Appendix

Short-term Association among Meteorological Variation, Outdoor Air Pollution and Acute Bronchiolitis in Children in a Subtropical Setting

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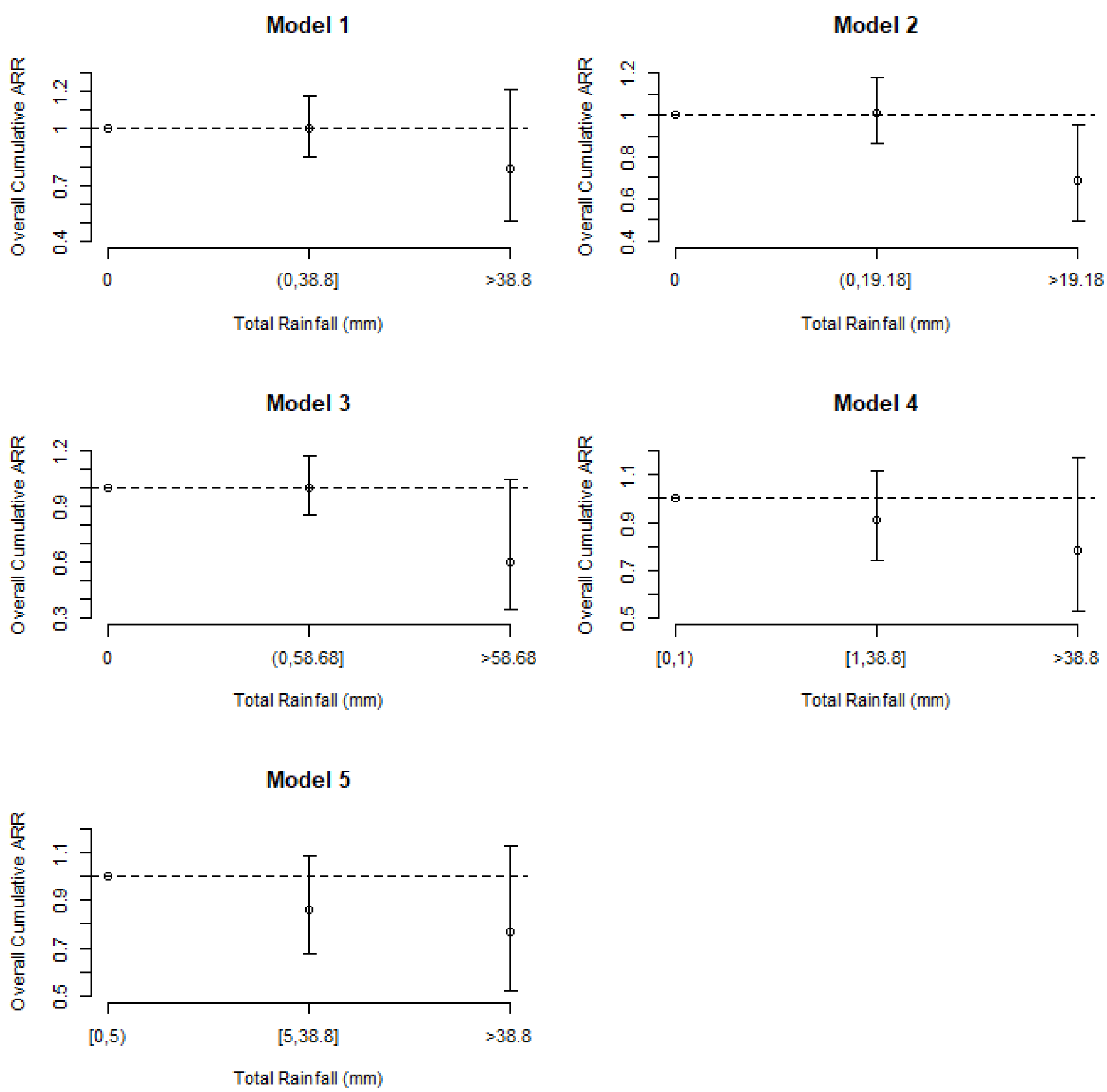
A. Pearson correlation coefficient between the meteorological factors and pollutants during the study period (2008 - 2017)

	Ambient Temperature	**Apparent Temperature**	**Relative Humidity**	**Vapour Pressure**	**Rainfall**	**NO_2**	**log(SO_2)**	**O_3**	**log(PM_{10})**
Ambient Temperature		0.973	0.227	0.942	0.121	-0.337	0.023	-0.093	-0.468
Apparent Temperature			0.281	0.939	0.105	-0.250	0.097	-0.199	-0.476
Relative Humidity				0.506	0.352	-0.329	-0.384	-0.439	-0.515
Vapour Pressure					0.239	-0.439	-0.095	-0.277	-0.619
Rainfall						-0.133	-0.150	-0.191	-0.309
NO_2							0.576	0.191	0.697
log(SO_2)								-0.068	0.417
O_3									0.566
log(PM_{10})									

B. Sensitivity Analysis: Cumulative adjusted relative risks (ARRs) of rainfall using different sets of cutoffs

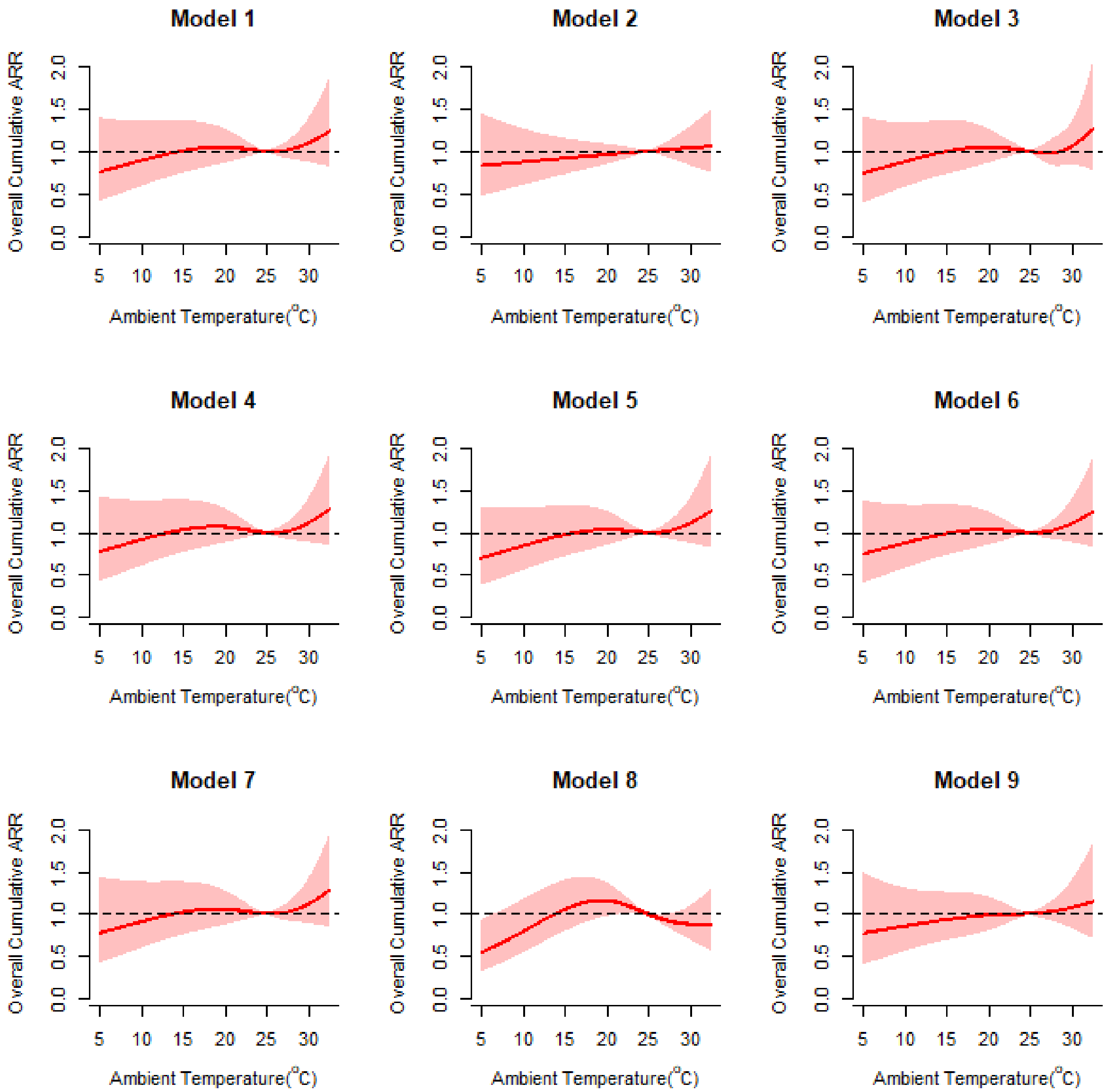
- **Model 1:** (i) Rainfall = 0; (ii) 0 < Rainfall ≤ 95th percentile; and (iii) Rainfall > 95th percentile
- **Model 2:** (i) Rainfall = 0; (ii) 0 < Rainfall ≤ 90th percentile; and (iii) Rainfall > 90th percentile
- **Model 3:** (i) Rainfall = 0; (ii) 0 < Rainfall ≤ 97.5th percentile; and (iii) Rainfall > 97.5th percentile
- **Model 4:** (i) 0 ≤ Rainfall ≤ 1; (ii) 1 < Rainfall ≤ 97.5th percentile; and (iii) Rainfall > 97.5th percentile
- **Model 5:** (i) 0 ≤ Rainfall ≤ 5; (ii) 5 < Rainfall ≤ 97.5th percentile; and (iii) Rainfall > 97.5th percentile



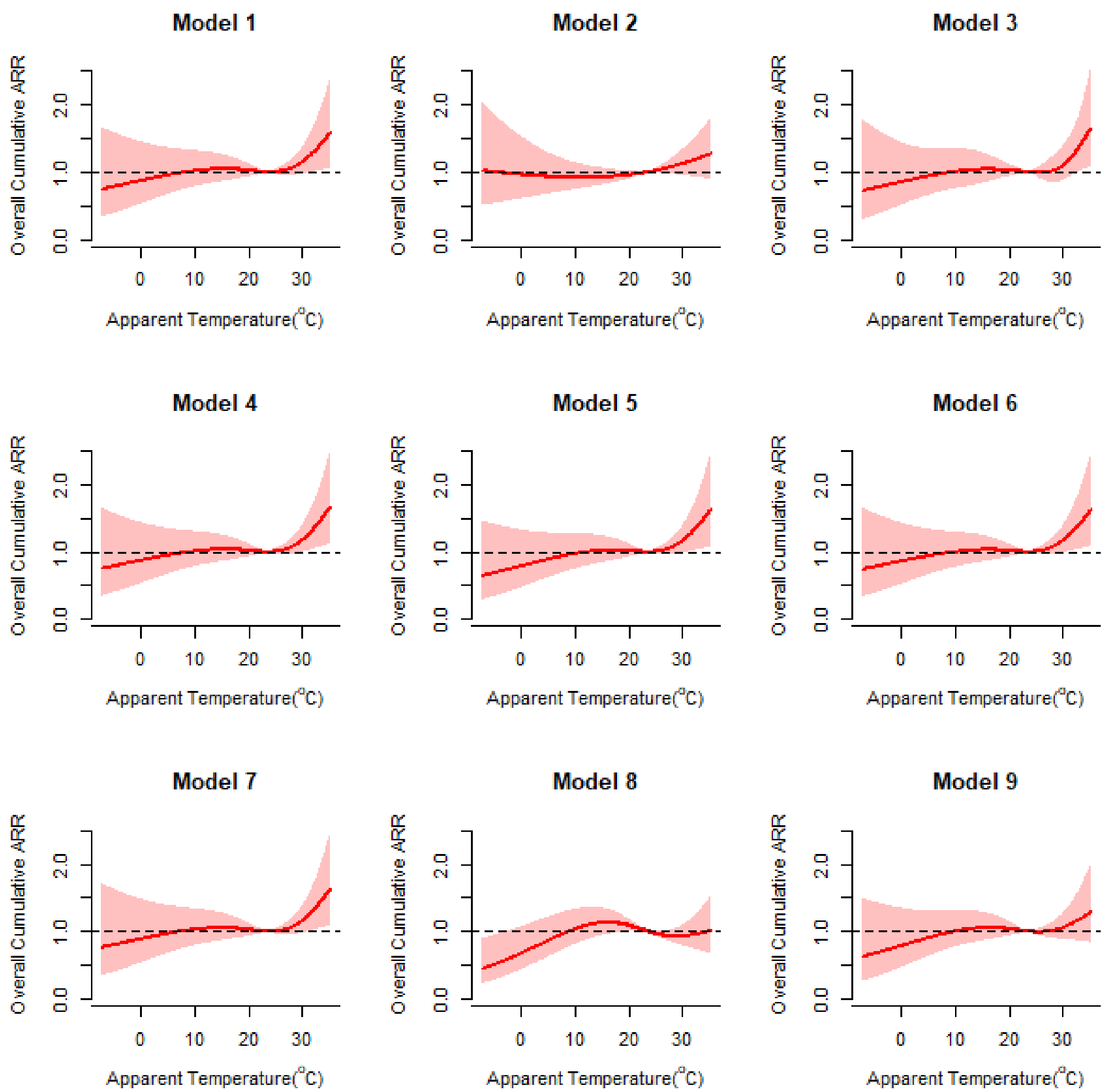
C. Sensitivity Analysis: Cumulative adjusted relative risks (ARRs) of meteorological parameters: (a) ambient temperature, (b) apparent temperature, (c) relative humidity, (d) vapour pressure, and (e) total rainfall at different parameter settings

