



Cornell University
Center for Advanced Computing

ParaView Lab

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Cornell Center for Advanced Computing

Data Analysis on Ranger
January 2012



Getting Started

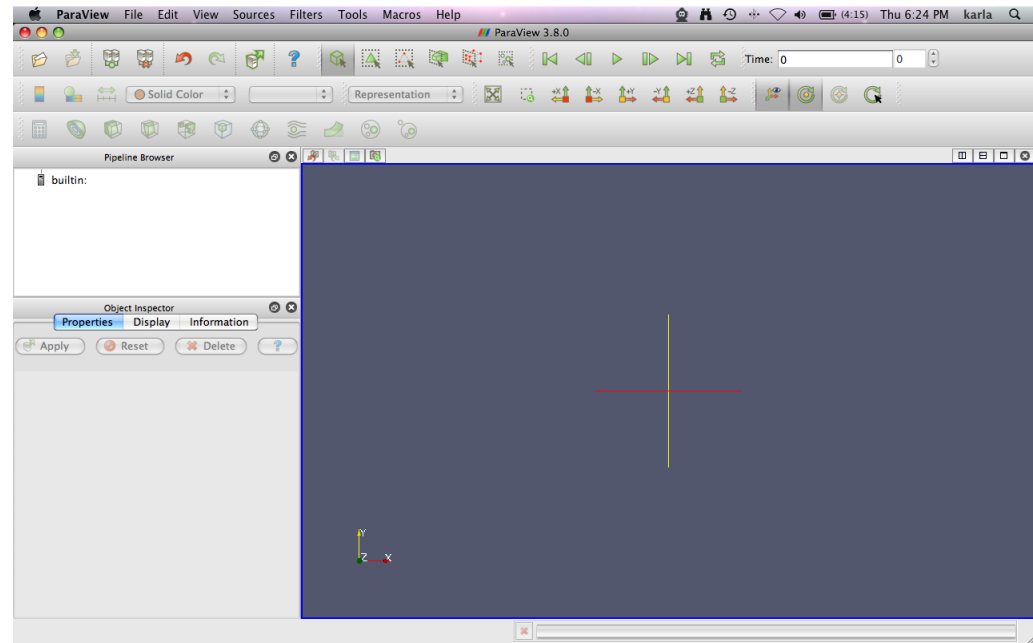
- Download example data file 'RectGrid2.vtk'
 - <http://portal.longhorn.tacc.utexas.edu/training/RectGrid2.vtk>
 - Right-click, Save link as...
- Open ParaView



ParaView

Today we will:

- Create isosurfaces for a scalar variable
- Clip and slice the isosurfaces
- Use glyphs to display a vector field
- Use streamlines to show flow through a vector field
- Edit color maps
- Add slices to show variable values over a plane
- Adjust opacities of filters
- Add color legends
- Create volume rendering



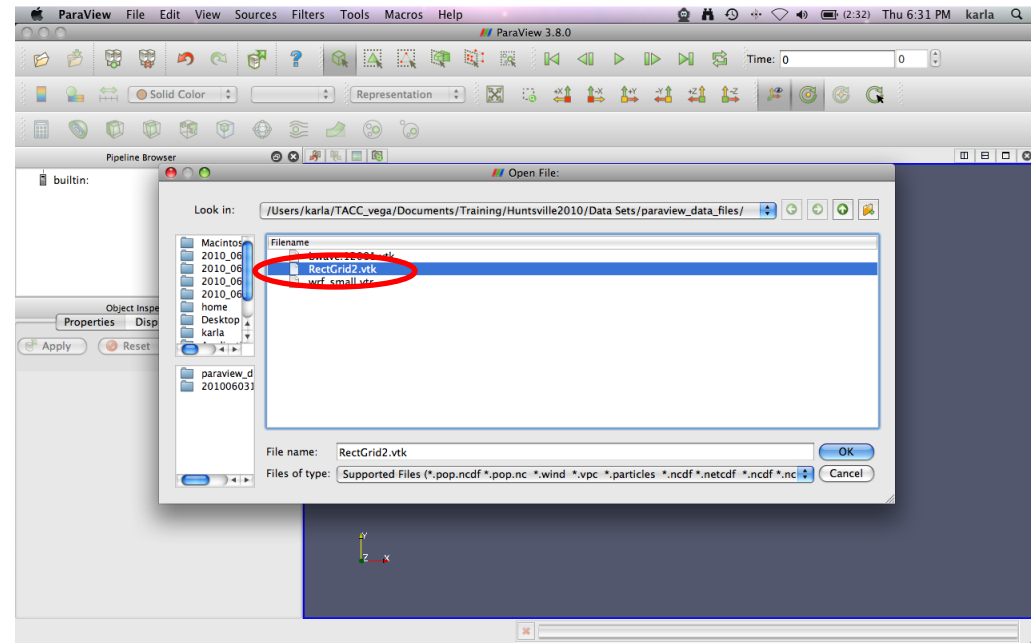


ParaView

Open the file

RectGrid2.vtk

- Click File -> Open
- Select RectGrid2.vtk
- Click OK
- Click blue Apply
- Box outline of dataset extent displayed



