

ATM 311

Topics for Exam

Tropical cyclones

- Differences between TCs and midlatitude cyclones

- Warm core vs. cold core cyclones

- TC genesis

 - WISHE

 - Ingredients for TC formation

 - TC development regions

- TC structure

 - Eye / Eyewall / Eyewall Replacement Cycle

- Extratropical transition

- Tropical transition

- Cyclone phase space

Thunderstorms

- Requirements for thunderstorm development

- Airmass thunderstorms

Sea-breeze circulation

Supercells

- Development (where the vorticity that creates a mesocyclone originates)

- Structure

- Storm motion (left-movers vs. right-movers)

- Storm splitting

Tornadoes

- Tornadogenesis (where the vorticity that creates a tornado originates)

 - Role of FFD and RFD

- Tornado cycling

- Conditions favorable for tornadoes (and for supercells)

Mesoscale Convective Systems (MCS)

- Development and structure

- Balance between vertical wind shear and cold pool (RKW theory)

- Derechos

Hail

- Hail formation

- Growth regimes (wet / dry)

Lightning

- Interface vs. induction charging

Mixed layers (and elevated mixed layers)

- Potential temperature review

- Loaded-gun sounding

- Weather pattern that can create a loaded-gun sounding

Nocturnal low-level jet

Severe weather indices

- LI, SI, TT, KI, SWEAT, BRN, Helicity, Updraft Helicity, EHI, DCAPE (know *how/why* each are used. Don't need to memorize all their definitions)

Severe weather soundings

Hail sounding

High wind sounding

In general, severe weather events (as discussed for the 16 May 2017 case in lecture on 11/5)

**Any topics covered in homework, or in-class assignments*