- **Model 1:** df for the meteorological parameters = 3; df for the pollutants = 4; df for lag = 4, df for day of study per year = 7
- **Model 2:** df for the meteorological parameters = 2; df for the pollutants = 4; df for lag = 4, df for day of study per year = 7
- **Model 3:** df for the meteorological parameters = 5; df for the pollutants = 4; df for lag = 4, df for day of study per year = 7
- **Model 4:** df for the meteorological parameters = 3; df for the pollutants = 3; df for lag = 4, df for day of study per year = 7
- **Model 5:** df for the meteorological parameters = 3; df for the pollutants = 5; df for lag = 4, df for day of study per year = 7
- **Model 6:** df for the meteorological parameters = 3; df for the pollutants = 4; df for lag = 3, df for day of study per year = 7
- **Model 7:** df for the meteorological parameters = 3; df for the pollutants = 4; df for lag = 5, df for day of study per year = 7
- **Model 8:** df for the meteorological parameters = 3; df for the pollutants = 4; df for lag = 4, df for day of study per year = 6
- **Model 9:** df for the meteorological parameters = 3; df for the pollutants = 4; df for lag = 4, df for day of study per year = 8

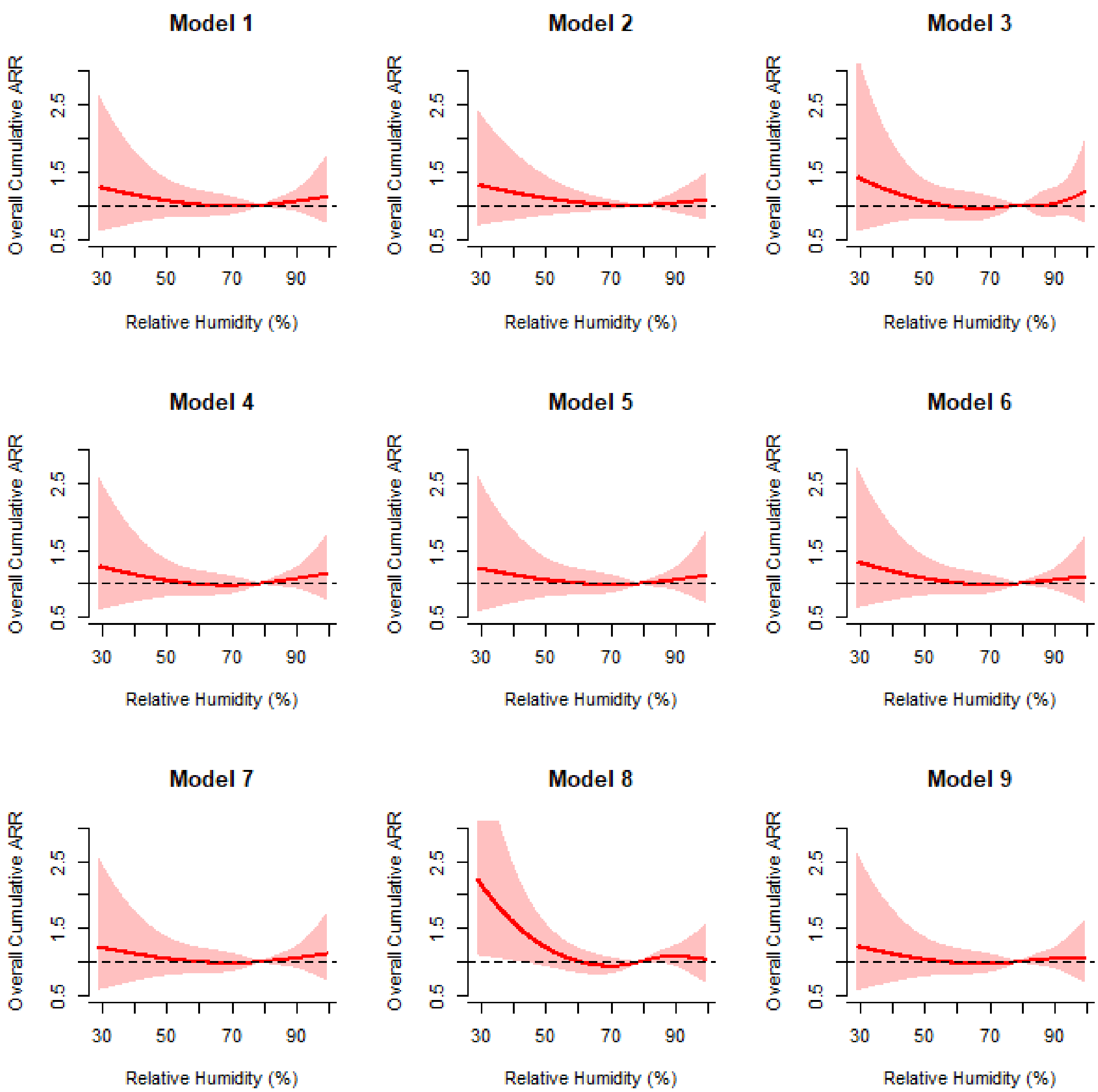
(a) Ambient Temperature (ref. = 24.8ºC)



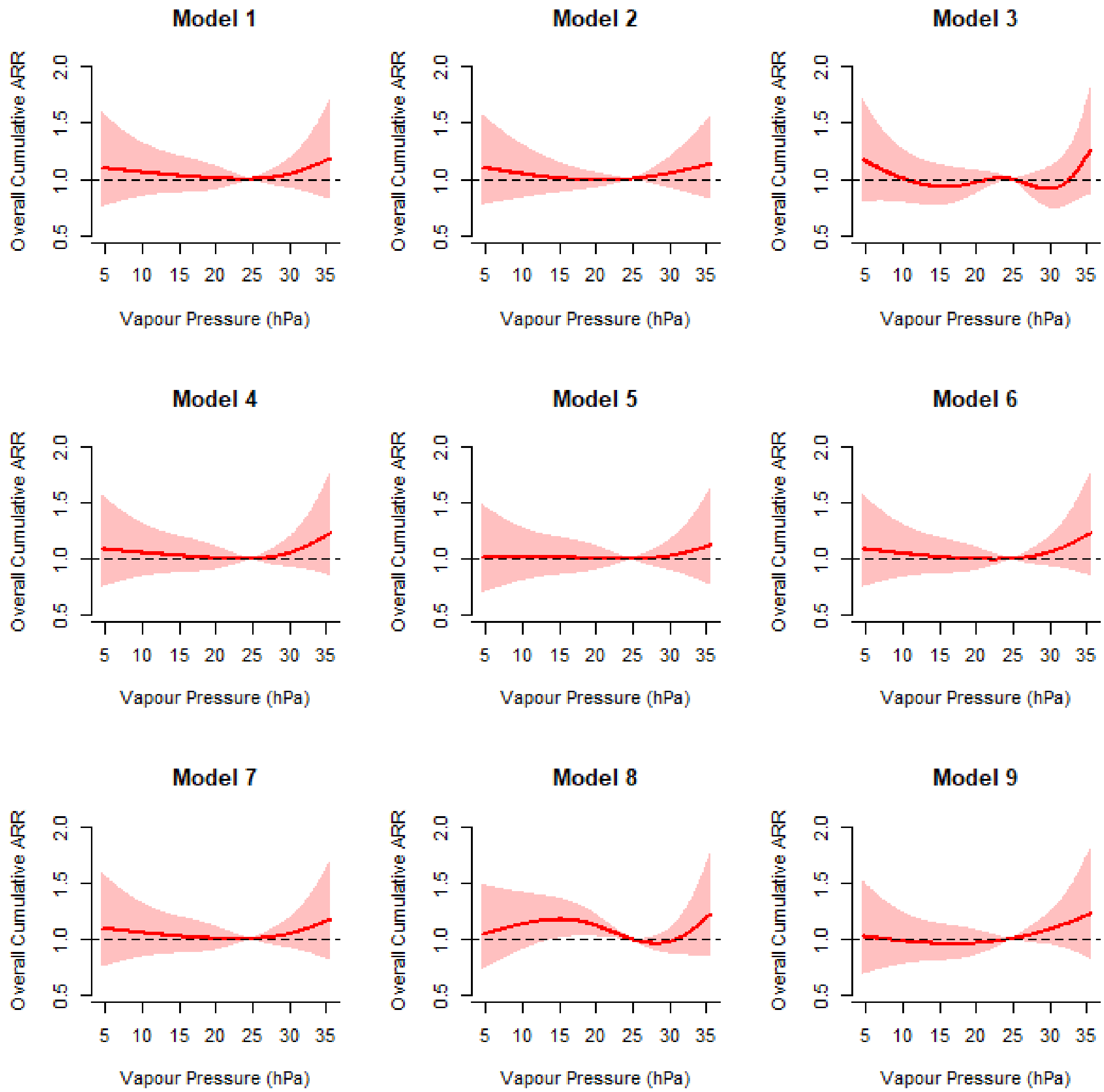
(b) Apparent Temperature (ref. = 23.6ºC)



