

Instructions (shown before students start the test)

Macomb Science Olympiad

January Workshop

January 16, 2021

Division B

Meteorology

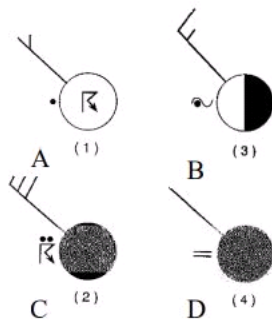
(Severe Storms)

(Total Points 76)

Introduction (shown after students start the test)

1. (2.00 pts) 1. What is a Dry Line?

2. (1.00 pts) Which station model correctly shows the weather conditions of a thunderstorm with heavy rain?



- ☐ A) Image 1
- ☐ B) image 2
- ☐ C) image 3
- ☐ D) image 4

3. (1.00 pts) An appendage or hook shape to the reflectivity echo usually indicates that a thunderstorm is _____.

- a. dissipating
- b. growing
- c. rotating
- d. splitting

4. (2.00 pts) Multicell thunderstorms owe their existence to:
- A) the interaction of the large-scale environment with topographic features.
 - B) favorable large-scale environmental conditions for thunderstorms.
 - C) the interaction of individual storm's downdrafts and the environmental air forming new updrafts.
 - D) All of the above can lead to multicell thunderstorms.
 - E) Multicell thunderstorms form by none of these mechanisms

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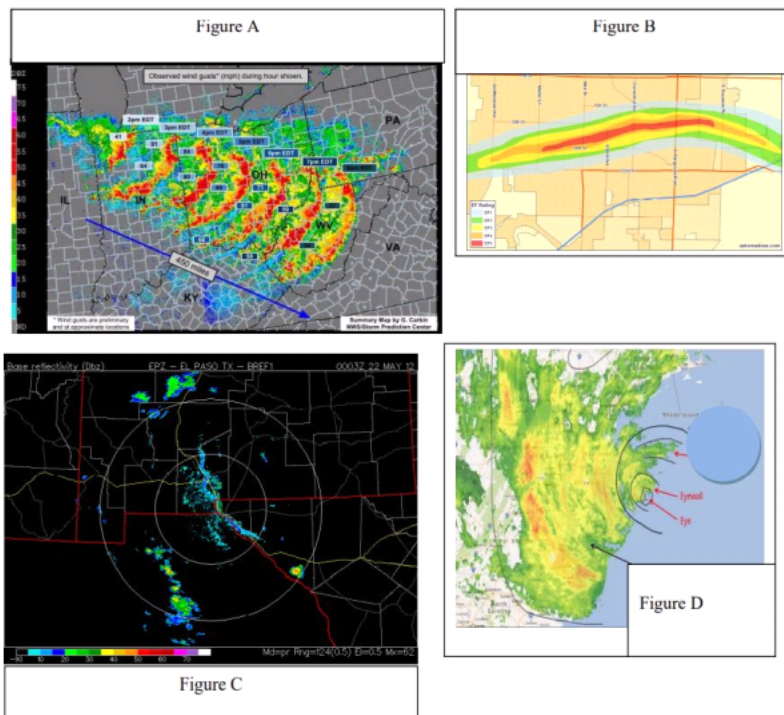
The radar images below all show 1 of the special topics for 2014. Match the picture with the event.

