Influence of horizontal diffusion to chimney formation

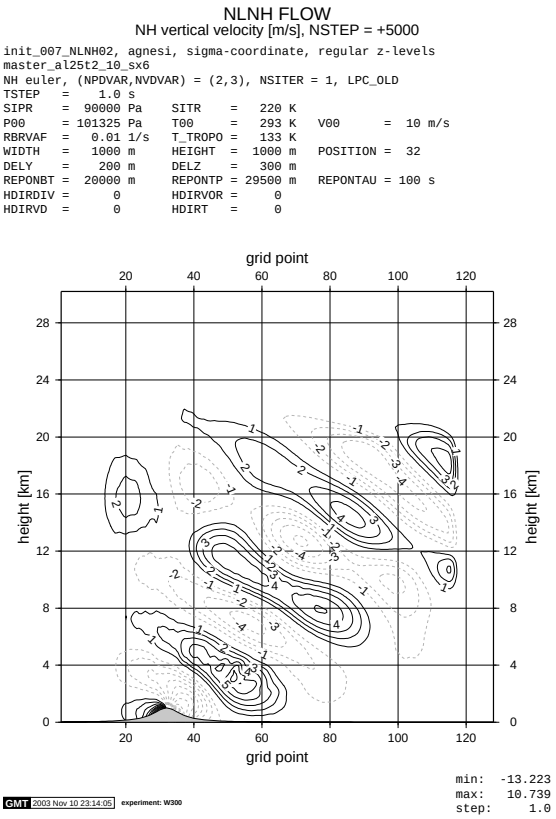

Fig. 1: euler, no diffusion.

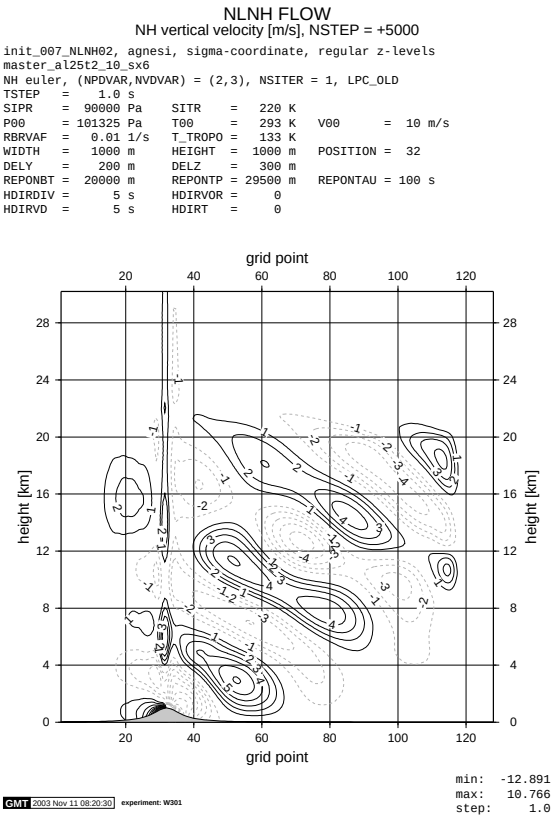

Fig. 2: euler, diffusion.

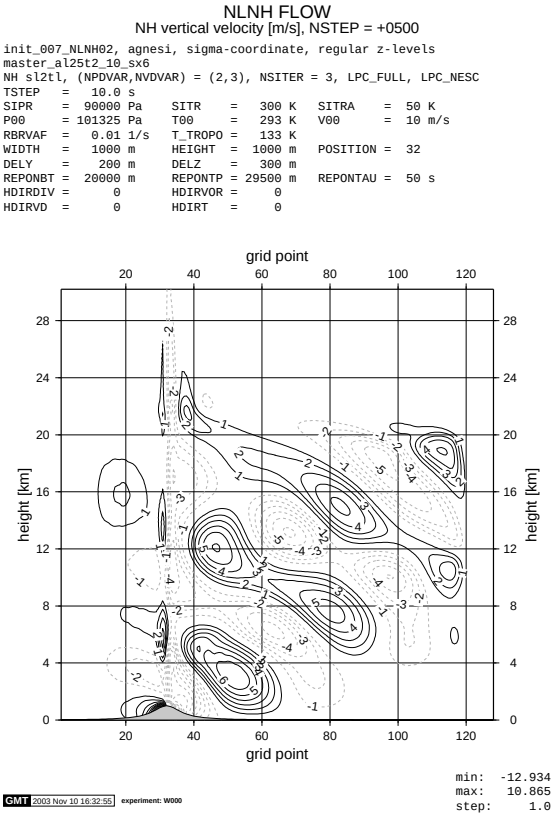

Fig. 3: sl2tl, no diffusion.

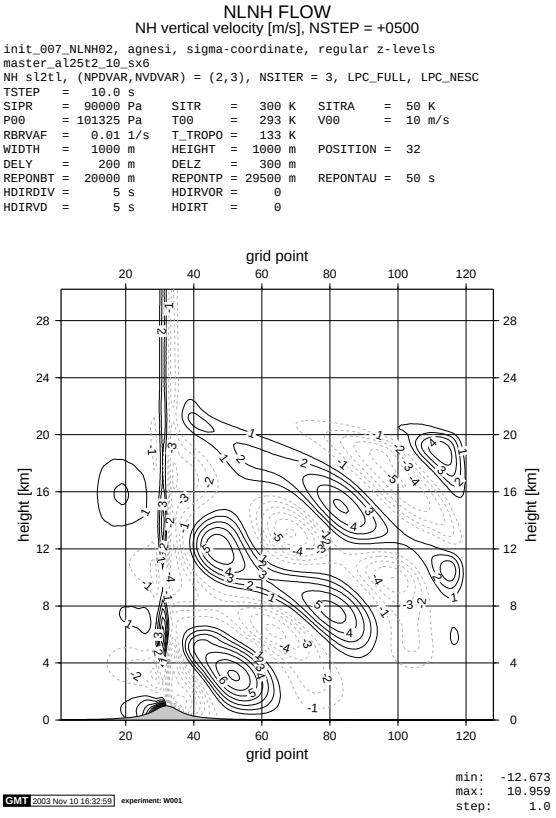

Fig. 4: sl2tl, diffusion.

