Steps for Manipulating WRF files in ParaView

1. Download and save the WRF files
2. Load the WRF files into ParaView
   1. File -> Open, Select directory and \*vtr files
   2. Click “Apply” to apply default values
   3. Change “Representation” to “Surface”
   4. Change “Coloring” to “HGT”
   5. Manipulate the image to see it in 3D if you’d like
3. Let’s create a slice of the data near the surface, but not at the surface (1.001, where 1 is the surface)
   1. We will create Z normal (X-Y plane) of temperature data
   2. To do this, do the following commands:
      1. Filters -> Common -> Slice
      2. Click on the Slice so the eye goes from gray to black
      3. Click “ZNormal”
      4. Change the “Z” value of “origin” to 1.001
      5. Hit “Apply”
      6. Change Coloring from “XLAND” to “HGT”
      7. Hit “Rescale”
      8. Manipulate the image to see it in 3D if you’d like
      9. This is showing the temperatures near the surface of some location in California from WRF data
      10. Click “Edit” to play around with the color map choices
4. Now let’s warp the data so that it shows 3D variations in the values
   1. Click on wrf-small-\* on the left hand side
   2. Do the following:
      1. Filters -> Alphabetical -> Warp by Scalar
      2. Change “Scalars” to “HGT”
      3. Change “Scale Factor” from “1” to “0.0025”
      4. Click “Apply”
      5. Change “Coloring” to “HGT”
      6. Rescale
5. Now let’s use the IsoVolume filter to display rain
   1. Click on wrf-small
   2. Do the following:
      1. Filters -> Alphabetical -> IsoVolume
      2. Change “Input Scalars” to “QRAIN”
      3. Change Minimum to “0”
      4. Change Maximum to “0.001”
      5. Click “Apply”
      6. Change Representation to “Volume”
      7. Change “Coloring” to “QRAIN”
6. Now we’ll use the Contour filter to add in clouds
   1. Click on wrf-small
   2. Do the following:
      1. Filters -> Common -> Contour
      2. Change “Contour By” to “QCLOUD”
      3. Change “Value Range” to “.0001”
      4. Click “Apply”
      5. Change “Coloring” to “Solid Color”
      6. You can click Edit to change the color map if you’d like
7. Now we’ll calculate the wind direction, which is a vector
   1. We will create the variable “wind” and tell ParaView how to calculate it from existing values
   2. Click on wrf-small
   3. Do the following:
      1. Filters -> Common -> Calculator
      2. Change “Result Array Name” from “Result” to “Wind”
      3. Enter “U\*iHat+V\*jHat+W\*kHat” in the bar below
      4. Click “Apply”
8. Now we’ll display the wind vectors
   1. We’ll do this at 18,000 feet, and to do this we’ll take a slice of the data at this level
   2. To do this, do the following commands:
      1. Filters -> Common -> Slice
      2. Click on the Slice so the eye goes from gray to black
      3. Click “ZNormal”
      4. Change the “Z” value of “origin” to 18
      5. Hit “Apply”
      6. Change “Coloring” to “Wind”
9. Now we’ll change the slice to display arrow values
   1. We’ll do this with a “Glyph”
   2. Do the following:
      1. Filters -> Common -> Glyph
      2. Make sure “Glyph Type” is “Arrow”
      3. Make sure “Active Attributes” is set to “Wind”
      4. Click “Apply”
      5. Too many wind vectors! Let’s reduce it by a magnitude, from 5000 to 500
      6. Change “Coloring” to “Glyph Vector”
      7. Can turn off the previous slice value if you want to see the surface
10. Add a title to the plot
    1. Sources -> Text
    2. In the text box, enter, “Yo! Cool Plot!”
    3. Hit “Apply”
    4. Move the text box from the bottom left corner to the top center
    5. Change features (size, bold, etc) as desired.
11. Edit Legend
    1. Click on “Glyph1” in the Pipeline Browser
    2. Click on “Edit” under “Coloring”
    3. Click on the “Edit Color Legend Parameters”
    4. Modify as desired
    5. Can also move around, eliminate the legend, etc.
12. Hit Play button at the top to cycle through all the time steps
13. Save Data
    1. Saves the currently selected filtered data
14. Save State