The coupling of winds and clouds in organized shallow convection

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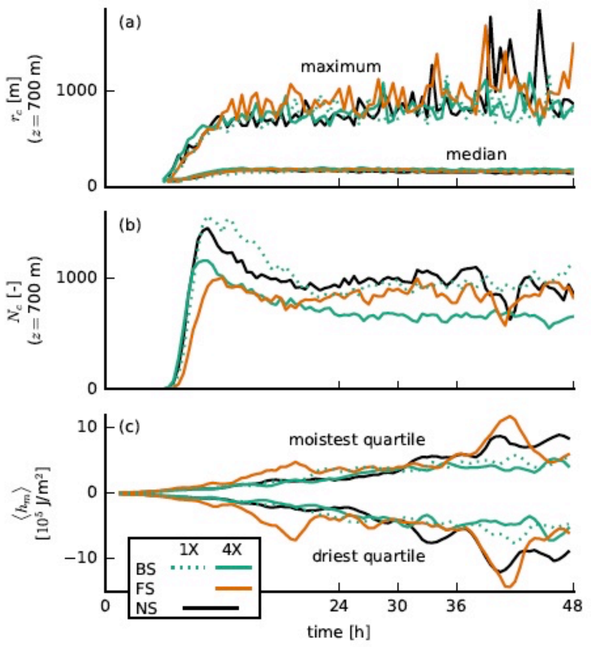
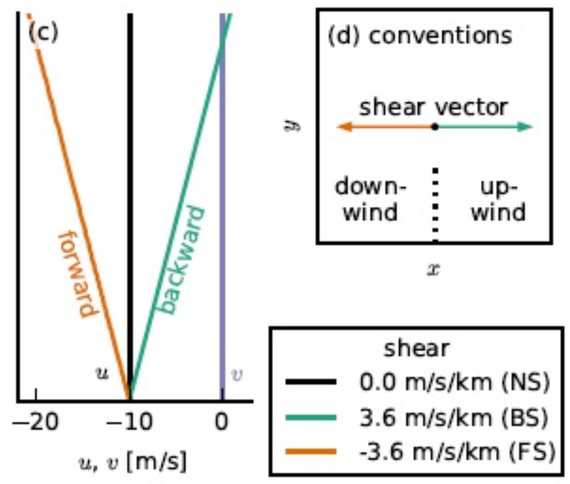
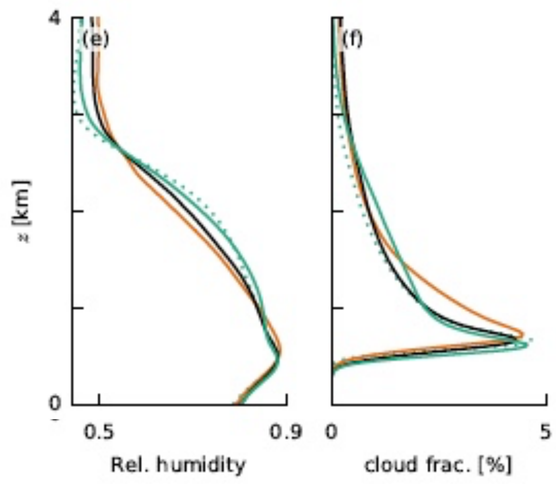
1. Backward shear limits convective depth and moisture aggregation, leading to a shallower more humid trade-wind layer