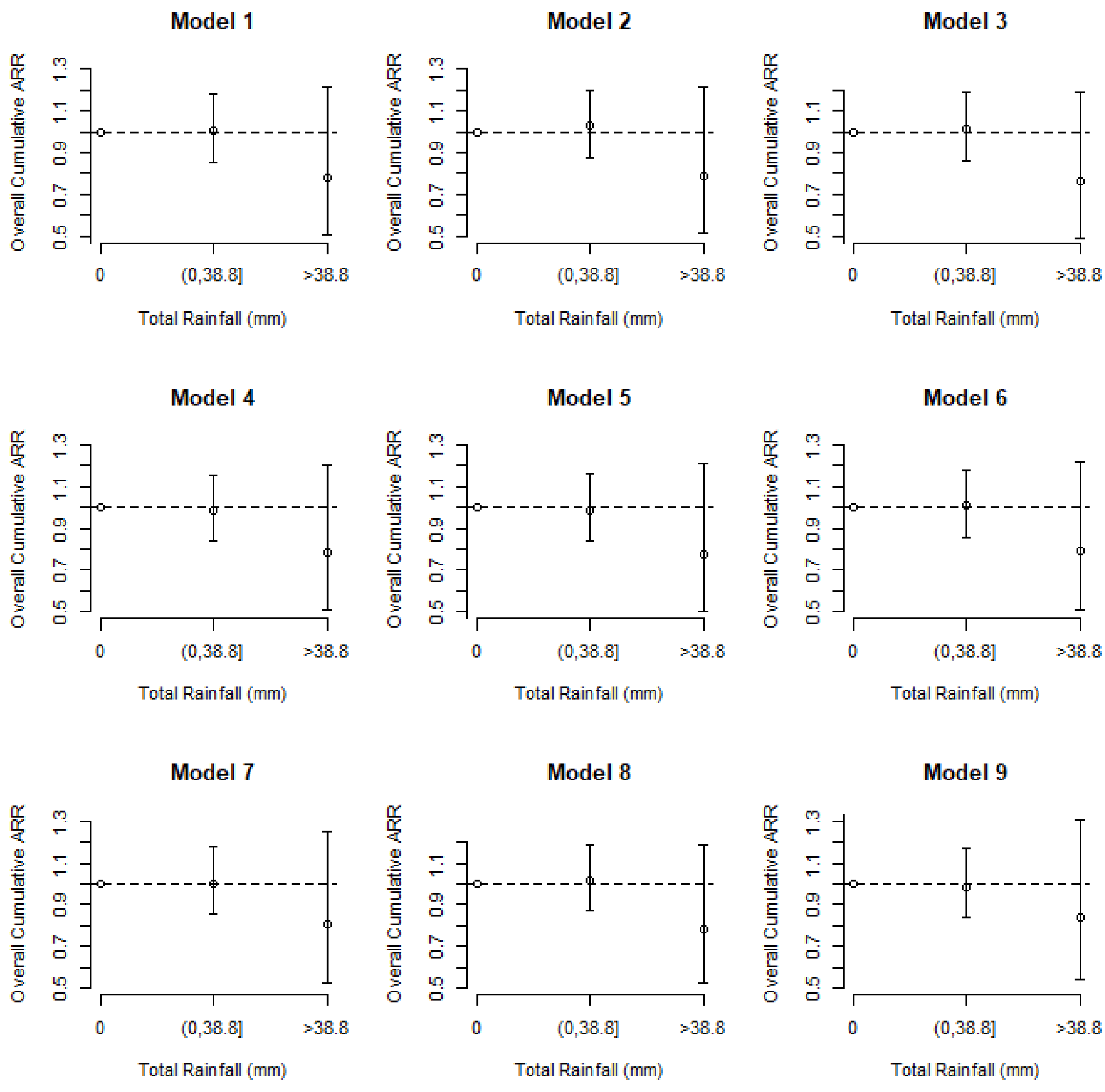
(c) Relative Humidity (ref. = 79.0%)



(d) Vapour Pressure (ref. = 24.7 hPa)



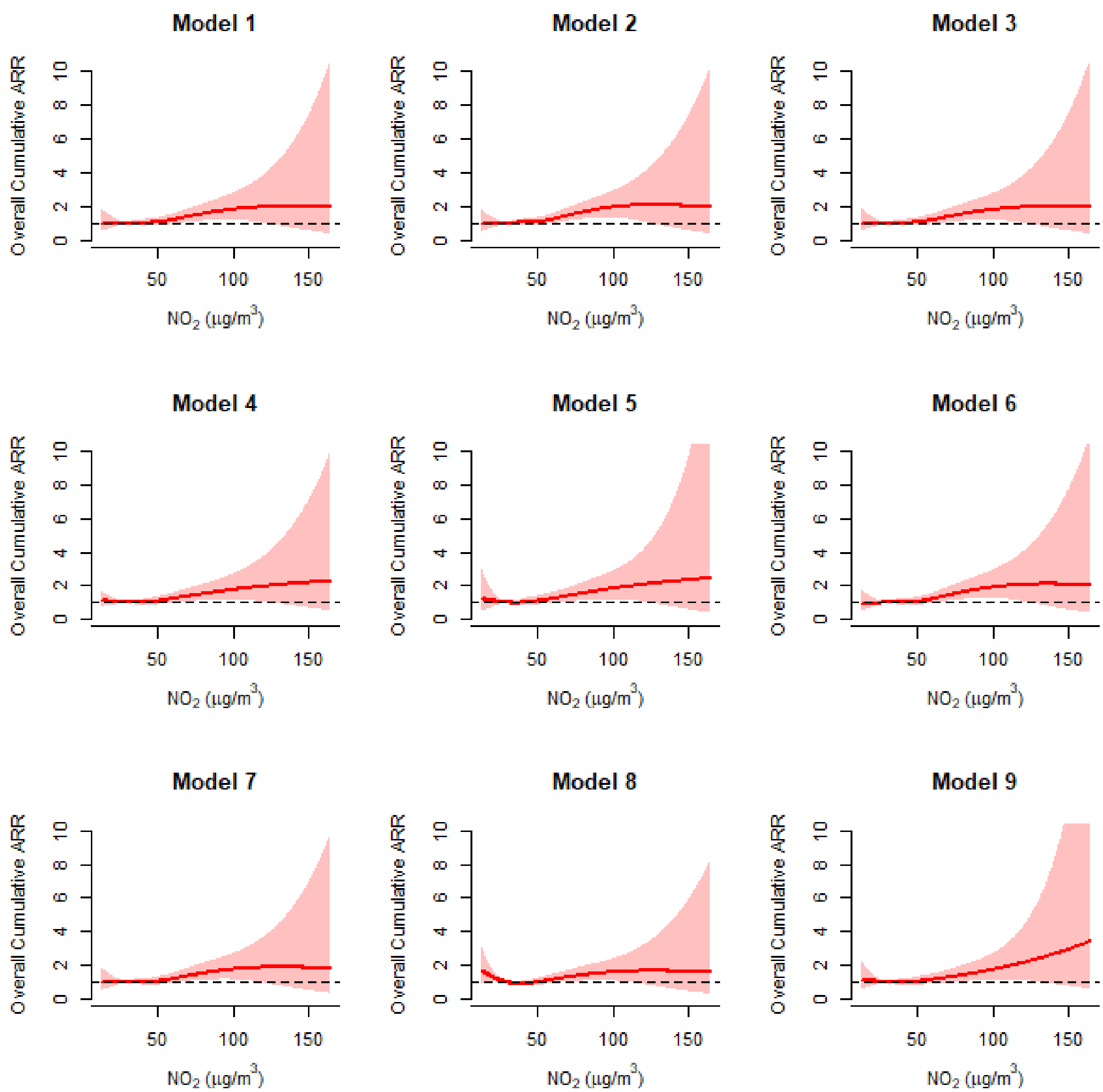
(e) Rainfall (ref. = 0)



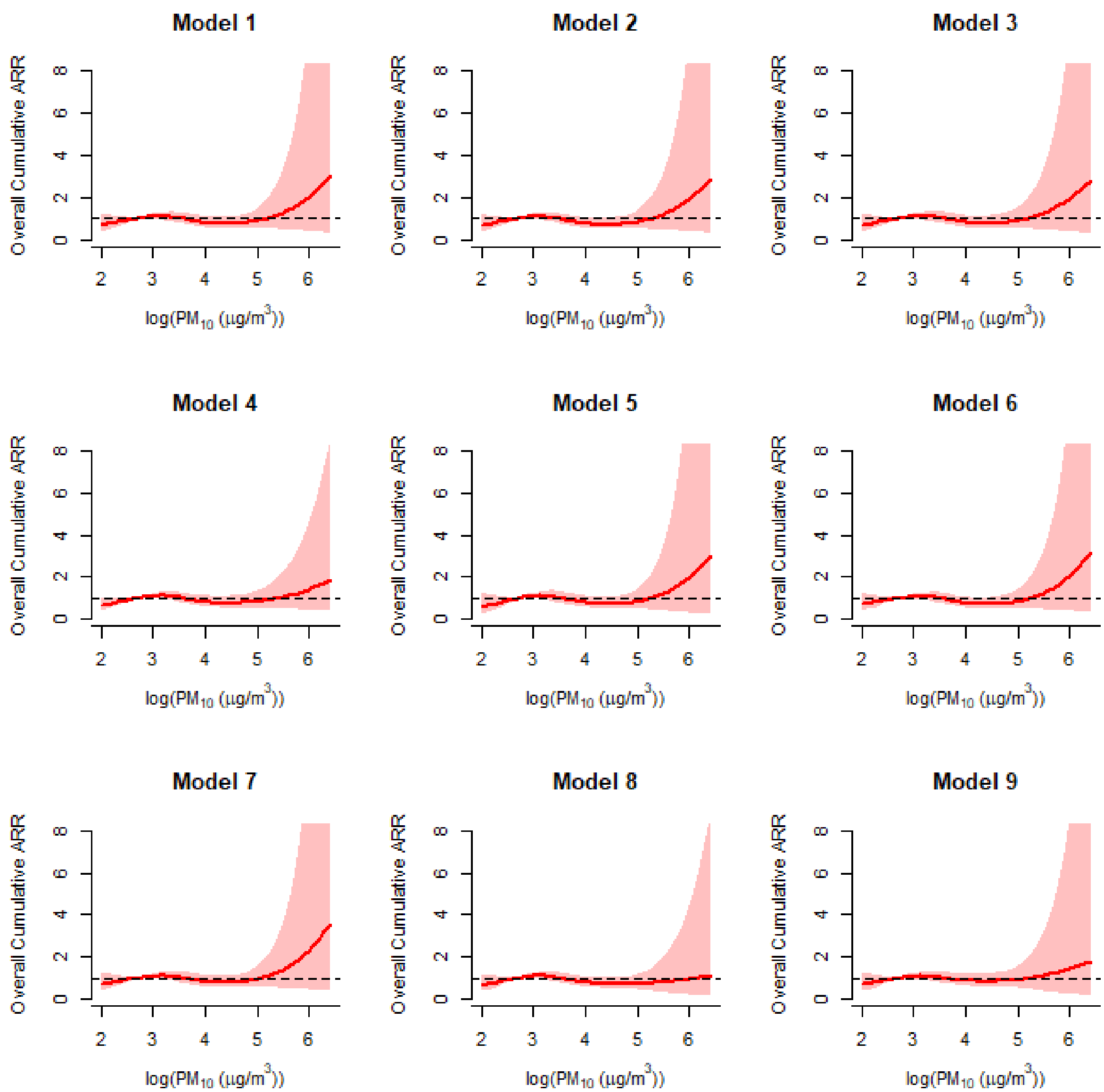
D. Sensitivity Analysis: Cumulative adjusted relative risks (ARRs) of pollutants: (a) NO_2, (b) PM_{10}, (c) O_3, and (d) SO_2 at different parameter settings

- **Model 1:** df for the meteorological parameters = 3; df for the pollutants = 4; df for lag = 4, df for day of study per year = 7
- **Model 2:** df for the meteorological parameters = 3; df for the pollutants = 4; df for lag = 4, df for day of study per year = 7
- **Model 3:** df for the meteorological parameters = 5; df for the pollutants = 4; df for lag = 4, df for day of study per year = 7
- **Model 4:** df for the meteorological parameters = 3; df for the pollutants = 3; df for lag = 4, df for day of study per year = 7
- **Model 5:** df for the meteorological parameters = 3; df for the pollutants = 5; df for lag = 4, df for day of study per year = 7
- **Model 6:** df for the meteorological parameters = 3; df for the pollutants = 4; df for lag = 3, df for day of study per year = 7
- **Model 7:** df for the meteorological parameters = 3; df for the pollutants = 4; df for lag = 5, df for day of study per year = 7
- **Model 8:** df for the meteorological parameters = 3; df for the pollutants = 4; df for lag = 4, df for day of study per year = 6
- **Model 9:** df for the meteorological parameters = 3; df for the pollutants = 4; df for lag = 4, df for day of study per year = 8

