**Names: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Group Project#2**

**Computer Applications in Meteorology Due: Fri. Jan. 31, 2020**

**VIS5D**

1. Driver Initials:\_\_\_\_\_\_\_\_ Passenger Initials:\_\_\_\_\_\_\_\_
* Launch Xming
* Launch PuTTY Secure Shell
	+ logon to “blizzard.atms.unca.edu”
		- login:
		- password:
* […blizzard]$ cd ◊ /home/atms261/vis5d
	+ […blizzard]$ /home/atms261/vis5d/vis5d ◊ CENTURY.25.v5d ◊ –mbs ◊ 100
	+ (this opens the “VIS5D” GUI)
* click “Probe” Vis5d Control Panel (**CP**) window
* click the left, middle, and right mouse button in the 3-D Display Window and list below their functions:
	+ left mouse button;
	+ middle mouse button;
	+ right mouse button;
* use the “Probe” cursor to determine the latitude and longitude of the cursor at the lower left and upper right corners of the map domain and note the location below:
	+ latitude, longitude of lower left corner
	+ latitude, longitude of upper right corner
* click “SOUTH” in the **CP** and describe below whether you’re looking *toward* the south or *from* the south
* click “WEST” and rotate the view with the mouse button so that you are looking toward the south
* move the cursor so that it’s at the bottom in the middle of the northern wall (lat/lon ~ 50oN, 79.5oW)
* hit the “Shift” key while hitting “↑” (up arrow key) multiple times and note below the atmospheric temperature (T) and potential temperature (TH) when the probe is at an altitude of ~ 7 km. Note also the time (UTC) and frame (# of 25) of this observation
* keeping the probe cursor position at the same spot as above (~ 50oN, 79.5oW, 7 km), click “STEP” to move in time between 1200 UTC FRI and 1200 UTC SAT
	+ note below the T and TH at 1200 UTC SAT, did the atmosphere warm or cool between 1200 UTC FRI and 1200 UTC SAT?

**Names: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Group Project#2**

**Computer Applications in Meteorology Due: Fri. Jan. 31, 2020**

**VIS5D (continued)**

1. Driver Initials:\_\_\_\_\_\_\_\_ Passenger Initials:\_\_\_\_\_\_\_\_
* describe below what happens when “STEP” is clicked with the right mouse button
* click “TOP”, “MAP”, and “Normal” and return the time frame to 1200 UTC FRI (1 of 25)
* click “Hwind1” located about 2/3 the way down the Vis5d **CP** and then “ANIMATE” and describe below the prominent weather feature that moves along the east coast (trough or ridge?)
* stop the animation by clicking “ANIMATE”. Click the “ANIMATE” button with the right mouse button and describe below what happens
* stop the animation, turn off “Hwind1”, and return the loop to the 1200 UTC FRI frame
* click “U” under “Isosurf” and slide the red diamond on the small control panel at the bottom of the computer screen to “U=0” and click “OK”. Note below whether the U<0 (negative) or U>0 (positive) values are *outside* the U=0 isosurface
* click on “U” under “Isosurf” using the right mouse button and then click on “T” describing below what happens and where (low or high altitude) the U=0 isosurface is shaded blue and where it is shaded red
* “STEP” through the time loop and note below the time when the U=0 isosurface “solid plume” **first** appears above 6 km over Tennessee and Kentucky
* overlay the “HStream” field with the U=0 isosurface and describe below what happens to the prominent weather feature described above (bullet#3) as the U=0 plume moves toward Kentucky
* turn off the U=0 isosurface and move the “HStream” plot to an altitude of ~ 0.25 km using the “Slice” option. Describe below how many surface cyclone centers you see at 1200 UTC FRI and at 1200 UTC SAT
	+ 1200 UTC FRI;
	+ 1200 UTC SAT;
* click on “Contour Slice Vert”-“TH” and “Colored Slice Vert”-“TH” with “HStream” still “on”, move the vertical slices to make an East/West cut through the U=0 plume at the time noted above (bullet#8). Note below the latitude of the vertical slice
* click to get a side view looking north and note below if the cyclone is a warm core or a cold core system

**Names: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Group Project#2**

**Computer Applications in Meteorology Due: Fri. Jan. 31, 2020**

**VIS5D (continued)**

1. Driver Initials:\_\_\_\_\_\_\_\_ Passenger Initials:\_\_\_\_\_\_\_\_
* click on “NEW VAR..” and “Make type-in expression…” typing in “wspd = sqrt(U\*U+V\*V)”, making certain that “U” and “V” are uppercase. Click “OK” after typing in the expression and note below the name of the new parameter that appears at the bottom of the parameter list.
* make a vertical contour and color slice plot of the newly created parameter and position the slices (using “Slice”) such that the vertical cross sections are oriented in a north-south direction in the middle of the display domain (~79oW). Change your view so that you can read the wind speed numbers from the side and note below the maximum wind speed (m s-1) and its altitude at 1200 UTC FRI.
* “STEP” through the vertical cross section wind speed loop and describe below what happens to the jet stream core from 1400 UTC FRI through 1400 UTC SAT in terms of its maximum speed and its location (does it move north or south?)
* return to “TOP” view and shut off all fields except the “HStream” field at 0.25 km in altitude
* click on “Trajectory” and position the cursor at the location of the surface cyclone center in the Southeast at an altitude of ~ 3 km at 1000 UTC SAT. Set “Step:” equal to “1”, “Length:” equal to “10”, and select “Ribbon” as “on” (button should have a red square if “on”). Make the trajectory by clicking the middle mouse button in the display window. Describe below if the parcel located at ~3 km above the surface cyclone center at 1000 UTC SAT originates from north, south, east or west of the 1000 UTC SAT surface cyclone position earlier in the time loop.
* right click on “Set 1” and select “T” so that the parcel trajectory has color shading. Describe below what the blue and red colors on the trajectory indicate with respect to the parcel altitude
* “STEP” through the parcel trajectory loop and note below the parcel position (lat/lon/altitude) at (a) 1600 UTC FRI, (b) 2200 UTC FRI, (c) 0400 UTC SAT, and (d) 1600 UTC SAT remembering that the parcel position is always at the *leading edge* of the trajectory ribbon
	+ 1600 UTC FRI;
	+ 2200 UTC FRI;
	+ 0400 UTC SAT;
	+ 1600 UTC SAT;

# The final product for Group Project#2 must consist of the hand-written responses on this hand-out along with the names and initials of each group participant.

# **Next Class**🡪 GARP