

# Supplementary information to “High resolution global climate modelling; the UPSCALE project, a large simulation campaign”

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## A Description of output data

Output in the Met Office Unified Model (MetUM) is controlled by a the Spatial and Temporal Averaging and Storage Handling (STASH) system, which specifies each data field by the combination of field name (with associated STASH code number) and time, domain and usage “profiles”. The time profile defines the temporal averaging used and the frequencies of sampling and output to file. A domain profile determines spatial properties of the output field, which can include the range of model or pressure levels on any of the various grids, regions to extract, and averaging (such as zonal means). The usage profile determines which output “stream” the data is written to. A stream is a sequence of data files, generated on disk as the simulation progresses, which is periodically reinitialised and is indicated by a single letter.

The various time and domain profiles are described in sections A.1 and A.2 respectively, with the STASH output fields defined in section A.3.

Two of the current climate ensemble members included additional diagnostics, and an ensemble of summer seasons (June-September) were also run. Extra data describing the behaviour of the Stratosphere was included in run *xgxqh*, see section A.4, and additional land surface data was included in *xgxqi*, section A.5. The ensemble of summer seasons was performed to aid analysis of the Indian and African monsoons with the additions described in section A.6

## A.1 Time profiles

Table 1: Description of time profiles. Two codes from the PP field headers are included to indicate how differently processed data can be distinguished. The full definition of the PP field header can be found at <http://badc.nerc.ac.uk/help/formats/pp-format/files/header.txt>.

Time Profile	Description	LBTIM code	LBPROC code
T6HMN	Mean over 30 days sampled every 6 hours	622	128
T24H0Z	Instantaneous values at 0Z every 24 hours	12	0
T6H	Instantaneous values at 6 hourly intervals (00Z, 06Z, 12Z, 18Z)	12	0
T6HDAYM	Daily mean of values sampled every 6 hours	622	128
TDAYM	Daily mean, sampled each timestep	122	128
TDAYMAX	Daily maximum of timestep data	122	8192
TDAYMIN	Daily minimum of timestep data	122	4096
TMONMN	Monthly mean data sampled every timestep	122	128
T30DAY	Instantaneous values output once every 30 days	0	0
TMPMNxx	Monthly mean of values at sampled daily at xxZ, where xx=00,03,...,18,21	2422	128
T3HDAYM	Daily mean sampled every 3 hours	322	128
T6HRMAX	Maximum value of timestep data in each 6 hour period	122	8192
T3H	Instantaneous values every 3 hours from 0Z	0	0
T3HMN	3 hourly means of timestep data	122	128
TSTEP	Instantaneous values every time step	0	0

## A.2 Domain profiles

Table 2: Description of domain profiles

Domain profile name	Description
DIAG	Standard 2D diagnostic field
DALLTH	All theta levels
DALLRH	All rho levels
D52TH	Bottom 52 theta levels
D1TH	Bottom theta level
D52RH	Bottom 52 rho levels
DA7ISCCP	7 ISCCP bands
DIAGAOT	Short-wave radiation bands 1-6
DPBLTH	Boundary layer theta levels (bottom 50 levels)
DSOIL	Soil levels
DTOPSOIL	Surface soil level
DTILE	Land and vegetation surface types 1-9 (on 1 degree grid?)
DTILEURB	Land and vegetation surface types 3 and 6 (on 1 degree grid?)
DPFTS	Land and vegetation surface types 1-5 (on 1 degree grid?)
DP31CCM	Pressure levels (hPa): 1000, 850, 700, 500, 400, 300, 250, 200, 170, 150, 130, 115, 100, 90, 80, 70, 50, 30, 20, 15, 10, 7, 5, 3, 2, 1.5, 1, 0.5, 0.3, 0.2, 0.1
DP31CCMZ	Zonal mean of pressure levels in DP31CCM
DP500	Pressure levels (hPa): 500
DP17	Pressure levels (hPa): 1000, 925, 850, 700, 600, 500, 400, 300, 250, 200, 150, 100, 70, 50, 30, 20, 10
DP8	Pressure levels (hPa): 925, 850, 600, 500, 400, 300, 200, 100
DP3	Pressure levels (hPa): 850, 500, 250, 200
DP7	Pressure levels (hPa): 1000, 850, 700, 500, 250, 100, 10
DP_HEAVI	Pressure levels (hPa): 1000, 925, 850, 700, 600. This profile is only used by the Heaviside function fields (30-301) for pressure levels above 600 you will need to assume that the fields are 1 everywhere. This assumption has been checked and this profile is used to reduce the volume of unnecessary high temporal resolution data being generated.
DNOGWTH	Theta levels 23-85
DNOGWRH	Rholevels 23-85
DP36CCM	Extension of DP31CCM to include the following Pressure levels (hPa): 0.7, 0.15, 0.07, 0.05, 0.03
DP36CCMZ	Zonal mean of pressure levels in DP36CCM
DOGW40RH	Rho levels 1-75
DP3MA	Pressure levels (hPa): 10, 1, 0.1
DP10100	Pressure levels (hPa): 1000, 100, 10
D.RHO.1	Rho level 1
D.THETA1	Theta level 1
DIAGAFR	2D diagnostic field over Africa; 40S - 40N, 20W - 50 E
DBLTHAFR	Boundary layer theta levels (bottom 50) over Africa
DIAGMONS	2D diagnostic field over the Indian monsoon region; 10S - 40N, 40E - 125E
DBLTHMON	Boundary layer theta levels (bottom 50) over monsoon region

### A.3 Standard STASH diagnostics

Table 3: Standard STASH diagnostic setup of the UPSCALE runs.

STASH code	Description	Time pro- file	Domain profile	Output stream
4	THETA AFTER TIMESTEP	TMONMN	DALLTH	I
10	SPECIFIC HUMIDITY AFTER TIMESTEP	TMONMN	DALLTH	I
12	QCF AFTER TIMESTEP	TMONMN	DALLTH	I
23	SNOW AMOUNT OVER LAND AFT TSTP KG/M2	TDAYM	DIAG	F
23	SNOW AMOUNT OVER LAND AFT TSTP KG/M2	TMONMN	DIAG	I
24	SURFACE TEMPERATURE AFTER TIMESTEP	TDAYM	DIAG	A
24	SURFACE TEMPERATURE AFTER TIMESTEP	T3H	DIAG	H
24	SURFACE TEMPERATURE AFTER TIMESTEP	TMONMN	DIAG	I
24	SURFACE TEMPERATURE AFTER TIMESTEP	TMPMN <sub>xx</sub>	DIAG	I
25	BOUNDARY LAYER DEPTH AFTER TIMESTEP	TMONMN	DIAG	I
31	FRAC OF SEA ICE IN SEA AFTER TSTEP	TDAYM	DIAG	A
31	FRAC OF SEA ICE IN SEA AFTER TSTEP	TMONMN	DIAG	I
58	SULPHUR DIOXIDE EMISSIONS	TMONMN	DIAG	I
59	DIMETHYL SULPHIDE EMISSIONS (ANCIL)	TMONMN	DIAG	I
101	SO2 MASS MIXING RATIO AFTER TSTEP	TMONMN	DALLTH	I
102	DIMETHYL SULPHIDE MIX RAT AFTER TS	TMONMN	DALLTH	I
103	SO4 AITKEN MODE AEROSOL AFTER TSTEP	TMONMN	DALLTH	I
104	SO4 ACCUM. MODE AEROSOL AFTER TSTEP	TMONMN	DALLTH	I
105	SO4 DISSOLVED AEROSOL AFTER TSTEP	TMONMN	DALLTH	I
108	FRESH SOOT MASS MIX RAT AFTER TSTEP	TMONMN	DALLTH	I
109	AGED SOOT MASS MIX RAT AFTER TSTEP	TMONMN	DALLTH	I
110	CLOUD SOOT MASS MIX RAT AFTER TSTEP	TMONMN	DALLTH	I
111	FRESH BIOMASS SMOKE AFTER TSTEP	TMONMN	DALLTH	I
112	AGED BIOMASS SMOKE AFTER TSTEP	TMONMN	DALLTH	I
113	CLOUD BIOMASS SMOKE AFTER TSTEP	TMONMN	DALLTH	I
121	3D NATURAL SO2 EMISSIONS KG/M2/S	TMONMN	DALLTH	I
126	HIGH LEVEL SO2 EMISSIONS KG/M2/S	TMONMN	DIAG	I
129	FRESH SOOT HI LEV EMISS KG/M2/S	TMONMN	DIAG	I
130	FRESH BIOMASS SURF EMISS KG/M2/S	TMONMN	DIAG	I
131	FRESH BIOMASS HI LEV EMISS KG/M2/S	TMONMN	DIAG	I
132	DMS CONCENTRATION IN SEAWATER	TMONMN	DIAG	I
135	FRESH Ocff HI LEV EMISS KG/M2/S	TMONMN	DIAG	I
211	CCA WITH ANVIL AFTER TIMESTEP	TMONMN	DALLTH	I
238	SURFACE DOWNWARD LW RADIATION W/M2	TMONMN	DIAG	I
239	TOA - SURF UPWARD LW RADIATION W/M2	TMONMN	DIAG	I
254	QCL AFTER TIMESTEP	TMONMN	DALLTH	I
262	BOUNDARY LAYER CONVECTION FLAG	TMONMN	DIAG	I
265	AREA CLOUD FRACTION IN EACH LAYER	TMONMN	DALLTH	I
266	BULK CLOUD FRACTION IN EACH LAYER	TMONMN	DALLTH	I
267	LIQUID CLOUD FRACTION IN EACH LAYER	TMONMN	DALLTH	I
268	FROZEN CLOUD FRACTION IN EACH LAYER	TMONMN	DALLTH	I
407	PRESSURE AT RHO LEVELS AFTER TS	TDAYM	D52RH	D
407	PRESSURE AT RHO LEVELS AFTER TS	TMONMN	DALLRH	I
408	PRESSURE AT THETA LEVELS AFTER TS	TDAYM	D52TH	D
408	PRESSURE AT THETA LEVELS AFTER TS	TMONMN	DALLTH	I
409	SURFACE PRESSURE AFTER TIMESTEP	TMONMN	DIAG	I