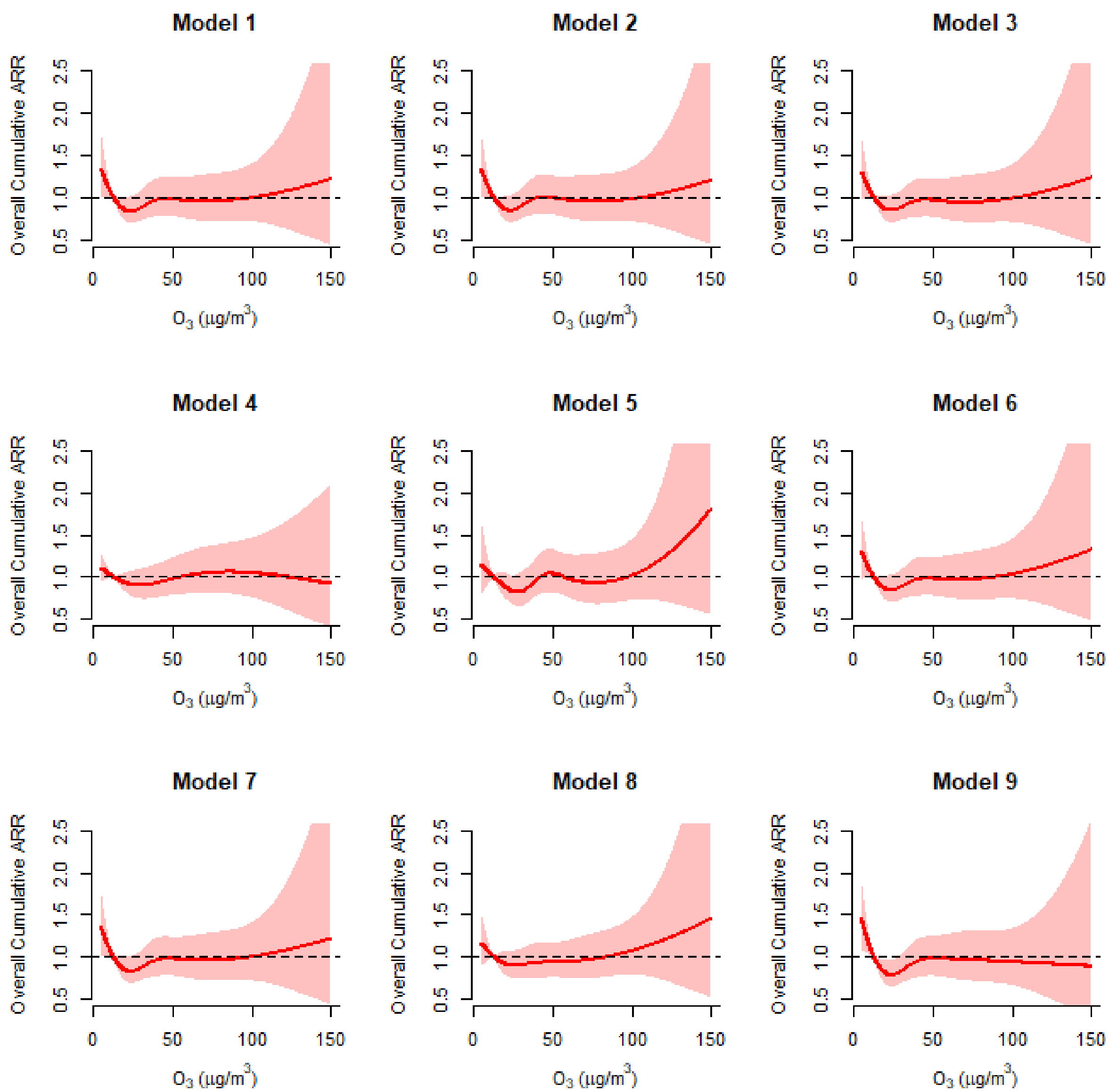
(a) NO_2 (ref. = 29.0 μg/m³)



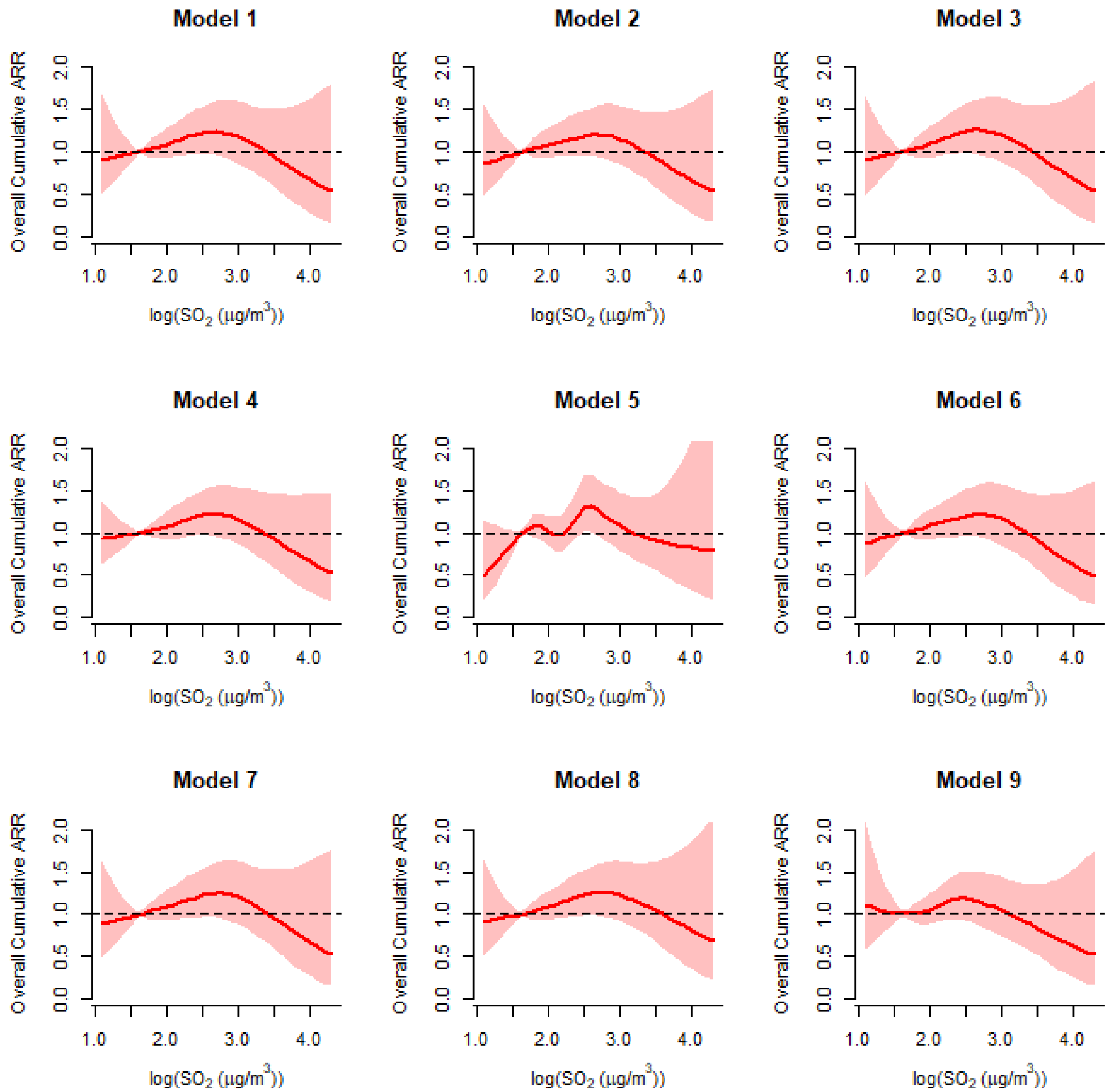
(b) log(PM_{10}) (ref. = log(15.0 μg/m^3))



(c) O_3 (ref. = 12.6 μg/m^3)



(d) log(SO_2) (ref. = log(5.2 μg/m^3))



