A more general paradigm for understanding the decoupling of stratocumulus-topped boundary layers (STBL): the importance of horizontal temperature advection

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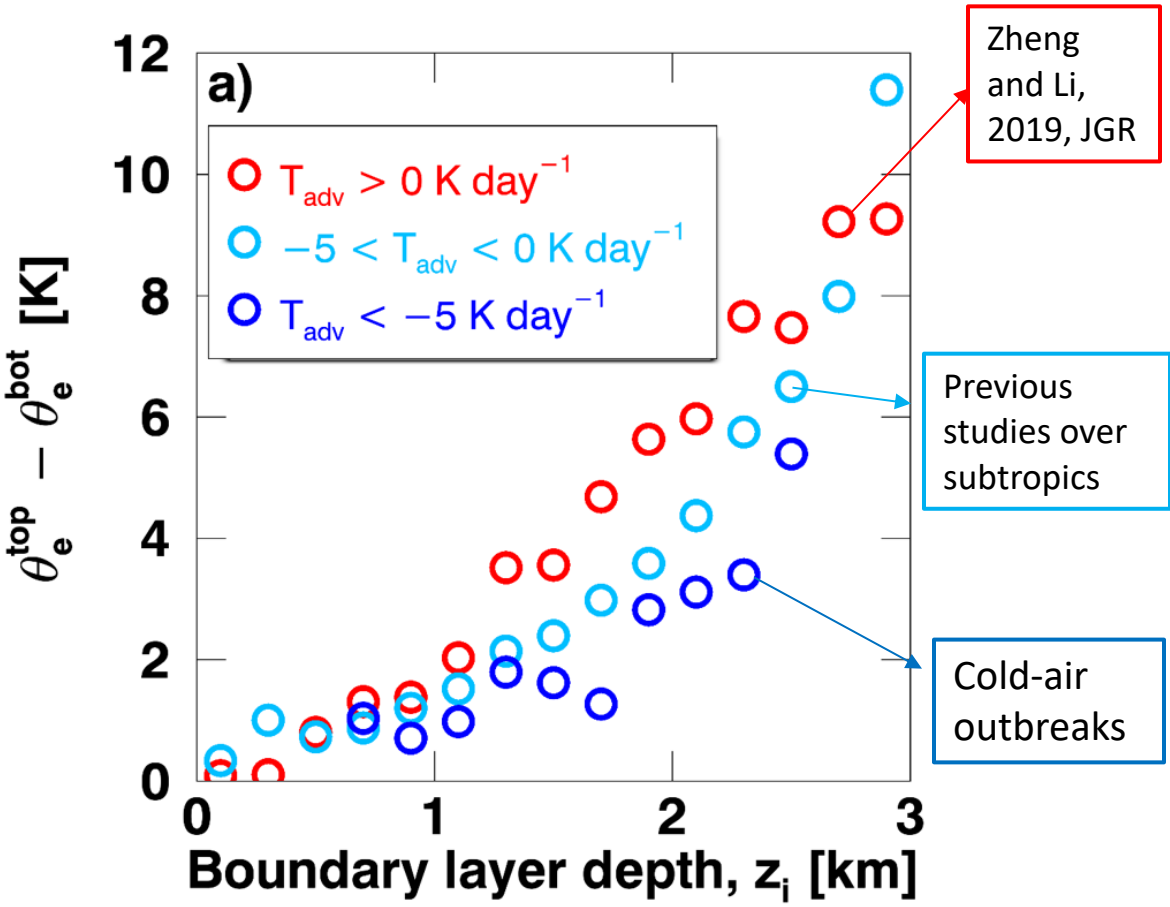
- **Motivation:** previous studies on STBL decoupling are limited to subtropical oceans with cold air advection.
- **Data:** > 700 STBL cases are collected from ENA, MAGIC, and MARCUS.
- **Result**: Stronger decoupling in a deeper STBL:
  Not new
- **Result:** For a given z_i, stronger decoupling in smaller T_{adv}:
  New



