# A climatology of cold pools at the ARM ENA Site

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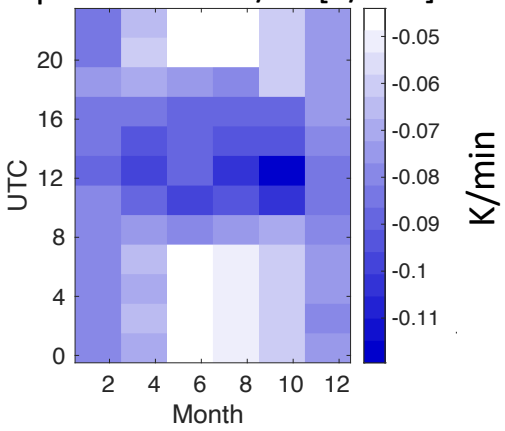
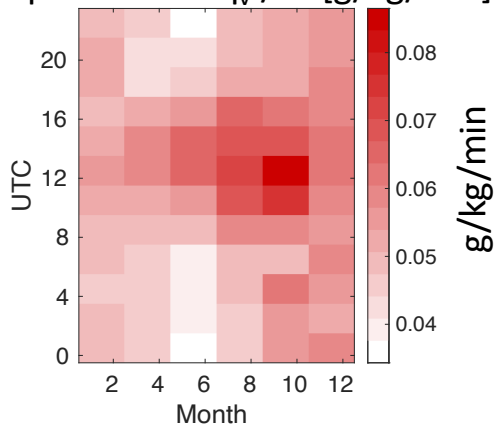
Detect CPs from changes in T and $q_v$ observed by the met station.

- CP signals from Sc and shallow Cu are weak!
- CP signals are embedded in background turbulence!

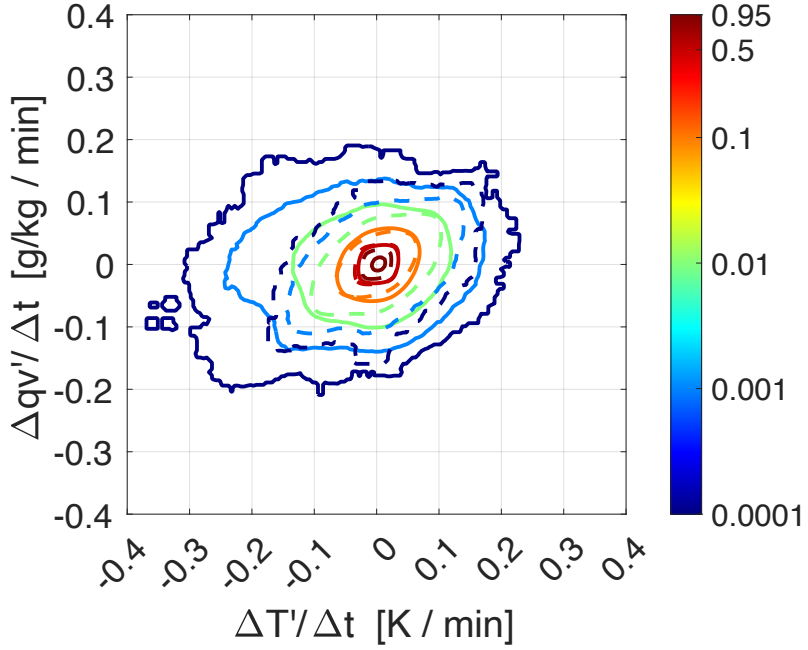
1st percentile $\Delta T'/\Delta t$ [K/min]




99th percentile $\Delta q_v'/\Delta t$ [g/kg/min]




**NearRain=Solid** **FarFromRain=dashed**

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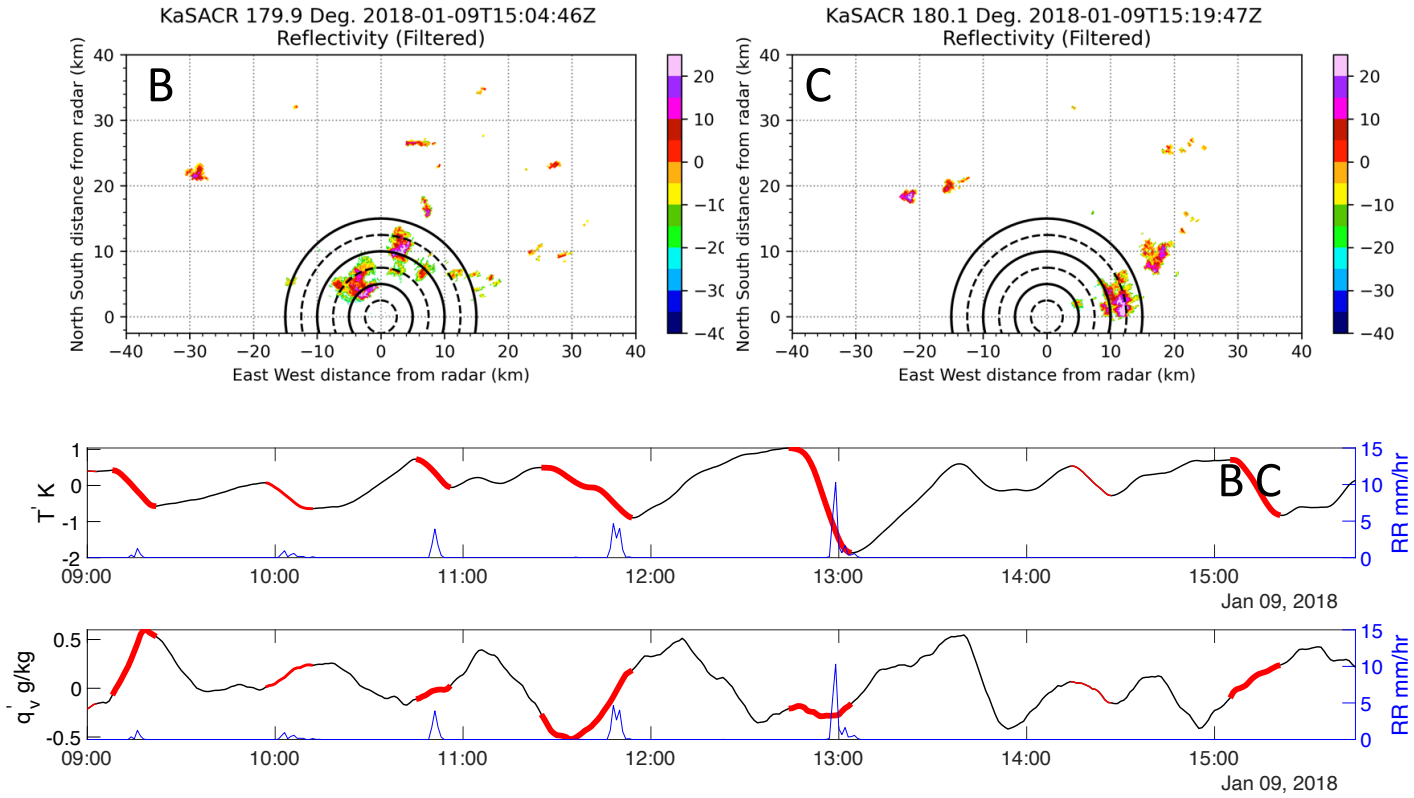
# Algorithm provides a confidence metric for each cold pool




