 seconds (13.74 ms logging)
```

Mean (2MOM\_noLF\_n1): 220821/40 = 5520 seconds (-0.13%)

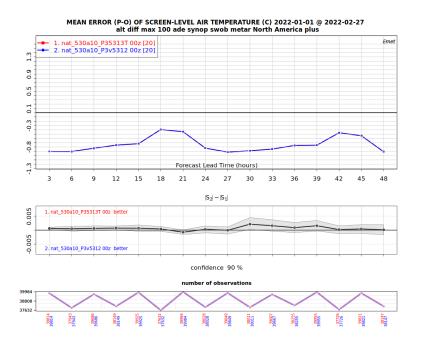
## Scores v5.3.12 vs. 5.3.13

Arcad → completely neutral

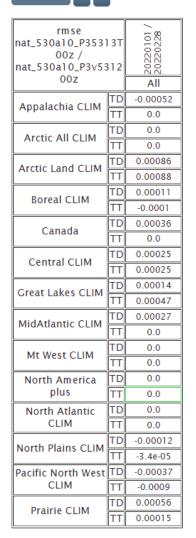


#### Scores v5.3.12 vs. 5.3.13

• Emet TT, TD, UV, P0 neutral







Stucy .	_	
stdev nat_530a10_P3531 00z / nat_530a10_P3v53	20220101 /	
00z		All
Appalachia CLIM	TD	-0.00023
	TT	0.00014
Arctic All CLIM	TD	0.00095
	TT	0.0011
Arctic Land CLIM	TD	0.0012
	TT	0.00096
Boreal CLIM	TD	0.00014
Borear ozim	TT	0.00011
Canada	TD	0.00046
Canada	TT	0.0
Central CLIM	TD	0.00018
Central CLIM	TT	0.00021
Great Lakes CLIM	TD	0.00048
Great Lakes CLIM	TT	-3.1e-05
MidAtlantic CLIM	TD	0.00025
MIDAUAIIUC CLIM	TT	0.0
Mt Woot CLIM	TD	0.0
Mt West CLIM	TT	0.0
North America	TD	6.4e-05
plus	TT	6.7e-05
North Atlantic	TD	0.0
CLIM	TT	0.0
North Plains CLIM	TD	0.0
NOTHI PIAITIS CLIM	TT	-0.00011
Pacific North West	TD	-0.0006
CLIM	TT	-0.00082
Drairio CLIM	TD	0.00055
Prairie CLIM	TT	1e-05

stdev v < >

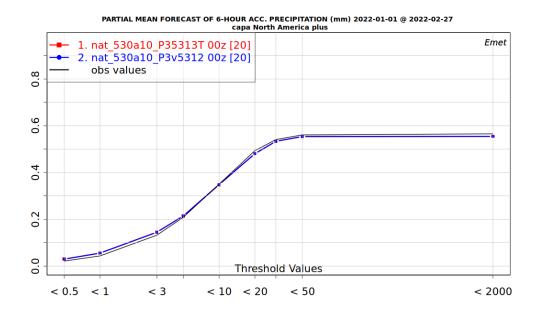
bias nat_530a10_P3v53 00z / nat_530a10_P3v53 00z	Z0220101 /	
Appalachia CLIM	PO	-0.0026
Arctic All CLIM	P0	-0.0020
	_	
Arctic Land CLIM	PO	0.0
Boreal CLIM	P0	-0.0016
Canada	P0	-0.0032
Central CLIM	PO	-0.0026
Central Plains CLIM	PO	0.0
Great Lakes CLIM	PO	-0.00089
MidAtlantic CLIM	PO	-0.0022
Mt West CLIM	PO	-0.004
North America plus	PO	-0.0037
North Atlantic CLIM	PO	-0.0033
North Plains CLIM	P0	-0.0021
Pacific North West CLIM	PO	0.0013
Prairie CLIM	P0	0.0

#### bias 🗸 < >

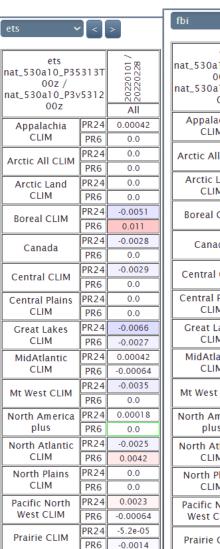
bias nat_530a10_P3v53 00z / nat_530a10_P3v53 00z	20220101 /	
Appalachia CLIM	UV	0.0
Arctic All CLIM	UV	-0.0012
Arctic Land CLIM	UV	-0.00076
Boreal CLIM	U۷	0.0
Canada	U٧	-0.0007
Central CLIM	UV	-0.00035
Central Plains CLIM	UV	-0.0026
Great Lakes CLIM	U۷	-2.5e-05
MidAtlantic CLIM	UV	0.0023
Mt West CLIM	UV	0.0026
North America plus	UV	-7e-05
North Atlantic CLIM	UV	0.00089
North Plains CLIM	UV	-9.1e-05
Pacific North West CLIM	UV	0.0
Prairie CLIM	UV	0.00097

## Scores v5.3.12 vs. v5.3.13

Emet (PR6 and PR24)



					numb	er of	obse	rved ev	ents	
97337 -										
90684 -										
84031 -										
	84031 4031	87098 37098	92038 12038	94010	96032	97076	97276	97332		9738



			_	
fbi v	/   <	>	1	far
fbi nat_530a10_P35 00z / nat_530a10_P3\ 00z		20220101 /   20220228		nat_53 nat_53
Annalashia	PR24	0.0		App
Appalachia CLIM	PR6	0.0		(
	PR24	0.0		Arctic
Arctic All CLIM	PR6	0.018		Arctic
Arctic Land	PR24	0.0		Arct
CLIM	PR6	0.0		(
	PR24	0.0		Bore
Boreal CLIM	PR6	0.026		ВОТС
	PR24	0.0021		Ca
Canada	PR6	-0.0012		
	PR24	-0.0047		Cent
Central CLIM	PR6	0.0		Cent