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STASH code	Description	Time pro- file	Domain profile	Output stream
431	Dust division 1 mass mixing ratio	TMONMN	DALLTH	I
432	Dust division 2 mass mixing ratio	TMONMN	DALLTH	I
433	Dust division 3 mass mixing ratio	TMONMN	DALLTH	I
434	Dust division 4 mass mixing ratio	TMONMN	DALLTH	I
435	Dust division 5 mass mixing ratio	TMONMN	DALLTH	I
436	Dust division 6 mass mixing ratio	TMONMN	DALLTH	I
507	OPEN SEA SURFACE TEMP AFTER TIMESTEP	TMONMN	DIAG	I
508	SEA-ICE SURFACE TEMP AFTER TIMESTEP	TMONMN	DIAG	I
509	SEA ICE ALBEDO AFTER TS	TMONMN	DIAG	I
510	MEAN LAND ALBEDO AFTER TS	TMONMN	DIAG	I
1201	NET DOWN SURFACE SW FLUX: SW TS ONLY	TDAYM	DIAG	D
1201	NET DOWN SURFACE SW FLUX: SW TS ONLY	T3H	DIAG	H
1201	NET DOWN SURFACE SW FLUX: SW TS ONLY	TMONMN	DIAG	I
1201	NET DOWN SURFACE SW FLUX: SW TS ONLY	TMPMN <sub>xx</sub>	DIAG	I
1203	NET DN SW RAD FLUX:OPEN SEA:SEA MEAN	TDAYM	DIAG	D
1203	NET DN SW RAD FLUX:OPEN SEA:SEA MEAN	TMONMN	DIAG	I
1207	INCOMING SW RAD FLUX (TOA): ALL TSS	TDAYM	DIAG	F
1207	INCOMING SW RAD FLUX (TOA): ALL TSS	TMONMN	DIAG	I
1208	OUTGOING SW RAD FLUX (TOA)	TDAYM	DIAG	F
1208	OUTGOING SW RAD FLUX (TOA)	TMONMN	DIAG	I
1208	OUTGOING SW RAD FLUX (TOA)	TMPMN <sub>xx</sub>	DIAG	I
1209	CLEAR-SKY (II) UPWARD SW FLUX (TOA)	TDAYM	DIAG	F
1209	CLEAR-SKY (II) UPWARD SW FLUX (TOA)	TMONMN	DIAG	I
1209	CLEAR-SKY (II) UPWARD SW FLUX (TOA)	TMPMN <sub>xx</sub>	DIAG	I
1210	CLEAR-SKY (II) DOWN SURFACE SW FLUX	TDAYM	DIAG	D
1210	CLEAR-SKY (II) DOWN SURFACE SW FLUX	T3H	DIAG	H
1210	CLEAR-SKY (II) DOWN SURFACE SW FLUX	TMONMN	DIAG	I
1210	CLEAR-SKY (II) DOWN SURFACE SW FLUX	TMPMN <sub>xx</sub>	DIAG	I
1211	CLEAR-SKY (II) UP SURFACE SW FLUX	TDAYM	DIAG	D
1211	CLEAR-SKY (II) UP SURFACE SW FLUX	T3H	DIAG	H
1211	CLEAR-SKY (II) UP SURFACE SW FLUX	TMONMN	DIAG	I
1211	CLEAR-SKY (II) UP SURFACE SW FLUX	TMPMN <sub>xx</sub>	DIAG	I
1221	LAYER CLD LIQ RE LAYER CLD WEIGHT	TMONMN	DALLTH	J
1223	LAYER CLOUD WEIGHT FOR MICROPHYSICS	TMONMN	DALLTH	J
1225	CONV CLOUD LIQ RE CONV CLD WEIGHT	TMONMN	DALLTH	J
1226	CONV CLOUD WEIGHT FOR MICROPHYSICS	TMONMN	DALLTH	J
1235	TOTAL DOWNWARD SURFACE SW FLUX	TDAYM	DIAG	D
1235	TOTAL DOWNWARD SURFACE SW FLUX	T3H	DIAG	H
1235	TOTAL DOWNWARD SURFACE SW FLUX	TMONMN	DIAG	J
1235	TOTAL DOWNWARD SURFACE SW FLUX	TMPMN <sub>xx</sub>	DIAG	J
1237	NET DOWNWARD SW FLUX AT THE TROP.	TMONMN	DIAG	J
1241	DROPLET NUMBER CONC LYR CLOUD WGT	TMONMN	DALLTH	J
1242	LAYER CLOUD LWC LAYER CLOUD WEIGHT	TMONMN	DALLTH	J
1245	2-D RE DISTRIBUTION 2-D RE WEIGHT	TMONMN	DIAG	J
1246	WEIGHT FOR 2-D RE DISTRIBUTION	TMONMN	DIAG	J
1247	FILM-MODE SEA-SALT AEROSOL NUMBER	TMONMN	DALLTH	J
1248	JET-MODE SEA-SALT AEROSOL NUMBER	TMONMN	DALLTH	J
1254	2-D RE WEIGHT - WARM CLOUDS ONLY	TMONMN	DIAG	J
1255	WEIGHT FOR WARM CLOUD 2-D RE	TMONMN	DIAG	J
1260	NET DN SW O SEA FLX BLW 690NM:SEA MN	TDAYM	DIAG	D
1260	NET DN SW O SEA FLX BLW 690NM:SEA MN	TMONMN	DIAG	J

