

This study presents an extensive investigation into convective cell characteristics in the Greater Houston area, delivering important insights into their behavior, movement, anvil generation, vertical motions, and the influencing environmental factors. The paper is well-organized and distinguishes itself through its methodical tracking of convective cells across their lifecycle and the in-depth analysis of both shallow and deep convection phenomena. However, some aspects might require further refinement.

Specific comments:

1. While the characteristics of convective cells and the impact of local meteorology are discussed, the exploration of the underlying causes and synoptic patterns of these meteorological conditions could be expanded. Such a discussion could provide greater context and depth to the study.

While we agree with this sentiment, the near-storm environment analyses have been removed from the paper at the request of reviewer #2.

2. The authors acknowledge potential artifacts and uncertainties in their data, primarily related to cells exiting the tracking domain during their anvil generation analysis. It will be beneficial to include a more comprehensive explanation of how this issue might influence the identified characteristics of shallow and deep convection.

Reviewer #2 suggested a similar adjustment to the paper. We have redone all analysis removing cells that have their first or last location as a domain border gridpoint. However, while these adjustments appear to have muted these artifacts slightly, they still remain. See our response to the Reviewer 2 comment #1.

3. The authors suggest that aerosols might not have a significant influence on cell initiation. However, it would be useful to understand the types of aerosols considered and the potential role each may play in convective processes. The current analysis and discussion on the role of aerosols could be made more explicit and comprehensive.

The data that we are using is raw aerosol optical depth from GOES-16, which does not distinguish between aerosol particle species. We have added speculative discussion on what aerosols may be present in the region. It can be found on lines 337-340.

4. The study alludes to other potential factors influencing cell initiation but does not explore these in detail. Incorporating these factors into the analysis or outlining them as future areas of study could add more value and richness to the research.

We have added discussion of future areas of study with respect to cell initiation at

the end of the manuscript, lines 422-424.

5. In Section 3.1, the authors state that all types of convective cells reach their peak monthly average in August. It would be beneficial if they could offer more insight into the underlying mechanisms driving these monthly variations. Understanding the causative factors may help further understand the influential factors for the convective cells.

We are unsure why this variability exists. We suspect this may be when the sea-breeze circulation is its most prevalent, but without further investigation, we cannot say definitively what causes this monthly variability.

Thank you for your comments that have helped aid in readability, further citations, and potential future areas of study for others to consider.