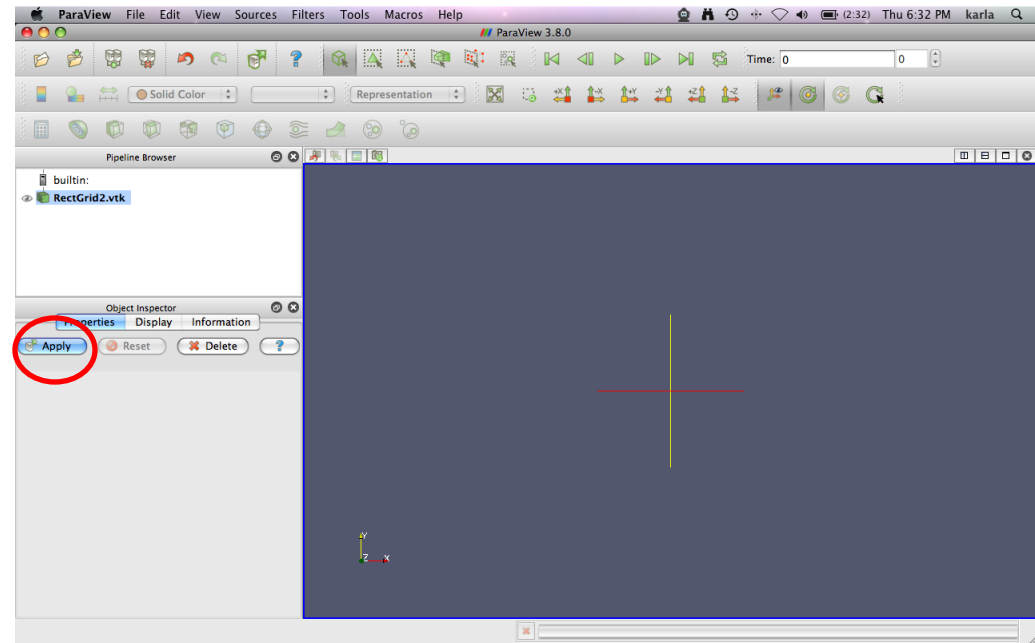


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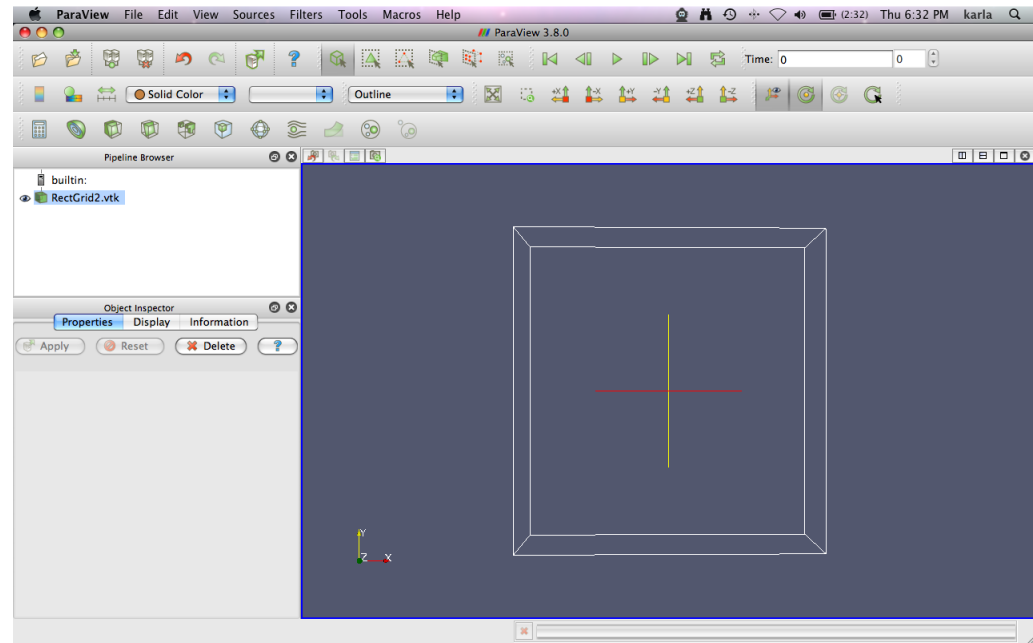