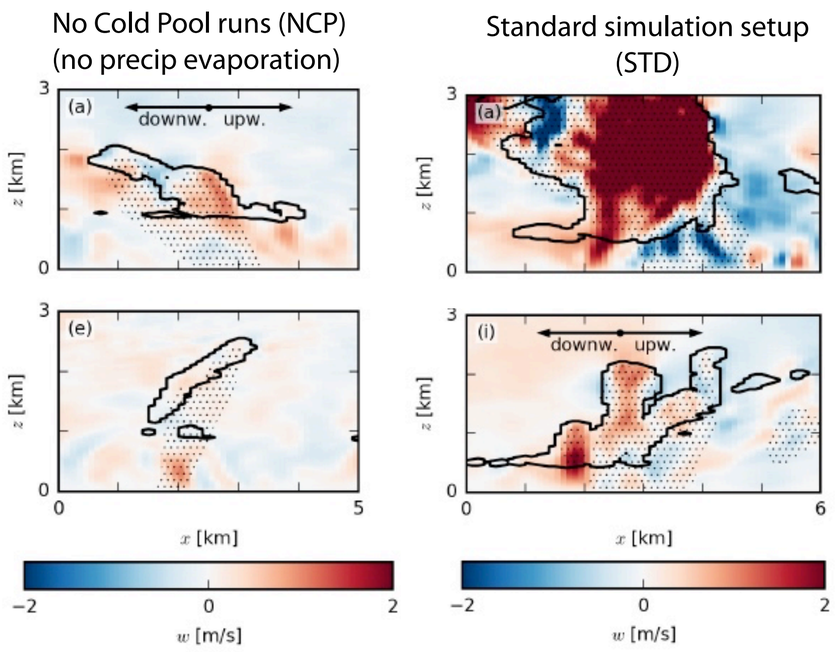


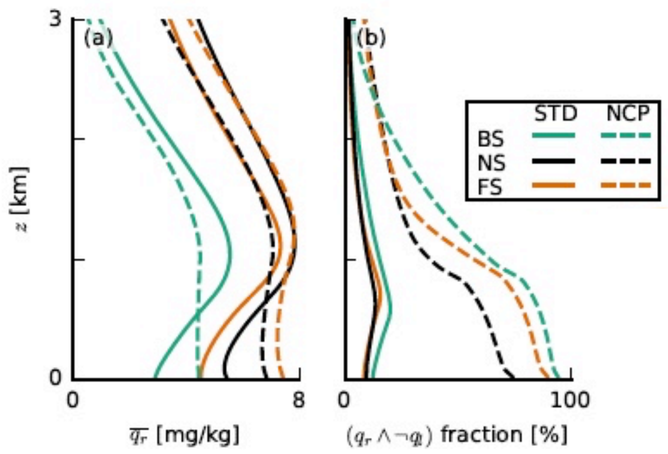


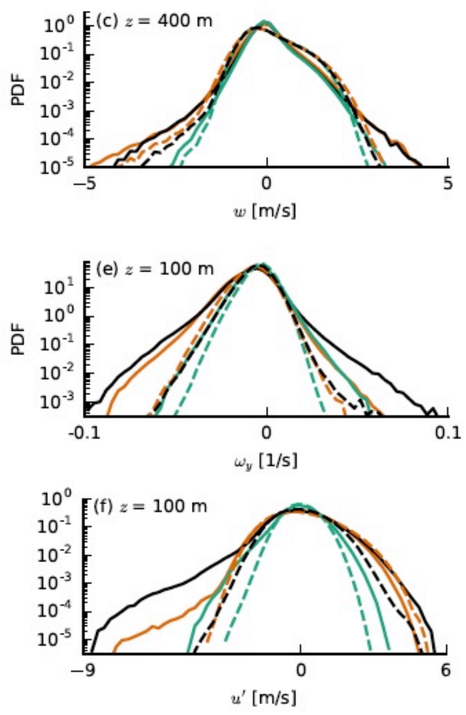
50 x 50 km^2 simulations at 50m resolution with DALES
prescribed surface flux, idealised trade-wind airmass

READ MORE: Helfer, Nuijens, de Roode, & Siebesma (2020). **How wind shear affects trade-wind cumulus convection**. (https://doi:10.1029/2020MS002183)

