Output from command demorun('ucminf')

```
DEMOV FOR VAR_LL WITH CODE 'COMPLETE'

Dimensions and parameter counts:
r     =    3        nA     =  18
n     =  400        nB     =   0
p     =    2        nSig   =   6
q     =    0        nmu    =   3
nObs  = 1200        nTotal =  27
nMiss =    0

Generating:     Ag =  0.144  0.143  0.122  0.066  0.147  0.163  Sigg =  1.200  0.500  0.333  mug =  0.100
                      0.151  0.133  0.090  0.036  0.136  0.021          0.500  0.533  0.250         0.200
                      0.033  0.056  0.072  0.022  0.124  0.105          0.333  0.250  0.400         0.300

Starting:       A0 =  0.161  0.142  0.230  0.031  0.190 -0.050  Sig0 =  1.167  0.508  0.336
                      0.170  0.097  0.111  0.017  0.159 -0.082          0.508  0.534  0.250
                      0.046  0.044  0.086 -0.028  0.145  0.084          0.336  0.250  0.389

Log-likelihood for generating parameters = -1236.40
Log-likelihood at starting parameters    = -1230.40

Maximizing log-likelihood with "ucminf"...
nFun  -logLik  norm(g,inf)
  1 1230.40188    12.4294
  2 1230.38679     9.2582
  3 1230.39104     8.8266
  4 1230.38573     9.1216
  5 1230.38457     8.9190
  6 1230.38421     9.1716
  7 1230.38390     8.8607
  8 1230.38355     8.8906
  9 1230.38316     8.8502
 10 1230.38284     8.8206
 11 1230.38262     8.5164
 12 1230.38270     8.9843
 13 1230.38254     8.7092
 14 1230.38242     8.6984
 15 1230.38220     8.5950
 16 1230.38061     8.2198
 17 1230.37665     6.6286
 18 1230.37378     5.3782
 19 1230.37114     4.4691
 20 1230.37128     4.1226
 21 1230.37087     4.3139
 22 1230.37079     4.2273
 23 1230.37054     4.1244
 24 1230.37028     3.9958
 25 1230.36893     3.4412
 26 1230.36802     2.5381
 27 1230.36765     2.1641
 28 1230.36819     1.9014
 29 1230.36756     2.0895
 30 1230.36715     1.8665
 31 1230.36656     1.5823
 32 1230.36618     1.4012
 33 1230.36500     0.0117
 34 1230.36500     0.0001
succeess
norm(g,inf)=9e-005, nit=34, nf=34

Maximum log-likelihood = -1230.37

Best fit        Ah =  0.161  0.143  0.232  0.030  0.191 -0.049  Sigh =  1.164  0.502  0.336  muh =  0.209
                      0.171  0.097  0.112  0.017  0.159 -0.082          0.502  0.534  0.250         0.298
                      0.047  0.044  0.088 -0.028  0.145  0.084          0.336  0.250  0.387         0.368
```

```
DEMOV FOR VAR_LL WITH CODE 'MISS'

Dimensions and parameter counts:
r     =    3        nA     =  18
n     =  200        nB     =   0
p     =    2        nSig   =   6
q     =    0        nmu    =   3
nObs  =  570        nTotal =  27
nMiss =   30

Generating:     Ag =  0.144  0.143  0.122  0.066  0.147  0.163  Sigg =  1.200  0.500  0.333  mug =  0.100
                      0.151  0.133  0.090  0.036  0.136  0.021          0.500  0.533  0.250         0.200
                      0.033  0.056  0.072  0.022  0.124  0.105          0.333  0.250  0.400         0.300

Starting:       A0 =  0.095  0.054  0.235  0.063  0.048  0.113  Sig0 =  1.148  0.375  0.278  mu0 =  0.246
                      0.066  0.143  0.145  0.068  0.086  0.028          0.375  0.433  0.186         0.305
                     -0.078  0.137  0.149 -0.028  0.134  0.109          0.278  0.186  0.318         0.443

Log-likelihood for generating parameters = -584.16
Log-likelihood at starting parameters    = -572.19

Maximizing log-likelihood with "ucminf"...