Central Plains	PR24	0.0		Centi
CLIM	PR6	0.0		(
Great Lakes	PR24	0.0		Grea
CLIM	PR6	0.018		
MidAtlantic	PR24	-0.0092		Mid
CLIM	PR6	-0.02		(
Mt West CLIM	PR24	0.0043		Mt W
WE WEST CEIM	PR6	0.0		1416 11
North America	PR24	-0.00081		North
plus	PR6	-0.00042		l
North Atlantic	PR24	0.0		North
CLIM	PR6	-0.0098		(
North Plains	PR24	0.0		Nort
CLIM	PR6	0.0		(
Pacific North	PR24	-0.0017		Pacif
West CLIM	PR6	0.0		Wes
Prairie CLIM	PR24	0.0036		Prair
	PR6	0.0	ıı II	

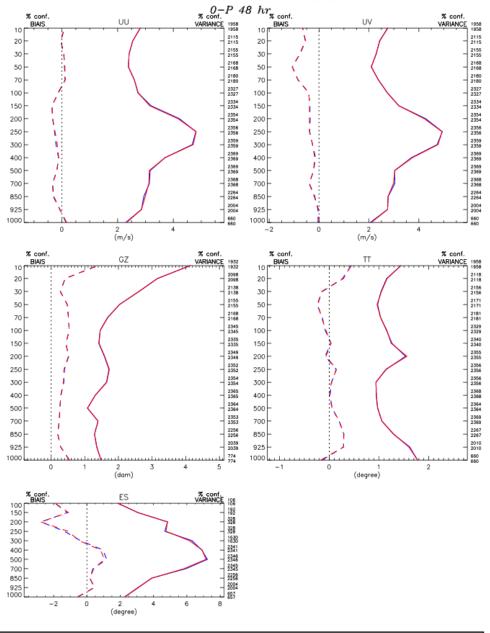
r v	·	>		pod	·   <	>
far t_530a10_P35 00z / t_530a10_P3v 00z		Z0220101 /		pod nat_530a10_P35 00z / nat_530a10_P3\ 00z		20220101 / 20220228
Appalachia	PR24	-0.0016		Appalachia	PR24	-0.0029
CLIM	PR6	0.0		CLIM	PR6	0.0
estic All CLIM	PR24	0.0		Arctic All CLIM	PR24	0.0
rctic All CLIM	PR6	0.0		Arctic All CLIM	PR6	0.0
Arctic Land	PR24	0.0		Arctic Land	PR24	0.0
CLIM	PR6	0.0		CLIM	PR6	0.0
Darrad CLIM	PR24	-0.0031		Boreal CLIM	PR24	-0.0064
Boreal CLIM	PR6	-6.4e-05		BOTEAT CLIM	PR6	0.017
Comedo	PR24	0.0		Canada	PR24	-0.0016
Canada	PR6	0.0		Callada	PR6	0.0
	PR24	-0.014		Central CLIM	PR24	0.0
Central CLIM	PR6	0.0		CCITITAL CEIM	PR6	0.0
entral Plains	PR24	0.0		Central Plains	PR24	0.0
CLIM	PR6	0.0		CLIM	PR6	0.0
Great Lakes	PR24	-0.0084		Great Lakes	PR24	0.0
CLIM	PR6	-0.0035	CLIM		PR6	-0.0064
MidAtlantic	PR24	-0.0035		MidAtlantic	PR24	4.6e-05
CLIM	PR6	0.0		CLIM	PR6	-0.0074
	PR24	0.0021		Mt West CLIM	PR24	0.0
It West CLIM	PR6	0.0		THE WOSE CENT	PR6	0.0
orth America	PR24	0.0011		North America	PR24	0.00057
plus	PR6	0.0		plus	PR6	0.0
orth Atlantic	PR24	0.0		North Atlantic	PR24	-0.0018
CLIM	PR6	0.0048		CLIM	PR6	0.0046
North Plains	PR24	0.0		North Plains	PR24	0.0
CLIM	PR6	0.0		CLIM	PR6	0.0
acific North	PR24	0.0022	4	Pacific North	PR24	0.0018
West CLIM	PR6	0.0		West CLIM	PR6	0.0
Duninia CLIM	PR24	-0.017		Prairie CLIM	PR24	0.002
Prairie CLIM	PR6	0.0			PR6	-0.0017

#### summer

## Scores v5.3.6 vs. 5.3.13

Arcad → completely neutral

#### 530a10\_Pa3ctls contre 2022070100.2022083112



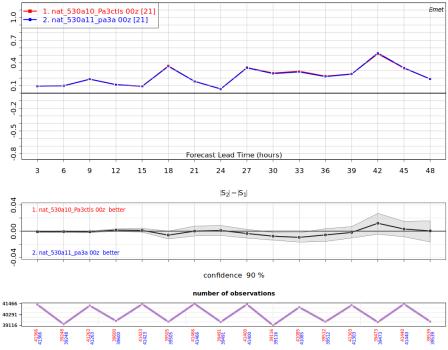


Type : 0-P 48 hr Region : Amerique du Nord plus Lat-lon: (25N, 170W) (85N, 40W) Stat. inversees

## Scores v5.3.6 vs. 5.3.13

# Emet TT, TD, UV, P0 Very small differences

MEAN ERROR (P-O) OF SCREEN-LEVEL AIR TEMPERATURE (C) 2022-07-01 @ 2022-08-30 alt diff max 100 ade synop swob metar North America plus



bias 🗸	>				
00z /	nat_530a10_Pa3ctls				
002		All			
Appalachia	TD	-0.0044			
CLIM	TT	-0.0039			
Arctic All CLIM	TD	-0.00062			
7 II CUIC 7 III CEIM	TT	0.0			
Arctic Land	TD	-0.0012			
CLIM	TT	0.0			
Boreal CLIM	TD	-0.0022			
Borear CEIM	TT	0.00042			
Canada	TD	0.0013			
Callada	TT	0.0			
