1. The visible satellite image for 2240 UTC 22 May 2011 for the se KS/ne OK/sw MO/nw AR region is given above.
   a. The somewhat circular cloud arc indicated by the letter A is a portion of the __________________________ of the Joplin tornadic supercell. (9 pts)
   b. The textured area indicated by the arrow from the letter B represents a portion of this thunderstorm that has ascended into the stratosphere. This is known as an __________________________.(9 pts)
Tornado path and impacted area for the Joplin tornado.
2. (Extra Credit—Either you get it right or you don't, no partial credit. Full sentences on the back, and no credit unless you explain carefully) How does the motion/track of the Joplin tornado correspond (or not correspond or both) to the motion of the thunderstorm you'd expect based upon your answer to Homework 8. (20 points)

3. The paired radar image above shows the \( \frac{1}{2} \) degree reflectivity and the \( \frac{1}{2} \) degree storm relative velocity plots from the KSGF radar at 2243 UTC, the time when the tornado itself was entering its most intense phase.

a. On the reflectivity images, identify the meteorological significance of the areas indicated by the Locations.
   
   Location A ___________________________
   Location B ___________________________
   Location C ___________________________

b. On the storm relative velocity image on the right, four radials from the radar site (off to the northeast) are drawn. With arrows, indicate the sense of the motion vectors right at the locations D, E, F, and G, indicating the relative magnitude by the length of the arrows.

c. On the storm relative velocity image on the right, four radials from the radar site (off to the northeast) are drawn. What is the magnitude of the motion (in knots) either to or from (indicate which) the radar at locations D, E, F, and G
   
   Location D ___________________________
   Location E ___________________________
   Location F ___________________________
   Location G ___________________________

d. On the storm relative velocity image on the right, the sharp color shift between locations E and F indicates the location of the center of the ___________________________. (The answer here is NOT “tornado” but there are two possibilities that could be equally correct.)