

## Deposition Test

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This note briefly records the results of a few model runs that were conducted to investigate the behavior of the deposition routines within NAME III.

A test case was constructed by Andrew Jones for both NAME and NAME III. This used mesoscale met data with a single 6 hour long point release of Sulphur dioxide over the southeast of England.

Figure 1 and 2 present results for nine hours after the start of the release of air concentration and deposition. It should be noted that the contour levels are not the same for all plots and that the source location is plotted incorrectly due to a PV Wave error. As can be seen, given the low particle numbers (5000 per hour), agreement is as good as we would likely expect.

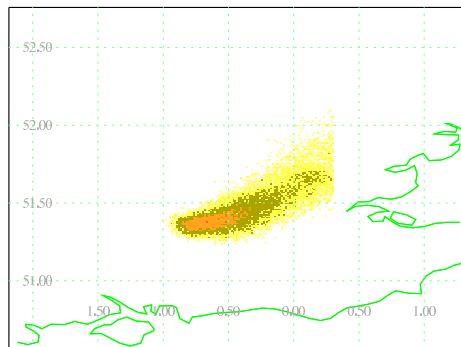
Sulphur dioxide is categorized as having different wet deposition characteristics and uses different sections of computer code within both NAME and NAME III from all other species. Therefore the above test was also carried out for a tracer release. The results for this are presented in Figures 3 and 4. Once again we observe that the results are in excellent agreement.

From these limited runs it is felt that the NAME III deposition schemes are working at least in accordance with NAME.

NAME version 812  
NAME-HPAC Comparison Run  
Valid at 0900UTC 01/07/2003

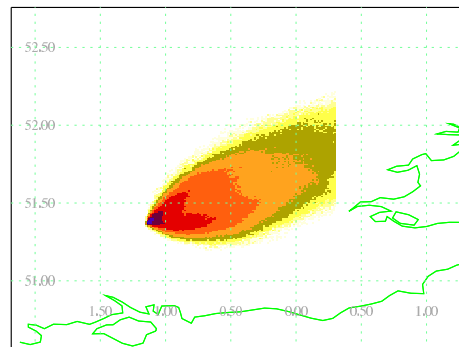


From 0 – 50m agl Air concentration



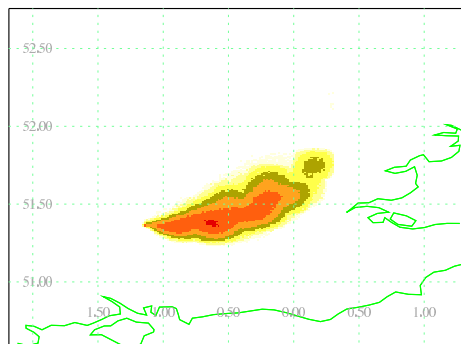
Maximum value =  $3.22 \times 10^{-8}$  g/m<sup>3</sup>  
1.00e-10 1.00e-09 1.00e-08 1.00e-07 1.00e-06 1.00e-05

Boundary layer Dry deposition



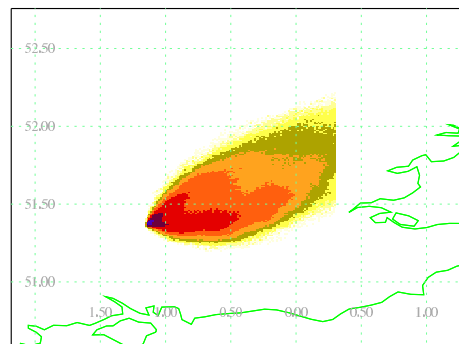
Maximum value =  $4.73 \times 10^{-5}$  g/m<sup>2</sup>  
1.00e-09 1.00e-08 1.00e-07 1.00e-06 1.00e-05 1.00e-04

Boundary layer Wet deposition



Maximum value =  $1.12 \times 10^{-6}$  g/m<sup>2</sup>  
1.00e-09 1.00e-08 1.00e-07 1.00e-06 1.00e-05 1.00e-04