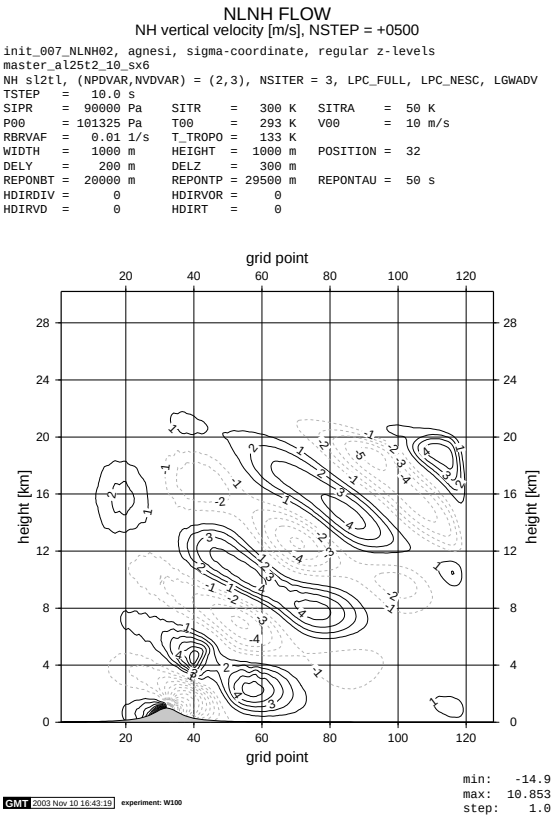

Fig. 5: sl2tl + advection of w, no diffusion.

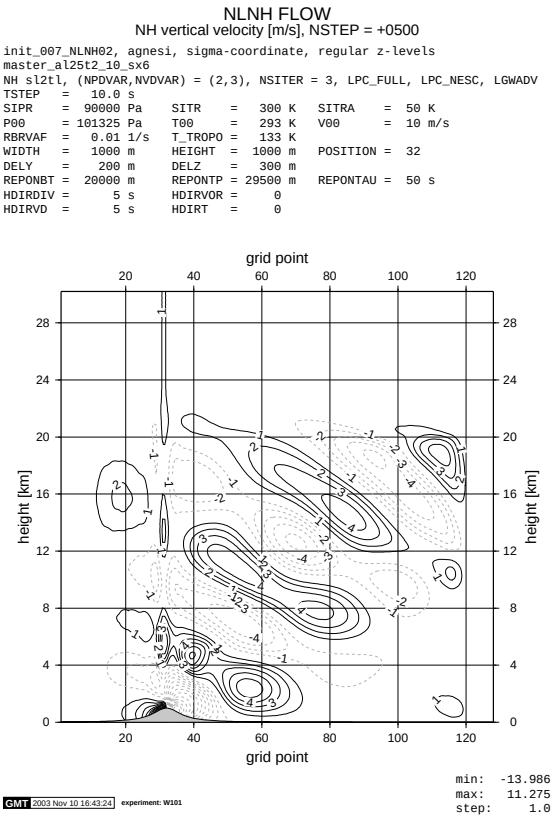

Fig. 6: sl2tl + advection of w, diffusion.

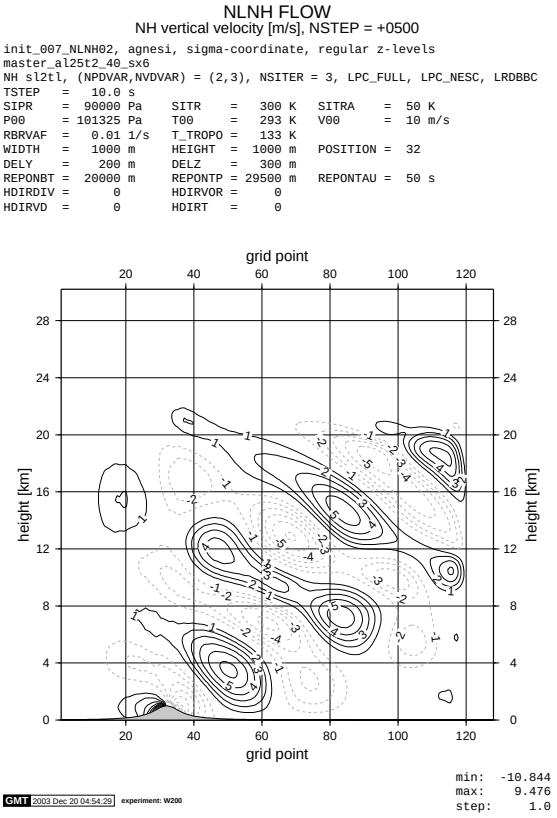

Fig. 7: sl2tl + diagnostic BBC, no diffusion.

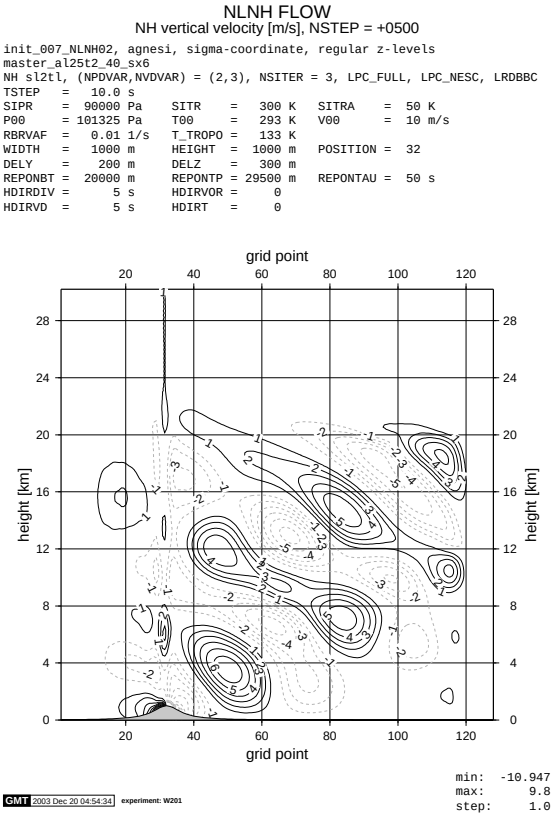

Fig. 8: sl2tl + diagnostic BBC, diffusion.

