## ATM421: Tropical Meteorology Map Discussion Guidelines

Tropical map discussions will begin on Tuesday with each group of two or three students leading one discussion that will count for 10% of their class grade. Your attention and participation in each other's discussions will also be noted and graded.

The discussions will give you the opportunity to show what you know about the weather in the tropics and will go hand-in-hand with the scientific concepts we've learned in class. Your map discussion should generally touch on each of the following weather analysis and forecasting questions (see Bosart (2003) for a detailed discussion):

- 1. What happened?
- 2. <u>Why</u> did it happen?
- 3. What is happening?
- 4. <u>Why</u> is it happening?
- 5. What is going to happen?
- 6. <u>Why</u> is it going to happen?

You should use **physical reasons** when answering questions 2, 4, and 6. For example, we learned that the MJO could have a big impact on our own weather. But **why** should we care what phase the MJO is in, and what are the **physical processes** and the **dynamic and thermodynamic reasons** for the MJO being of interest?

Feel free to use any web-based or self-made plots to display observational data and model forecasts. The "Weather Links" on my home page and the "Reference Material" on the ATM 421 website are also great places to look for a variety of tropical meteorology related links.

In addition, each group **must** show and describe one new map (i.e., one that neither myself or any of your classmates have already talked about) and one non-internet based product (e.g., from Python, ESRL, or a hand-drawn schematic) during your discussion.

## ATM421: Tropical Meteorology Some Additional Tips on How to Approach Map Discussions

1) Start with the big picture

- Show satellite loops to illustrate where there is interesting tropical weather happening across the globe (e.g., the RAMMB CIRA slider <u>https://rammb-slider.cira.colostate.edu/</u> & tropical page <u>https://rammb.cira.colostate.edu/ramsdis/online/tropical-new.asp</u>, or SSEC Real Earth <u>https://realearth.ssec.wisc.edu/</u>
- Show current sea surface temperatures (e.g., <u>http://www.ssec.wisc.edu/data/sst/</u> or <u>https://psl.noaa.gov/map/clim/sst.shtml</u>) and moisture analyses (<u>http://tropic.ssec.wisc.edu/real-time/mtpw2</u>)
- 2) Come down in scale and discuss the relevant weather makers in the tropics
  - ➤ Talk about any active TCs, the location of the ITCZ, the phase of the MJO, any active monsoon systems, equatorial wave modes, etc.
  - ➤ Good websites to start from are CIMMS Tropical Cyclones (<u>http://tropic.ssec.wisc.edu/</u>), CIRA Tropical Cyclones (<u>https://rammb-data.cira.colostate.edu/tc\_realtime/</u>), and NC State's Monitoring of Tropical Waves and the MJO (<u>https://ncics.org/portfolio/monitor/mjo/</u>), plus the links shown in class about the MJO tracking, monsoons, etc., from the posted Reference Materials: (<u>https://www.atmos.albany.edu/daes/atmclasses/atm421/Reference\_Material.html</u>
- **3)** Discuss the thermodynamics and dynamics associated with the features noted in #2
  - ➤ Show analyses at the surface and on relevant pressure levels (e.g., 850 or 700 hPa, 500 hPa, 300 or 250 hPa)
  - Consult Alicia Bentley's (<u>http://www.atmos.albany.edu/student/abentley/realtime.html</u>) and NC State's Tropical Monitoring (<u>https://ncics.org/portfolio/monitor/mjo/</u>) websites, as well as Tropical Tidbits (<u>https://www.tropicaltidbits.com/analysis/models/</u>)
  - Show some interesting soundings (with trade wind inversions, instability/moist neutrality, etc.) using a site like Wyoming (<u>http://weather.uwyo.edu/upperair/sounding.html</u>) or Tropical Tidbits
  - ➤ Finally, make sure to relate the features on these maps to the current weather situation using the dynamic & thermodynamic reasons we've discussed in class (or from other classes)
- 4) Finish with a discussion of the model forecasts
  - ➤ Discuss how the features of note will evolve over time and the potential genesis of any new features over the next week (e.g., will any TCs develop, how will the MJO propagate, will the tropical features you've discussed have any impact on the midlatitudes?)

## \*\*\* NOTE \*\*\*

The above is just a helpful guideline, <u>NOT</u> a strict recipe or checklist. Let the interesting weather of the day be your guide to what maps will be most interesting to show and discuss!

If there is nothing particularly interesting going on, you may examine a past high impact tropical event (see any of the "archive" links on my "Weather Links"), or look at the composite structure of any tropical weather phenomenon we have not discussed in detail in class.