

IC6.3: Optional Job Sheet Answer Key

Using Ensembles in Winter Weather Forecasting

Question 1. Where is the variability in 2 m temperatures maximized at 12 UTC on the 22nd (illustrated by the grey shading in the upper plot)?

Maximum variability in 2m temperature is shown in dark gray shading, and is across primarily 2 regions: Southern Arkansas and northeast Kentucky/southeast Ohio.

Question 2. In southern Indiana at 12 UTC on the 22nd, is it likely that it will be significantly warmer or colder than freezing? (i.e. examine location of the 2m temperature variability relative to the spaghetti plot)

No, it is not likely to be significantly warmer or colder than freezing. Because there is no variability in the temperatures across southern Indiana, the temperatures there are only like to vary a few degrees warmer or colder than freezing. This is the reason the spaghetti plot of freezing temperatures shows variability, but it is highly unlikely that temperatures would be ~5 C warmer or colder than freezing across Southern Indiana.

Question 3. Where is the snow most likely to fall?

From the snowfall graphic (top right), the most likely area of heavy snow fall is across southern Missouri into southern Illinois, central Indiana, and western Ohio.

Question 4. What is the highest probability of sleet and freezing rain, and where are those two most likely to fall?

Sleet: 40% across northeast Arkansas/southeast Missouri/western Kentucky
Freezing Rain: 40% in central Ohio, 20% centered on the Ohio River Valley.

Question 5. Based only on these graphics, briefly describe the types of precipitation you expect across the state of Indiana from 12 UTC on the 22nd through 00 UTC on the 23rd.

This is a subjective interpretation, our answer is certainly not the only possible solution. Precipitation should begin around 03 UTC across southern Ohio and fall mostly as very

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cold rain mixed with snow, and quickly change over to snow at around 06 UTC, staying as snow all across Indiana other than the southern most counties along the Ohio River. Extreme southern Indiana will see rain and sleet mix from 03-12 UTC, then a mix of snow and sleet from 12-21 UTC. Finally, from 21 UTC on, all snow will fall across all of Indiana.

Question 6. Where is the highest probability for 0.5 inches of liquid equivalent in 24 hours?

Western half of Kentucky along the Ohio River to western Tennessee, eastern Arkansas, and northern Mississippi.

Question 7. Based on this graphic and the P-Type graphic where is the most likely location for significant accumulations of winter precip?

Western Kentucky and northern Kentucky along the Ohio River