Warm and cold bubble test

sl2tl + advection of w

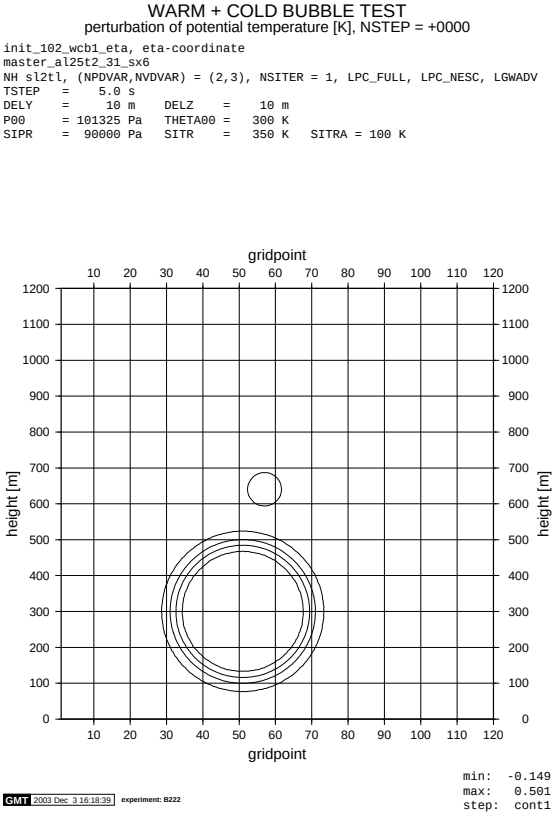

Fig. 9: $t = 0\,\mathrm{min}$.

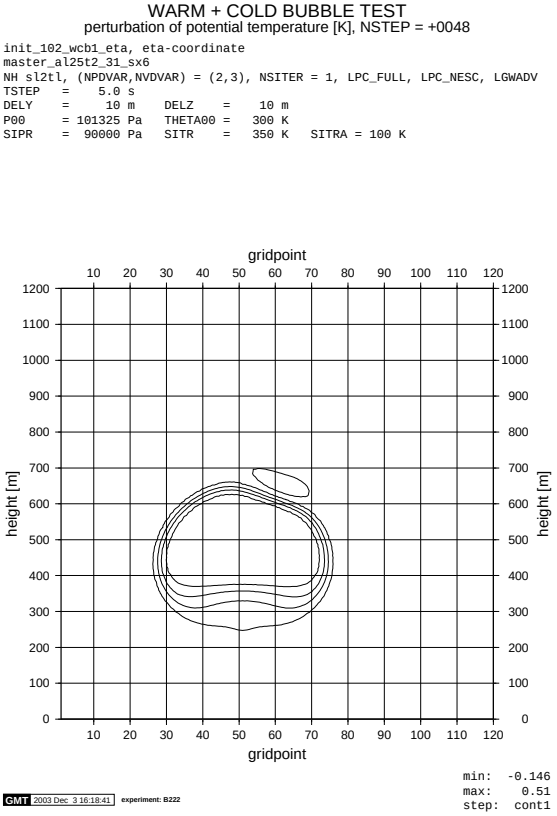

Fig. 10: $t = 4\,\mathrm{min}$.

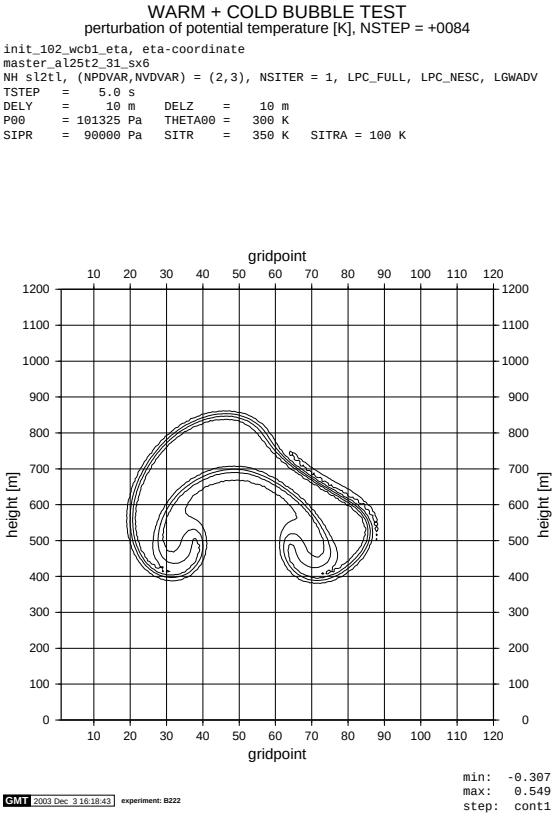

Fig. 11: $t = 7\,\mathrm{min}$.

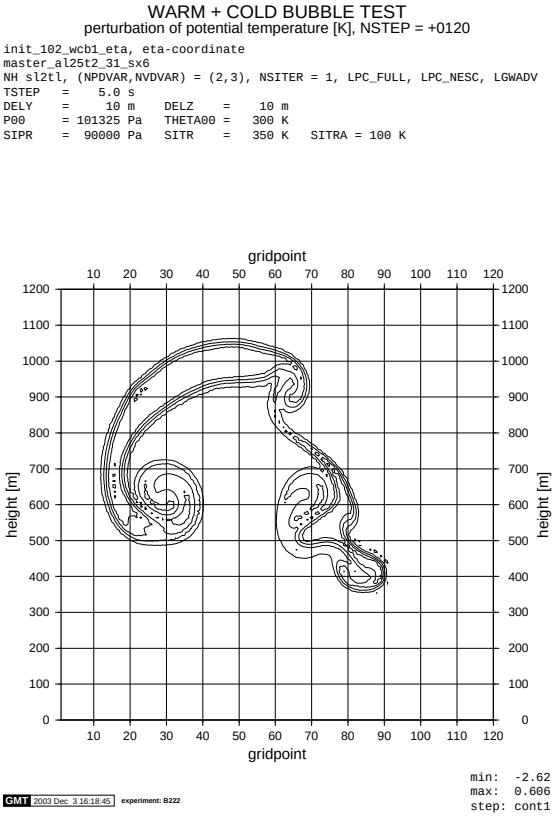

Fig. 12: $t = 10\,\mathrm{min}$.