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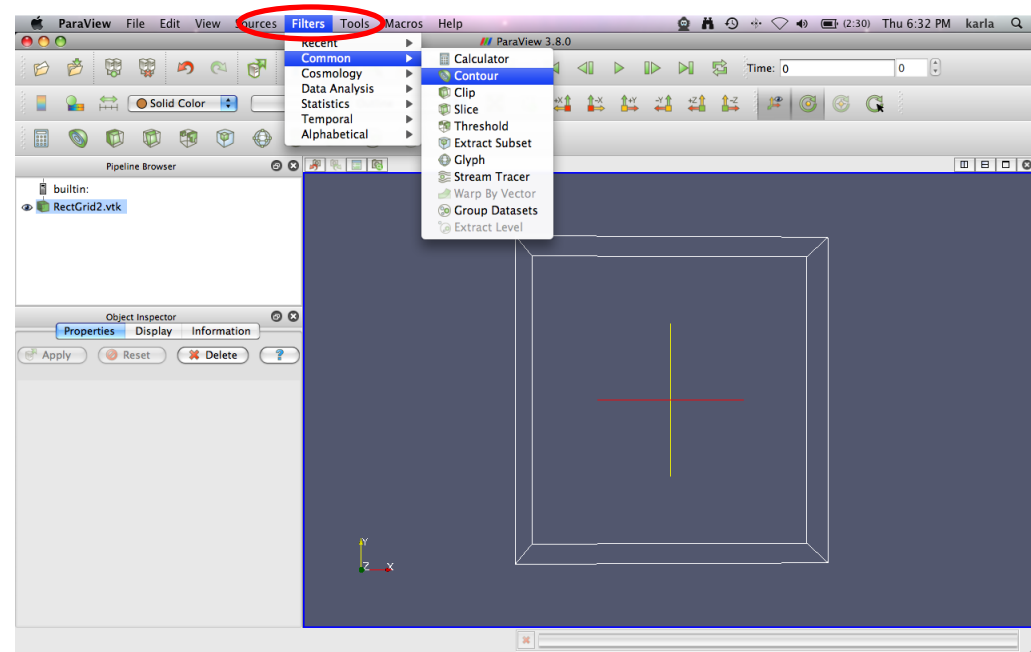




ParaView

Create isosurfaces

- Click Filters -> Common -> Contour
- In Isosurfaces box, click Delete All
- Click New Range
- Keep defaults, click OK
- Click blue Apply
- Click Display tab
- In Color by box, select vectors