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STASH code	Description	Time pro- file	Domain profile	Output stream
1280	COLUMN-INTEGRATED Nd SAMP. WEIGHT	TMONMN	DIAG	J
1281	SAMP. WEIGHT FOR COL. INT. Nd	TMONMN	DIAG	J
2201	NET DOWN SURFACE LW RAD FLUX	TDAYM	DIAG	D
2201	NET DOWN SURFACE LW RAD FLUX	T3H	DIAG	H
2201	NET DOWN SURFACE LW RAD FLUX	TMONMN	DIAG	J
2201	NET DOWN SURFACE LW RAD FLUX	TMPMN <sub>xx</sub>	DIAG	J
2203	NET DN LW RAD FLUX:OPEN SEA:SEA MEAN	TDAYM	DIAG	D
2203	NET DN LW RAD FLUX:OPEN SEA:SEA MEAN	TMONMN	DIAG	J
2204	TOTAL CLOUD AMOUNT IN LW RADIATION	TDAYM	DIAG	D
2204	TOTAL CLOUD AMOUNT IN LW RADIATION	T3H	DIAG	H
2204	TOTAL CLOUD AMOUNT IN LW RADIATION	TMONMN	DIAG	J
2204	TOTAL CLOUD AMOUNT IN LW RADIATION	TMPMN <sub>xx</sub>	DIAG	J
2205	OUTGOING LW RAD FLUX (TOA)	TMONMN	DIAG	J
2206	CLEAR-SKY (II) UPWARD LW FLUX (TOA)	TDAYM	DIAG	F
2206	CLEAR-SKY (II) UPWARD LW FLUX (TOA)	TMONMN	DIAG	J
2206	CLEAR-SKY (II) UPWARD LW FLUX (TOA)	TMPMN <sub>xx</sub>	DIAG	J
2207	DOWNWARD LW RAD FLUX: SURFACE	TDAYM	DIAG	D
2207	DOWNWARD LW RAD FLUX: SURFACE	T3H	DIAG	H
2207	DOWNWARD LW RAD FLUX: SURFACE	TMONMN	DIAG	J
2207	DOWNWARD LW RAD FLUX: SURFACE	TMPMN <sub>xx</sub>	DIAG	J
2208	CLEAR-SKY (II) DOWN SURFACE LW FLUX	TDAYM	DIAG	D
2208	CLEAR-SKY (II) DOWN SURFACE LW FLUX	T3H	DIAG	H
2208	CLEAR-SKY (II) DOWN SURFACE LW FLUX	TMONMN	DIAG	J
2208	CLEAR-SKY (II) DOWN SURFACE LW FLUX	TMPMN <sub>xx</sub>	DIAG	J
2237	NET DOWNWARD LW FLUX AT THE TROP.	TMONMN	DIAG	J
2261	TOTAL CLOUD AMOUNT ON LEVELS	TMONMN	DALLTH	J
2269	ISCCP CLOUD WEIGHTS	TDAYM	DIAG	F
2269	ISCCP CLOUD WEIGHTS	TMONMN	DIAG	J
2269	ISCCP CLOUD WEIGHTS	TMPMN <sub>xx</sub>	DIAG	J
2270	ISCCP CLOUD $0.3 \leq \tau$	TDAYM	DA7ISCCP	D
2270	ISCCP CLOUD $0.3 \leq \tau$	TMONMN	DA7ISCCP	J
2271	ISCCP CLOUD $\tau < 0.3$	TMONMN	DA7ISCCP	J
2271	ISCCP CLOUD $\tau < 0.3$	TMPMN <sub>xx</sub>	DA7ISCCP	J
2272	ISCCP CLOUD $0.3 \leq \tau < 1.3$	TMONMN	DA7ISCCP	J
2272	ISCCP CLOUD $0.3 \leq \tau < 1.3$	TMPMN <sub>xx</sub>	DA7ISCCP	J
2273	ISCCP CLOUD $1.3 \leq \tau < 3.6$	TMONMN	DA7ISCCP	J
2273	ISCCP CLOUD $1.3 \leq \tau < 3.6$	TMPMN <sub>xx</sub>	DA7ISCCP	J
2274	ISCCP CLOUD $3.6 \leq \tau < 9.4$	TMONMN	DA7ISCCP	J
2274	ISCCP CLOUD $3.6 \leq \tau < 9.4$	TMPMN <sub>xx</sub>	DA7ISCCP	J
2275	ISCCP CLOUD $9.4 \leq \tau < 23.0$	TMONMN	DA7ISCCP	J
2275	ISCCP CLOUD $9.4 \leq \tau < 23.0$	TMPMN <sub>xx</sub>	DA7ISCCP	J
2276	ISCCP CLOUD $23.0 \leq \tau < 60.0$	TMONMN	DA7ISCCP	J
2276	ISCCP CLOUD $23.0 \leq \tau < 60.0$	TMPMN <sub>xx</sub>	DA7ISCCP	J
2277	ISCCP CLOUD $60.0 \leq \tau$	TMONMN	DA7ISCCP	J
2277	ISCCP CLOUD $60.0 \leq \tau$	TMPMN <sub>xx</sub>	DA7ISCCP	J
2284	SULPHATE OPTICAL DEPTH	TMONMN	DIAGAOT	J
2285	MINERAL DUST OPTICAL DEPTH	TMONMN	DIAGAOT	J
2286	SEA SALT OPTICAL DEPTH	TMONMN	DIAGAOT	J
2287	SOOT OPTICAL DEPTH	TMONMN	DIAGAOT	J
2288	BIOMASS OPTICAL DEPTH	TMONMN	DIAGAOT	J
2289	BIOGENIC OPTICAL DEPTH	TMONMN	DIAGAOT	J

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STASH code	Description	Time pro- file	Domain profile	Output stream
2290	WEIGHTED ISCCP CLOUD ALBEDO	TDAYM	DIAG	F
2290	WEIGHTED ISCCP CLOUD ALBEDO	TMONMN	DIAG	J
2291	WEIGHTED ISCCP CLOUD OPTICAL DEPTH	TMONMN	DIAG	J
2292	WEIGHTED ISCCP CLOUD TOP PRESSURE	TDAYM	DIAG	F
2292	WEIGHTED ISCCP CLOUD TOP PRESSURE	TMONMN	DIAG	J
2293	WEIGHTED ISCCP TOTAL CLOUD AREA	TDAYM	DIAG	F
2293	WEIGHTED ISCCP TOTAL CLOUD AREA	TMONMN	DIAG	J
2295	FOSSIL FUEL ORG CARBON OPTIC DEPTH	TMONMN	DIAGAOT	J
3054	AERODYNAMIC RESISTANCE (S/M)	TMONMN	DIAG	J
3201	HT FLUX THROUGH SEAICE:SEA MEAN W/M2	TMONMN	DIAG	J
3217	SURFACE HEAT FLUX W/M2	TDAYM	DIAG	D
3217	SURFACE HEAT FLUX W/M2	T3H	DIAG	H
3217	SURFACE HEAT FLUX W/M2	TMONMN	DIAG	J
3219	X-COMP OF SURF + BL WIND STRESS N/M2	TMONMN	DPBLTH	J
3220	Y-COMP OF SURF + BL WIND STRESS N/M2	TMONMN	DPBLTH	J
3223	SURFACE TOTAL MOISTURE FLUX KG/M2/S	TDAYM	DIAG	E
3223	SURFACE TOTAL MOISTURE FLUX KG/M2/S	TMONMN	DIAG	J
3225	10 METRE WIND U-COMP B GRID	TDAYM	DIAG	D
3225	10 METRE WIND U-COMP B GRID	T3H	DIAG	H
3225	10 METRE WIND U-COMP B GRID	TMONMN	DIAG	J
3226	10 METRE WIND V-COMP B GRID	TDAYM	DIAG	D
3226	10 METRE WIND V-COMP B GRID	T3H	DIAG	H
3226	10 METRE WIND V-COMP B GRID	TMONMN	DIAG	J
3227	10 METRE WIND SPEED ON B GRID	TDAYM	DIAG	A
3227	10 METRE WIND SPEED ON B GRID	T6HRMAX	DIAG	B
3227	10 METRE WIND SPEED ON B GRID	TDAYMAX	DIAG	D
3227	10 METRE WIND SPEED ON B GRID	TMONMN	DIAG	J
3228	SFC SH FLX FROM OPEN SEA:SEA MN W/M2	TDAYM	DIAG	D
3228	SFC SH FLX FROM OPEN SEA:SEA MN W/M2	TMONMN	DIAG	J
3231	SUBLIM. FROM SURFACE (GBM) KG/M2/TS	TMONMN	DIAG	J
3232	EVAP FROM OPEN SEA: SEA MEAN KG/M2/S	TMONMN	DIAG	J
3234	SURFACE LATENT HEAT FLUX W/M2	TDAYM	DIAG	D
3234	SURFACE LATENT HEAT FLUX W/M2	T3H	DIAG	H
3234	SURFACE LATENT HEAT FLUX W/M2	TMONMN	DIAG	J
3235	SEAICE TOP MELT LH FLX:SEA MEAN W/M2	TMONMN	DIAG	J
3236	TEMPERATURE AT 1.5M	TDAYM	DIAG	D
3236	TEMPERATURE AT 1.5M	TDAYMAX	DIAG	D
3236	TEMPERATURE AT 1.5M	TDAYMIN	DIAG	D
3236	TEMPERATURE AT 1.5M	T3H	DIAG	H
3236	TEMPERATURE AT 1.5M	T6HMN	DIAG	J
3237	SPECIFIC HUMIDITY AT 1.5M	TDAYM	DIAG	D
3237	SPECIFIC HUMIDITY AT 1.5M	TDAYMAX	DIAG	F
3237	SPECIFIC HUMIDITY AT 1.5M	TDAYMIN	DIAG	F
3237	SPECIFIC HUMIDITY AT 1.5M	T3H	DIAG	H
3237	SPECIFIC HUMIDITY AT 1.5M	TMONMN	DIAG	J
3238	DEEP SOIL TEMPERATURE AFTER B.LAYER	TMONMN	DSOIL	J
3245	RELATIVE HUMIDITY AT 1.5M	TDAYM	DIAG	D
3245	RELATIVE HUMIDITY AT 1.5M	TMONMN	DIAG	J
3258	SURFACE SNOWMELT HEAT FLUX W/M2	TMONMN	DIAG	J
3259	CANOPY CONDUCTANCE M/S	TMONMN	DIAG	J
3261	GROSS PRIMARY PRODUCTIVITY KG C/M2/S	TMONMN	DIAG	J