Central CLIM	TD	0.0019			
Central CLIM	TT	-0.0033			
Central Plains	TD	-0.00079			
CLIM	TT	-0.0048			
Great Lakes	TD	0.0			
CLIM	TT	-0.004			
MidAtlantic	TD	0.0			
CLIM	TT	0.0061			
Mt Woot CLIM	TD	0.0			
Mt West CLIM	TT	0.0041			
North America	TD	0.0014			
plus	TT	-0.0013			
North Atlantic	TD	0.0012			
CLIM	TT	0.0027			
North Plains	TD	-0.00032			
CLIM	TT	0.0			
Pacific North	TD	0.0			
West CLIM	TT	0.0			
Drairio CLIM	TD	0.0041			
Prairie CLIM	TT	-0.0057			

rinse V	<i>'</i> ,	
rmse nat_530a10_Pa3 00z / nat_530a11_pa 00z	20220701 / 20220831	
	=	All
Appalachia	TD	
CLIM	TT	0.0013
Arctic All CLIM	TD	-0.0033
	TT	0.0
Arctic Land	TD	-0.0049
CLIM	TT	0.0
Boreal CLIM	TD	0.0011
Borear CEIII	TT	0.0
Canada	TD	0.0
Callaua	TT	-0.0012
Central CLIM	TD	0.0018
Central CLIM	TT	-0.0003
Central Plains	TD	0.0076
CLIM	TT	0.0
Great Lakes	TD	0.0014
CLIM	TT	0.0013
MidAtlantic	TD	0.0
CLIM	TT	0.0036
	TD	-0.0042
Mt West CLIM	TT	0.00018
North America	TD	0.00013
plus	TT	0.00029
North Atlantic	TD	0.0
CLIM	TT	-0.00057
North Plains	TD	0.0014
CLIM	TT	0.0017
Pacific North	TD	0.0
West CLIM	TT	0.0
Drainia CLIM	TD	0.0018
Prairie CLIM	TT	-0.0025

stdev 🗸 < >					
stdev nat_530a10_Pa3 00z / nat_530a11_pa 00z	E 20220701 / 20220831				
Appalachia	TD	0.006			
CLIM	TT	0.0			
Arctic All CLIM	TD	-0.0037			
Arctic All CLIM	TT	0.0			
Arctic Land	TD	-0.0046			
CLIM	TT	0.0			
Boreal CLIM	TD	0.0012			
Borear CEIII	TT	-0.002			
Canada	TD	0.0			
Curiudu	TT	-0.0013			
Central CLIM	TD	0.0007			
Contrar obini	TT	0.00075			
Central Plains	TD	0.0099			
CLIM	TT	0.0			
Great Lakes	TD	0.0028			
CLIM	TT	0.0015			
MidAtlantic	TD	0.0			
CLIM	TT	0.0			
Mt West CLIM	TD	0.0			
Me West CEIM	TT	-0.00046			
North America	TD	7.5e-05			
plus	TT	0.0003			
North Atlantic	TD	0.0			
CLIM	TT	-0.0026			
North Plains	TD	0.0011			
CLIM	TT	0.0016			
Pacific North	TD	0.0			
West CLIM	TT	0.0			
Prairie CLIM	TD	-8.2e-05			

-0.00013

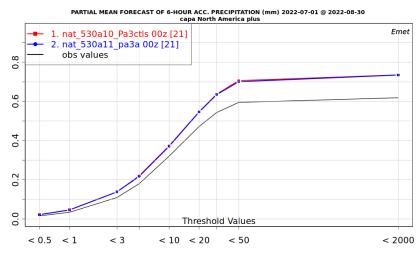
bias	~	<	>

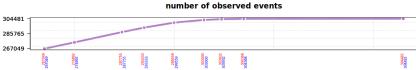
bias nat_530a10_Pa30 00z / nat_530a11_pa3 00z	20220701 / 20220831	
Appalachia CLIM	PO	0.003
Arctic All CLIM	PO	0.00045
Arctic Land CLIM	PO	0.00071
Boreal CLIM	P0	0.00037
Canada	P0	0.00021
Central CLIM	P0	-0.00049
Central Plains CLIM	PO	0.0
Great Lakes CLIM	PO	0.00018
MidAtlantic CLIM	PO	-0.0014
Mt West CLIM	PO	0.0
North America plus	PO	0.0002
North Atlantic CLIM	PO	0.0011
North Plains CLIM	PO	0.0001
Pacific North West CLIM	PO	-0.00076
Prairie CLIM	P0	0.0

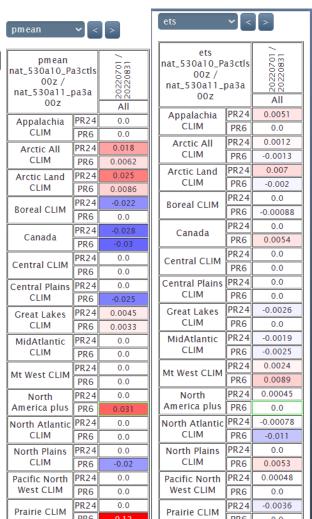
Dias V		
bias nat_530a10_Pa3ctls 00z / nat_530a11_pa3a 00z		<b>≥</b> 20220701 / <b>≥</b> 20220831
Appalachia CLIM	UV	0.0032
Arctic All CLIM	UV	0.0