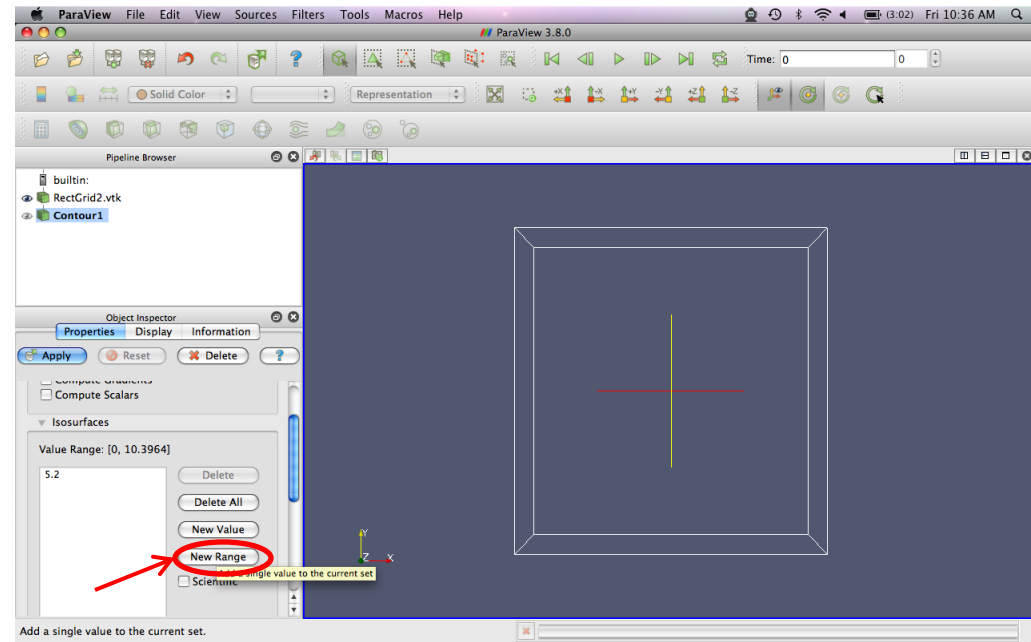




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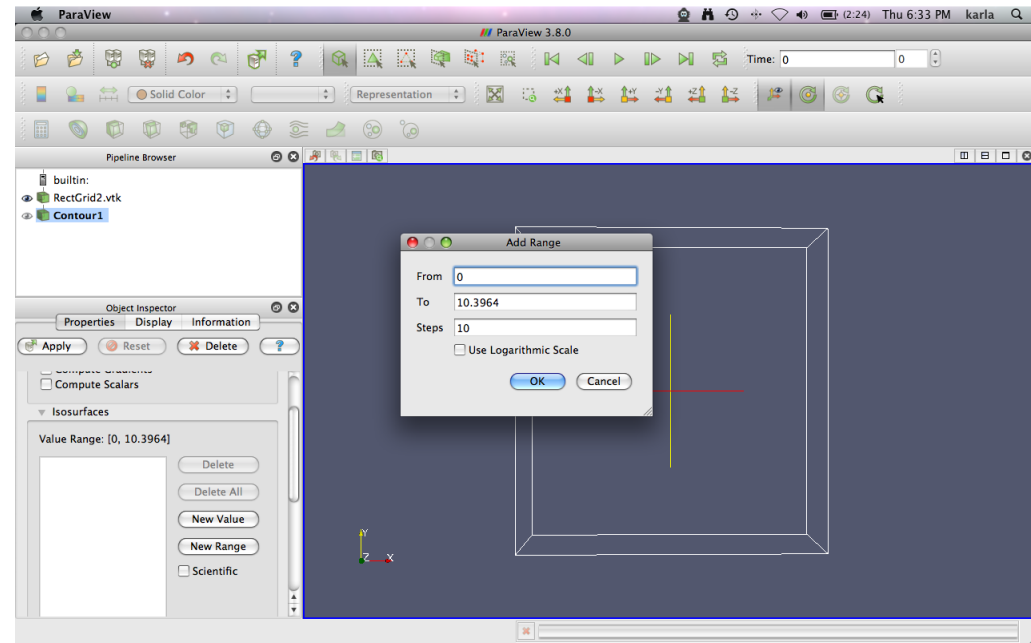




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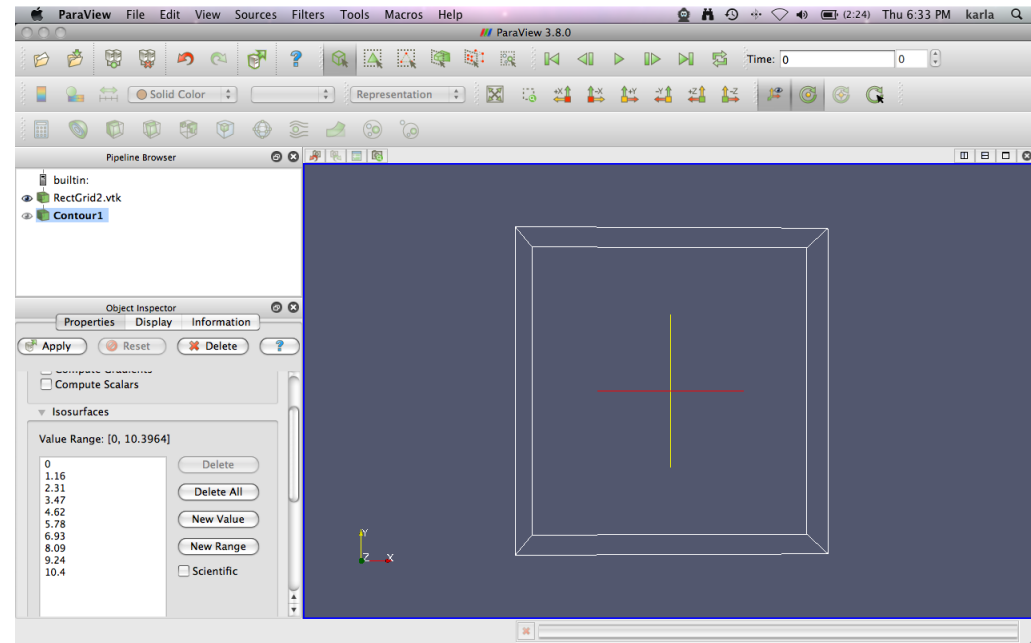