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STASH code	Description	Time pro- file	Domain profile	Output stream
3262	NET PRIMARY PRODUCTIVITY KG C/M2/S	TMONMN	DIAG	J
3263	PLANT RESPIRATION KG/M2/S	TMONMN	DIAG	J
3270	SO2 SURFACE DRY DEP FLUX KG/M2/S	TMONMN	DIAG	J
3271	SO4 AIT SURF DRY DEP FLUX KG/M2/S	TMONMN	DIAG	J
3272	SO4 ACC SURF DRY DEP FLUX KG/M2/S	TMONMN	DIAG	J
3273	SO4 DIS SURF DRY DEP FLUX KG/M2/S	TMONMN	DIAG	J
3287	CANOPY EVAPORATION ON TILES	TDAYM	DTILE	D
3287	CANOPY EVAPORATION ON TILES	TMONMN	DTILE	J
3288	TRANSPIRATION+SOIL EVP ON TILES	TMONMN	DTILE	J
3290	SURFACE SENSIBLE HEAT FLUX ON TILES	TDAYM	DTILEURB	F
3290	SURFACE SENSIBLE HEAT FLUX ON TILES	TMONMN	DTILE	J
3291	NET PRIMARY PRODUCTIVITY ON PFTS	TMONMN	DPFTS	J
3292	PLANT RESPIRATION ON PFTS KG C/M2/S	TMONMN	DPFTS	J
3293	SOIL RESPIRATION KG C/M2/S	TMONMN	DIAG	J
3296	EVAP FROM SOIL SURF : RATE KG/M2/S	TDAYM	DIAG	D
3296	EVAP FROM SOIL SURF : RATE KG/M2/S	TMONMN	DIAG	J
3297	EVAP FROM CANOPY : RATE KG/M2/S	TDAYM	DIAG	D
3297	EVAP FROM CANOPY : RATE KG/M2/S	TMONMN	DIAG	J
3298	SUBLIM. SURFACE (GBM) : RATE KG/M2/S	TMONMN	DIAG	J
3300	NH3 SURFACE DRY DEP FLUX KG/M2/S	TMONMN	DIAG	J
3301	FRESH SOOT DRY DEP FLUX KG/M2/S	TMONMN	DIAG	J
3302	AGED SOOT DRY DEP FLUX KG/M2/S	TMONMN	DIAG	J
3303	SOOT IN CLOUD DEP FLUX KG/M2/S	TMONMN	DIAG	J
3304	TURBULENT MIXING HT AFTER B.LAYER m	TDAYM	DIAG	D
3304	TURBULENT MIXING HT AFTER B.LAYER m	TMONMN	DIAG	J
3305	STABLE BL INDICATOR	TDAYM	DIAG	D
3305	STABLE BL INDICATOR	TMONMN	DIAG	J
3306	STRATOCUM. OVER STABLE BL INDICATOR	TMONMN	DIAG	J
3307	WELL MIXED BL INDICATOR	TDAYM	DIAG	D
3307	WELL MIXED BL INDICATOR	TMONMN	DIAG	J
3308	DECOUPLED SC. NOT OVER CU. INDICATOR	TMONMN	DIAG	J
3309	DECOUPLED SC. OVER CU. INDICATOR	TDAYM	DIAG	D
3309	DECOUPLED SC. OVER CU. INDICATOR	TMONMN	DIAG	J
3310	CUMULUS-CAPPED BL INDICATOR	TDAYM	DIAG	D
3310	CUMULUS-CAPPED BL INDICATOR	TMONMN	DIAG	J
3313	SOIL MOIS AVAIL FACTOR ON PFTS	TDAYM	DPFTS	B
3313	SOIL MOIS AVAIL FACTOR ON PFTS	TMONMN	DPFTS	J
3316	SURFACE TEMP ON TILES K	TDAYM	DTILEURB	F
3321	CANOPY WATER ON TILES KG/M2	TMONMN	DTILE	J
3324	ROUGHNESS LENGTH ON TILES M	TMONMN	DTILE	J
3328	1.5M TEMPERATURE OVER TILES	TDAYM	DTILEURB	F
3329	1.5M SPECIFIC HUMIDITY OVER TILES	TDAYM	DTILEURB	F
3329	1.5M SPECIFIC HUMIDITY OVER TILES	TMONMN	DTILE	J
3330	SURFACE LATENT HEAT FLUX ON TILES	TDAYM	DTILEURB	F
3331	SUBLIMATION MOISTURE FLUX ON TILES	TMONMN	DTILE	J
3332	TOA OUTGOING LW RAD AFTER B.LAYER	TDAYM	DIAG	D
3332	TOA OUTGOING LW RAD AFTER B.LAYER	TMONMN	DIAG	J
3332	TOA OUTGOING LW RAD AFTER B.LAYER	TMPMNxx	DIAG	J
3334	LAND MEAN POTENTIAL EVAPORATION	TMONMN	DIAG	J
3340	SHEAR-DRIVEN B.LAYER INDICATOR	TMONMN	DIAG	J
3347	MOISTURE FLUX FROM MEAN SEA KG/M2/S	TMONMN	DIAG	J



Continued from previous page.