Reverted warm and cold bubble test

sl2tl + advection of w

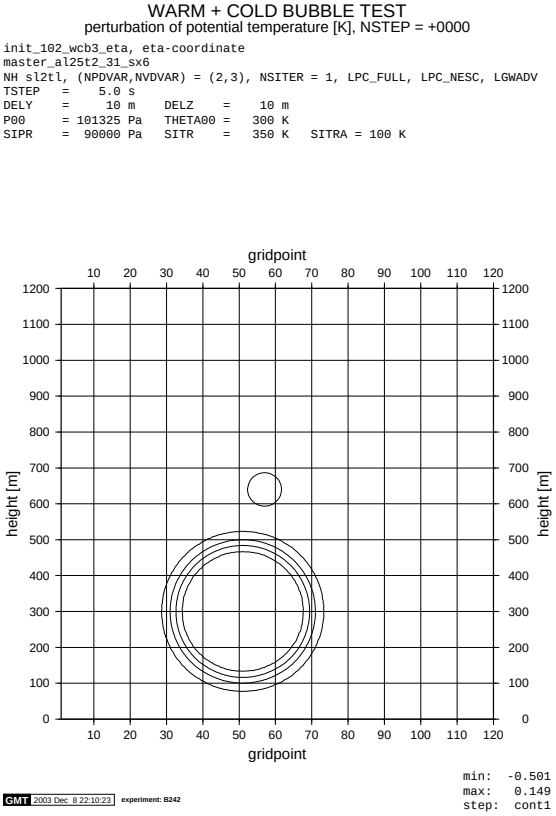

Fig. 13: $t = 0\,\mathrm{min}$.

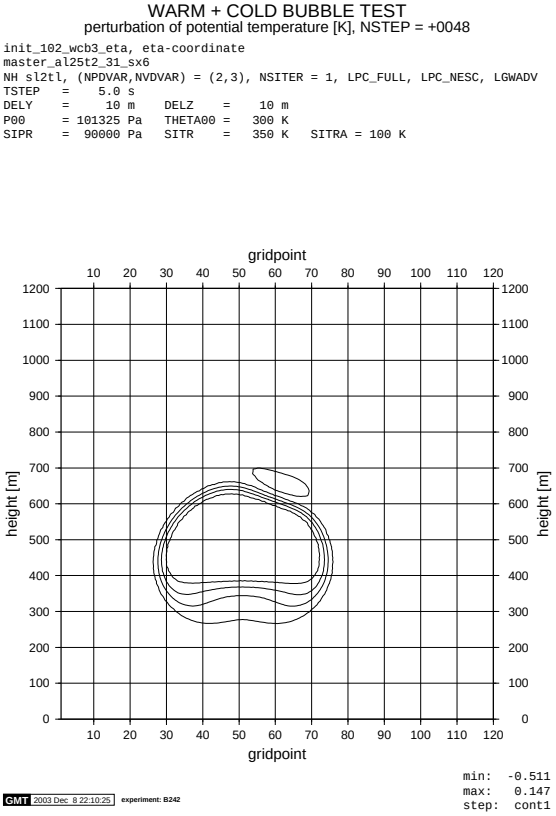

Fig. 14: $t = 4\,\mathrm{min}$.

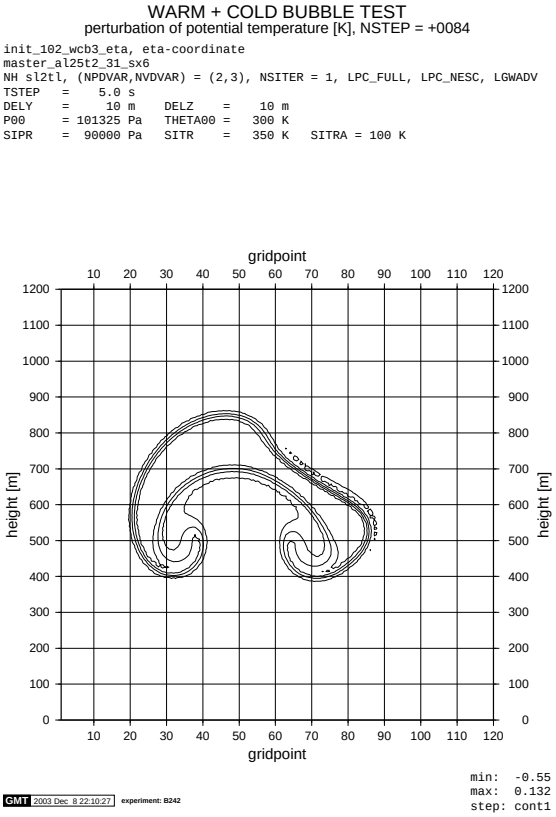

Fig. 15: $t = 7\,\mathrm{min}$.

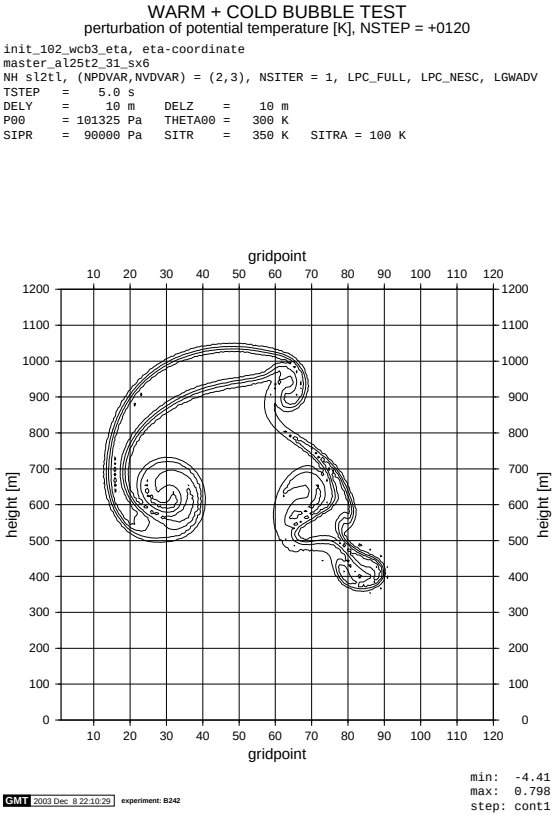

Fig. 16: $t = 10\,\mathrm{min}$.