Boundary layer Total deposition



Maximum value =  $4.79 \times 10^{-5}$  g/m<sup>2</sup>  
1.00e-09 1.00e-08 1.00e-07 1.00e-06 1.00e-05 1.00e-04

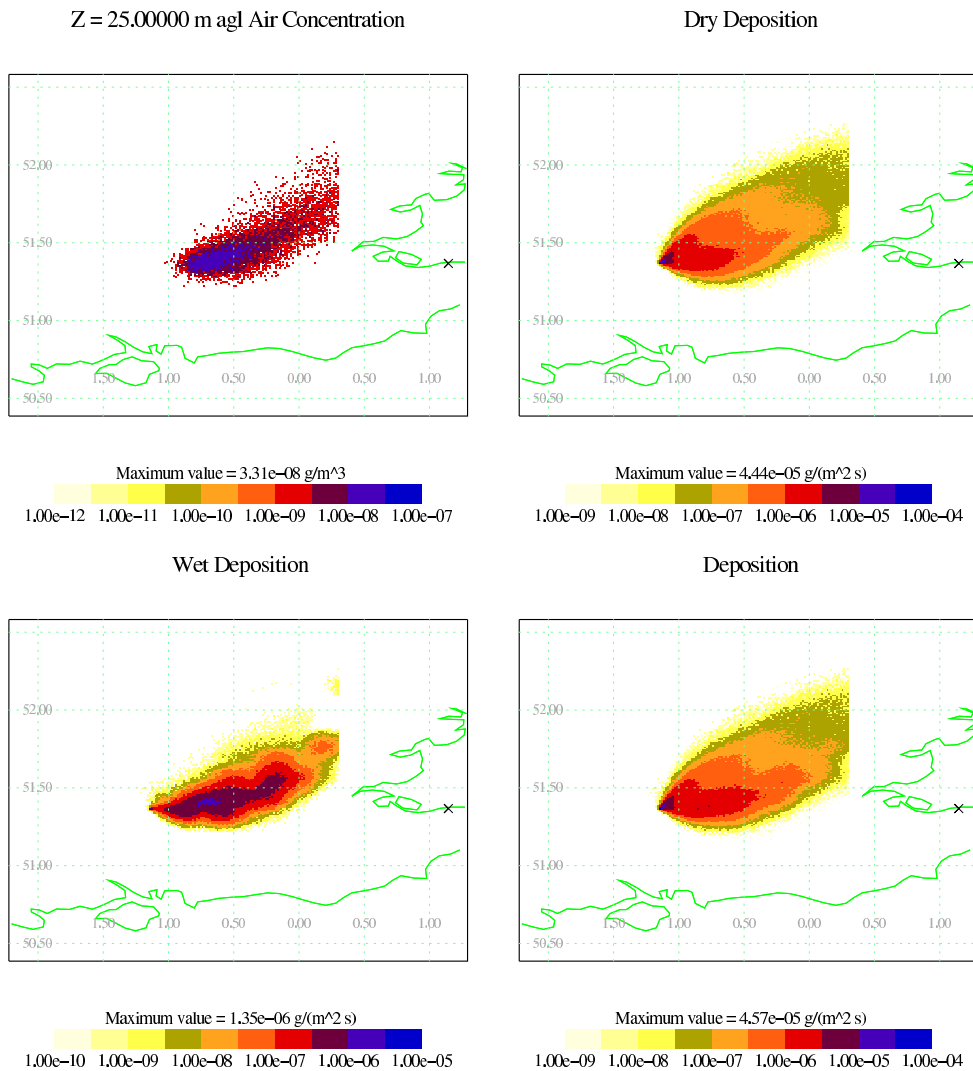
Start of release: 0000UTC 01/07/2003  
End of release: 0600UTC\_07/01/1957  
Release rate: multiple sources  
Release location: multiple sources  
Release heights : 10 to 10m agl

Pollutant: SULPHUR-DIOXIDE  
Met data: Mesoscale  
Run time: 1104UTC 15/07/2004

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Figure 1: NAME output. SO<sub>2</sub> release.