STASH code	Description	Time pro- file	Domain profile	Output stream
3353	SUBLIM. SEAICE:SEA MEAN RATE KG/M2/S	TMONMN	DIAG	J
3392	X-COMP OF MEAN SEA SURF STRESS N/M2	TMONMN	DIAG	J
3393	Y-COMP OF LAND SURF WIND STRESS N/M2	TMONMN	DIAG	J
3394	Y-COMP OF MEAN SEA SURF STRESS N/M2	TMONMN	DIAG	J
3396	FRESH BIOMASS DRY DEPN FLUX KG/M2/S	TMONMN	DIAG	J
3397	AGED BIOMASS DRY DEPN FLUX KG/M2/S	TMONMN	DIAG	J
3398	BIOMASS IN CLOUD DEPN FLUX KG/M2/S	TMONMN	DIAG	J
3401	Dust emissions div 1 (kg/m2/s)	TMONMN	DIAG	J
3402	Dust emissions div 2 (kg/m2/s)	TMONMN	DIAG	J
3403	Dust emissions div 3 (kg/m2/s)	TMONMN	DIAG	J
3404	Dust emissions div 4 (kg/m2/s)	TMONMN	DIAG	J
3405	Dust emissions div 5 (kg/m2/s)	TMONMN	DIAG	J
3406	Dust emissions div 6 (kg/m2/s)	TMONMN	DIAG	J
3407	FRESH OCFF DRY DEPN FLUX KG/M2/S	TMONMN	DIAG	J
3408	AGED OCFF DRY DEPN FLUX KG/M2/S	TMONMN	DIAG	J
3409	OCFF IN CLOUD DEPN FLUX KG/M2/S	TMONMN	DIAG	J
3411	Dust threshold U on tiles div 1	TMONMN	DTILE	J
3412	Dust threshold U on tiles div 2	TMONMN	DTILE	J
3413	Dust threshold U on tiles div 3	TMONMN	DTILE	J
3414	Dust threshold U on tiles div 4	TMONMN	DTILE	J
3415	Dust threshold U on tiles div 5	TMONMN	DTILE	J
3416	Dust threshold U on tiles div 6	TMONMN	DTILE	J
3430	Dust Friction velocity (U) on tiles	TMONMN	DTILE	J
3441	Dust dry dep flux from lev 1 div 1	TMONMN	DIAG	J
3442	Dust dry dep flux from lev 1 div 2	TMONMN	DIAG	J
3443	Dust dry dep flux from lev 1 div 3	TMONMN	DIAG	J
3444	Dust dry dep flux from lev 1 div 4	TMONMN	DIAG	J
3445	Dust dry dep flux from lev 1 div 5	TMONMN	DIAG	J
3446	Dust dry dep flux from lev 1 div 6	TMONMN	DIAG	J
3451	Dust dry dep flux from lev 2 div 1	TMONMN	DIAG	J
3452	Dust dry dep flux from lev 2 div 2	TMONMN	DIAG	J
3453	Dust dry dep flux from lev 2 div 3	TMONMN	DIAG	J
3454	Dust dry dep flux from lev 2 div 4	TMONMN	DIAG	J
3455	Dust dry dep flux from lev 2 div 5	TMONMN	DIAG	J
3456	Dust dry dep flux from lev 2 div 6	TMONMN	DIAG	J
3460	X-COMP SURFACE BL STRESS	TMONMN	DIAG	J
3461	Y-COMP SURFACE BL STRESS	TMONMN	DIAG	J
3462	STOMATAL CONDUCTANCE ON PFTS (M/S)	TMONMN	DPFTS	J
4203	LARGE SCALE RAINFALL RATE KG/M2/S	TDAYM	DIAG	A
4203	LARGE SCALE RAINFALL RATE KG/M2/S	T3HMN	DIAG	B
4203	LARGE SCALE RAINFALL RATE KG/M2/S	TMONMN	DIAG	J
4204	LARGE SCALE SNOWFALL RATE KG/M2/S	T3HMN	DIAG	B
4204	LARGE SCALE SNOWFALL RATE KG/M2/S	TDAYM	DIAG	F
4204	LARGE SCALE SNOWFALL RATE KG/M2/S	TMONMN	DIAG	J
4206	CLOUD ICE CONTENT AFTER LS PRECIP	TMONMN	DALLTH	J
4215	NH3 SCAVENGED BY LS PPN KG/M2/S	TMONMN	DIAG	J
4216	SO2 SCAVENGED BY LS PPN KG/M2/S	TMONMN	DIAG	J
4219	SO4 DIS SCAVNGD BY LS PPN KG/M2/S	TMONMN	DIAG	J
4220	SOOT RAINOUT BY LS PPN KG/M2/S	TMONMN	DIAG	J
4228	OCFF RAINOUT BY LS PPN KG/M2/S	TMONMN	DIAG	J
4231	Dust wet dep flux ls precip div 1	TMONMN	DIAG	J

Continued from previous page.

STASH code	Description	Time pro- file	Domain profile	Output stream
4232	Dust wet dep flux ls precip div 2	TMONMN	DIAG	J
4233	Dust wet dep flux ls precip div 3	TMONMN	DIAG	J
4234	Dust wet dep flux ls precip div 4	TMONMN	DIAG	J
4235	Dust wet dep flux ls precip div 5	TMONMN	DIAG	J
4236	Dust wet dep flux ls precip div 6	TMONMN	DIAG	J
4237	BIOMASS RAINOUT BY LS PPN KG/M2/S	TMONMN	DIAG	J
5205	CONVECTIVE RAINFALL RATE KG/M2/S	TDAYM	DIAG	A
5205	CONVECTIVE RAINFALL RATE KG/M2/S	T3HMN	DIAG	H
5205	CONVECTIVE RAINFALL RATE KG/M2/S	TMONMN	DIAG	J
5205	CONVECTIVE RAINFALL RATE KG/M2/S	TMPMN <sub>xx</sub>	DIAG	J
5206	CONVECTIVE SNOWFALL RATE KG/M2/S	T3HMN	DIAG	H
5206	CONVECTIVE SNOWFALL RATE KG/M2/S	TMONMN	DIAG	J
5206	CONVECTIVE SNOWFALL RATE KG/M2/S	TMPMN <sub>xx</sub>	DIAG	J
5209	TEMPERATURE AFTER CONVECTION	TMONMN	D1TH	J
5213	CONV CLOUD CONDENSED WATER KG/KG	TMONMN	DALLTH	J
5214	TOTAL RAINFALL RATE: LS+CONV KG/M2/S	TMONMN	DIAG	J
5215	TOTAL SNOWFALL RATE: LS+CONV KG/M2/S	T3HMN	DIAG	H
5215	TOTAL SNOWFALL RATE: LS+CONV KG/M2/S	TMONMN	DIAG	J
5216	TOTAL PRECIPITATION RATE KG/M2/S	TDAYM	DIAG	A
5216	TOTAL PRECIPITATION RATE KG/M2/S	TDAYMAX	DIAG	F
5216	TOTAL PRECIPITATION RATE KG/M2/S	T3HMN	DIAG	H
5216	TOTAL PRECIPITATION RATE KG/M2/S	TMONMN	DIAG	J
5216	TOTAL PRECIPITATION RATE KG/M2/S	TMPMN <sub>xx</sub>	DIAG	J
5231	CAPE TIMESCALE (DEEP) S	TMONMN	DIAG	J
5232	INDICATOR REDUCED CAPE TIMESCALE	TMONMN	DIAG	J
5237	NH3 SCAVENGED BY CONV PPN KG/M2/SEC	TMONMN	DIAG	J
5238	SO2 SCAVENGED BY CONV PPN KG/M2/SEC	TMONMN	DIAG	J
5239	SO4 AIT SCAVNGD BY CONV PPN KG/M2/S	TMONMN	DIAG	J
5240	SO4 ACC SCAVNGD BY CONV PPN KG/M2/S	TMONMN	DIAG	J
5241	SO4 DIS SCAVNGD BY CONV PPN KG/M2/S	TMONMN	DIAG	J
5242	SOOT SCAVNGD BY CONV PPN KG/M2/S	TMONMN	DIAG	J
5243	BIOMASS SCAVNGD BY CONV PPN KG/M2/S	TMONMN	DIAG	J
5244	OCFF SCAVNGD BY CONV PPN KG/M2/S	TMONMN	DIAG	J
5250	UPDRAUGHT MASS FLUX (Pa/s)	TDAYM	D52TH	A
5250	UPDRAUGHT MASS FLUX (Pa/s)	TMONMN	DALLTH	J
5251	DOWNDRAUGHT MASS FLUX (PA/S)	TMONMN	DALLTH	J
5256	U INCREMENT MS-2 ( P GRID)	TDAYM	D52RH	A
5257	V INCREMENT MS-2 ( P GRID)	TDAYM	D52RH	A
5269	DEEP CONVECTION INDICATOR	TDAYM	DIAG	A
5269	DEEP CONVECTION INDICATOR	TMONMN	DIAG	J
5270	SHALLOW CONVECTION INDICATOR	TDAYM	DIAG	A
5270	SHALLOW CONVECTION INDICATOR	TMONMN	DIAG	J
5272	MID LEVEL CONVECTION INDICATOR	TDAYM	DIAG	A
5272	MID LEVEL CONVECTION INDICATOR	TDAYM	DIAG	D
5272	MID LEVEL CONVECTION INDICATOR	TMONMN	DIAG	J
5277	DEEP CONV PRECIP RATE KG/M2/S	TDAYM	DIAG	A
5277	DEEP CONV PRECIP RATE KG/M2/S	TMONMN	DIAG	J
5278	SHALLOW CONV PRECIP RATE KG/M2/S	TDAYM	DIAG	A
5278	SHALLOW CONV PRECIP RATE KG/M2/S	TMONMN	DIAG	J
5279	MID LEVEL CONV PRECIP RATE KG/M2/S	TDAYM	DIAG	A
5279	MID LEVEL CONV PRECIP RATE KG/M2/S	TMONMN	DIAG	J

Continued from previous page.

