

ATS 641

Mesoscale Meteorology

Lab Exercise 4

March 28, 2022
(Due Friday, April 15, 2022)

Analysis of a severe weather event; and numerical modeling of convective storms

Part 1: On 21-23 March 2022, there was a multi-day episode of severe weather in the southern US, with numerous tornadoes. (Fig. 1).

For this question, please conduct a brief but thorough case study of this severe weather event. Frame your analysis on the “ingredients-based methodology” for severe and tornadic convection on this day, and why the severe weather occurred in the locations it did. Feel free to use any available information. At a minimum, include one or more synoptic maps, thermodynamic soundings, and hodographs, from either observations or model-based analyses. Use supporting evidence for your claims as much as possible, i.e., don’t simply say “SPC predicted there would be severe weather...”. It may be helpful to consult Dave Schultz’s paper “How to Research and Write Effective Case Studies in Meteorology,” which is linked in the “Articles” section of the class website, when putting together your case study. A length of ~3 pages with 3-5 figures is good to aim for; please don’t make it excessively long.

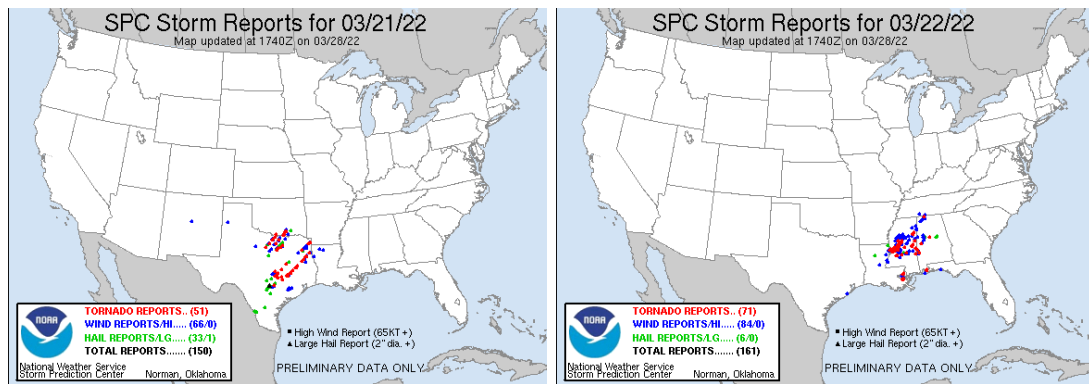


Figure 1: Storm reports from 21-22 March 2022. Obtained from the Storm Prediction Center.

Part 2: Part 2 involves the numerical simulation of convective storms, with instructions found at https://russ-schumacher.github.io/ats641_spring2022/lab4.html