Arctic Land CLIM	UV	0.0
Boreal CLIM	U۷	-0.005
Canada	U۷	0.0
Central CLIM	UV	1.6e-05
Central Plains CLIM	UV	0.012
Great Lakes CLIM	UV	-0.0011
MidAtlantic CLIM	UV	0.0
Mt West CLIM	UV	0.0
North America plus	UV	9.6e-05
North Atlantic CLIM	υv	0.00014
North Plains CLIM	υv	0.0
Pacific North West CLIM	UV	0.0
Prairie CLIM	UV	0.0013

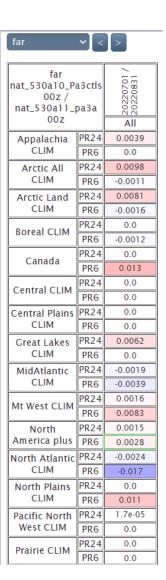
## Scores v5.3.6 vs. v5.3.13

Emet (PR6 and PR24)





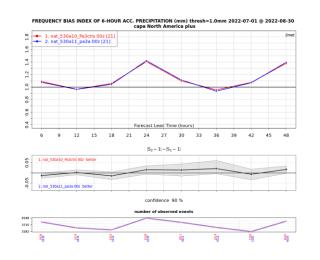


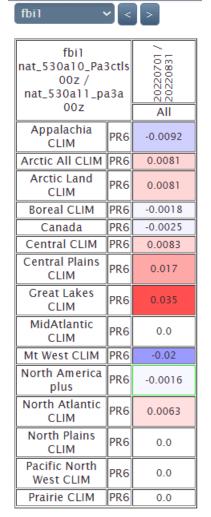


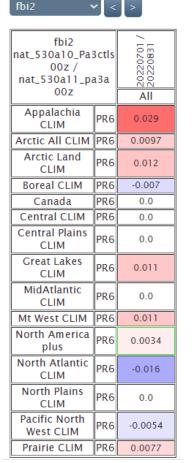
pod • ( >				
pod nat_530a10_Pa3ctls 00z / nat_530a11_pa3a 00z		20220701 /		
	DD 3.4	All		
Appalachia CLIM	PR24	0.0068		
	PR6	-0.011		
Arctic All CLIM	PR24			
	PR6	-0.011		
Arctic Land CLIM	PR24	0.004		
CLIM	PR6 PR24	-0.0095		
Boreal CLIM	$\vdash$	0.0		
	PR6	0.0048		
Canada	PR24	0.0		
	PR6	0.0082		
Central CLIM	PR24	0.0		
	PR6	0.0		
Central Plains	PR24	0.0		
CLIM	PR6	0.0		
Great Lakes	PR24	0.0041		
CLIM	PR6	0.0		
MidAtlantic	PR24	0.0078		
CLIM	PR6	-0.0045		
Mt West CLIM	PR24	0.012		
	PR6	0.0		
North	PR24	0.0		
America plus	PR6	0.0		
North Atlantic	PR24	-0.0065		
CLIM	PR6	-0.0047		
North Plains	PR24	0.032		
CLIM	PR6	0.0089		
Pacific North	PR24	0.0		
West CLIM	PR6	0.0		
Prairie CLIM	PR24	-0.0047		
	PR6	0.0		

## Scores v5.3.6 vs. v5.3.13

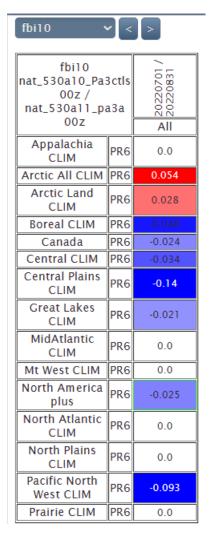
#### FBI







fbi5 <b>v</b> < >				
fbi5 nat_530a10_Pa3ctls 00z / nat_530a11_pa3a 00z		20220701 /		
		All		
Appalachia CLIM	PR6	0.05		
Arctic All CLIM	PR6	0.011		
Arctic Land CLIM	PR6	0.039		
Boreal CLIM	PR6	0.0035		
Canada	PR6	0.0076		
Central CLIM	PR6	0.0		
Central Plains CLIM	PR6	0.0		
Great Lakes CLIM	PR6	0.0065		
MidAtlantic CLIM	PR6	0.013		
Mt West CLIM	PR6	-0.0031		
North America plus	PR6	0.0058		
North Atlantic CLIM	PR6	-0.026		
North Plains CLIM	PR6	0.0		
Pacific North West CLIM	PR6	0.0		
Prairie CLIM	PR6	-0.0042		



## Timing v5.3.13 control for v5.3.14

```
HRnat 530a10 Pa3ctls 2022070100 M 4582992.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5566.3472 seconds (13.85 ms logging)
HRnat 530a10 Pa3ctls 2022070212 M 4582984.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5598.5447 seconds (13.43 ms logging)
HRnat 530a10 Pa3ctls 2022070400 M 4582966.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5647.2154 seconds (13.71 ms logging)
HRnat_530a10_Pa3ctls_2022070512_M_4583000.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5686.2003 seconds (13.56 ms logging)
HRnat_530a10_Pa3ctls_2022070700_M_4583011.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5656.3555 seconds (13.56 ms logging)