Reverted warm and cold bubble test, simulation of rigid lid TBC

sl2tl + advection of w

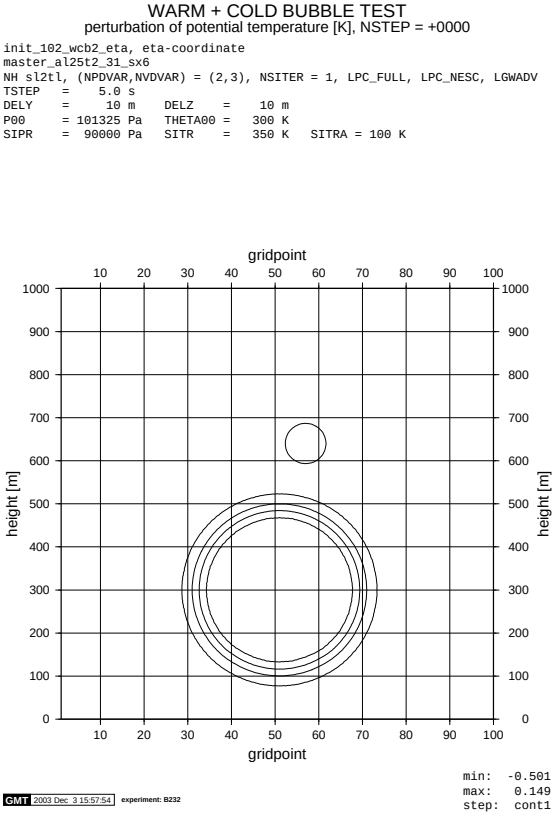

Fig. 17: $t = 0\,\mathrm{min}$.

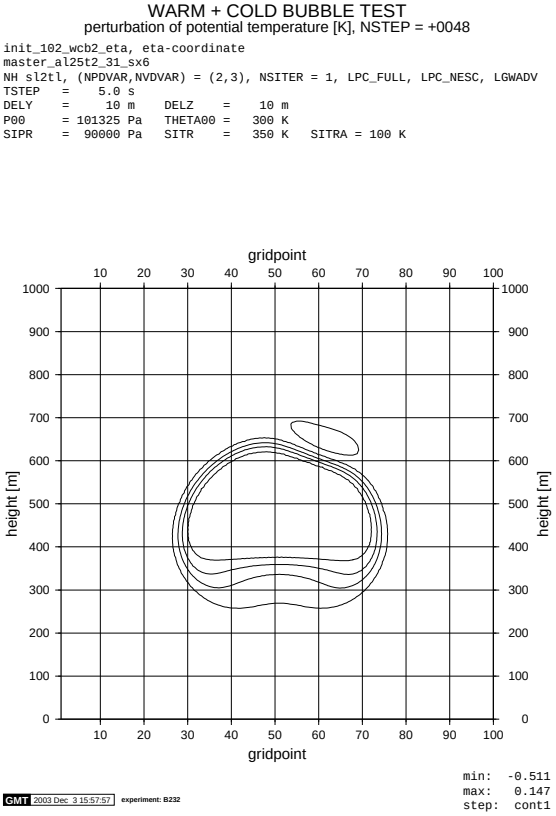

Fig. 18: $t = 4\,\mathrm{min}$.

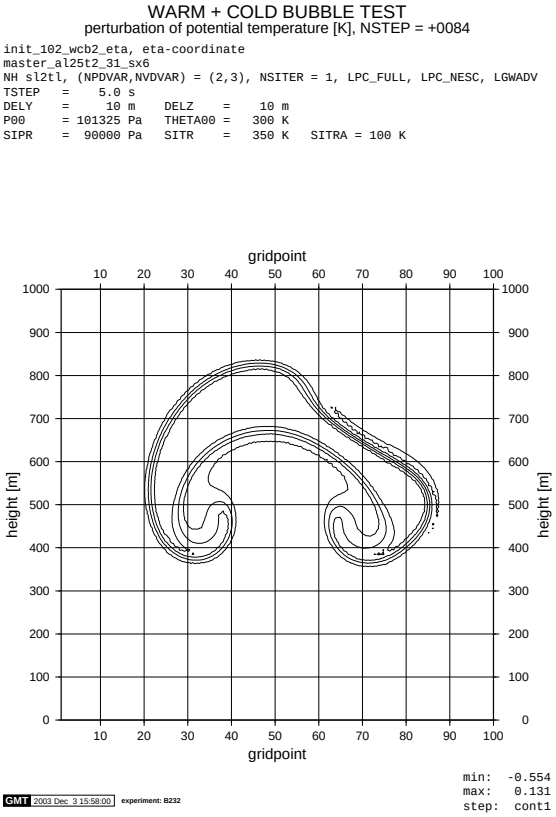

Fig. 19: $t = 7\,\mathrm{min}$.

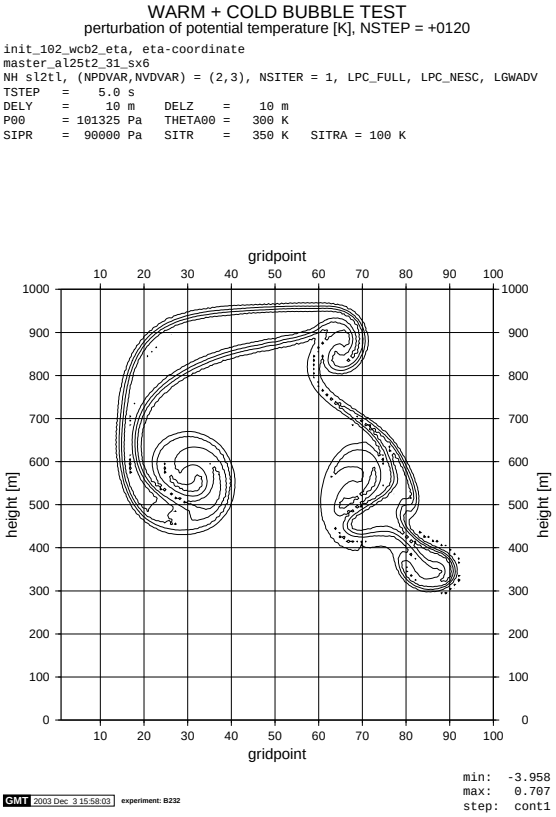

Fig. 20: $t = 10\,\mathrm{min}$.