STASH code	Description	Time pro- file	Domain profile	Output stream
5281	Dust wet dep flux conv precip div 1	TMONMN	DIAG	J
5282	Dust wet dep flux conv precip div 2	TMONMN	DIAG	J
5283	Dust wet dep flux conv precip div 3	TMONMN	DIAG	J
5284	Dust wet dep flux conv precip div 4	TMONMN	DIAG	J
5285	Dust wet dep flux conv precip div 5	TMONMN	DIAG	J
5286	Dust wet dep flux conv precip div 6	TMONMN	DIAG	J
6111	E. FLUX SPECTRAL PSEUDOMOM. P LEVS	TMONMN	DP31CCMZ	G
6113	W. FLUX SPECTRAL PSEUDOMOM. P LEVS	TMONMN	DP31CCMZ	G
6115	EAST. FORCE FROM SPECTRAL GW P LEVS	TMONMN	DP31CCMZ	G
6241	X COMPT OF GRAV. WAVE STRESS P LEVS	TMONMN	DP31CCMZ	G
6247	U-ACCEL FROM SATURATED STRESS P LEVS	TMONMN	DP31CCMZ	G
8023	SNOW MASS AFTER HYDROLOGY KG/M2	TDAYM	DIAG	D
8023	SNOW MASS AFTER HYDROLOGY KG/M2	T30DAY	DIAG	H
8023	SNOW MASS AFTER HYDROLOGY KG/M2	TMONMN	DIAG	J
8201	LAND SNOW MELT AMOUNT KG/M2/TS	TMONMN	DIAG	J
8202	LAND SNOW MELT HEAT FLUX W/M2	TMONMN	DIAG	J
8208	SOIL MOISTURE CONTENT	TDAYM	DIAG	A
8208	SOIL MOISTURE CONTENT	TMONMN	DIAG	J
8209	CANOPY WATER CONTENT	TDAYM	DIAG	D
8209	CANOPY WATER CONTENT	T30DAY	DIAG	H
8209	CANOPY WATER CONTENT	TMONMN	DIAG	J
8223	SOIL MOISTURE CONTENT IN A LAYER	TDAYM	DSOIL	D
8223	SOIL MOISTURE CONTENT IN A LAYER	T30DAY	DSOIL	H
8223	SOIL MOISTURE CONTENT IN A LAYER	T3H	DTOPSOIL	H
8223	SOIL MOISTURE CONTENT IN A LAYER	TMONMN	DSOIL	J
8225	DEEP SOIL TEMP. AFTER HYDROLOGY DEGK	T3H	DTOPSOIL	H
8225	DEEP SOIL TEMP. AFTER HYDROLOGY DEGK	TMONMN	DSOIL	J
8229	UNFROZEN SOIL MOISTURE FRACTION	TMONMN	DSOIL	J
8230	FROZEN SOIL MOISTURE FRACTION	TMONMN	DSOIL	J
8231	LAND SNOW MELT RATE KG/M2/S	TMONMN	DIAG	J
8233	CANOPY THROUGHFALL RATE KG/M2/S	TMONMN	DIAG	J
8234	SURFACE RUNOFF RATE KG/M2/S	TDAYM	DIAG	F
8234	SURFACE RUNOFF RATE KG/M2/S	T3HMN	DIAG	H
8234	SURFACE RUNOFF RATE KG/M2/S	TMONMN	DIAG	J
8235	SUB-SURFACE RUNOFF RATE KG/M2/S	TDAYM	DIAG	F
8235	SUB-SURFACE RUNOFF RATE KG/M2/S	T3HMN	DIAG	H
8235	SUB-SURFACE RUNOFF RATE KG/M2/S	TMONMN	DIAG	J
8240	DUNNE RUNOFF KG/M2/S	TMONMN	DIAG	J
8245	INLANDBASINFLOW ATM GRID KG/M2/S	TMONMN	DIAG	J
8247	SURFACE SATURATION FRACTION	TMONMN	DIAG	J
8248	SURFACE WETLAND FRACTION	TMONMN	DIAG	J
8249	MEAN WATER TABLE DEPTH M	TMONMN	DIAG	J
8250	SATURATION FRAC IN DEEP LAYER	TMONMN	DIAG	J
9216	TOTAL CLOUD AMOUNT - RANDOM OVER- LAP	TMONMN	DIAG	J
9217	TOTAL CLOUD AMOUNT MAX/RANDOM OVERLP	TMONMN	DIAG	J
13201	Indicator of local q diffusion	TMONMN	DIAG	J
15215	THETA ON PV=+/-2 SURFACE	T24H0Z	DIAG	F
16202	GEOPOTENTIAL HEIGHT ON P LEV/P GRID	T6H	DP500	B
16202	GEOPOTENTIAL HEIGHT ON P LEV/P GRID	TMONMN	DP17	J

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STASH code	Description	Time pro- file	Domain profile	Output stream
16203	TEMPERATURE ON P LEV/P GRID	TMONMN	DP17	J
16222	PRESSURE AT MEAN SEA LEVEL	T6H	DIAG	B
16222	PRESSURE AT MEAN SEA LEVEL	TDAYM	DIAG	D
16222	PRESSURE AT MEAN SEA LEVEL	T6HDAYM	DIAG	F
16222	PRESSURE AT MEAN SEA LEVEL	T6HMN	DIAG	J
17205	DIMETHYL SULPHIDE EMISSIONS	TMONMN	DIAG	J
26001	RIVER WATER STORAGE KG	T3HDAYM	DIAG	A
26001	RIVER WATER STORAGE KG	T30DAY	DIAG	H
26001	RIVER WATER STORAGE KG	TMONMN	DIAG	J
26002	GRIDBOX OUTFLOW KG/S	TMONMN	DIAG	J
26003	GRIDBOX INFLOW KG/S	TMONMN	DIAG	J
26004	RIVER OUTFLOW KG/M2/S	TMONMN	DIAG	J
26006	INLANDBASINFLOW TRIP GRID KG/S	TMONMN	DIAG	J
30112	WBIG Set to 1 if w GT 1.0m/s	TMONMN	DALLTH	J
30114	WBIG Set to 1 if w GT 0.1m/s	TMONMN	DALLTH	J
30201	U COMPNT OF WIND ON P LEV/UV GRID	T6H	DP8	B
30201	U COMPNT OF WIND ON P LEV/UV GRID	TDAYM	DP17	E
30201	U COMPNT OF WIND ON P LEV/UV GRID	T6HDAYM	DP500	F
30201	U COMPNT OF WIND ON P LEV/UV GRID	TMONMN	DP31CCMZ	G
30201	U COMPNT OF WIND ON P LEV/UV GRID	T6HMN	DP17	J
30202	V COMPNT OF WIND ON P LEV/UV GRID	T6H	DP8	B
30202	V COMPNT OF WIND ON P LEV/UV GRID	TDAYM	DP17	E
30202	V COMPNT OF WIND ON P LEV/UV GRID	T6HDAYM	DP500	F
30202	V COMPNT OF WIND ON P LEV/UV GRID	TMONMN	DP31CCMZ	G
30202	V COMPNT OF WIND ON P LEV/UV GRID	T6HMN	DP17	J
30203	W COMPNT OF WIND ON P LEV/UV GRID	TMONMN	DP31CCMZ	G
30203	W COMPNT OF WIND ON P LEV/UV GRID	TMONMN	DP17	J
30204	TEMPERATURE ON P LEV/UV GRID	T6H	DP8	B
30204	TEMPERATURE ON P LEV/UV GRID	TDAYM	DP17	E
30204	TEMPERATURE ON P LEV/UV GRID	TMONMN	DP31CCMZ	G
30204	TEMPERATURE ON P LEV/UV GRID	T6HMN	DP17	J
30205	SPECIFIC HUMIDITY ON P LEV/UV GRID	T6H	DP8	C
30205	SPECIFIC HUMIDITY ON P LEV/UV GRID	TDAYM	DP17	E
30205	SPECIFIC HUMIDITY ON P LEV/UV GRID	TMONMN	DP31CCMZ	G
30205	SPECIFIC HUMIDITY ON P LEV/UV GRID	T6HMN	DP17	J
30206	RELATIVE HUMIDITY ON P LEV/UV GRID	T6HMN	DP17	J
30207	GEOPOTENTIAL HEIGHT ON P LEV/UV GRID	T6H	DP8	C
30207	GEOPOTENTIAL HEIGHT ON P LEV/UV GRID	TDAYM	DP3	C
30207	GEOPOTENTIAL HEIGHT ON P LEV/UV GRID	T6HDAYM	DP500	F
30207	GEOPOTENTIAL HEIGHT ON P LEV/UV GRID	T6HMN	DP17	J
30207	GEOPOTENTIAL HEIGHT ON P LEV/UV GRID	TMONMN	DP7	J
30208	OMEGA ON P LEV/UV GRID	T6H	DP8	C
30208	OMEGA ON P LEV/UV GRID	TDAYM	DP17	E
30208	OMEGA ON P LEV/UV GRID	TMONMN	DP17	J
30211	UU ON P LEV/UV GRID	T6HMN	DP17	J
30212	UV ON P LEV/UV GRID	T6HMN	DP17	J
30214	UT ON P LEV/UV GRID	T6HMN	DP17	J
30215	UQ ON P LEV/UV GRID	TDAYM	DP17	E
30215	UQ ON P LEV/UV GRID	T6HMN	DP17	J
30222	VV ON P LEV/UV GRID	T6HMN	DP17	J
30224	VT ON P LEV/UV GRID	T6HMN	DP17	J