NAME III (version 1.4)  
 HPAC Comparison: RUN 1  
 Valid at 01/07/2003 09:00 UTC



Start of release: 01/07/2003 00:00 UTC  
 End of release: 01/07/2003 06:00 UTC  
 Source strength: 10000.00 g  
 Release location: 1.145200W 51.36690N  
 Release height: 10.000m agl

Pollutant: SO<sub>2</sub>  
 Met data: Regional  
 Run time: 15/07/2004 11:24:04.341 UTC+01:00

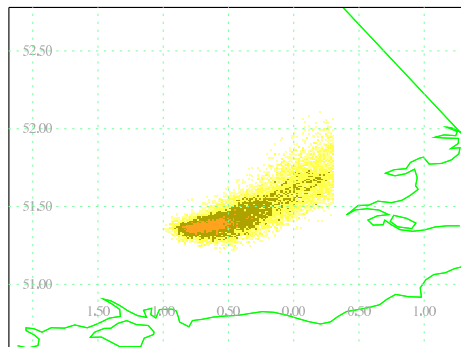
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Figure 2: NAME III output. SO<sub>2</sub> release.

NAME version 812  
NAME-HPAC Comparison Run  
Valid at 0900UTC 01/07/2003

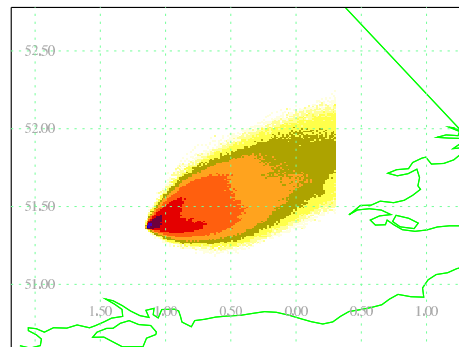


From 0 – 50m agl Air concentration



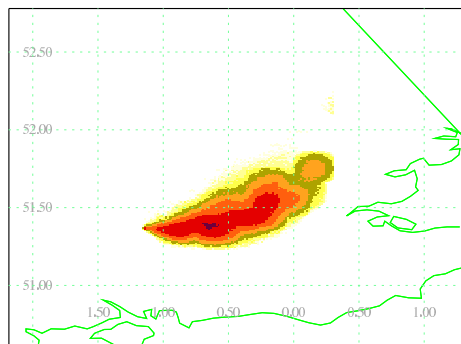
Maximum value =  $2.64 \times 10^{-8}$  g/m<sup>3</sup>  
1.00e-10 1.00e-09 1.00e-08 1.00e-07 1.00e-06 1.00e-05

Boundary layer Dry deposition



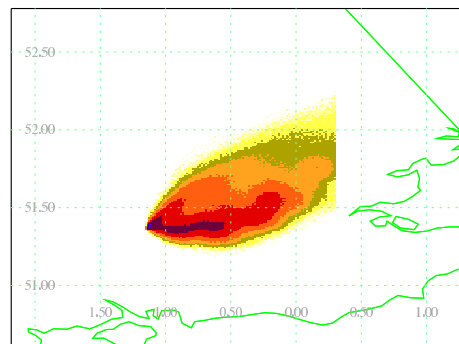
Maximum value =  $4.25 \times 10^{-5}$  g/m<sup>2</sup>  
1.00e-09 1.00e-08 1.00e-07 1.00e-06 1.00e-05 1.00e-04

Boundary layer Wet deposition



Maximum value =  $3.65 \times 10^{-6}$  g/m<sup>2</sup>  
1.00e-09 1.00e-08 1.00e-07 1.00e-06 1.00e-05 1.00e-04

Boundary layer Total deposition



Maximum value =  $4.48 \times 10^{-5}$  g/m<sup>2</sup>  
1.00e-09 1.00e-08 1.00e-07 1.00e-06 1.00e-05 1.00e-04