Warm and cold bubble test

sl2tl

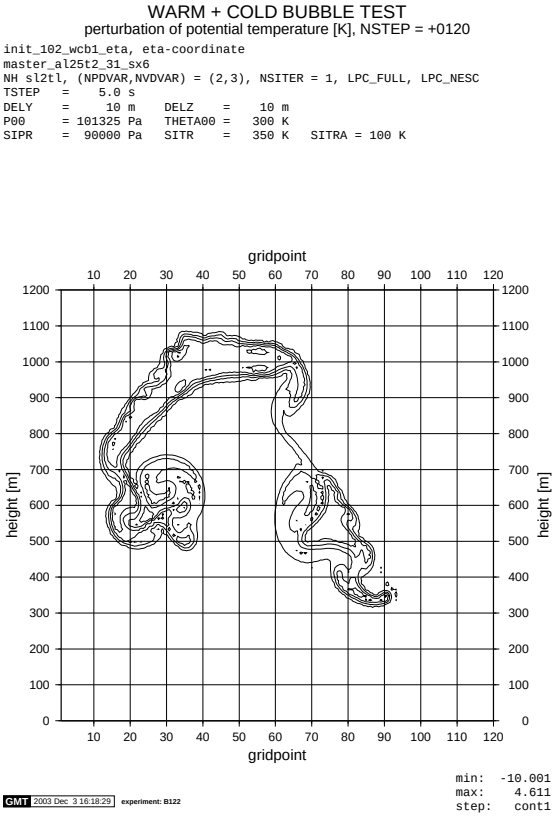

Fig. 21: $\Delta t = 5.0\,\mathrm{s}$.

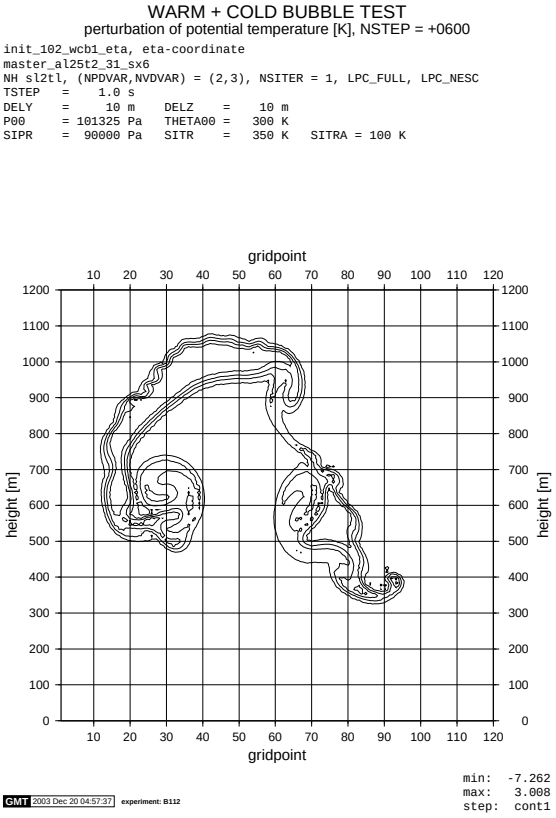

Fig. 22: $\Delta t = 1.0\,\mathrm{s}$.

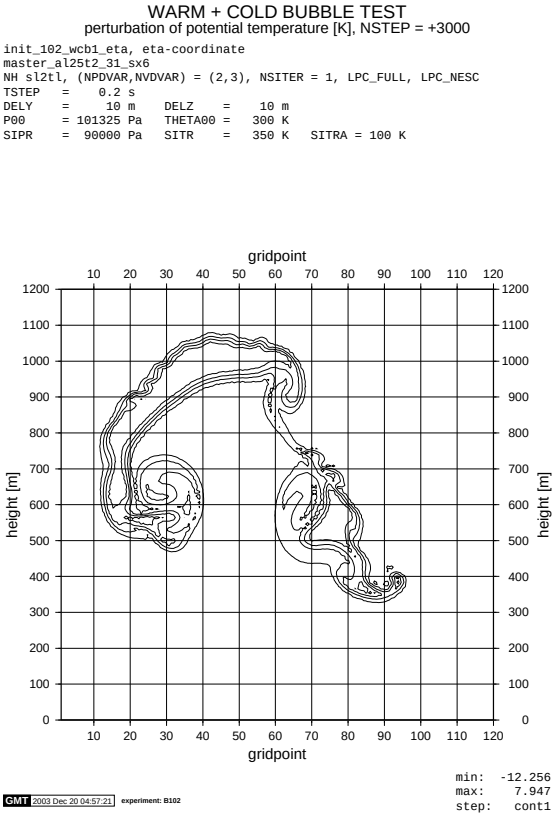

Fig. 23: $\Delta t = 0.2\,\mathrm{s}$.

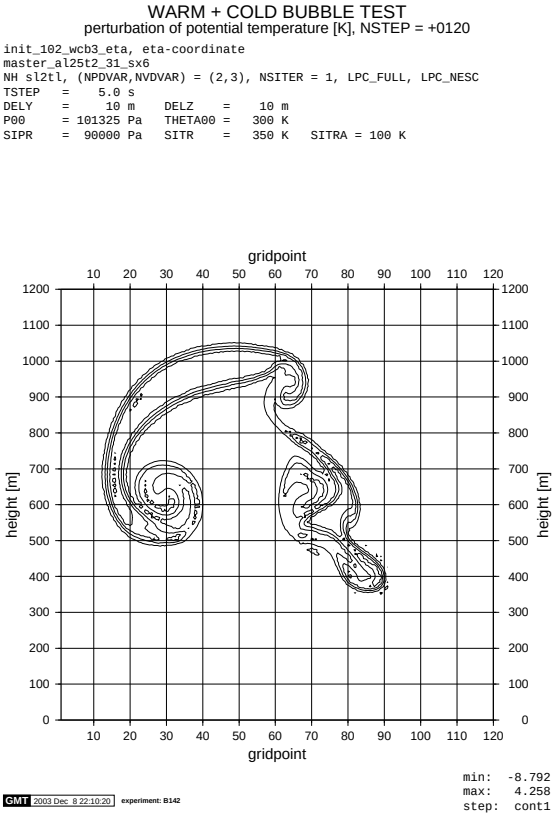

Fig. 24: Reverted test, $\Delta t = 5.0\,\mathrm{s}$.