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STASH code	Description	Time pro- file	Domain profile	Output stream
30225	VQ ON P LEV/UV GRID	TDAYM	DP17	E
30225	VQ ON P LEV/UV GRID	T6HMN	DP17	J
30258	QOM ON P LEV/UV GRID	TDAYM	DP17	E
30258	QOM ON P LEV/UV GRID	T6HMN	DP17	J
30301	HEAVISIDE FN ON P LEV/UV GRID	TDAYM	DP_HEAVI	A
30301	HEAVISIDE FN ON P LEV/UV GRID	T6H	DP_HEAVI	C
30301	HEAVISIDE FN ON P LEV/UV GRID	T6HMN	DP_HEAVI	J
30301	HEAVISIDE FN ON P LEV/UV GRID	TMONMN	DP_HEAVI	J
30310	RESIDUAL MN MERID. CIRC. VSTARBAR	TMONMN	DP31CCM	G
30311	RESIDUAL MN MERID. CIRC. WSTARBAR	TMONMN	DP31CCM	G
30312	ELIASSEN-PALM FLUX (MERID. COMPNT)	TMONMN	DP31CCM	G
30313	ELIASSEN-PALM FLUX (VERT. COMPNT)	TMONMN	DP31CCM	G
30314	DIVERGENCE OF ELIASSEN-PALM FLUX	TMONMN	DP31CCM	G
30315	MERIDIONAL HEAT FLUX	TMONMN	DP31CCM	G
30316	MERIDIONAL MOMENTUM FLUX	TMONMN	DP31CCM	G
30402	TOTAL KE PER UA WITH W RHO GRID	T30DAY	DIAG	H
30403	TOTAL COLUMN DRY MASS RHO GRID	T30DAY	DIAG	H
30403	TOTAL COLUMN DRY MASS RHO GRID	TMONMN	DIAG	J
30403	TOTAL COLUMN DRY MASS RHO GRID	TMPMN <sub>xx</sub>	DIAG	J
30404	TOTAL COLUMN WET MASS RHO GRID	T30DAY	DIAG	H
30404	TOTAL COLUMN WET MASS RHO GRID	TMONMN	DIAG	J
30404	TOTAL COLUMN WET MASS RHO GRID	TMPMN <sub>xx</sub>	DIAG	J
30405	TOTAL COLUMN QCL RHO GRID	T30DAY	DIAG	H
30405	TOTAL COLUMN QCL RHO GRID	TMONMN	DIAG	J
30405	TOTAL COLUMN QCL RHO GRID	TMPMN <sub>xx</sub>	DIAG	J
30406	TOTAL COLUMN QCF RHO GRID	T30DAY	DIAG	H
30406	TOTAL COLUMN QCF RHO GRID	TMONMN	DIAG	J
30406	TOTAL COLUMN QCF RHO GRID	TMPMN <sub>xx</sub>	DIAG	J
30410	MOUNTAIN TORQUE PER UNIT AREA N/M	TMONMN	DIAG	J
30417	PSTAR P GRID	T3H	DIAG	H
30417	PSTAR P GRID	TMONMN	DIAG	J
30419	ENERGY CORR P GRID IN COLUMN W/M2	TMONMN	DIAG	J
30420	column integral cvT per unit area	T30DAY	DIAG	H
30421	column integral gr per unit area	T30DAY	DIAG	H
30428	dry mass col int uq per unit area	TDAYM	DIAG	A
30428	dry mass col int uq per unit area	TMONMN	DIAG	J
30429	dry mass col int vq per unit area	TDAYM	DIAG	A

## A.4 Extra Stratosphere data: xgxqh

Table 4: Additional diagnostics in xgxqh. Asterisks denote fields where the domain profile of a field has been modified

STASH code	Description	Time pro- file	Domain profile	Output stream
2	U COMPNT OF WIND AFTER TIMESTEP	TMONMN	DALLRH	K
3	V COMPNT OF WIND AFTER TIMESTEP	TMONMN	DALLRH	K
6101	EASTWARD FLUX - SPECTRAL PSEUDOMOM.	TMONMN	DNOGWTH	K
6102	SOUTHWARD FLUX - SPECTRAL PSEUDO- MOM.	TMONMN	DNOGWTH	K
6103	WESTWARD FLUX - SPECTRAL PSEUDOMOM.	TMONMN	DNOGWTH	K
6104	NORTHWARD FLUX - SPECTRAL PSEUDO- MOM.	TMONMN	DNOGWTH	K
6105	EASTWARD FORCE FROM SPECTRAL GW	TMONMN	DNOGWRH	K
6106	NORTHWARD FORCE FROM SPECTRAL GW	TMONMN	DNOGWRH	K
6111*	E. FLUX SPECTRAL PSEUDOMOM. P LEVS	TMONMN	DP36CCMZ	G
6113*	W. FLUX SPECTRAL PSEUDOMOM. P LEVS	TMONMN	DP36CCMZ	G
6115*	EAST. FORCE FROM SPECTRAL GW P LEVS	TMONMN	DP36CCMZ	G
6207	U-ACCEL FROM SATURATED STRESS	TMONMN	DOGW40RH	K
6208	V-ACCEL FROM SATURATED STRESS	TMONMN	DOGW40RH	K
6223	X COMPONENT OF GW SATURATION STRESS	TMONMN	DALLTH	K
6224	Y COMPONENT OF GW SATURATION STRESS	TMONMN	DALLTH	K
6241*	X COMPT OF GRAV. WAVE STRESS P LEVS	TMONMN	DP36CCMZ	G
6247*	U-ACCEL FROM SATURATED STRESS P LEVS	TMONMN	DP36CCMZ	G
30201	U COMPNT OF WIND ON P LEV/UV GRID	T6H	DP3MA	K
30201*	U COMPNT OF WIND ON P LEV/UV GRID	TDAYM	DP36CCMZ	G
30201*	U COMPNT OF WIND ON P LEV/UV GRID	TMONMN	DP36CCMZ	G
30202	V COMPNT OF WIND ON P LEV/UV GRID	T6H	DP3MA	K
30202*	V COMPNT OF WIND ON P LEV/UV GRID	TDAYM	DP36CCMZ	G
30202*	V COMPNT OF WIND ON P LEV/UV GRID	TMONMN	DP36CCMZ	G
30203	W COMPNT OF WIND ON P LEV/UV GRID	T6H	DP3MA	K
30203	W COMPNT OF WIND ON P LEV/UV GRID	T6H	DP8	K
30203*	W COMPNT OF WIND ON P LEV/UV GRID	TMONMN	DP36CCMZ	G
30204	TEMPERATURE ON P LEV/UV GRID	T6H	DP3MA	K
30204*	TEMPERATURE ON P LEV/UV GRID	TDAYM	DP36CCMZ	G
30204*	TEMPERATURE ON P LEV/UV GRID	TMONMN	DP36CCMZ	G
30205*	SPECIFIC HUMIDITY ON P LEV/UV GRID	TMONMN	DP36CCMZ	G
30207	GEOPOTENTIAL HEIGHT ON P LEV/UV GRID	TDAYM	DP10100	K
30207*	GEOPOTENTIAL HEIGHT ON P LEV/UV GRID	TDAYM	DP36CCMZ	G
30301	HEAVISIDE FN ON P LEV/UV GRID	TMONMN	DP36CCMZ	G
30310*	RESIDUAL MN MERID. CIRC. VSTARBAR	TDAYM	DP36CCM	K
30310*	RESIDUAL MN MERID. CIRC. VSTARBAR	TMONMN	DP36CCM	K
30311*	RESIDUAL MN MERID. CIRC. WSTARBAR	TDAYM	DP36CCM	K
30311*	RESIDUAL MN MERID. CIRC. WSTARBAR	TMONMN	DP36CCM	K
30312*	ELIASSEN-PALM FLUX (MERID. COMPNT)	TDAYM	DP36CCM	K
30312*	ELIASSEN-PALM FLUX (MERID. COMPNT)	TMONMN	DP36CCM	K
30313*	ELIASSEN-PALM FLUX (VERT. COMPNT)	TDAYM	DP36CCM	K
30313*	ELIASSEN-PALM FLUX (VERT. COMPNT)	TMONMN	DP36CCM	K
30314*	DIVERGENCE OF ELIASSEN-PALM FLUX	TDAYM	DP36CCM	K
30314*	DIVERGENCE OF ELIASSEN-PALM FLUX	TMONMN	DP36CCM	K
30315*	MERIDIONAL HEAT FLUX	TMONMN	DP36CCM	K
30316*	MERIDIONAL MOMENTUM FLUX	TMONMN	DP36CCM	K

