Title

Subtitle

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Abstract

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Acknowledgements

Acknowledgements

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1 Introduction and theory

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4.1 Entrainment reduces downdraft strength

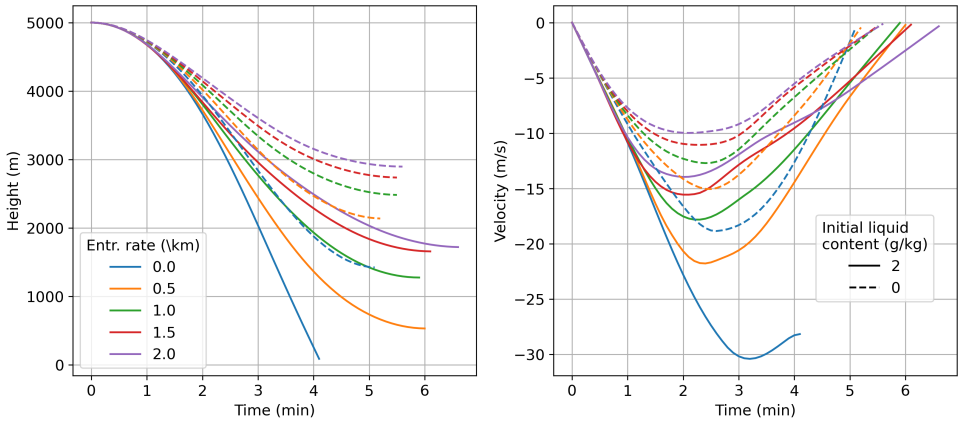

Figure 1: Height and velocity over time of a parcels, initial height 5 km, that are initially cooled by evaporation to the point of saturation. We use sounding data from Sydney for the environmental temperature and dew point profiles.

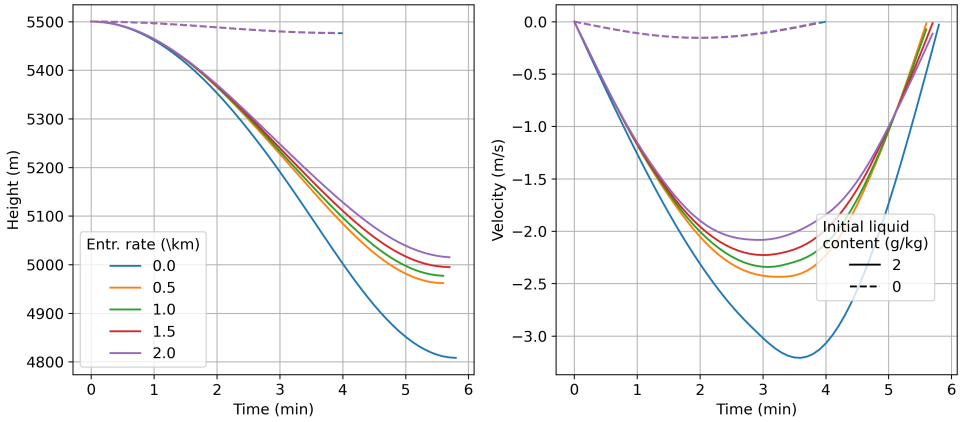

Figure 2: The results of the same calculation used for Figure 1, but using sounding data from Singapore for the environmental temperature and dew point profiles.

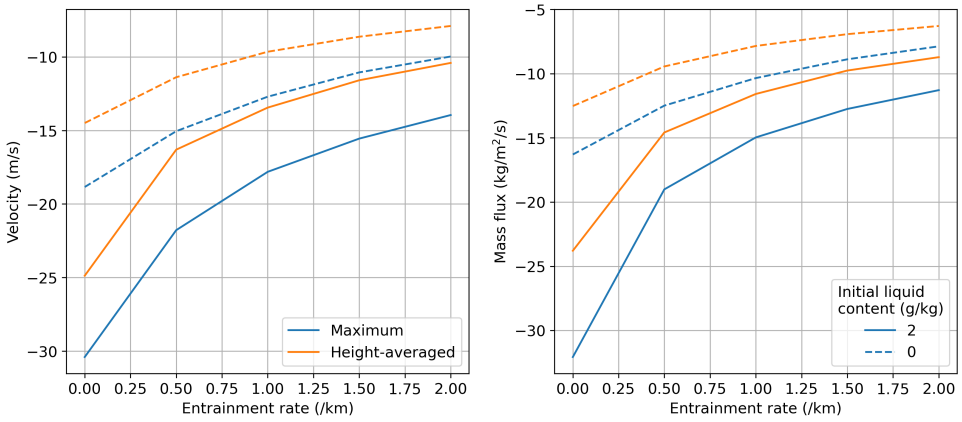

Figure 3: Maximum and height-averaged downdraft velocities from Figure 1, (using Sydney sounding data).