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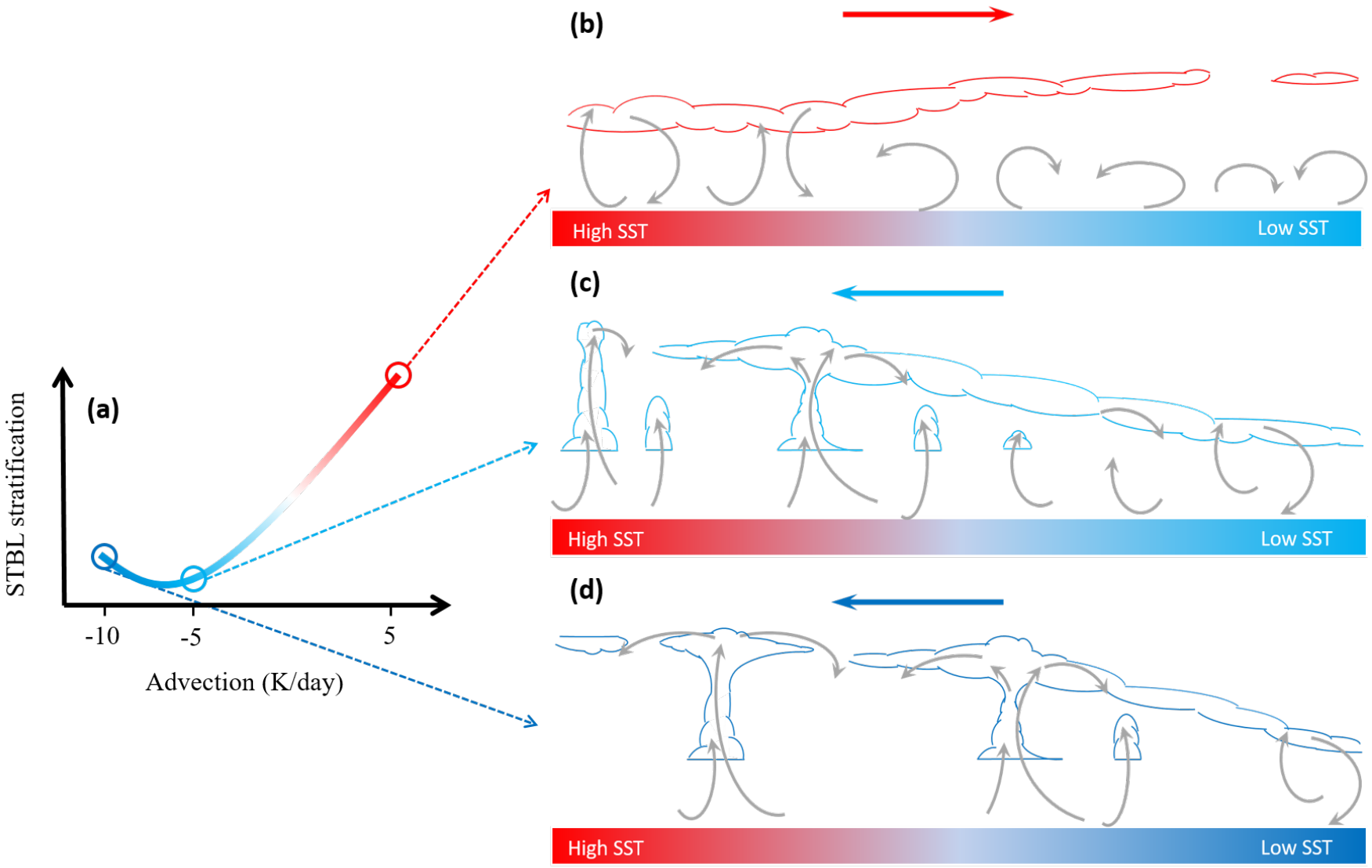
A schematic diagram



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Future work and potential collaboration

- We are running large-eddy simulations to elucidate the physics
- We plan to use COMBLE data to further test this finding
- Influence of decoupling on the aerosol-cloud interactions