*Continued from previous page.*

STASH code	Description	Time pro- file	Domain profile	Output stream
30317	VERTICAL MOMENTUM FLUX	TMONMN	DP36CCM	K
30418	PSTAR UV GRID	T6H	DIAG	K

## A.5 Extra Land surface data: xgxqi

Table 5: Additional diagnostics in xgxqi.

STASH code	Description	Time pro- file	Domain profile	Output stream
2	U COMPNT OF WIND AFTER TIMESTEP	T3H	D_RHO_1	K
3	V COMPNT OF WIND AFTER TIMESTEP	T3H	D_RHO_1	K
10	SPECIFIC HUMIDITY AFTER TIMESTEP	T3H	D_THETA1	K
409	SURFACE PRESSURE AFTER TIMESTEP	T3H	DIAG	K
3259	CANOPY CONDUCTANCE M/S	TDAYM	DIAG	K
3288	TRANSPIRATION+SOIL EVP ON TILES	TDAYM	DTILE	K
3290	SURFACE SENSIBLE HEAT FLUX ON TILES	T3HMN	DTILE	K
3291	NET PRIMARY PRODUCTIVITY ON PFTS	TDAYM	DPFTS	K
3292	PLANT RESPIRATION ON PFTS KG C/M2/S	TDAYM	DPFTS	K
3316	SURFACE TEMP ON TILES K	T3HMN	DTILE	K
3321	CANOPY WATER ON TILES KG/M2	TDAYM	DTILE	K
3328	1.5M TEMPERATURE OVER TILES	T3HMN	DTILE	K
3330	SURFACE LATENT HEAT FLUX ON TILES	T3HMN	DTILE	K
5214	TOTAL RAINFALL RATE: LS+CONV KG/M2/S	T3H	DIAG	K
5215	TOTAL SNOWFALL RATE: LS+CONV KG/M2/S	T3H	DIAG	K
8229	UNFROZEN SOIL MOISTURE FRACTION	TDAYM	DSOIL	K
8230	FROZEN SOIL MOISTURE FRACTION	TDAYM	DSOIL	K
30111	T AT EOT ON MODEL LEVELS	T3H	D_THETA1	K
30404	TOTAL COLUMN WET MASS RHO GRID	T6H	DIAG	K
30428	dry mass col int u*q per unit area	T6H	DIAG	K
30429	dry mass col int v*q per unit area	T6H	DIAG	K

## A.6 Extra African and Indian Monsoon data: xgxqj

Table 6: Additional diagnostics in xgxqj

STASH code	Description	Time pro- file	Domain profile	Output stream
3304	TURBULENT MIXING HT AFTER B.LAYER m	TSTEP	DIAGAFR	K
3304	TURBULENT MIXING HT AFTER B.LAYER m	TSTEP	DIAGMONS	K
3305	STABLE BL INDICATOR	TSTEP	DIAGAFR	K
3305	STABLE BL INDICATOR	TSTEP	DIAGMONS	K
3307	WELL_MIXED BL INDICATOR	TSTEP	DIAGAFR	K
3307	WELL_MIXED BL INDICATOR	TSTEP	DIAGMONS	K
3309	DECOUPLED SC. OVER CU. INDICATOR	TSTEP	DIAGAFR	K
3309	DECOUPLED SC. OVER CU. INDICATOR	TSTEP	DIAGMONS	K

*Continued from previous page.*

STASH code	Description	Time pro- file	Domain profile	Output stream
3310	CUMULUS-CAPPED BL INDICATOR	TSTEP	DIAGAFR	K
3310	CUMULUS-CAPPED BL INDICATOR	TSTEP	DIAGMONS	K
3340	SHEAR-DRIVEN B.LAYER INDICATOR	TSTEP	DIAGAFR	K
3340	SHEAR-DRIVEN B.LAYER INDICATOR	TSTEP	DIAGMONS	K
4203	LARGE SCALE RAINFALL RATE KG/M2/S	TSTEP	DIAGAFR	K
4203	LARGE SCALE RAINFALL RATE KG/M2/S	TSTEP	DIAGMONS	K
5205	CONVECTIVE RAINFALL RATE KG/M2/S	TSTEP	DIAGAFR	K
5205	CONVECTIVE RAINFALL RATE KG/M2/S	TSTEP	DIAGMONS	K
5216	TOTAL PRECIPITATION RATE KG/M2/S	TSTEP	DIAGAFR	K
5216	TOTAL PRECIPITATION RATE KG/M2/S	TSTEP	DIAGMONS	K
5250	UPDRAUGHT MASS FLUX (Pa/s)	TSTEP	DBLTHAFR	K
5250	UPDRAUGHT MASS FLUX (Pa/s)	TSTEP	DBLTHMONK	
5269	DEEP CONVECTION INDICATOR	TSTEP	DIAGAFR	K
5269	DEEP CONVECTION INDICATOR	TSTEP	DIAGMONS	K
5270	SHALLOW CONVECTION INDICATOR	TSTEP	DIAGAFR	K
5270	SHALLOW CONVECTION INDICATOR	TSTEP	DIAGMONS	K
5272	MID LEVEL CONVECTION INDICATOR	TSTEP	DIAGAFR	K
5272	MID LEVEL CONVECTION INDICATOR	TSTEP	DIAGMONS	K
5277	DEEP CONV PRECIP RATE KG/M2/S	TSTEP	DIAGAFR	K
5277	DEEP CONV PRECIP RATE KG/M2/S	TSTEP	DIAGMONS	K
5278	SHALLOW CONV PRECIP RATE KG/M2/S	TSTEP	DIAGAFR	K
5278	SHALLOW CONV PRECIP RATE KG/M2/S	TSTEP	DIAGMONS	K
5279	MID LEVEL CONV PRECIP RATE KG/M2/S	TSTEP	DIAGAFR	K
5279	MID LEVEL CONV PRECIP RATE KG/M2/S	TSTEP	DIAGMONS	K