

Weather Analysis and Forecast end of semester project – ATMS 103

Prof. Miller has been giving a weather analysis and forecast discussion for Asheville, NC throughout the semester, generally on Mondays. Your group will be expected to make a similar presentation for a city in the lower 48 states in the U.S. You'll be giving an **analysis** of the weather that occurred over the 24 hour period from 1200 UTC 1 December – 1200 UTC 2 December 2024 and then give a **48 hour forecast** for the period 1200 UTC 2 December – 1200 UTC 4 December 2024 at your location of interest.

A brief **analysis** of the large-scale weather features on the SLP, 500, and 300 hPa level maps is required, being certain to highlight the features relevant to your chosen city over the past 24 hours. You'll also be expected to give the wind speed (miles per hour) and wind direction (N, NE, E, SE, S, SW, W, NW) analysis valid at 1800 UTC on 1 December, the maximum temperature observed on 1 December, the minimum temperature observed on 2 December, and the observed 24-h accumulated precipitation amount (liquid equivalent) from 1200 UTC 1 December – 1200 UTC 2 December 2024.

A brief overview of the **predicted** large-scale weather features on the SLP, 500, and 300 hPa level maps is required, being certain to highlight the features relevant to your chosen city over the next 48 hours. You'll also be expected to give the wind speed (miles per hour) and wind direction (N, NE, E, SE, S, SW, W, NW) forecast valid at 1800 UTC on 2 and 3 December 2024, the maximum temperature forecast on 2 and 3 December, the minimum temperature forecast on 3 December and 4 December 2024, and the predicted 24-h accumulated precipitation amount (liquid equivalent) from 1200 UTC 2 December – 1200 UTC 3 December 2024 and from 1200 UTC 3 December – 1200 UTC 4 December 2024.

A thorough weather analysis and forecasting discussion should require the presentation to last between ten and fifteen minutes (no longer than 15 minutes). One or two team member(s) will make the presentation [if a three-person group; person #1; analysis, person #2; forecast] in front of the class and one team member will compose a typed one page double-spaced summary of the analysis and forecast for the particular city. Each team will hand in electronic versions of their PowerPoint weather analysis and forecast presentation and their one page analysis and forecast summary on Monday, December 2, 2024. ***Each team will make a forecast for a unique city.*** Please let me know which city your group will be creating a forecast for by 25 November (at the latest) so that we do not have duplicate forecasts.

The template for your forecast can be found here,

http://www.atms.unca.edu/dmiller/atms103/map_discussion_temp.pptx

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Other useful web sites might be found at the following locations,

<http://www.weather.gov/> (click on the interactive map to find observations at your location)

http://www.wpc.ncep.noaa.gov/archives/web_pages/sfc/sfc_archive.php (SLP analysis maps, use “CONUS”)

<http://www.spc.noaa.gov/obswx/maps/> (500 and 300 hPa level analysis maps)

<http://mag.ncep.noaa.gov/model-guidance-model-area.php#> (SLP, 500 & 300 hPa forecast maps)

MODEL GUIDANCE → NAM → NAMER

SLP; click on “850_temp_mslp_precip”, 500 hPa level; click on “500_vort_ht”, and 300 hPa level; click on “300_wnd_ht” using the “12/02/2024 00 UTC” NAM model simulation under the “Cycles” option. You’ll click on the “024”, “036”, “048”, and “060” links to get the appropriate SLP, 500 hPa and 300 hPa level maps [e.g., click on => **Image**

URL: http://mag.ncep.noaa.gov/data/nam/06/nam_namer_024_500_vort_ht.gif to get the actual *.gif format image].

Expectations

In your verbal and written description you will need to demonstrate proper usage of weather terminology (e.g., cold front, trough, jet stream or jet streak, meridional, zonal, convergence, divergence, air mass type, etc.) and a proper logic behind describing what happened (“Why were overnight minimum temperatures so low?”) or what will happen (“The maximum temperature on Tuesday will be rather low because...”). Your analysis and forecast discussion must be consistent with the maps and the written narrative that you present. Some issues to consider; [a] are wind direction and speed statements consistent with what is shown on the SLP charts?, [b] are maximum and minimum temperature statements consistent with wind directions and cloud cover?, and [c] are precipitation accumulation statements consistent with the proximity to significant weather features such as a front, a low pressure system, an upper-level trough, and an upper-level jet stream or jet streak? One final point to consider, if the weather doesn’t appear to behave according to expectations of the synoptic-scale weather features, is it possible that a more localized (mesoscale) effect caused the “strange” weather pattern that you have observed or are predicting to happen?

A minor portion of your weather analysis and forecasting project grade (one quarter) will be an evaluation of the effectiveness of your communication. Using a strong voice for excellent projection, proper voice intonation, and professional attire for the presentation will earn a maximum score. A written document demonstrating minimal grammatical and spelling errors and a logical organization of the analysis and forecast description will earn a maximum score.