E. R outputs of the modelling analysis

1. Primary model: $\log[E(Y_t)] = \alpha + cb(\text{temperature}_t) + cb(\text{relative humdity}_t) + cb\big(\text{factor}(\text{rainfall}_t)\big) + cb\big(NO_{2_t}\big) + cb\big(\log(SO_{2_t})\big) + cb\big(O_{3_t}\big) + cb\big(\log(PM_{10_t})\big) + cb\big(\text{factor}(\text{Holiday}_t)\big) + ns(DOS_t, \text{df} = 7 \text{ per year}) + \text{factor}(DOW_t) + s\big(\sqrt{\text{influenza}_t}, k = 7\big)$

```
Family: quasipoisson
Link function: log
Formula:
ad ~ temp.cb + humid.cb + rainfall.cb + o3.cb + so2.cb + no2.cb +
    pm10.cb + holiday.cb + factor(dow) + ns(dos, df = 10 * trend_df) +
    s(sqrt(influ), k = 7)

Parametric coefficients:
                                Estimate Std. Error t value Pr(>|t|)
(Intercept)                    1.4512548  0.7160001   2.027 0.042750 *
temp.cbv1.l1                   0.0439784  0.0418318   1.051 0.293187
temp.cbv1.l2                  -0.0878345  0.0390152  -2.251 0.024430 *
temp.cbv1.l3                   0.0446216  0.0618343   0.722 0.470570
temp.cbv1.l4                  -0.0034920  0.0423107  -0.083 0.934228
temp.cbv2.l1                   0.1231761  0.1142025   1.079 0.280852
temp.cbv2.l2                  -0.1643616  0.1065041  -1.543 0.122864
temp.cbv2.l3                   0.1794677  0.1601544   1.121 0.262540
temp.cbv2.l4                  -0.0698977  0.1133739  -0.617 0.537590
temp.cbv3.l1                   0.0137331  0.0511297   0.269 0.788258
temp.cbv3.l2                  -0.1119861  0.0500760  -2.236 0.025394 *
temp.cbv3.l3                   0.0684730  0.0706839   0.969 0.332752
temp.cbv3.l4                   0.0674186  0.0498300   1.353 0.176153
humid.cbv1.l1                 -0.0266661  0.0328741  -0.811 0.417331
humid.cbv1.l2                  0.0259349  0.0323173   0.803 0.422314
humid.cbv1.l3                  0.0136069  0.0448957   0.303 0.761849
humid.cbv1.l4                 -0.0470236  0.0330892  -1.421 0.155373
humid.cbv2.l1                 -0.0812557  0.1074348  -0.756 0.449505
humid.cbv2.l2                  0.1865052  0.1062710   1.755 0.079349 .
humid.cbv2.l3                 -0.0743799  0.1565142  -0.475 0.634655
humid.cbv2.l4                 -0.1123834  0.1107212  -1.015 0.310171
humid.cbv3.l1                 -0.0198497  0.0412145  -0.482 0.630106
humid.cbv3.l2                  0.0941500  0.0406179   2.318 0.020511 *
humid.cbv3.l3                 -0.0571965  0.0556244  -1.028 0.303899
humid.cbv3.l4                  0.0217260  0.0391004   0.556 0.578488
rainfall.cbv1.l1              -0.0022131  0.0110607  -0.200 0.841422
rainfall.cbv1.l2              -0.0047411  0.0115397  -0.411 0.681211
rainfall.cbv1.l3               0.0032760  0.0145790   0.225 0.822220
rainfall.cbv1.l4               0.0045150  0.0105962   0.426 0.670061
rainfall.cbv2.l1              -0.0104598  0.0280257  -0.373 0.709005
rainfall.cbv2.l2              -0.0495716  0.0304926  -1.626 0.104106
rainfall.cbv2.l3               0.0254501  0.0361916   0.703 0.481977
rainfall.cbv2.l4              -0.0359519  0.0268185  -1.341 0.180151
o3.cbv1.l1                     0.0345359  0.0298613   1.157 0.247540
o3.cbv1.l2                    -0.0307839  0.0298265  -1.032 0.302099
o3.cbv1.l3                    -0.0591781  0.0410856  -1.440 0.149856
o3.cbv1.l4                     0.0178601  0.0293947   0.608 0.543494
o3.cbv2.l1                     0.0179539  0.0389989   0.460 0.645280
o3.cbv2.l2                     0.0066618  0.0398056   0.167 0.867098
o3.cbv2.l3                    -0.0294685  0.0524620  -0.562 0.574350
o3.cbv2.l4                    -0.0338190  0.0377101  -0.897 0.369880
o3.cbv3.l1                     0.0729922  0.0746161   0.978 0.328026
o3.cbv3.l2                    -0.0630899  0.0762029  -0.828 0.407773
o3.cbv3.l3                    -0.1670266  0.0999883  -1.670 0.094919 .
o3.cbv3.l4                     0.0555581  0.0730619   0.760 0.447053
o3.cbv4.l1                     0.1574924  0.0703358   2.239 0.025210 *
o3.cbv4.l2                    -0.1800452  0.0740213  -2.432 0.015052 *
o3.cbv4.l3                    -0.0433764  0.0938465  -0.462 0.643963
o3.cbv4.l4                     0.1376333  0.0706558   1.948 0.051503 .
so2.cbv1.l1                    0.0134665  0.0521547   0.258 0.796266
so2.cbv1.l2                    0.0984224  0.0509775   1.931 0.053602 .
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so2.cbv1.l3                     0.0114321  0.0712974   0.160 0.872620
so2.cbv1.l4                    -0.0912327  0.0503946  -1.810 0.070326 .
so2.cbv2.l1                     0.0464193  0.0474932   0.977 0.328445
so2.cbv2.l2                     0.0811822  0.0475452   1.707 0.087824 .
so2.cbv2.l3                    -0.0280440  0.0639681  -0.438 0.661120
so2.cbv2.l4                    -0.0241849  0.0459626  -0.526 0.598792
so2.cbv3.l1                     0.0549618  0.1204914   0.456 0.648313
so2.cbv3.l2                     0.2331202  0.1208678   1.929 0.053847 .
so2.cbv3.l3                    -0.1215267  0.1657625  -0.733 0.463524
so2.cbv3.l4                    -0.1651787  0.1167885  -1.414 0.157352
so2.cbv4.l1                     0.0026564  0.0769013   0.035 0.972447
so2.cbv4.l2                     0.0560959  0.0811260   0.691 0.489319
so2.cbv4.l3                    -0.0973958  0.1074898  -0.906 0.364949
so2.cbv4.l4                    -0.0658722  0.0757302  -0.870 0.384455
no2.cbv1.l1                    -0.0616957  0.0527942  -1.169 0.242642
no2.cbv1.l2                     0.0017939  0.0542495   0.033 0.973623
no2.cbv1.l3                    -0.0009991  0.0715642  -0.014 0.988862
no2.cbv1.l4                     0.1019180  0.0538348   1.893 0.058420 .
no2.cbv2.l1                     0.0188803  0.0511363   0.369 0.711990
no2.cbv2.l2                    -0.0198304  0.0538109  -0.369 0.712508
no2.cbv2.l3                     0.0673643  0.0691143   0.975 0.329787
no2.cbv2.l4                     0.0877127  0.0512704   1.711 0.087210 .
no2.cbv3.l1                    -0.1785233  0.1212393  -1.472 0.140980
no2.cbv3.l2                     0.1512279  0.1246071   1.214 0.224969
no2.cbv3.l3                     0.0090424  0.1643940   0.055 0.956138
no2.cbv3.l4                     0.2665555  0.1212167   2.199 0.027944 *
no2.cbv4.l1                    -0.0688453  0.1023508  -0.673 0.501221
no2.cbv4.l2                     0.1026636  0.1061544   0.967 0.333554
no2.cbv4.l3                     0.0079176  0.1451105   0.055 0.956490
no2.cbv4.l4                     0.1460566  0.1029970   1.418 0.156262
pm10.cbv1.l1                   -0.0236306  0.0549739  -0.430 0.667330
pm10.cbv1.l2                   -0.0261759  0.0527177  -0.497 0.619553
pm10.cbv1.l3                    0.1661722  0.0743066   2.236 0.025395 *
pm10.cbv1.l4                   -0.1381865  0.0528898  -2.613 0.009021 **
pm10.cbv2.l1                   -0.0436518  0.0515316  -0.847 0.397004
pm10.cbv2.l2                   -0.0538285  0.0513311  -1.049 0.294411
pm10.cbv2.l3                    0.0703806  0.0739057   0.952 0.341010
pm10.cbv2.l4                   -0.1381750  0.0517831  -2.668 0.007658 **
pm10.cbv3.l1                    0.0970854  0.1293034   0.751 0.452804
pm10.cbv3.l2                   -0.2039492  0.1259097  -1.620 0.105365
pm10.cbv3.l3                    0.3679024  0.1741204   2.113 0.034679 *
pm10.cbv3.l4                   -0.2342362  0.1248315  -1.876 0.060682 .
pm10.cbv4.l1                    0.0010267  0.1237157   0.008 0.993379
pm10.cbv4.l2                   -0.0726563  0.1305394  -0.557 0.577847
pm10.cbv4.l3                    0.2272455  0.1722491   1.319 0.187162
pm10.cbv4.l4                    0.0032430  0.1298638   0.025 0.980079
holiday.cbv1.l1                 0.0195226  0.0139753   1.397 0.162523
holiday.cbv1.l2                -0.0377211  0.0125888  -2.996 0.002751 **
holiday.cbv1.l3                -0.0213359  0.0183454  -1.163 0.244904
holiday.cbv1.l4                -0.0291242  0.0132594  -2.196 0.028123 *
factor(dow)2                   -0.0587772  0.0221779  -2.650 0.008080 **
factor(dow)3                   -0.0737656  0.0235202  -3.136 0.001726 **
factor(dow)4                   -0.0442848  0.0237874  -1.862 0.062731 .
factor(dow)5                   -0.0751847  0.0237134  -3.171 0.001535 **
factor(dow)6                   -0.0899525  0.0235340  -3.822 0.000135 ***
factor(dow)7                   -0.0397347  0.0228790  -1.737 0.082524 .
ns(dos, df = 10 * trend_df)1    0.8616721  0.3091919   2.787 0.005351 **
ns(dos, df = 10 * trend_df)2   -0.0458647  0.4184533  -0.110 0.912729
ns(dos, df = 10 * trend_df)3    0.9980103  0.3923718   2.544 0.011017 *
ns(dos, df = 10 * trend_df)4    0.3362908  0.4123966   0.815 0.414868
ns(dos, df = 10 * trend_df)5    0.4138532  0.3848843   1.075 0.282331
ns(dos, df = 10 * trend_df)6   -0.2839202  0.4000807  -0.710 0.477965
ns(dos, df = 10 * trend_df)7   -0.0838325  0.3579476  -0.234 0.814841
ns(dos, df = 10 * trend_df)8    1.2097265  0.3573797   3.385 0.000720 ***
ns(dos, df = 10 * trend_df)9   -0.8398919  0.4148958  -2.024 0.043012 *
ns(dos, df = 10 * trend_df)10  -0.1715906  0.4126791  -0.416 0.677585
ns(dos, df = 10 * trend_df)11  -0.1609482  0.4416006  -0.364 0.715533
ns(dos, df = 10 * trend_df)12   0.6232963  0.3867686   1.612 0.107152
ns(dos, df = 10 * trend_df)13  -0.5633256  0.3747890  -1.503 0.132918
ns(dos, df = 10 * trend_df)14   1.3810768  0.3554162   3.886 0.000104 ***
ns(dos, df = 10 * trend_df)15   0.7007377  0.3546676   1.976 0.048262 *
```

```
ns(dos, df = 10 * trend_df)16  0.0950378  0.3999787   0.238 0.812200
ns(dos, df = 10 * trend_df)17 -0.7546348  0.4165587  -1.812 0.070136 .
ns(dos, df = 10 * trend_df)18  0.3153634  0.4294361   0.734 0.462775
ns(dos, df = 10 * trend_df)19  0.3169441  0.3761137   0.843 0.399465
ns(dos, df = 10 * trend_df)20  0.9033308  0.3660175   2.468 0.013635 *
ns(dos, df = 10 * trend_df)21 -0.1041196  0.3738877  -0.278 0.780662
ns(dos, df = 10 * trend_df)22  1.1412016  0.3575339   3.192 0.001426 **
ns(dos, df = 10 * trend_df)23  0.1288197  0.3916974   0.329 0.742270
ns(dos, df = 10 * trend_df)24  0.7538852  0.3893076   1.936 0.052891 .
ns(dos, df = 10 * trend_df)25  0.9750480  0.4100772   2.378 0.017474 *
ns(dos, df = 10 * trend_df)26  0.1975424  0.3802096   0.520 0.603402
ns(dos, df = 10 * trend_df)27 -0.4322074  0.3771566  -1.146 0.251890
ns(dos, df = 10 * trend_df)28  0.6356608  0.3621247   1.755 0.079286 .
ns(dos, df = 10 * trend_df)29  1.0673142  0.3595173   2.969 0.003011 **
ns(dos, df = 10 * trend_df)30  0.1287451  0.4219465   0.305 0.760292
ns(dos, df = 10 * trend_df)31  0.1093384  0.3945192   0.277 0.781687
ns(dos, df = 10 * trend_df)32  0.5879758  0.4081295   1.441 0.149771
ns(dos, df = 10 * trend_df)33  0.5000772  0.3804599   1.314 0.188798
ns(dos, df = 10 * trend_df)34  0.6856981  0.3469802   1.976 0.048213 *
ns(dos, df = 10 * trend_df)35  1.1784024  0.3723688   3.165 0.001566 **
ns(dos, df = 10 * trend_df)36  0.0960919  0.3497702   0.275 0.783541
ns(dos, df = 10 * trend_df)37  0.2188771  0.4076512   0.537 0.591356
ns(dos, df = 10 * trend_df)38  1.1243102  0.3909058   2.876 0.004050 **
ns(dos, df = 10 * trend_df)39  0.5472236  0.4055893   1.349 0.177359
ns(dos, df = 10 * trend_df)40  0.3836715  0.3869929   0.991 0.321551
ns(dos, df = 10 * trend_df)41 -0.0475495  0.3874454  -0.123 0.902332
ns(dos, df = 10 * trend_df)42 -0.5383873  0.3875989  -1.389 0.164913
ns(dos, df = 10 * trend_df)43  1.5538601  0.3523201   4.410 1.06e-05 ***
ns(dos, df = 10 * trend_df)44  0.4011037  0.4129479   0.971 0.331458
ns(dos, df = 10 * trend_df)45  0.1423757  0.4001527   0.356 0.722010
ns(dos, df = 10 * trend_df)46  0.1128887  0.4155741   0.272 0.785911
ns(dos, df = 10 * trend_df)47  0.4619514  0.3811831   1.212 0.225638
ns(dos, df = 10 * trend_df)48  0.1630531  0.3813022   0.428 0.668953
ns(dos, df = 10 * trend_df)49 -0.2127009  0.3906294  -0.545 0.586127
ns(dos, df = 10 * trend_df)50  0.6608814  0.3591247   1.840 0.065816 .
ns(dos, df = 10 * trend_df)51  0.2155257  0.4203650   0.513 0.608186
ns(dos, df = 10 * trend_df)52  0.1086832  0.4229558   0.257 0.797224
ns(dos, df = 10 * trend_df)53  0.6313049  0.3956350   1.596 0.110653
ns(dos, df = 10 * trend_df)54  0.3613383  0.4008369   0.901 0.367407
ns(dos, df = 10 * trend_df)55  0.5361872  0.3478824   1.541 0.123338
ns(dos, df = 10 * trend_df)56  0.9130877  0.3846419   2.374 0.017657 *
ns(dos, df = 10 * trend_df)57  0.6538293  0.3522626   1.856 0.063527 .
ns(dos, df = 10 * trend_df)58  0.8777681  0.4292818   2.045 0.040956 *
ns(dos, df = 10 * trend_df)59  0.2278709  0.4058652   0.561 0.574531
ns(dos, df = 10 * trend_df)60  0.1307263  0.4172703   0.313 0.754080
ns(dos, df = 10 * trend_df)61  0.6635502  0.3857125   1.720 0.085463 .
ns(dos, df = 10 * trend_df)62  0.6422523  0.3559697   1.804 0.071282 .
ns(dos, df = 10 * trend_df)63  0.4363803  0.3762755   1.160 0.246236
ns(dos, df = 10 * trend_df)64  1.1266372  0.3555550   3.169 0.001545 **
ns(dos, df = 10 * trend_df)65  0.0357018  0.4227793   0.084 0.932707
ns(dos, df = 10 * trend_df)66  0.5818062  0.4249520   1.369 0.171054
ns(dos, df = 10 * trend_df)67  1.0917789  0.4220827   2.587 0.009732 **
ns(dos, df = 10 * trend_df)68  0.5217567  0.3044827   1.714 0.086695 .
ns(dos, df = 10 * trend_df)69  0.5761929  0.7550888   0.763 0.445468
ns(dos, df = 10 * trend_df)70 -0.0060447  0.1776860  -0.034 0.972864
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Approximate significance of smooth terms:
                  edf Ref.df     F  p-value
s(sqrt(influ)) 1.259  1.482 9.878 0.000315 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

R-sq.(adj) =  0.474   Deviance explained = 47.9%
GCV = 1.0821  Scale est. = 0.98661   n = 3632
```