HRnat 530a10 Pa3ctls 2022070812 M 4583010.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5722.5522 seconds (13.40 ms logging)
HRnat 530a10 Pa3ctls 2022071000 M 4582996.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5681.1729 seconds (13.57 ms logging)
HRnat 530a10 Pa3ctls 2022071112 M 4582989.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5598.0317 seconds (13.56 ms logging)
HRnat_530a10_Pa3ctls_2022071300_M_4582994.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5591.5255 seconds (13.68 ms logging)
HRnat_530a10_Pa3ctls_2022071412_M_4582987.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5596.7476 seconds (13.65 ms logging)
HRnat 530a10 Pa3ctls 2022071600 M 4583012.sc6pbs-001-ib.out.000:oe-00000-00000; Execution time: 5593.1546 seconds (13.72 ms logging)
HRnat 530a10 Pa3ctls 2022071712 M 4583016.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5595.9422 seconds (13.50 ms logging)
HRnat 530a10 Pa3ctls 2022071900 M 4582985.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5651.1927 seconds (13.40 ms logging)
HRnat_530a10_Pa3ctls_2022072012_M_4583009.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5490.5867 seconds (13.60 ms logging)
HRnat 530a10 Pa3ctls 2022072200 M 4583014.sc6pbs-001-ib.out.000:oe-00000-00000; Execution time: 5519.1458 seconds (13.84 ms logging)
HRnat_530a10_Pa3ctls_2022072312_M_4583005.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5606.4022 seconds (13.43 ms logging)
HRnat 530a10 Pa3ctls 2022072500 M 4583004.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5618.2809 seconds (13.85 ms logging)
HRnat 530a10 Pa3ctls 2022072612 M 4582988.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5590.9695 seconds (13.90 ms logging)
HRnat_530a10_Pa3ctls_2022072800_M_4583013.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5539.3442 seconds (13.45 ms logging)
HRnat_530a10_Pa3ctls_2022072912_M_4582999.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5554.5525 seconds (13.71 ms logging)
HRnat 530a10 Pa3ctls 2022073100 M 4583647.sc6pbs-001-ib.out.000:oe-00000-00000; Execution time: 5596.2898 seconds (13.34 ms logging)
HRnat 530a10 Pa3ctls 2022080112 M 4583648.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5591.9851 seconds (13.69 ms logging)
HRnat 530a10 Pa3ctls 2022080300 M 4583652.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5635.1617 seconds (13.87 ms logging)
HRnat_530a10_Pa3ctls_2022080412_M_4583645.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5652.3158 seconds (13.34 ms logging)
HRnat_530a10_Pa3ctls_2022080600_M_4583651.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5632.5590 seconds (13.70 ms logging)