nFun  -logLik  norm(g,inf)
  1  572.19127    10.7512
  2  572.16766    10.5652
  3  572.11871     9.9898
  4  572.01504     8.7715
  5  571.89866    12.0968
  6  571.85762    13.3627
  7  571.90299    13.5324
  8  571.83505    11.5737
  9  571.81014    11.2120
 10  571.79864    11.3550
 11  571.78339    10.6436
 12  571.76978    11.6476
 13  571.76127    11.0201
 14  571.74074    10.8126
 15  571.71018    10.7014
 16  571.67498    10.1124
 17  571.62800     8.8862
 18  571.51989     6.9000
 19  571.44098     6.2900
 20  571.40310     5.7488
 21  571.39202     4.6601
 22  571.37514     3.8838
 23  571.38223     3.7917
 24  571.36967     3.8473
 25  571.36745     3.5392
 26  571.35639     3.2099
 27  571.33866     2.8243
 28  571.32414     2.5970
 29  571.31359     2.0527
 30  571.30947     1.9346
 31  571.30615     1.8127
 32  571.29695     1.4202
 33  571.29081     1.1372
 34  571.28357     0.5682
 35  571.28116     0.0044
 36  571.28116     0.0002
 37  571.28116     0.0000
succeess
norm(g,inf)=1e-005, nit=37, nf=37

Maximum log-likelihood = -571.28

Best fit        Ah =  0.144  0.051  0.219  0.081  0.038  0.127  Sigh =  1.202  0.407  0.299  muh =  0.276
                      0.059  0.180  0.116  0.091  0.054  0.021          0.407  0.441  0.196         0.330
                     -0.076  0.133  0.172 -0.003  0.131  0.079          0.299  0.196  0.325         0.456
```

```
DEMOV FOR VARMA_LLC WITH CODE 'COMPLETE'

Dimensions and parameter counts:
r     =    2        nA     =   4
n     =  200        nB     =   4
p     =    1        nSig   =   3
q     =    1        nmu    =   2
nObs  =  400        nTotal =  13
nMiss =    0

Generating:     Ag =  0.432  0.100  Bg =  0.796  0.729  Sigg =  1.200  0.500  mug =  0.100
                      0.453  0.430        0.338  0.543          0.500  0.533         0.200

Starting:       A0 =  0.978 -0.253  B0 =  0.000  0.000  Sig0 =  2.117  1.061
                      0.700  0.290        0.000  0.000          1.061  0.904

Log-likelihood for generating parameters = -507.74
Log-likelihood at starting parameters    = -543.88

Maximizing log-likelihood with "ucminf"...
nFun  -logLik  norm(g,inf)
  1  543.88268    68.7511
  2  543.79404    68.1247
  3  543.58616    68.2107
  4  543.10595    67.4922
  5  542.02345    65.5300
  6  538.97773    65.5970
  7  530.82174    66.3289
  8  514.95966    98.0553
  9  516.35135   127.6977
 10  512.92175   286.2936
 11  510.14200   115.3113
 12  514.57724   159.5812
 13  509.95010    92.0313
 14  509.36049    82.4907
 15  508.25255   120.8895
 16  506.39646    88.8838
 17  501.28771    31.1623
 18  500.33238    18.9699
 19  500.37855    22.0799
 20  499.97272    19.2099
 21  499.71789    10.0205
 22  499.60532     3.7849
 23  499.59102     1.6379
 24  499.58580     1.3714
 25  499.58391     0.5150
 26  499.58357     0.1980
 27  499.58353     0.0487
 28  499.58353     0.0088
 29  499.58352     0.0022
 30  499.58352     0.0006
 31  499.58352     0.0002
succeess
norm(g,inf)=0.0002, nit=31, nf=31

Maximum log-likelihood = -499.58

Best fit        Ah =  0.454  0.056  Bh =  0.615  0.634  Sigh =  1.427  0.551  muh =  0.424
                      0.399  0.446        0.314  0.646          0.551  0.512         0.632
```

```
DEMOV FOR VARMA_LLM WITH CODE 'MISS'

Dimensions and parameter counts:
r     =    2        nA     =   4
n     =  200        nB     =   4
p     =    1        nSig   =   3
q     =    1        nmu    =   2
nObs  =  380        nTotal =  13
nMiss =   20

Generating:     Ag =  0.432  0.100  Bg =  0.796  0.729  Sigg =  1.200  0.500  mug =  0.100
                      0.453  0.430        0.338  0.543          0.500  0.533         0.200

Starting:       A0 =  0.831 -0.126  B0 =  0.000  0.000  Sig0 =  2.251  0.879  mu0 =  0.367
                      0.734  0.227        0.000  0.000          0.879  1.111         0.572

Log-likelihood for generating parameters = -494.58
Log-likelihood at starting parameters    = -548.27

Maximizing log-likelihood with "ucminf"...
