MR3252: Tropical Meteorology

Paper Summary for Powell and Houze (2015): Please answer the following questions with as much detail as possible. Your answers may be in paragraph form or list form as appropriate.

1. What were the authors' primary research questions, goals, and/or hypotheses?

2. What motivated the authors to conduct this study?

3. How did the authors execute this research? What data and models did they use? How did they use these data?

4. What are some potential key limitations in this study, including those that were explicitly mentioned in the article?

5. What were the article's central conclusions? How did they relate to the primary research questions and/or hypotheses? (i.e., If possible, match a conclusions or set of conclusions to each research questions and/or hypothesis.)

6. Why do velocity potential and vertical velocity anomalies appear to circumnavigate the globe but precipitation anomalies do not?

7. In the "dry" MJO circulation anomaly presented, the implied zonal mass transport by the upper-level zonal wind anomalies (around 150 hPa) is consistent with the mass transport implied by low level zonal wind anomalies (around 850 hPa). How do you know?

8. What do Q_1 and Q_2 represent?

9. How do the authors prove using just sounding data that clouds "preconditioned" the free troposphere with moisture prior to MJO onset?

10. In the absence of latent heating/cooling, how does anomalous vertical motion impact static stability?