2. Secondary model 1: $\log[E(Y_t)] = \alpha + \mathrm{cb}(\text{Apparent Temperature}_t) + \mathrm{cb}(\text{Relative Humdity}_t) + \mathrm{cb}(\mathrm{factor}(\text{Rainfall}_t)) + \mathrm{cb}(\mathrm{NO}_{2_t}) + \mathrm{cb}(\log(\mathrm{SO}_{2_t})) + \mathrm{cb}(\mathrm{O}_{3_t}) + \mathrm{cb}(\log(\mathrm{PM}_{10_t})) + \mathrm{cb}(\mathrm{factor}(\text{Holiday}_t)) + \mathrm{ns}(\mathrm{DOS}_t, \mathrm{df} = 7 \text{ per year}) + \mathrm{factor}(\mathrm{DOW}_t) + s(\sqrt{\text{Influenza}_t}, k = 7)$

```
Family: quasipoisson
Link function: log

Formula:
ad ~ AT.cb + humid.cb + rainfall.cb + o3.cb + so2.cb + no2.cb +
    pm10.cb + holiday.cb + factor(dow) + ns(dos, df = 10 * trend_df) +
    s(sqrt(influ), k = 7)

Parametric coefficients:
                              Estimate Std. Error t value Pr(>|t|)
(Intercept)                  1.6660412  0.7586414   2.196 0.028155 *
AT.cbv1.l1                   0.0552618  0.0477023   1.158 0.246754
AT.cbv1.l2                  -0.1034158  0.0444522  -2.326 0.020054 *
AT.cbv1.l3                   0.0631939  0.0685733   0.922 0.356829
AT.cbv1.l4                  -0.0334739  0.0473336  -0.707 0.479496
AT.cbv2.l1                   0.2376932  0.1459218   1.629 0.103427
AT.cbv2.l2                  -0.2115769  0.1356748  -1.559 0.118987
AT.cbv2.l3                   0.1915229  0.2004322   0.956 0.339369
AT.cbv2.l4                  -0.1378967  0.1445228  -0.954 0.340076
AT.cbv3.l1                   0.0423648  0.0472982   0.896 0.370479
AT.cbv3.l2                  -0.0966215  0.0457569  -2.112 0.034793 *
AT.cbv3.l3                   0.1121366  0.0661026   1.696 0.089903 .
AT.cbv3.l4                  -0.0018263  0.0468047  -0.039 0.968877
humid.cbv1.l1               -0.0218804  0.0356452  -0.614 0.539365
humid.cbv1.l2                0.0224829  0.0347639   0.647 0.517850
humid.cbv1.l3               -0.0009628  0.0477471  -0.020 0.983914
humid.cbv1.l4               -0.0370310  0.0348635  -1.062 0.288234
humid.cbv2.l1               -0.0646684  0.1164570  -0.555 0.578728
humid.cbv2.l2                0.1329434  0.1113794   1.194 0.232716
humid.cbv2.l3               -0.0641735  0.1653667  -0.388 0.697990
humid.cbv2.l4               -0.0963373  0.1162263  -0.829 0.407234
humid.cbv3.l1               -0.0068002  0.0432011  -0.157 0.874933
humid.cbv3.l2                0.0665029  0.0423867   1.569 0.116753
humid.cbv3.l3               -0.0534840  0.0575815  -0.929 0.353040
humid.cbv3.l4                0.0285791  0.0404871   0.706 0.480312
rainfall.cbv1.l1            -0.0031316  0.0115235  -0.272 0.785827
rainfall.cbv1.l2            -0.0049700  0.0121226  -0.410 0.681846
rainfall.cbv1.l3             0.0040544  0.0150196   0.270 0.787220
rainfall.cbv1.l4             0.0053266  0.0109031   0.489 0.625197
rainfall.cbv2.l1            -0.0105060  0.0292174  -0.360 0.719184
rainfall.cbv2.l2            -0.0421359  0.0321307  -1.311 0.189816
rainfall.cbv2.l3             0.0412199  0.0378669   1.089 0.276433
rainfall.cbv2.l4            -0.0502319  0.0282973  -1.775 0.075965 .
o3.cbv1.l1                   0.0348665  0.0295563   1.180 0.238217
o3.cbv1.l2                  -0.0416967  0.0294356  -1.417 0.156711
o3.cbv1.l3                  -0.0463252  0.0409948  -1.130 0.258546
o3.cbv1.l4                   0.0248903  0.0290758   0.856 0.392031
o3.cbv2.l1                   0.0227358  0.0387075   0.587 0.556992
o3.cbv2.l2                   0.0025551  0.0397889   0.064 0.948801
o3.cbv2.l3                  -0.0224234  0.0527896  -0.425 0.671032
o3.cbv2.l4                  -0.0292102  0.0378654  -0.771 0.440512
o3.cbv3.l1                   0.0649870  0.0744233   0.873 0.382613
o3.cbv3.l2                  -0.0755945  0.0759536  -0.995 0.319676
o3.cbv3.l3                  -0.1363626  0.1003953  -1.358 0.174474
o3.cbv3.l4                   0.0494855  0.0731764   0.676 0.498929
o3.cbv4.l1                   0.1564937  0.0718709   2.177 0.029519 *
o3.cbv4.l2                  -0.1974352  0.0761727  -2.592 0.009585 **
o3.cbv4.l3                  -0.0179600  0.0957428  -0.188 0.851213
o3.cbv4.l4                   0.1257924  0.0725845   1.733 0.083180 .
so2.cbv1.l1                  0.0167104  0.0541531   0.309 0.757662
so2.cbv1.l2                  0.0831071  0.0531672   1.563 0.118118
so2.cbv1.l3                  0.0001811  0.0739389   0.002 0.998046
so2.cbv1.l4                 -0.0649959  0.0516835  -1.258 0.208634
so2.cbv2.l1                  0.0512144  0.0489616   1.046 0.295632
so2.cbv2.l2                  0.0676012  0.0492383   1.373 0.169864
so2.cbv2.l3                 -0.0380584  0.0660353  -0.576 0.564428
so2.cbv2.l4                 -0.0034456  0.0473060  -0.073 0.941941
```

```
so2.cbv3.l1                     0.0512808  0.1243337   0.412 0.680040
so2.cbv3.l2                     0.1955869  0.1250029   1.565 0.117758
so2.cbv3.l3                    -0.1419627  0.1713154  -0.829 0.407355
so2.cbv3.l4                    -0.1093854  0.1195790  -0.915 0.360387
so2.cbv4.l1                    -0.0021016  0.0774203  -0.027 0.978345
so2.cbv4.l2                     0.0148940  0.0813678   0.183 0.854773
so2.cbv4.l3                    -0.1435432  0.1088079  -1.319 0.187182
so2.cbv4.l4                    -0.0180096  0.0761196  -0.237 0.812985
no2.cbv1.l1                    -0.0651355  0.0527155  -1.236 0.216693
no2.cbv1.l2                     0.0240398  0.0527676   0.456 0.648722
no2.cbv1.l3                    -0.0233851  0.0722192  -0.324 0.746104
no2.cbv1.l4                     0.0724792  0.0537295   1.349 0.177440
no2.cbv2.l1                     0.0133337  0.0507296   0.263 0.792692
no2.cbv2.l2                     0.0124311  0.0529264   0.235 0.814321
no2.cbv2.l3                     0.0291712  0.0688185   0.424 0.671676
no2.cbv2.l4                     0.0585159  0.0513353   1.140 0.254420
no2.cbv3.l1                    -0.1983282  0.1208347  -1.641 0.100826
no2.cbv3.l2                     0.2152031  0.1223656   1.759 0.078722 .
no2.cbv3.l3                    -0.0379806  0.1657823  -0.229 0.818806
no2.cbv3.l4                     0.2064575  0.1214117   1.700 0.089135 .
no2.cbv4.l1                    -0.0736111  0.1029959  -0.715 0.474845
no2.cbv4.l2                     0.1499224  0.1062928   1.410 0.158496
no2.cbv4.l3                     0.0300032  0.1462432   0.205 0.837460
no2.cbv4.l4                     0.1414452  0.1034423   1.367 0.171598
pm10.cbv1.l1                   -0.0413979  0.0564995  -0.733 0.463785
pm10.cbv1.l2                   -0.0148565  0.0534441  -0.278 0.781043
pm10.cbv1.l3                    0.1699841  0.0763136   2.227 0.025984 *
pm10.cbv1.l4                   -0.1356220  0.0539619  -2.513 0.012008 *
pm10.cbv2.l1                   -0.0655134  0.0532196  -1.231 0.218409
pm10.cbv2.l2                   -0.0535008  0.0528486  -1.012 0.311449
pm10.cbv2.l3                    0.0908371  0.0754894   1.203 0.228942
pm10.cbv2.l4                   -0.1419105  0.0531216  -2.671 0.007590 **
pm10.cbv3.l1                    0.0621278  0.1325245   0.469 0.639242
pm10.cbv3.l2                   -0.1970264  0.1281867  -1.537 0.124382
pm10.cbv3.l3                    0.3798868  0.1784794   2.128 0.033372 *
pm10.cbv3.l4                   -0.2472232  0.1270476  -1.946 0.051750 .
pm10.cbv4.l1                    0.0051321  0.1264202   0.041 0.967621
pm10.cbv4.l2                   -0.0879770  0.1327344  -0.663 0.507501
pm10.cbv4.l3                    0.2528895  0.1743678   1.450 0.147063
pm10.cbv4.l4                   -0.0317103  0.1314118  -0.241 0.809334
holiday.cbv1.l1                 0.0229240  0.0140656   1.630 0.103241
holiday.cbv1.l2                -0.0384166  0.0127883  -3.004 0.002684 **
holiday.cbv1.l3                -0.0271741  0.0184173  -1.475 0.140180
holiday.cbv1.l4                -0.0262329  0.0133766  -1.961 0.049950 *
factor(dow)2                   -0.0649037  0.0225217  -2.882 0.003979 **
factor(dow)3                   -0.0786969  0.0238626  -3.298 0.000984 ***
factor(dow)4                   -0.0522564  0.0241511  -2.164 0.030556 *
factor(dow)5                   -0.0788882  0.0240608  -3.279 0.001054 **
factor(dow)6                   -0.0962840  0.0238861  -4.031 5.68e-05 ***
factor(dow)7                   -0.0411008  0.0231921  -1.772 0.076455 .
ns(dos, df = 10 * trend_df)1    0.9348702  0.3096874   3.019 0.002557 **
ns(dos, df = 10 * trend_df)2   -0.0803316  0.4164357  -0.193 0.847047
ns(dos, df = 10 * trend_df)3    1.0230267  0.3934626   2.600 0.009362 **
ns(dos, df = 10 * trend_df)4    0.2611783  0.4190711   0.623 0.533175
ns(dos, df = 10 * trend_df)5    0.4308111  0.3930425   1.096 0.273117
ns(dos, df = 10 * trend_df)6   -0.3433589  0.4087290  -0.840 0.400932
ns(dos, df = 10 * trend_df)7   -0.0118598  0.3584741  -0.033 0.973610
ns(dos, df = 10 * trend_df)8    1.1995473  0.3593351   3.338 0.000852 ***
ns(dos, df = 10 * trend_df)9   -0.9221487  0.4106954  -2.245 0.024812 *
ns(dos, df = 10 * trend_df)10 -0.1866354  0.4136076  -0.451 0.651848
ns(dos, df = 10 * trend_df)11 -0.2841876  0.4413071  -0.644 0.519641
ns(dos, df = 10 * trend_df)12  0.6536305  0.3931383   1.663 0.096487 .
ns(dos, df = 10 * trend_df)13 -0.5691370  0.3824402  -1.488 0.136800
ns(dos, df = 10 * trend_df)14  1.3880733  0.3552156   3.908 9.50e-05 ***
ns(dos, df = 10 * trend_df)15  0.7389734  0.3566781   2.072 0.038359 *
ns(dos, df = 10 * trend_df)16  0.0195143  0.3967728   0.049 0.960777
ns(dos, df = 10 * trend_df)17 -0.7927040  0.4170666  -1.901 0.057432 .
ns(dos, df = 10 * trend_df)18  0.2183160  0.4275896   0.511 0.609683
ns(dos, df = 10 * trend_df)19  0.3343548  0.3729369   0.897 0.370026
ns(dos, df = 10 * trend_df)20  0.9254000  0.3714831   2.491 0.012783 *
ns(dos, df = 10 * trend_df)21 -0.1336946  0.3742418  -0.357 0.720934
```

```
ns(dos, df = 10 * trend_df)22  1.1972173  0.3591861   3.333 0.000868 ***
ns(dos, df = 10 * trend_df)23  0.0118967  0.3885849   0.031 0.975578
ns(dos, df = 10 * trend_df)24  0.7251224  0.3867721   1.875 0.060907 .
ns(dos, df = 10 * trend_df)25  0.8458428  0.4134686   2.046 0.040862 *
ns(dos, df = 10 * trend_df)26  0.2569205  0.3719087   0.691 0.489729
ns(dos, df = 10 * trend_df)27 -0.4461225  0.3833977  -1.164 0.244669
ns(dos, df = 10 * trend_df)28  0.6629031  0.3611692   1.835 0.066530 .
ns(dos, df = 10 * trend_df)29  1.0391171  0.3682964   2.821 0.004810 **
ns(dos, df = 10 * trend_df)30  0.1485589  0.4257700   0.349 0.727173
ns(dos, df = 10 * trend_df)31  0.0513062  0.3928524   0.131 0.896100
ns(dos, df = 10 * trend_df)32  0.4906748  0.4061067   1.208 0.227040
ns(dos, df = 10 * trend_df)33  0.5155347  0.3745580   1.376 0.168796
ns(dos, df = 10 * trend_df)34  0.7009934  0.3520285   1.991 0.046530 *
ns(dos, df = 10 * trend_df)35  1.1763850  0.3748126   3.139 0.001712 **
ns(dos, df = 10 * trend_df)36  0.1230499  0.3514770   0.350 0.726291
ns(dos, df = 10 * trend_df)37  0.1355332  0.4026633   0.337 0.736446
ns(dos, df = 10 * trend_df)38  1.1019279  0.3907503   2.820 0.004830 **
ns(dos, df = 10 * trend_df)39  0.4670187  0.4022368   1.161 0.245703
ns(dos, df = 10 * trend_df)40  0.3887944  0.3783013   1.028 0.304148
ns(dos, df = 10 * trend_df)41 -0.0256821  0.3917498  -0.066 0.947734
ns(dos, df = 10 * trend_df)42 -0.5588517  0.3885952  -1.438 0.150490
ns(dos, df = 10 * trend_df)43  1.5858538  0.3556713   4.459 8.52e-06 ***
ns(dos, df = 10 * trend_df)44  0.3081121  0.4151729   0.742 0.458061
ns(dos, df = 10 * trend_df)45  0.0408652  0.4048381   0.101 0.919603
ns(dos, df = 10 * trend_df)46 -0.0130057  0.4174507  -0.031 0.975148
ns(dos, df = 10 * trend_df)47  0.4410692  0.3781409   1.166 0.243530
ns(dos, df = 10 * trend_df)48  0.1638694  0.3867899   0.424 0.671837
ns(dos, df = 10 * trend_df)49 -0.2254507  0.3913279  -0.576 0.564575
ns(dos, df = 10 * trend_df)50  0.6883038  0.3620310   1.901 0.057358 .
ns(dos, df = 10 * trend_df)51  0.1323519  0.4167186   0.318 0.750804
ns(dos, df = 10 * trend_df)52 -0.0167819  0.4269387  -0.039 0.968648
ns(dos, df = 10 * trend_df)53  0.5195820  0.3981041   1.305 0.191935
ns(dos, df = 10 * trend_df)54  0.3275957  0.3929122   0.834 0.404474
ns(dos, df = 10 * trend_df)55  0.5389357  0.3528137   1.528 0.126723
ns(dos, df = 10 * trend_df)56  0.8693710  0.3848434   2.259 0.023946 *
ns(dos, df = 10 * trend_df)57  0.7022714  0.3553213   1.976 0.048187 *
ns(dos, df = 10 * trend_df)58  0.7339430  0.4301806   1.706 0.088078 .
ns(dos, df = 10 * trend_df)59  0.1534584  0.4069458   0.377 0.706125
ns(dos, df = 10 * trend_df)60  0.0042170  0.4202259   0.010 0.991994
ns(dos, df = 10 * trend_df)61  0.6576398  0.3811990   1.725 0.084586 .
ns(dos, df = 10 * trend_df)62  0.6332635  0.3593769   1.762 0.078142 .
ns(dos, df = 10 * trend_df)63  0.3733542  0.3790214   0.985 0.324672
ns(dos, df = 10 * trend_df)64  1.1305471  0.3587700   3.151 0.001641 **
ns(dos, df = 10 * trend_df)65 -0.0773355  0.4220216  -0.183 0.854613
ns(dos, df = 10 * trend_df)66  0.5305942  0.4265496   1.244 0.213616
ns(dos, df = 10 * trend_df)67  0.8842477  0.4293260   2.060 0.039513 *
ns(dos, df = 10 * trend_df)68  0.5238019  0.2922416   1.792 0.073166 .
ns(dos, df = 10 * trend_df)69  0.5981283  0.7591184   0.788 0.430797
ns(dos, df = 10 * trend_df)70 -0.0693098  0.1784268  -0.388 0.697708
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Approximate significance of smooth terms:
                 edf Ref.df     F p-value
s(sqrt(influ)) 1.47  1.833 6.815 0.00122 **
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

R-sq.(adj) =   0.48   Deviance explained = 48.6%
GCV = 1.0847  Scale est. = 0.98601   n = 3507
```

