

ATM 401/501 – Synoptic Laboratory II
Homework Assignment #1: Forecast Verification
Due: Thursday 7 February 2019

You will need the following website for this assignment:

<http://www.atmos.albany.edu/daes/atmclasses/atm401/HW1.php>

The website contains imagery of:

- a. 300-hPa geopotential height (dam; solid contours), temperature ($^{\circ}\text{C}$; dashed red), isotachs (m s^{-1} ; shaded according to scale), and wind barbs (standard convention).
- b. 500-hPa geopotential height (dam; solid contours), relative vorticity (10^{-5} s^{-1} , cyclonic only shaded according to scale), and wind barbs (standard convention).
- c. 1000–500 hPa thickness (dam; dashed contours with 540 separating red/blue), precipitable water (mm; shaded according to scale), and mean sea level pressure (hPa; solid contours)

Use 7-, 5-, 3-, and 1-day forecasts all verifying at 1200 UTC 2 February 2011 to answer the following questions:

1. Discuss forecast error evolution as a function of time.
2. Discuss how the large-scale spatial distribution of forecast errors evolves.
3. Discuss smaller-scale spatial distribution of forecast error. In your response, discuss forecast adjustments in terms of expected sensible weather for Albany, NY, Chicago, IL, and Denver, CO.
4. Discuss possible dynamical reasons for the evolution of observed forecast errors over North America.

Additional Instructions:

- a. Quantify your answers where possible.
- b. Relate your answers to specific features on specific images and, if necessary, provide images in your write-up.
- c. Please type your responses. Your answers to each question should be no longer than one paragraph.
- d. Note that this homework assignment will be graded 75% on your responses and 25% for scientific writing.
- e. Please submit your answers electronically to Lance (lbosart@albany.edu) and Marshall (mpfahler@albany.edu)