2. Before cold pool development, forward shear is beneficial for secondary triggering of convection

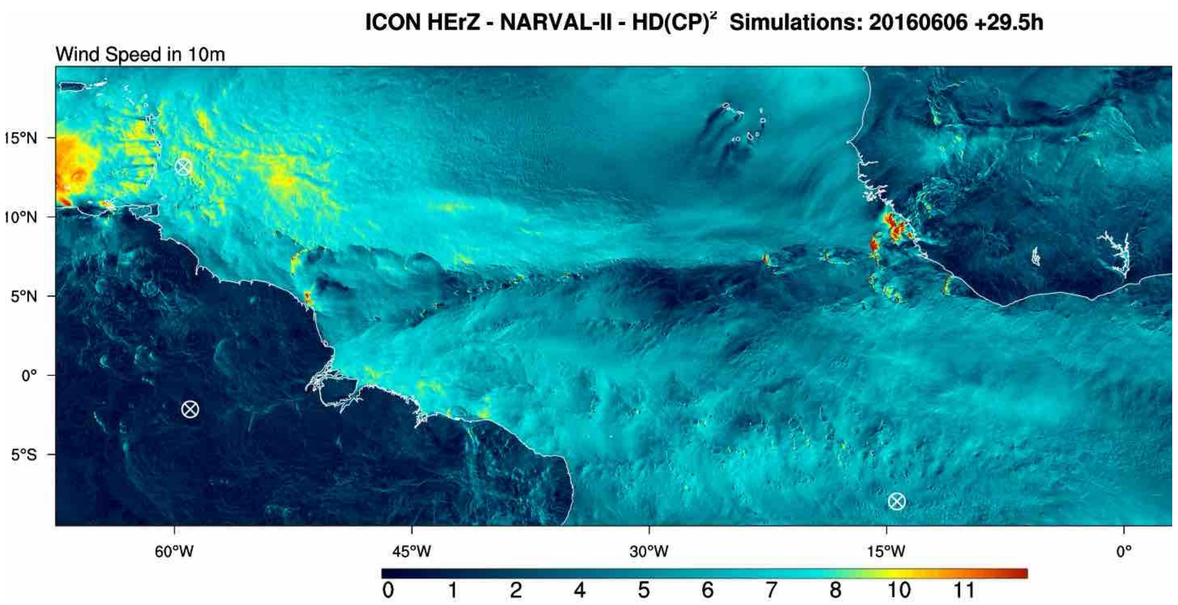


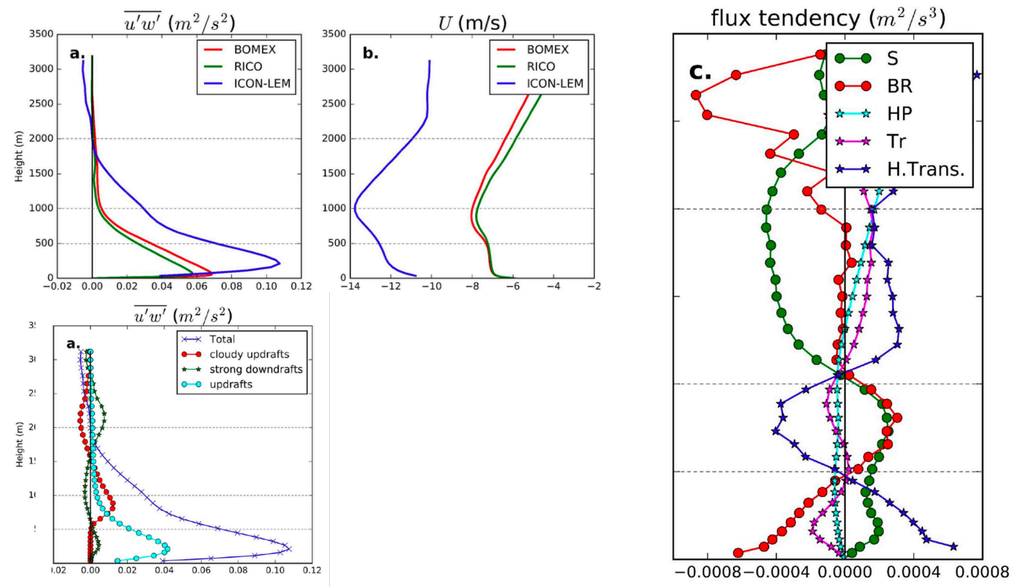




READ MORE: Helfer & Nuijens (submitted): **The morphology of simulated trade-wind congestus clouds under wind shear** (https://www.essoar.org/doi/10.1002/essoar.10506905.1)

3. Meso-scale horizontal circulations play a non-negligible role in setting momentum flux divergence





READ MORE: Dixit, Helfer & Nujiens (2021): **Counter-gradient momentum transport through subtropical shallow convection in ICON-LEM simulations** (https://doi.org/10.1029/2020MS002352)