nFun  -logLik  norm(g,inf)
  1  548.27179    66.4747
  2  548.15007    66.5185
  3  548.02891    66.5617
  4  547.69751    66.6256
  5  547.36630    66.6879
  6  546.37751    66.8728
  7  545.38793    67.0411
  8  542.41623    67.4253
  9  539.44483    67.5766
 10  530.62920    65.5249
 11  519.17870    67.8776
 12  511.95284    69.2965
 13  504.09786    79.5012
 14  497.19261    89.2748
 15  529.23992    79.7564
 16  652.92315   369.6008
 17  518.69484    82.0231
 18  499.08639    83.3689
 19  496.05491    84.7661
 20  549.52970  1796.7737
 21  494.76708    81.9312
 22  493.59669    84.0194
 23  494.43551    84.3584
 24  492.89403    82.5794
 25  491.48019    79.4452
 26  490.63957    72.6171
 27  489.87277   101.7855
 28  488.52434    93.3100
 29  487.55952    42.2721
 30  485.99301    25.0772
 31  485.69415     9.0960
 32  485.57817     8.5363
 33  485.53107     5.1776
 34  485.51101     3.3277
 35  485.50607     3.3508
 36  485.49461     3.8810
 37  485.48661     3.3407
 38  485.48132     3.2198
 39  485.47631     2.7515
 40  485.46963     3.0651
 41  485.45720     2.8888
 42  485.44817     1.7943
 43  485.44519     0.6225
 44  485.44486     0.0637
 45  485.44485     0.0051
 46  485.44485     0.0005
 47  485.44485     0.0000
succeess
norm(g,inf)=4e-005, nit=47, nf=47

Maximum log-likelihood = -485.44

Best fit        Ah =  0.436  0.070  Bh =  0.595  0.646  Sigh =  1.461  0.562  muh =  0.414
                      0.365  0.473        0.326  0.677          0.562  0.496         0.620
```

```
LOWER AND DIAGONAL MODELLING OF METEOROLOGICAL DATA

Starting:    A0 =  0.222  0.000  0.000  D10 =  0.077  0.000  0.000  D20 =  0.380  0.000  0.000
                   0.012  0.398  0.000         0.000  0.032  0.000         0.000  0.239  0.000
                  -0.062  0.250  0.376         0.000  0.000  0.129         0.000  0.000  0.280

             Sig0 =  0.461  0.274  0.403  mu0 =  3.733
                     0.274  0.221  0.259         5.151
                     0.403  0.259  0.475         3.921

Log-likelihood at starting parameters = -223.62

Maximizing log-likelihood with "ucminf"...