- ✓ The strongest CP is at 13:00 UTC, arriving with the strongest rain rates.
- ✓ At 15:10 UTC, a rain event passes near the met station. No rain is observed at the station but we retrieve the CP with high confidence.
- ✓ CPs are also associated with wind gusts, but we do not currently account for this.

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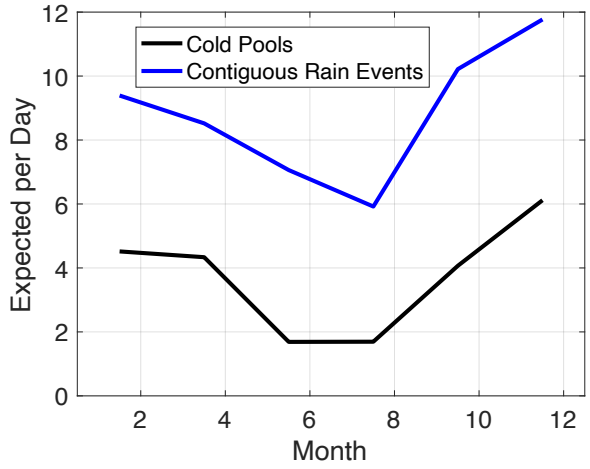
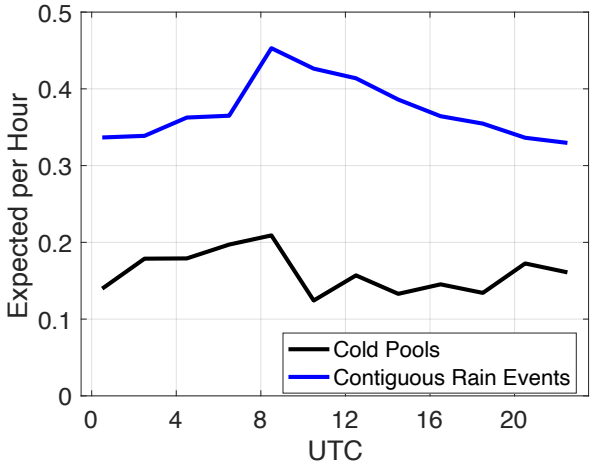
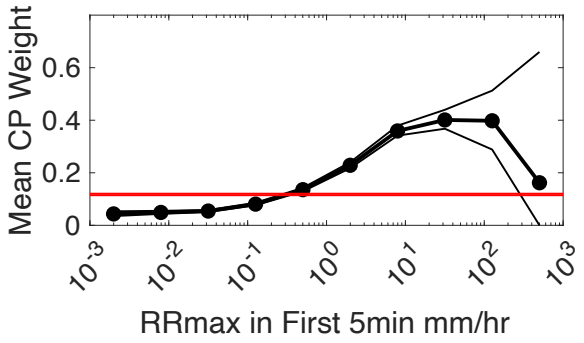
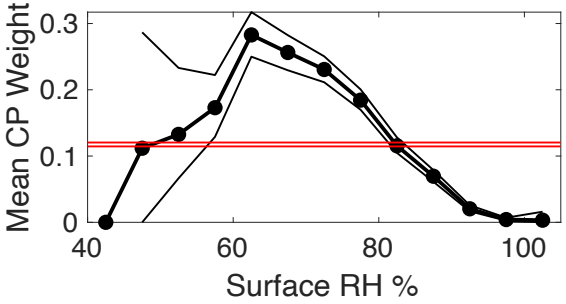
- CPs *that can be distinguished from the background turbulence* follow the annual cycle in rain events.
- CPs deviate from diurnal cycle of rain events due to elevated background turbulence in the afternoon.




Rain events with stronger rain and lower surface RH are more likely to result in stronger cold pools.

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Thank you!
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Image courtesy of the Earth Science and Remote Sensing Unit, NASA Johnson Space Center
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