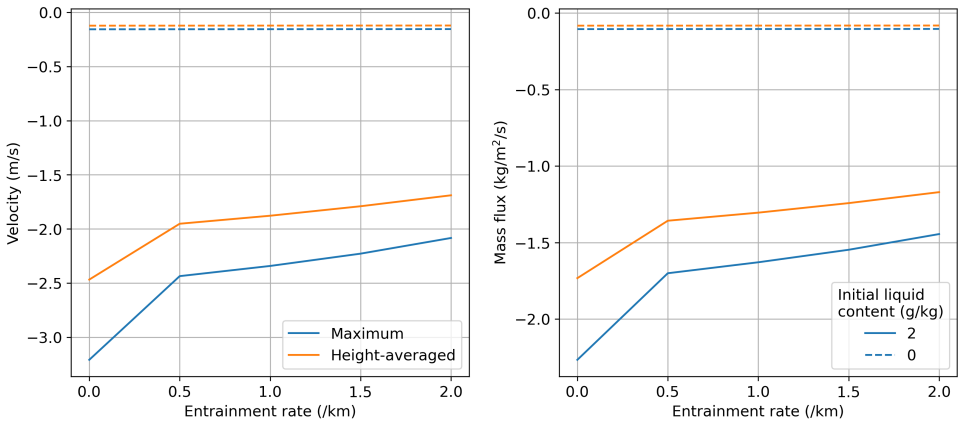

Figure 4: Maximum and height-averaged downdraft velocities from Figure 2, (using Singapore sounding data).

4.2 Initial addition of water increases downdraft strength

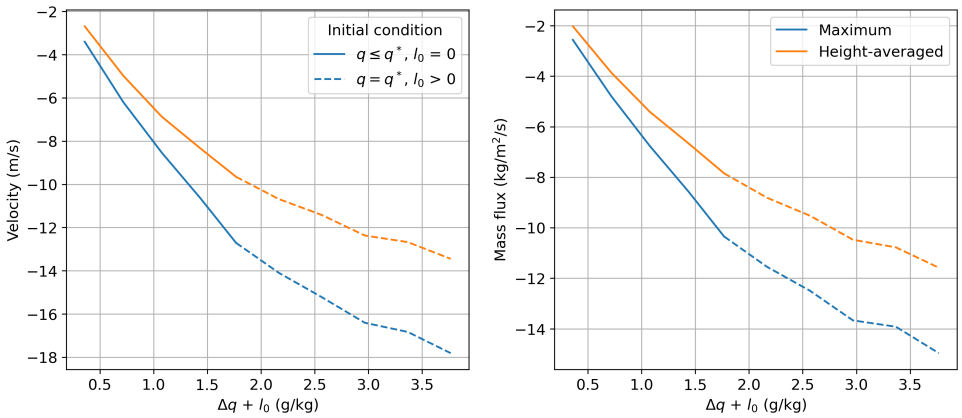

Figure 5: Maximum and height-averaged downdraft velocities computed as functions of the amount of water initially added. Dashed lines indicate that enough water is initially evaporated to saturate the parcel; the rest remains in the parcel as liquid and can evaporate during descent. The entrainment rate is fixed at $1\,\mathrm{km}^{-1}$ and we use the Sydney sounding data.

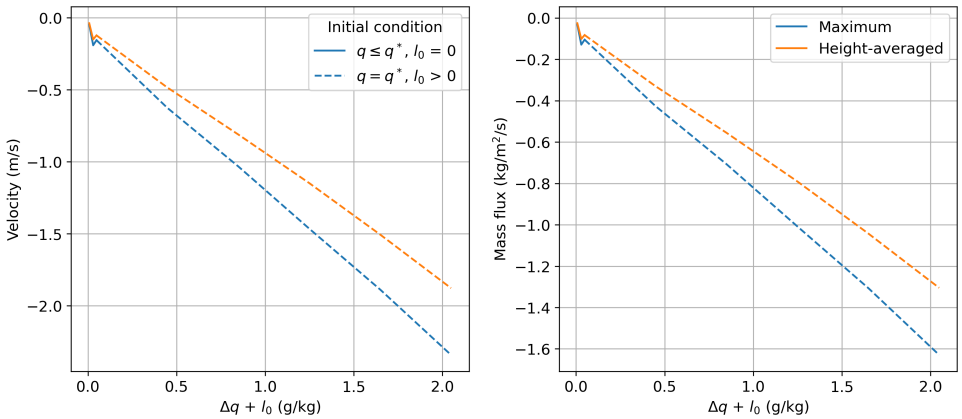

Figure 6: The result shown in Figure 5, now using the Singapore sounding data.