nFun  -logLik  norm(g,inf)
  1  223.61566   361.1716
  2  222.85477   340.8338
  3  221.67593   356.4839
  4  218.57827   402.3186
  5  221.15394  1013.8258
  6  217.13815   354.5720
  7  215.58072   355.5433
  8  214.50697   389.2980
  9  213.25683   396.2466
 10  210.13810   397.7576
 11  208.28840   395.5785
 12  206.61378   385.0184
 13  205.23798   405.1893
 14  204.35707   393.2000
 15  203.18202   390.2394
 16  201.65768   396.2267
 17  200.01740   481.8796
 18  199.21625   476.3972
 19  196.39083   434.8038
 20  191.55462   422.7863
 21  189.29281   407.1472
 22  185.05684   397.9278
 23  181.53059   427.1579
 24  197.52438   333.9683
 25  179.99474   323.7756
 26  176.60467   214.0492
 27  173.09546   223.4056
 28  170.96278   116.7090
 29  170.64818   112.2617
 30  170.49598    21.3459
 31  170.32176    14.0237
 32  170.27653     5.5553
 33  170.23988     4.1782
 34  170.23616     1.7328
 35  170.23555     0.4929
 36  170.23534     0.6838
 37  170.23531     0.0506
 38  170.23531     0.0121
 39  170.23531     0.0084
 40  170.23531     0.0036
 41  170.23531     0.0019
success
norm(g,inf)=0.002, nit=41, nf=41

Max.loglik:  Ah =  0.482  0.000  0.000  D1h =  0.023  0.000  0.000  D2h =  0.230  0.000  0.000
                   0.225  0.217  0.000         0.000  0.063  0.000         0.000  0.255  0.000
                   0.034  0.267  0.231         0.000  0.000  0.100         0.000  0.000  0.195

             Sigh =  0.505  0.339  0.456  muh =  3.770
                     0.339  0.265  0.315         5.096
                     0.456  0.315  0.520         3.889

Log-likelihood at solution = -170.24
```

```
DISTRIBUTED LAGS MODELLING OF METEOROLOGICAL DATA

Starting:    A0 =  0.340  0.089  0.063  Sig0 =  0.535  0.286  0.427  mu0 =  3.733
                  -0.020  0.423  0.094          0.286  0.232  0.274         5.151
                  -0.048  0.145  0.432          0.427  0.274  0.499         3.921

Log-likelihood at starting parameters = -206.63

Maximizing log-likelihood with "ucminf"...

nFun  -logLik  norm(g,inf)
  1  206.62966   446.8297
  2  206.04221   446.1672
  3  205.45577   445.1153
  4  203.79397   441.4451
  5  202.14752   434.2490
  6  198.13106   417.8740
  7  194.26520   257.9132
  8  193.43007   243.3123
  9  193.16813   255.9851
 10  192.72657   289.9664
 11  192.12599   283.7849
 12  191.79685   289.1170
 13  191.50023   295.5219
 14  191.19225   291.2568
 15  190.47802   288.7984
 16  189.62570   306.5976
 17  193.02857   457.9418
 18  189.45140   320.1731
 19  188.96121   350.0177
 20  188.33883   330.1167
 21  186.43995   318.9807
 22  182.00363   268.9246
 23  185.27768  1112.0636
 24  179.52600   264.0562
 25  178.25619   240.1266
 26  176.52290   313.3369
 27  175.53567    61.8643
 28  175.26755    70.0672
 29  175.09273    21.6918
 30  175.10759    11.1405
 31  175.04831    15.1904
 32  175.04471    14.7907
 33  175.03107     1.3392
 34  175.03083     0.5470
 35  175.03081     0.2782
 36  175.03080     0.1656
 37  175.03080     0.0184
 38  175.03080     0.0017
 39  175.03080     0.0009
success
norm(g,inf)=0.0009, nit=39, nf=39

Max.loglik:  Ah = -0.303  0.601  0.262  Sigh =  0.502  0.343  0.454  muh =  3.784
                  -0.236  0.646  0.122          0.343  0.273  0.322         5.091
                  -0.601  0.723  0.502          0.454  0.322  0.524         3.884

Log-likelihood at solution = -175.03
```