HRnat 530a10 Pa3ctls 2022080712 M 4583660.sc6pbs-001-ib.out.000:oe-00000-00000; Execution time: 5615.1978 seconds (13.74 ms logging)
HRnat_530a10_Pa3ctls_2022080900_M_4583654.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5552.5437 seconds (13.73 ms logging)
HRnat 530a10 Pa3ctls 2022081012 M 4583680.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5542.9899 seconds (13.69 ms logging)
HRnat_530a10_Pa3ctls_2022081200_M_4583696.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5528.5475 seconds (13.64 ms logging)
HRnat 530a10 Pa3ctls 2022081312 M 4583714.sc6pbs-001-ib.out.000:oe-00000-00000; Execution time: 5610.3968 seconds (13.33 ms logging)
HRnat_530a10_Pa3ctls_2022081500_M_4583706.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5630.2268 seconds (13.57 ms logging)
HRnat 530a10 Pa3ctls 2022081612 M 4583745.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5667.8040 seconds (13.78 ms logging)
HRnat 530a10 Pa3ctls 2022081800 M 4583740.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5564.8270 seconds (13.74 ms logging)
HRnat_530a10_Pa3ctls_2022081912_M_4583747.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5517.3753 seconds (13.46 ms logging)
HRnat_530a10_Pa3ctls_2022082100_M_4583779.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5538.6323 seconds (13.34 ms logging)
HRnat 530a10 Pa3ctls 2022082212 M 4583776.sc6pbs-001-ib.out.000:oe-00000-00000; Execution time: 5597.8056 seconds (13.89 ms logging)
HRnat 530a10 Pa3ctls 2022082400 M 4583749.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5583.0686 seconds (13.56 ms logging)
HRnat 530a10 Pa3ctls 2022082512 M 4583743.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5564.9892 seconds (13.51 ms logging)
HRnat_530a10_Pa3ctls_2022082700_M_4583775.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5551.3104 seconds (13.58 ms logging)
HRnat_530a10_Pa3ctls_2022082812_M_4583811.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5630.6916 seconds (13.45 ms logging)
HRnat 530a10 Pa3ctls 2022083000 M 4585193.sc6pbs-001-ib.out.000:oe-00000-00000; Execution time: 5623.1600 seconds (13.43 ms logging)
HRnat 530a10 Pa3ctls 2022083112 M 4585294.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5559.1589 seconds (13.96 ms logging)
```

Mean (2MOM\_noLF\_n1): 235072/42 = 5597 seconds

# Timing v5.3.13

```
HRnat 530a10 P5313Ts 2022070100 M 4588567.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5580.4130 seconds (13.46 ms logging)
HRnat 530a10 P5313Ts 2022070212 M 4588552.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5590.0552 seconds (13.24 ms logging)
HRnat 530a10 P5313Ts 2022070400 M 4588572.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5618.6224 seconds (13.64 ms logging)
