

WAsP CFD Calculation Report

JobID: 16082112-9085-4287-B49F-33FEC27DC126
 Calculation Start: Sat Sep 6 22:54:51 2014
 Calculation Stop: Sat Sep 6 23:11:08 2014
 Process time: 84 CPU hours (EllipSys3D)

Server Information: Cerebrum EMD International
 WAsP CFD version: 1.11.1.2
 Client: WAsP 11.01.0016
 User: John Johnson

Simulations Overview

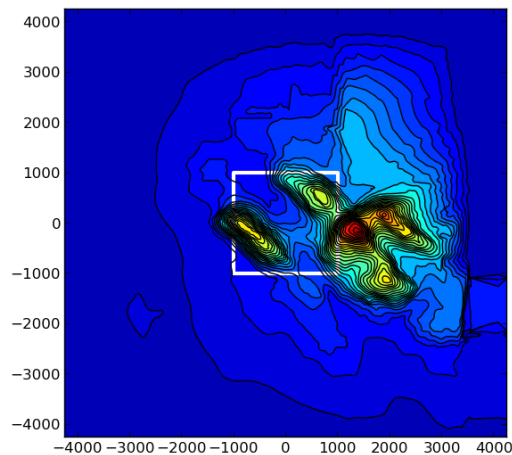
<i>Dir</i>	<i>Ok?</i>	<i>log(r)</i>	<i>Iteration</i>	<i>Z_{0ref}</i>	<i>Z_{ref}</i>	<i>Dir</i>	<i>Ok?</i>	<i>log(r)</i>	<i>Iteration</i>	<i>Z_{0ref}</i>	<i>Z_{ref}</i>
0	yes	-4.310	1450	0.0005	1.0	180	yes	-4.303	1413	0.0005	1.0
10	yes	-4.301	1469	0.0006	1.0	190	yes	-4.302	1420	0.0005	1.0
20	yes	-4.301	1490	0.0006	1.0	200	yes	-4.304	1440	0.0005	1.0
30	yes	-4.309	1494	0.0006	1.0	210	yes	-4.302	1446	0.0006	1.0
40	yes	-4.306	1484	0.0006	1.0	220	yes	-4.304	1422	0.0005	1.0
50	yes	-4.307	1498	0.0006	1.0	230	yes	-4.304	1432	0.0004	1.0
60	yes	-4.308	1478	0.0006	1.0	240	yes	-4.302	1429	0.0004	1.0
70	yes	-4.306	1428	0.0005	3.8	250	yes	-4.303	1392	0.0004	1.0
80	yes	-4.302	1420	0.0005	3.9	260	yes	-4.301	1384	0.0004	1.0
90	yes	-4.308	1390	0.0005	1.5	270	yes	-4.303	1372	0.0004	1.0
100	yes	-4.304	1380	0.0005	27.6	280	yes	-4.302	1377	0.0004	1.0
110	yes	-4.302	1409	0.0005	11.7	290	yes	-4.302	1390	0.0004	1.0
120	yes	-4.308	1438	0.0006	9.9	300	yes	-4.304	1392	0.0004	1.0
130	yes	-4.304	1432	0.0006	2.8	310	yes	-4.301	1380	0.0005	1.0
140	yes	-4.304	1448	0.0006	1.0	320	yes	-4.303	1410	0.0005	1.0
150	yes	-4.308	1436	0.0006	1.0	330	yes	-4.301	1410	0.0006	1.0
160	yes	-4.306	1417	0.0005	1.0	340	yes	-4.305	1417	0.0006	1.0
170	yes	-4.302	1414	0.0005	1.0	350	yes	-4.308	1436	0.0005	1.0

Dir the simulated direction in degrees
Ok? is convergence achieved? ($\log(r) \leq -4.3$)
log(r) the end-residual (max of all variables)

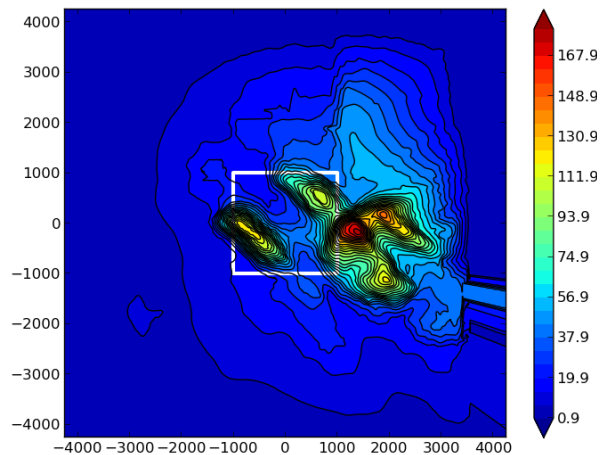
Iteration iteration steps used to reach convergence
Z_{0ref} the mesoscale reference roughness in metres
Z_{ref} the farfield terrain height in metres

Simulations Setup

1. The figure shows the user specified height contours of the inner part of the domain including the 2 by 2 km WAsP CFD tile.



2. The figure shows the terrain prepared for CFD. The terrain was filtered and gently flattened in the farfield (not seen) before the computational grid was made.



3. A polar CFD domain was used; domain dimensions and mean resolution of the inner 4 by 4 km area:

Number of Grid Points	7 mill
Domain Height/Diameter	8/34 km
Mean Resolution Horizontal/Vertical	20.7/5 m

4. Convective terms were discretized using the third order QUICK scheme and the $k - \epsilon$ eddy-viscosity model of Launder and Spalding (1974) was used:

C_μ	σ_k	σ_ϵ	$C_{\epsilon 1}$	$C_{\epsilon 2}$	κ
0.052	1.0	1.3	1.38	1.92	0.4