3. Secondary model 2: $\log[E(Y_t)] = \alpha + cb(\text{Vapour Pressure}_t) + cb(\text{factor}(\text{Rainfall}_t)) + cb(NO_{2_t}) + cb(\log(SO_{2_t})) + cb(O_{3_t}) + cb(\log(PM_{10_t})) + cb(\text{factor}(\text{Holiday}_t)) + ns(DOS_t, df = 7 \text{ per year}) + \text{factor}(DOW_t) + s(\sqrt{\text{Influenza}_t}, k = 7)$

```
Family: quasipoisson
Link function: log

Formula:
ad ~ VP.cb + rainfall.cb + o3.cb + so2.cb + no2.cb + pm10.cb +
    holiday.cb + factor(dow) + ns(dos, df = 10 * trend_df) +
    s(sqrt(influ), k = 7)

Parametric coefficients:
                              Estimate Std. Error t value Pr(>|t|)
(Intercept)                  1.3553095  0.5661917   2.394 0.016731 *
VP.cbv1.l1                  -0.0051677  0.0275582  -0.188 0.851264
VP.cbv1.l2                  -0.0370730  0.0268103  -1.383 0.166819
VP.cbv1.l3                   0.0166116  0.0390717   0.425 0.670749
VP.cbv1.l4                  -0.0001894  0.0271655  -0.007 0.994437
VP.cbv2.l1                   0.0736201  0.0682986   1.078 0.281147
VP.cbv2.l2                  -0.1653748  0.0687627  -2.405 0.016224 *
VP.cbv2.l3                   0.0694318  0.0948159   0.732 0.464047
VP.cbv2.l4                  -0.0303909  0.0677348  -0.449 0.653694
VP.cbv3.l1                   0.0501825  0.0367864   1.364 0.172606
VP.cbv3.l2                  -0.0702289  0.0341507  -2.056 0.039815 *
VP.cbv3.l3                  -0.0011149  0.0510029  -0.022 0.982561
VP.cbv3.l4                   0.0573688  0.0354223   1.620 0.105417
rainfall.cbv1.l1            -0.0089060  0.0095426  -0.933 0.350734
rainfall.cbv1.l2             0.0117857  0.0097057   1.214 0.224713
rainfall.cbv1.l3             0.0042138  0.0131819   0.320 0.749243
rainfall.cbv1.l4             0.0049149  0.0094476   0.520 0.602940
rainfall.cbv2.l1            -0.0185781  0.0234733  -0.791 0.428733
rainfall.cbv2.l2            -0.0031497  0.0254193  -0.124 0.901395
rainfall.cbv2.l3             0.0097602  0.0311368   0.313 0.753949
rainfall.cbv2.l4            -0.0329604  0.0236611  -1.393 0.163703
o3.cbv1.l1                   0.0350348  0.0279724   1.252 0.210480
o3.cbv1.l2                  -0.0471171  0.0278681  -1.691 0.090980 .
o3.cbv1.l3                  -0.0414443  0.0393413  -1.053 0.292206
o3.cbv1.l4                   0.0141358  0.0277313   0.510 0.610266
o3.cbv2.l1                   0.0324395  0.0363703   0.892 0.372497
o3.cbv2.l2                  -0.0195819  0.0370433  -0.529 0.597102
o3.cbv2.l3                  -0.0096331  0.0501870  -0.192 0.847797
o3.cbv2.l4                  -0.0289869  0.0358466  -0.809 0.418780
o3.cbv3.l1                   0.0665267  0.0717748   0.927 0.354053
o3.cbv3.l2                  -0.0888793  0.0732998  -1.213 0.225386
o3.cbv3.l3                  -0.1384151  0.0969419  -1.428 0.153435
o3.cbv3.l4                   0.0581507  0.0704800   0.825 0.409390
o3.cbv4.l1                   0.1555801  0.0703260   2.212 0.027013 *
o3.cbv4.l2                  -0.1850006  0.0742172  -2.493 0.012724 *
o3.cbv4.l3                  -0.0411989  0.0938417  -0.439 0.660670
o3.cbv4.l4                   0.1450825  0.0711142   2.040 0.041413 *
so2.cbv1.l1                  0.0192957  0.0464112   0.416 0.677615
so2.cbv1.l2                  0.0453044  0.0455387   0.995 0.319876
so2.cbv1.l3                  0.0652402  0.0636952   1.024 0.305786
so2.cbv1.l4                 -0.0983907  0.0451572  -2.179 0.029410 *
so2.cbv2.l1                  0.0575265  0.0423461   1.358 0.174398
so2.cbv2.l2                  0.0219654  0.0425749   0.516 0.605940
so2.cbv2.l3                  0.0162539  0.0574158   0.283 0.777124
so2.cbv2.l4                 -0.0230780  0.0414628  -0.557 0.577840
so2.cbv3.l1                  0.0597653  0.1104291   0.541 0.588398
so2.cbv3.l2                  0.1164419  0.1119523   1.040 0.298365
so2.cbv3.l3                 -0.0011307  0.1518771  -0.007 0.994060
so2.cbv3.l4                 -0.1620714  0.1076844  -1.505 0.132400
so2.cbv4.l1                 -0.0106711  0.0716659  -0.149 0.881640
so2.cbv4.l2                 -0.0269358  0.0756726  -0.356 0.721898
so2.cbv4.l3                 -0.0254380  0.1003181  -0.254 0.799840
so2.cbv4.l4                 -0.0690957  0.0707578  -0.977 0.328881
no2.cbv1.l1                 -0.0544867  0.0501652  -1.086 0.277490
no2.cbv1.l2                  0.0321086  0.0505383   0.635 0.525255
no2.cbv1.l3                 -0.0337680  0.0679432  -0.497 0.619218
no2.cbv1.l4                  0.1157413  0.0508129   2.278 0.022799 *
no2.cbv2.l1                  0.0281539  0.0492771   0.571 0.567807
```