Arizona Haboob

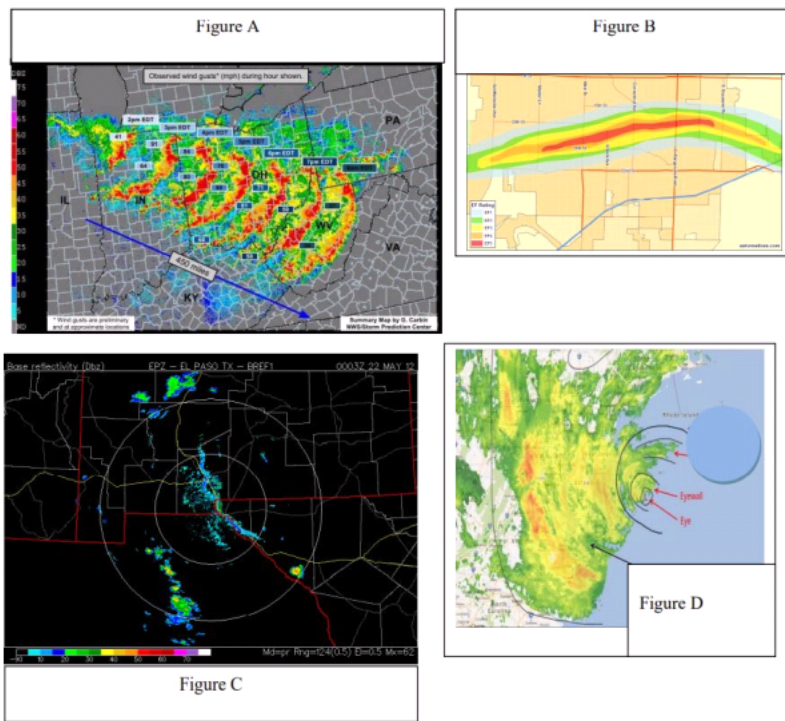
East Coast Derecho

Hurricane Sandy

Joplin Tornado



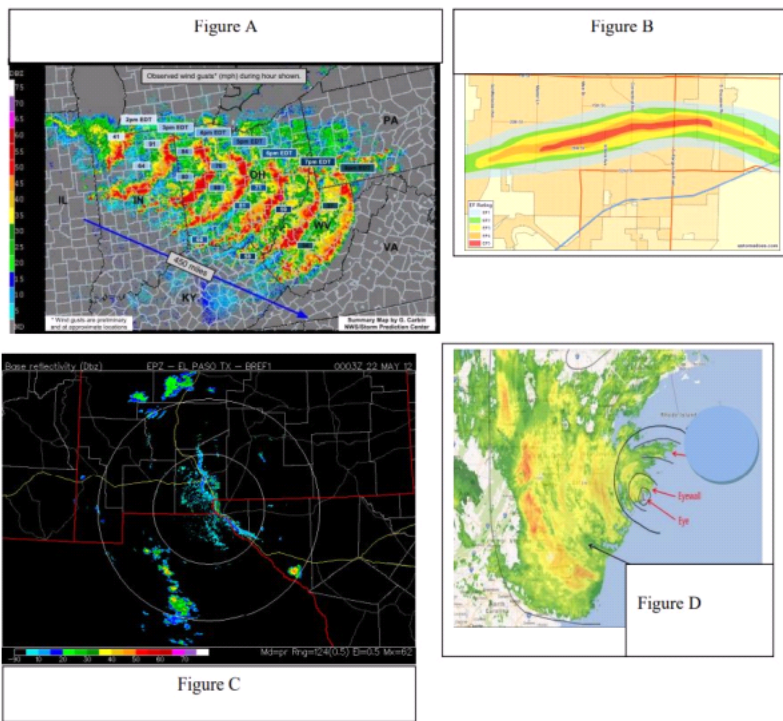
5. (1.00 pts) The radar images below all show 1 of the special topics for 2014. Match the picture with the event.
- Arizona Haboob



- ☐ A) image A
- ☐ B) Image B
- ☐ C) Image C
- ☐ D) Image D

6. (1.00 pts) The radar images below all show 1 of the special topics for 2014. Match the picture with the event.

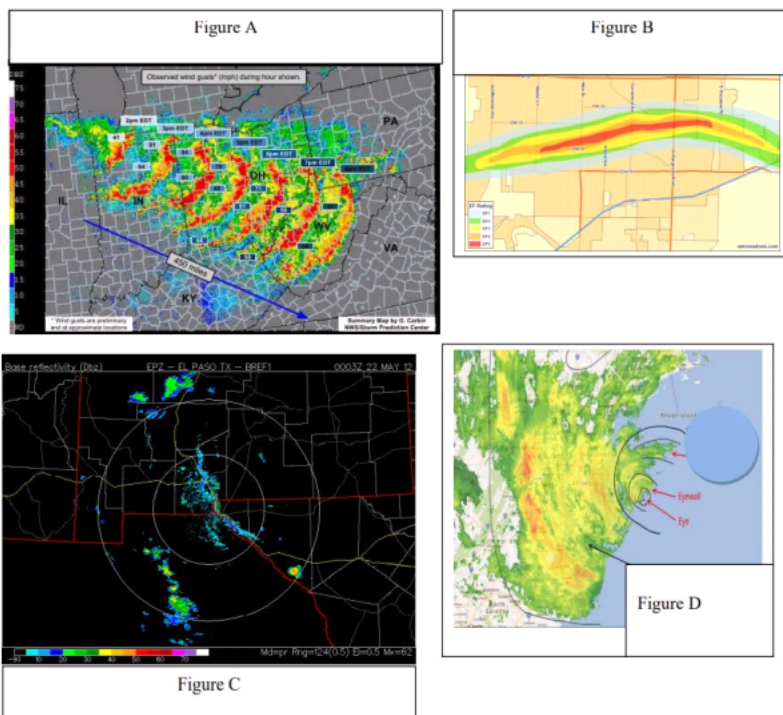
East Coast Derecho



- ☐ A) Image A
- ☐ B) Image B
- ☐ C) Image C
- ☐ D) Image D

7. (1.00 pts) The radar images below all show 1 of the special topics for 2014. Match the picture with the event.