Warm and cold bubble test

sl2tl + diagnostic BBC

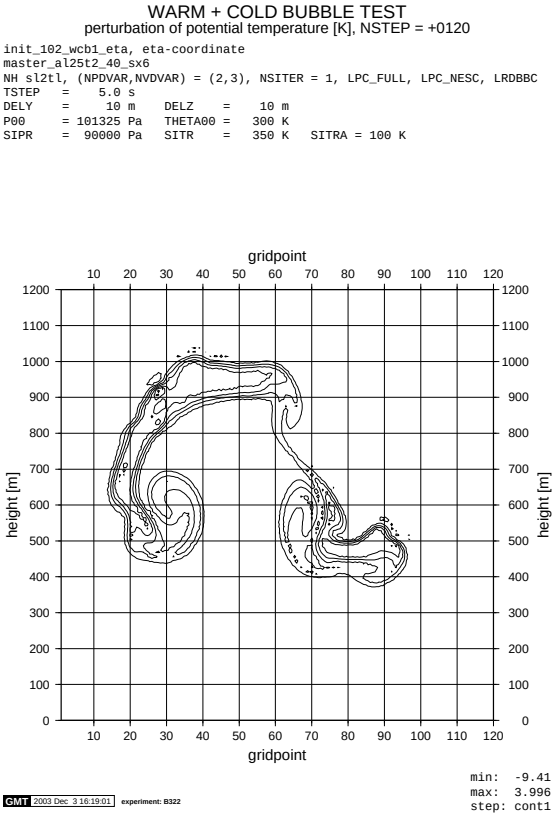

Fig. 25: $\Delta t = 5.0\,\mathrm{s}$.

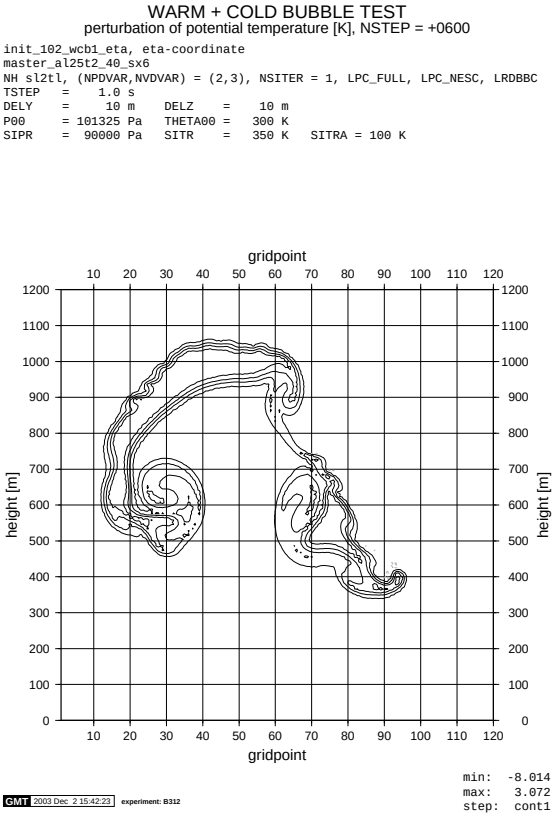

Fig. 26: $\Delta t = 1.0\,\mathrm{s}$.

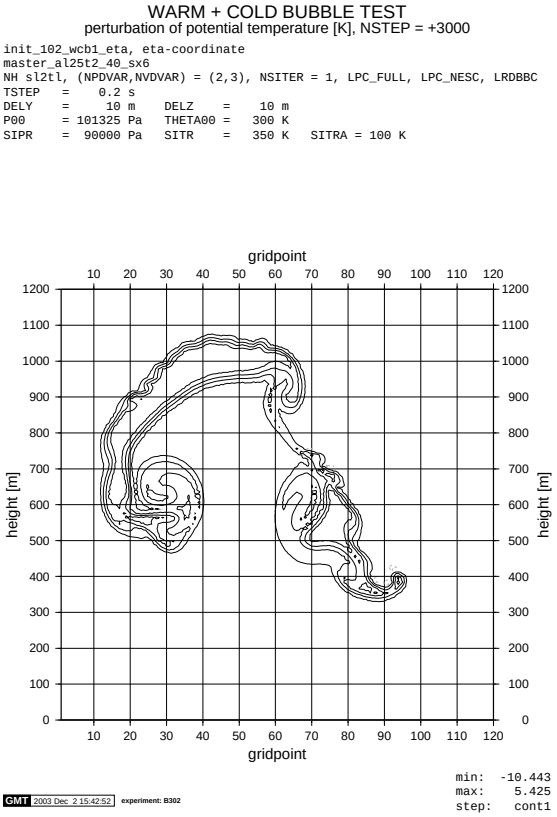

Fig. 27: $\Delta t = 0.2\,\mathrm{s}$.

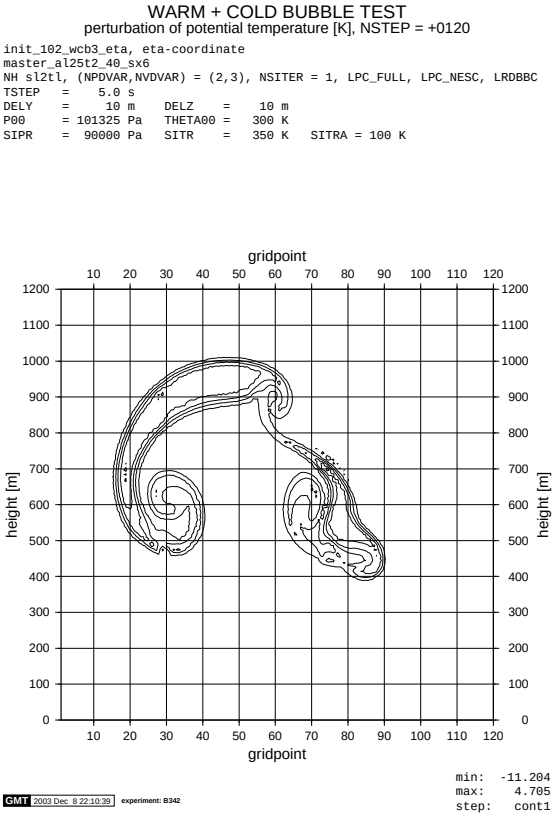

Fig. 28: Reverted test, $\Delta t = 5.0\,\mathrm{s}$.

