NWPSAF-MO-TV-19

RTTOV v9.1: Performance Tests

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Change record			
Version	Date	Author / changed by	Remarks
1.0	20.2.08	R.W.Saunders	Version submitted to DRI

RTTOV_9_1 TSTRAD_SX6 supercomputer performance tests for 50000/25000 profiles

Test number	Platform	Sensor	Channels / Profiles	Pred-ictors	Extra Gases	Interp?	Emissivity calc.		Model?	Test for
							IR	Fastem		
1	noaa	amsua	15/50	7	-	N	-	3	FWD	ECMWF
2	noaa	amsua	15/50	7	-	Y	-	3	FWD	ECMWF
3	noaa	hirs	19/50	7	-	N	ISEM	-	FWD	ECMWF
4	noaa	amsua	15/1	7	-	N	-	3	FWD	METO
5	noaa	amsua	15/1	7	-	Y	-	3	FWD	METO
6	noaa	hirs	19/1	7	-	N	ISEM	-	FWD	METO
7	noaa	amsua	15/50	7	-	N	-	3	TL/AD	ECMWF
8	noaa	hirs	19/50	7	-	Y	ISEM	-	TL/AD	ECMWF
9	eos	airs	14/50	9	All	N	ISEM	-	TL/AD	ECMWF
10	eos	airs	14/50	9	All	Y	ISEM	-	TL/AD	ECMWF
11	noaa	amsua	15/1	7	-	N	-	3	K	METO
12	noaa	hirs	19/1	7	-	Y	ISEM	-	K	METO
13	eos	airs	14/1	9	All	N	ISEM	-	K	METO
14	eos	airs	14/1	9	All	Y	ISEM	-	K	METO
21	noaa	amsua	15/50	7	-	N	-	3	K	MF
22	noaa	hirs	19/50	7	-	Y	ISEM	-	K	MF
23	eos	airs	14/50	9	All	N	ISEM	-	K	MF
24	eos	airs	14/50	9	All	Y	ISEM	-	K	MF

Comparison of RTTOV8 vs RTTOV9 Run Times in secs

Test #	NEC METO RTTOV8	NEC METO RTTOV9	NEC METO RT9/RT8	NEC MF RT9	IBM ECMWF RT8	IBM ECMWF RT9	IBM ECMWF RT9/RT8	Intel PC RT9	DELL MF RTTOV8	DELL MF RTTOV9	DELL MF RT9/RT8	SUN MF RT9
1	21	16	0.76	9	11	10	0.91	47	15	13	0.87	47
2		64		36		20		83		23		96
3	17	11	0.65	5	12	12	1.00	69	16	22	1.38	64
4	33	67	2.03	36	11	14	1.27	47	9	12	1.33	42
5		211		93		30		90		25		88
6	28	62	2.21	33	12	16	1.33	67	11	15	1.36	55
7	92	85	0.92	45	56	53	0.95	285	96	72	0.75	266
8		182		105		77		426		117		361
9		336		161		227				347		1078
10		605		331		255				363		1088
11	218	166	0.76	87	52	46	0.88	258	39	52	1.33	166
12		297		138		80		455		81		259
13		430		250		235		1412		358		949
14		734		389		285		1456		383		1013
21				39	54	42	0.78	257		62		199
22				69		72		414		98		300
23				169		231				353		940
24				224		258				361		965

Comparison of RTTOV9 parallel times in secs

Test #	DELL MF 1 proc	DELL MF 2 procs	DELL MF 1p/2p	DELL MF 4 procs	DELL MF 1p/4p	DELL MF 2p/4p
1	13	7	1.86	4.6	2.83	1.52
2	23	17	1.35	11.8	1.95	1.44
3	22	14	1.57	6.3	3.49	2.22
4	12	14	0.86	17	0.71	0.82
5	25	24	1.04	26	0.96	0.92
6	15	22	0.68	18	0.83	1.22
7	72	44	1.64	27	2.67	1.63
8	117	82	1.43	36	3.25	2.28
9	329	210	1.57	123	2.67	1.71
10	345	219	1.58	131	2.63	1.67
11	52	35	1.49	34	1.53	1.03
12	81	62	1.31	45	1.80	1.38
13	340	233	1.46	197	1.73	1.18
14	365	250	1.46	191	1.91	1.31
21	62	40	1.55	23	2.70	1.74
22	98	64	1.53	32	3.06	2.00
23	335	213	1.57	121	2.77	1.76
24	343	217	1.58	123	2.79	1.76

Time for reading AIRS coefs has been removed (tests 9 10 13 14 23 24)
Timings for 1proc where measured without DrHook library
Timings for 2-4procs where measured with DrHook library (slowest thread)

RTTOV-8 vs RTTOV-9 Memory requirements in Mbytes

Test #	DELL MF RTTOV8	DELL MF RTTOV9
1	9	9
3	8	9
4	8	8
6	8	8
7	13	11
11	9	9