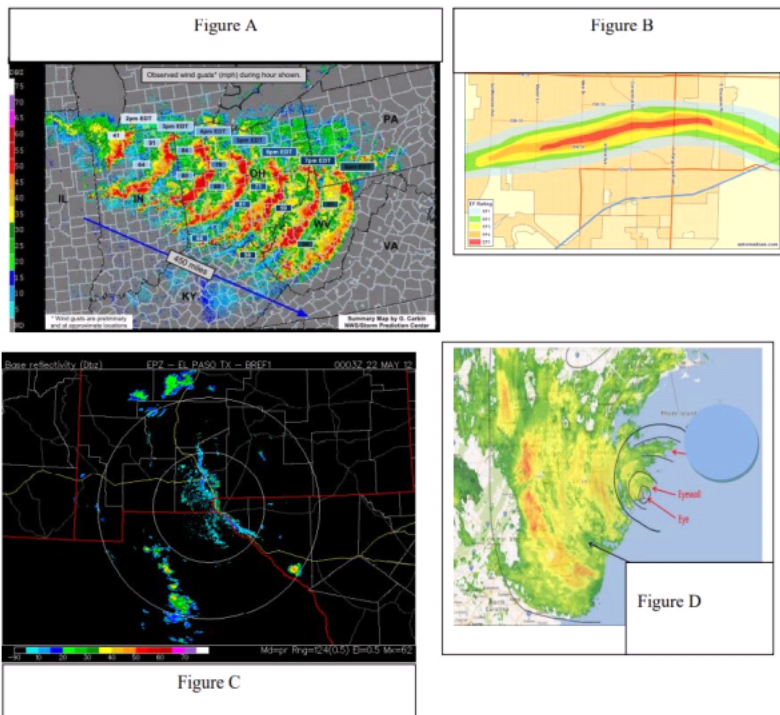
Hurricane Sandy



- ☐ A) Image A
- ☐ B) Image B
- ☐ C) Image C
- ☐ D) Image D

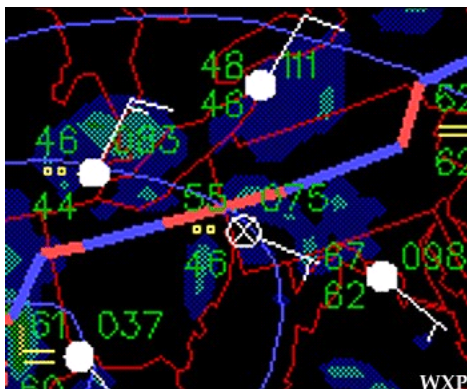
8. (1.00 pts) The radar images below all show 1 of the special topics for 2014. Match the picture with the event.

Joplin Tornado



- ☐ A) image A
- ☐ B) Image B
- ☐ C) Image C
- ☐ D) Image D

9. (1.00 pts) Which front does this picture indicate/show?



- ☐ A) Warm
- ☐ B) Cold
- ☐ C) Stationary

☐ D) Occluded

10. (1.00 pts) Your friend tells you that she just heard there is a tornado watch that includes the city of Chicago. What does this mean? Circle the best answer.

- ☐ A) A tornado has been spotted in Chicago by a storm spotter.
- ☐ B) A tornado has shown up on radar (over Chicago), but not verified by a person.
- ☐ C) Weather conditions favor the development of a tornado in or near Chicago in the next several hours.
- ☐ D) A tornado will certainly develop just outside of Chicago, just you wait.

11. (1.00 pts)

A potential severe weather situation in which warm and moist air is in the lower troposphere and very dry air is in the middle troposphere is termed _____ instability.

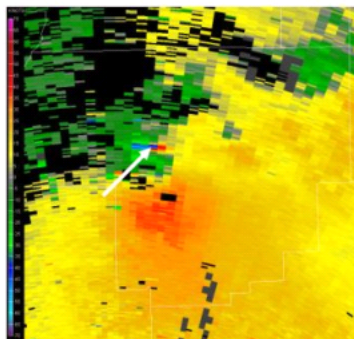
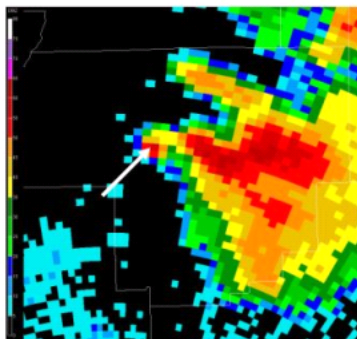
- a. Amount of instability
- b. Amount of shear
- c. Surface dew point being greater than 65 F
- d. Upper level divergence and low level convergence

12. (1.00 pts) Lightning kills more people each year than tornadoes and hurricanes combined. However, you can protect yourself by using the 30/30 rule. What is the 30/30 rule?

- ☐ A) You should protect yourself from lightning only if lightning strikes the ground within 30 yards of you.
- ☐ B) If you witness at least 30 lightning strikes at your location within 30 minutes, then you should take shelter immediately.
- ☐ C) If you hear thunder within 30 seconds of a lightning flash, then you should take shelter and remain there until 30 minutes after the last flash.
- ☐ D) If there is at least a 30% chance of lightning forecast by the National Weather Service, then you should take shelter until 30 minutes after the forecast has expired.

13. (1.00 pts)

Shown below are reflectivity and velocity radar images for a summer day in Central Illinois. What is the feature present at the arrow?



- ☐ A) Squall line
- ☐ B) Hail
- ☐ C) Tornado
- ☐ D) Waterspout