Warm and cold bubble test

euler

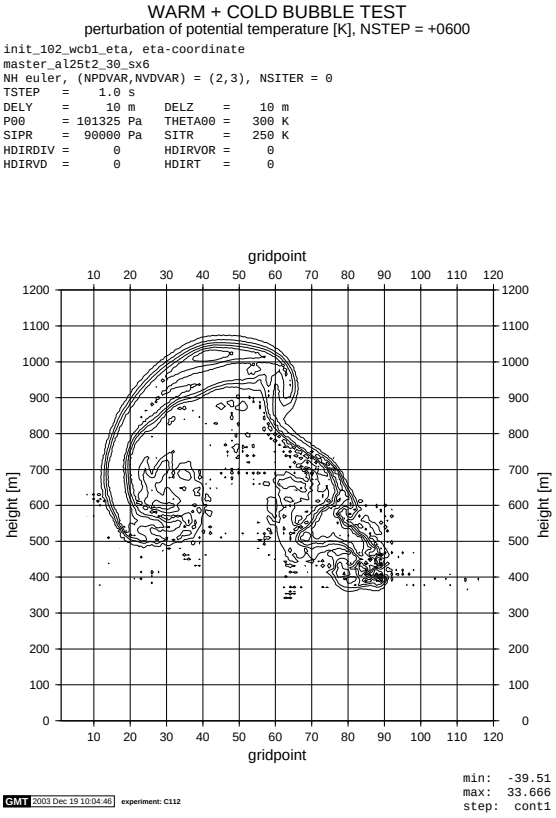

Fig. 29: $\Delta t = 1.0\,\mathrm{s}$, no diffusion.

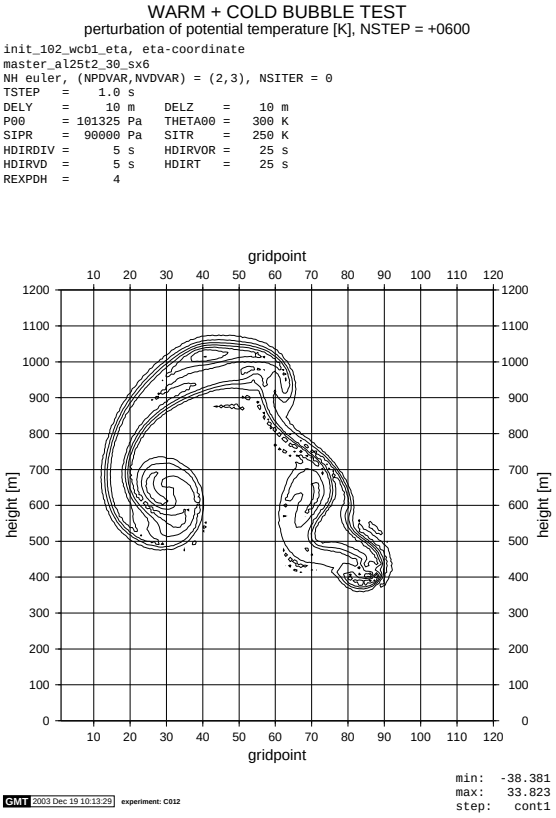

Fig. 30: $\Delta t = 1.0\,\mathrm{s}$, diffusion.

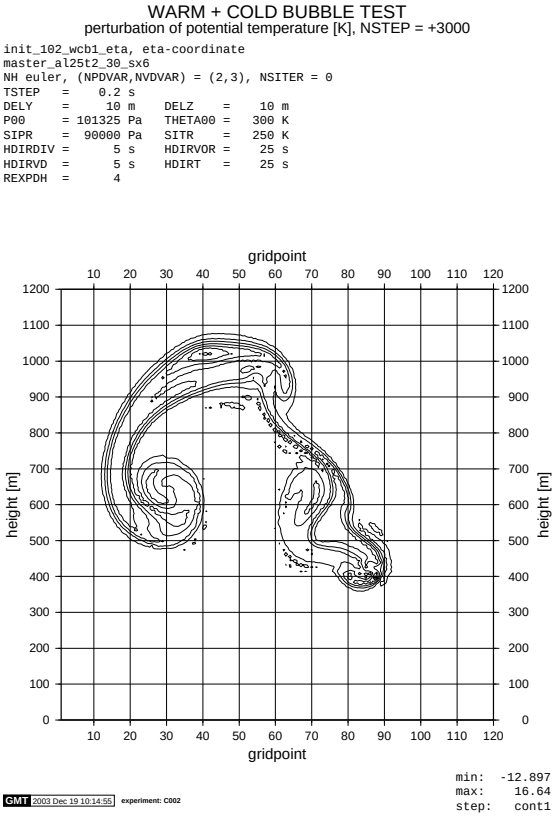

Fig. 31: $\Delta t = 0.2\,\mathrm{s}$, diffusion.

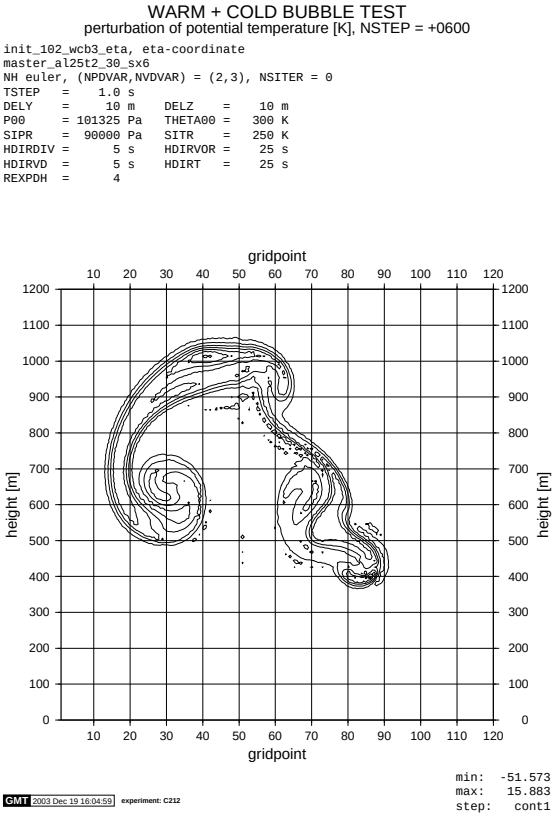

Fig. 32: Reverted test, $\Delta t = 1.0\,\mathrm{s}$, diffusion.