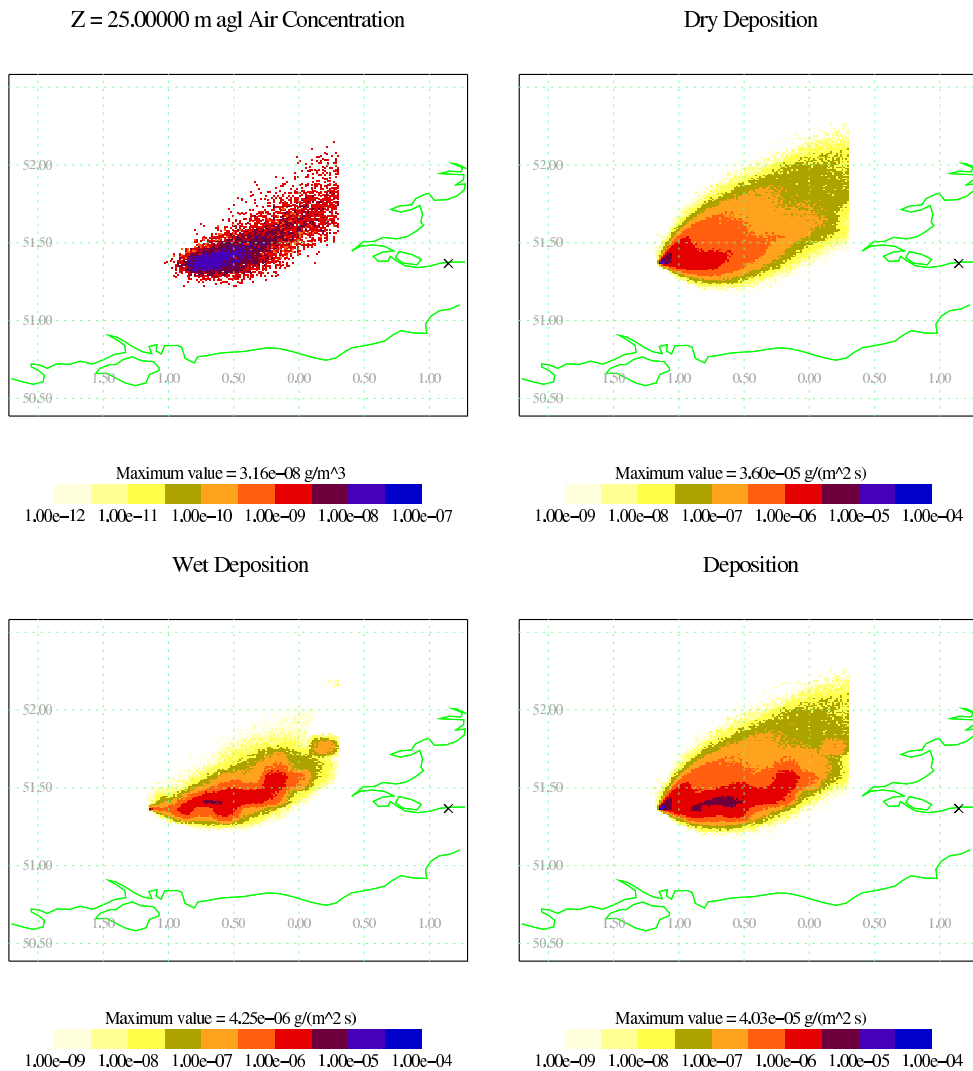
Start of release: 0000UTC 01/07/2003  
End of release: 0600UTC\_07/01/1957  
Release rate: multiple sources  
Release location: multiple sources  
Release heights: 10 to 10m agl

Pollutant: TRACER  
Met data: Mesoscale  
Run time: 1303UTC 15/07/2004

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Figure 3: NAME output. Tracer release.

NAME III (version 1.4)  
 HPAC Comparison: RUN 1  
 Valid at 01/07/2003 09:00 UTC



Start of release: 01/07/2003 00:00 UTC  
 End of release: 01/07/2003 06:00 UTC  
 Source strength: 10000.00 g  
 Release location: 1.145200W 51.36690N  
 Release height: 10.000m agl

Pollutant: TRACER  
 Met data: Regional  
 Run time: 15/07/2004 12:54:09.610 UTC+01:00

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Figure 4: NAME III output. Tracer release.