HRnat_530a10_P5313Ts_2022070512_M_4588556.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5646.8599 seconds (13.29 ms logging)
HRnat_530a10_P5313Ts_2022070700_M_4588578.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5654.4216 seconds (13.72 ms logging)
HRnat 530a10 P5313Ts 2022070812 M 4588561.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5664.8992 seconds (13.70 ms logging)
HRnat 530a10 P5313Ts 2022071000 M 4588582.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5662.4137 seconds (13.48 ms logging)
HRnat 530a10 P5313Ts 2022071112 M 4588560.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5599.6365 seconds (13.44 ms logging)
HRnat_530a10_P5313Ts_2022071300_M_4588564.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5553.0888 seconds (13.68 ms logging)
HRnat_530a10_P5313Ts_2022071412_M_4588581.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5586.8783 seconds (13.73 ms logging)
HRnat 530a10 P5313Ts 2022071600 M 4588566.sc6pbs-001-ib.out.000;oe-00000-00000; Execution time: 5554.6875 seconds (13.29 ms logging)
HRnat_530a10_P5313Ts_2022071712_M_4588540.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5619.9023 seconds (13.57 ms logging)
HRnat 530a10 P5313Ts 2022071900 M 4588542.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5618.1755 seconds (13.69 ms logging)
HRnat_530a10_P5313Ts_2022072012_M_4588539.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5516.1179 seconds (13.92 ms logging)
HRnat 530a10 P5313Ts 2022072200 M 4588588.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5502.5496 seconds (13.77 ms logging)
HRnat_530a10_P5313Ts_2022072312_M_4588570.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5613.0262 seconds (13.52 ms logging)
HRnat 530a10 P5313Ts 2022072500 M 4588574.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5598.6850 seconds (13.50 ms logging)
HRnat_530a10_P5313Ts_2022072612_M_4588571.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5592.9930 seconds (13.63 ms logging)
HRnat_530a10_P5313Ts_2022072800_M_4588589.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5555.7451 seconds (13.97 ms logging)
HRnat_530a10_P5313Ts_2022072912_M_4588575.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5524.9680 seconds (13.55 ms logging)
HRnat_530a10_P5313Ts_2022073100_M_4590228.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5540.7973 seconds (13.72 ms logging)
HRnat 530a10 P5313Ts 2022080112 M 4590265.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5607.6053 seconds (13.47 ms logging)
HRnat 530a10 P5313Ts 2022080300 M 4590264.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5590.0519 seconds (13.58 ms logging)
