How do updrafts vary with height in the subcloud layer?

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Variation of intensity and width with height

“Flatten the curve” -> as updrafts ascend the occurrence of wide strong updrafts increases

➢ Rooted updrafts are stronger and wider, varying less linearly with height.
How sensitive are updraft properties to environmental factors?

Convective Velocity ($w_*$)  Horizontal Wind ($U$)  $w_*/U$

- Updraft intensity is sensitive to both the cross wind and the buoyancy forcing.
- Updraft width is primarily sensitive to the buoyancy forcing.
What Predicts Updraft Fraction?

What is the relationship between updraft size and strength?

Upper BL 0.7<Z/Zi<0.8
VECTOR: Vertical Exchange and Convective Initiation over Orography

**Why?** Improve our understanding of how
1) Turbulent exchange processes in complex terrain vent water vapor and aerosols from the boundary layer to the free troposphere, and how this venting feeds back on surface and near-surface radiation and thermodynamics.
2) Mountain boundary layer processes, including thermals and thermally driven flows, control convective preconditioning and initiation.
3) Complex terrain boundary layer and convective processes are represented in numerical models.

VECTOR is aligned with the Transport and Exchange processes in the Atmosphere over Mountains – programme and experiment (TEAMx).

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