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no2.cbv2.l2                    0.0265271  0.0510940   0.519 0.603667
no2.cbv2.l3                    0.0314189  0.0663276   0.474 0.635749
no2.cbv2.l4                    0.1039874  0.0496052   2.096 0.036128 *
no2.cbv3.l1                   -0.1666180  0.1183115  -1.408 0.159132
no2.cbv3.l2                    0.2087022  0.1203854   1.734 0.083075 .
no2.cbv3.l3                   -0.0291471  0.1604221  -0.182 0.855837
no2.cbv3.l4                    0.2799515  0.1178405   2.376 0.017571 *
no2.cbv4.l1                   -0.0545403  0.1007962  -0.541 0.588477
no2.cbv4.l2                    0.1379325  0.1043397   1.322 0.186270
no2.cbv4.l3                   -0.0173810  0.1432889  -0.121 0.903460
no2.cbv4.l4                    0.1642793  0.1012649   1.622 0.104836
pm10.cbv1.l1                  -0.0407622  0.0533743  -0.764 0.445095
pm10.cbv1.l2                  -0.0517256  0.0510717  -1.013 0.311224
pm10.cbv1.l3                   0.2054219  0.0720623   2.851 0.004389 **
pm10.cbv1.l4                  -0.1512313  0.0515482  -2.934 0.003371 **
pm10.cbv2.l1                  -0.0694038  0.0512745  -1.354 0.175961
pm10.cbv2.l2                  -0.0543270  0.0506952  -1.072 0.283956
pm10.cbv2.l3                   0.0810566  0.0727806   1.114 0.265480
pm10.cbv2.l4                  -0.1532471  0.0514432  -2.979 0.002912 **
pm10.cbv3.l1                   0.0800839  0.1273213   0.629 0.529397
pm10.cbv3.l2                  -0.2573946  0.1233464  -2.087 0.036983 *
pm10.cbv3.l3                   0.4379224  0.1715185   2.553 0.010716 *
pm10.cbv3.l4                  -0.2506877  0.1233479  -2.032 0.042193 *
pm10.cbv4.l1                   0.0507315  0.1222589   0.415 0.678203
pm10.cbv4.l2                  -0.1276988  0.1284987  -0.994 0.320402
pm10.cbv4.l3                   0.2442471  0.1718410   1.421 0.155304
pm10.cbv4.l4                  -0.0219763  0.1290729  -0.170 0.864814
holiday.cbv1.l1                0.0216149  0.0139777   1.546 0.122103
holiday.cbv1.l2               -0.0389137  0.0126002  -3.088 0.002029 **
holiday.cbv1.l3               -0.0243269  0.0182945  -1.330 0.183692
holiday.cbv1.l4               -0.0253565  0.0132018  -1.921 0.054853 .
factor(dow)2                  -0.0593118  0.0221940  -2.672 0.007566 **
factor(dow)3                  -0.0739103  0.0235176  -3.143 0.001688 **
factor(dow)4                  -0.0438628  0.0237731  -1.845 0.065114 .
factor(dow)5                  -0.0746431  0.0237100  -3.148 0.001657 **
factor(dow)6                  -0.0892264  0.0235227  -3.793 0.000151 ***
factor(dow)7                  -0.0417234  0.0228870  -1.823 0.068387 .
ns(dos, df = 10 * trend_df)1   1.0053188  0.3018644   3.330 0.000876 ***
ns(dos, df = 10 * trend_df)2  -0.0733716  0.4172199  -0.176 0.860415
ns(dos, df = 10 * trend_df)3   1.0199234  0.3882061   2.627 0.008645 **
ns(dos, df = 10 * trend_df)4   0.3463243  0.4060638   0.853 0.393784
ns(dos, df = 10 * trend_df)5   0.4701391  0.3666328   1.282 0.199818
ns(dos, df = 10 * trend_df)6  -0.2401648  0.3955762  -0.607 0.543807
ns(dos, df = 10 * trend_df)7  -0.0260474  0.3533197  -0.074 0.941236
ns(dos, df = 10 * trend_df)8   1.2971209  0.3541993   3.662 0.000254 ***
ns(dos, df = 10 * trend_df)9  -0.8712522  0.3967492  -2.196 0.028160 *
ns(dos, df = 10 * trend_df)10 -0.1775152  0.4185246  -0.424 0.671486
ns(dos, df = 10 * trend_df)11 -0.1639397  0.4219056  -0.389 0.697618
ns(dos, df = 10 * trend_df)12  0.6751854  0.3725418   1.812 0.070015 .
ns(dos, df = 10 * trend_df)13 -0.5013254  0.3614264  -1.387 0.165508
ns(dos, df = 10 * trend_df)14  1.3977460  0.3488010   4.007 6.27e-05 ***
ns(dos, df = 10 * trend_df)15  0.8347699  0.3524784   2.368 0.017925 *
ns(dos, df = 10 * trend_df)16  0.0515214  0.3942280   0.131 0.896029
ns(dos, df = 10 * trend_df)17 -0.7347354  0.4198475  -1.750 0.080206 .
ns(dos, df = 10 * trend_df)18  0.2638040  0.4153546   0.635 0.525386
ns(dos, df = 10 * trend_df)19  0.4053899  0.3674312   1.103 0.269970
ns(dos, df = 10 * trend_df)20  0.9291309  0.3633743   2.557 0.010602 *
ns(dos, df = 10 * trend_df)21 -0.1141378  0.3633280  -0.314 0.753430
ns(dos, df = 10 * trend_df)22  1.2252529  0.3535204   3.466 0.000535 ***
ns(dos, df = 10 * trend_df)23  0.0883765  0.3766806   0.235 0.814518
ns(dos, df = 10 * trend_df)24  0.7963751  0.3922070   2.030 0.042382 *
ns(dos, df = 10 * trend_df)25  0.9461921  0.3956940   2.391 0.016845 *
ns(dos, df = 10 * trend_df)26  0.2515012  0.3644274   0.690 0.490161
ns(dos, df = 10 * trend_df)27 -0.3910095  0.3693294  -1.059 0.289810
ns(dos, df = 10 * trend_df)28  0.6571490  0.3495717   1.880 0.060210 .
ns(dos, df = 10 * trend_df)29  1.2016442  0.3569473   3.366 0.000770 ***
ns(dos, df = 10 * trend_df)30  0.0220232  0.4114475   0.054 0.957316
ns(dos, df = 10 * trend_df)31  0.1566382  0.3897626   0.402 0.687796
ns(dos, df = 10 * trend_df)32  0.5486411  0.3934679   1.394 0.163294
ns(dos, df = 10 * trend_df)33  0.5550475  0.3643537   1.523 0.127756
ns(dos, df = 10 * trend_df)34  0.7738539  0.3409383   2.270 0.023282 *
```

```
ns(dos, df = 10 * trend_df)35  1.1660641  0.3613343   3.227 0.001262 **
ns(dos, df = 10 * trend_df)36  0.2220552  0.3445922   0.644 0.519359
ns(dos, df = 10 * trend_df)37  0.1518120  0.4031203   0.377 0.706500
ns(dos, df = 10 * trend_df)38  1.1555986  0.3847944   3.003 0.002691 **
ns(dos, df = 10 * trend_df)39  0.4897097  0.4063586   1.205 0.228240
ns(dos, df = 10 * trend_df)40  0.4762154  0.3646694   1.306 0.191679
ns(dos, df = 10 * trend_df)41 -0.0188192  0.3872195  -0.049 0.961240
ns(dos, df = 10 * trend_df)42 -0.5647915  0.3723370  -1.517 0.129387
ns(dos, df = 10 * trend_df)43  1.7093045  0.3491602   4.895 1.03e-06 ***
ns(dos, df = 10 * trend_df)44  0.3305572  0.3981937   0.830 0.406516
ns(dos, df = 10 * trend_df)45  0.1669668  0.4079098   0.409 0.682328
ns(dos, df = 10 * trend_df)46  0.0622764  0.4056984   0.154 0.878010
ns(dos, df = 10 * trend_df)47  0.5551462  0.3660050   1.517 0.129415
ns(dos, df = 10 * trend_df)48  0.1556012  0.3755963   0.414 0.678696
ns(dos, df = 10 * trend_df)49 -0.1621871  0.3828264  -0.424 0.671842
ns(dos, df = 10 * trend_df)50  0.7622711  0.3517725   2.167 0.030307 *
ns(dos, df = 10 * trend_df)51  0.1223278  0.4180436   0.293 0.769830
ns(dos, df = 10 * trend_df)52  0.1600776  0.4078557   0.392 0.694723
ns(dos, df = 10 * trend_df)53  0.5942923  0.3955386   1.502 0.133062
ns(dos, df = 10 * trend_df)54  0.3892705  0.3768845   1.033 0.301740
ns(dos, df = 10 * trend_df)55  0.6049207  0.3440421   1.758 0.078789 .
ns(dos, df = 10 * trend_df)56  0.8654396  0.3735774   2.317 0.020582 *
ns(dos, df = 10 * trend_df)57  0.8190290  0.3483579   2.351 0.018773 *
ns(dos, df = 10 * trend_df)58  0.7551938  0.4116690   1.834 0.066670 .
ns(dos, df = 10 * trend_df)59  0.2679309  0.4124670   0.650 0.516006
ns(dos, df = 10 * trend_df)60  0.0836855  0.4071016   0.206 0.837143
ns(dos, df = 10 * trend_df)61  0.6969491  0.3738524   1.864 0.062373 .
ns(dos, df = 10 * trend_df)62  0.7025813  0.3536095   1.987 0.047014 *
ns(dos, df = 10 * trend_df)63  0.4321847  0.3711280   1.165 0.244295
ns(dos, df = 10 * trend_df)64  1.2265577  0.3530616   3.474 0.000519 ***
ns(dos, df = 10 * trend_df)65 -0.0542336  0.4122271  -0.132 0.895338
ns(dos, df = 10 * trend_df)66  0.6087704  0.4147462   1.468 0.142245
ns(dos, df = 10 * trend_df)67  1.0404031  0.4240504   2.453 0.014197 *
ns(dos, df = 10 * trend_df)68  0.6124457  0.2615844   2.341 0.019273 *
ns(dos, df = 10 * trend_df)69  0.5883909  0.7494997   0.785 0.432481
ns(dos, df = 10 * trend_df)70  0.0603472  0.1696749   0.356 0.722114
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Approximate significance of smooth terms:
                edf Ref.df     F  p-value
s(sqrt(influ)) 1.03  1.059 14.78 9.19e-05 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

R-sq.(adj) =  0.472   Deviance explained = 47.6%
GCV =  1.081  Scale est. = 0.98971   n = 3632
```