HRnat_530a10_P5313Ts_2022080412_M_4590270.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5602.0623 seconds (13.65 ms logging)
HRnat_530a10_P5313Ts_2022080600_M_4590277.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5645.8356 seconds (13.66 ms logging)
HRnat 530a10 P5313Ts 2022080712 M 4590281.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5616.8410 seconds (13.52 ms logging)
HRnat_530a10_P5313Ts_2022080900_M_4590327.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5526.2416 seconds (13.58 ms logging)
HRnat 530a10 P5313Ts 2022081012 M 4590338.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5530.6340 seconds (13.30 ms logging)
HRnat_530a10_P5313Ts_2022081200_M_4590346.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5527.0002 seconds (13.74 ms logging)
HRnat 530a10 P5313Ts 2022081312 M 4590348.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5571.3506 seconds (13.71 ms logging)
HRnat_530a10_P5313Ts_2022081500_M_4590493.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5577.2719 seconds (13.73 ms logging)
HRnat 530a10 P5313Ts 2022081612 M 4590521.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5590.5720 seconds (13.42 ms logging)
HRnat 530a10 P5313Ts 2022081800 M 4590489.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5542.1696 seconds (13.88 ms logging)
HRnat_530a10_P5313Ts_2022081912_M_4590513.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5504.8678 seconds (13.60 ms logging)
HRnat_530a10_P5313Ts_2022082100_M_4590971.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5522.0518 seconds (13.37 ms logging)
HRnat 530a10 P5313Ts 2022082212 M 4591021.sc6pbs-001-ib.out.000;oe-00000-00000; Execution time: 5614,2807 seconds (13.74 ms logging)
HRnat 530a10 P5313Ts 2022082400 M 4591055.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5581.2960 seconds (14.04 ms logging)
HRnat 530a10 P5313Ts 2022082512 M 4591101.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5557.9950 seconds (14.01 ms logging)
HRnat_530a10_P5313Ts_2022082700_M_4591137.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5599.5400 seconds (13.39 ms logging)
HRnat_530a10_P5313Ts_2022082812_M_4591141.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5598.1293 seconds (13.55 ms logging)
HRnat 530a10 P5313Ts 2022083000 M 4593019.sc6pbs-001-ib.out.000;oe-00000-00000; Execution time: 5646.0825 seconds (13.36 ms logging)
HRnat 530a10 P5313Ts 2022083112 M 4593044.sc6pbs-001-ib.out.000:oe-00000-00000: Execution time: 5576.4056 seconds (13.81 ms logging)
```

Mean (2MOM\_noLF\_n1): 234503/42 = 5583 seconds (-0.24%)