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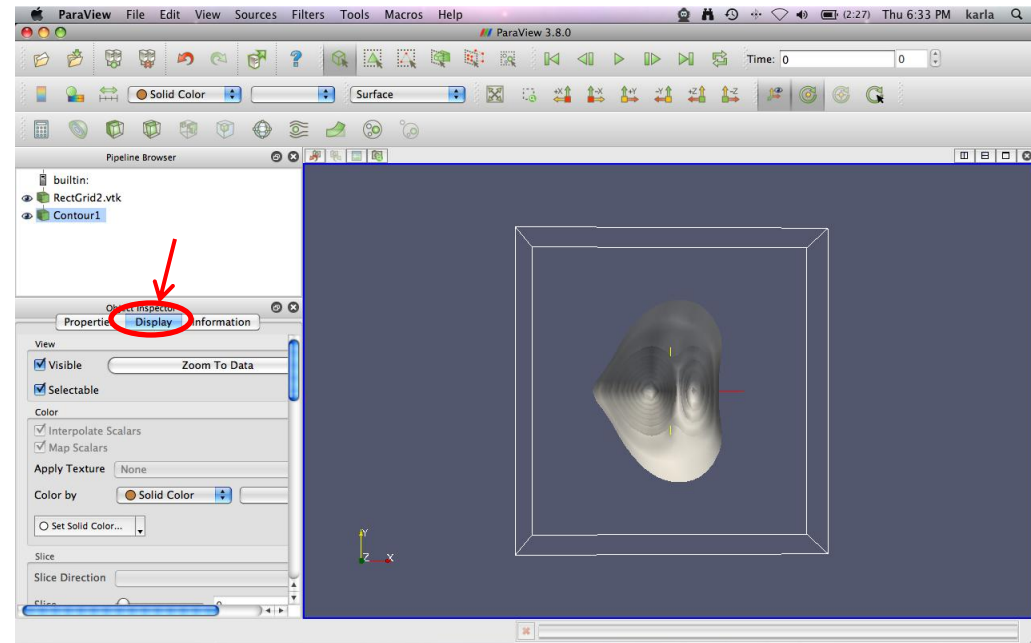




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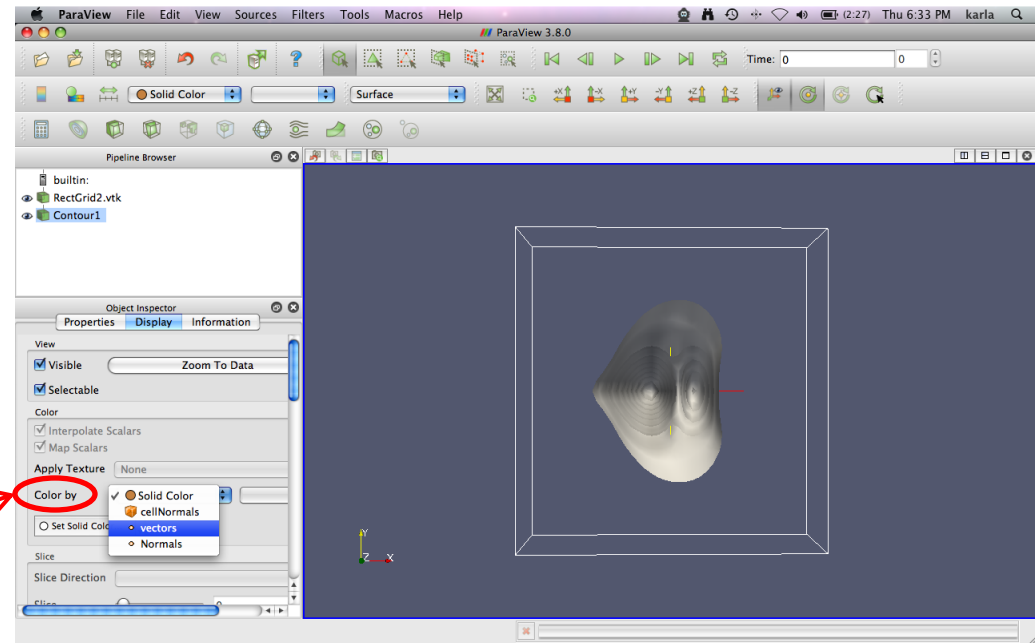




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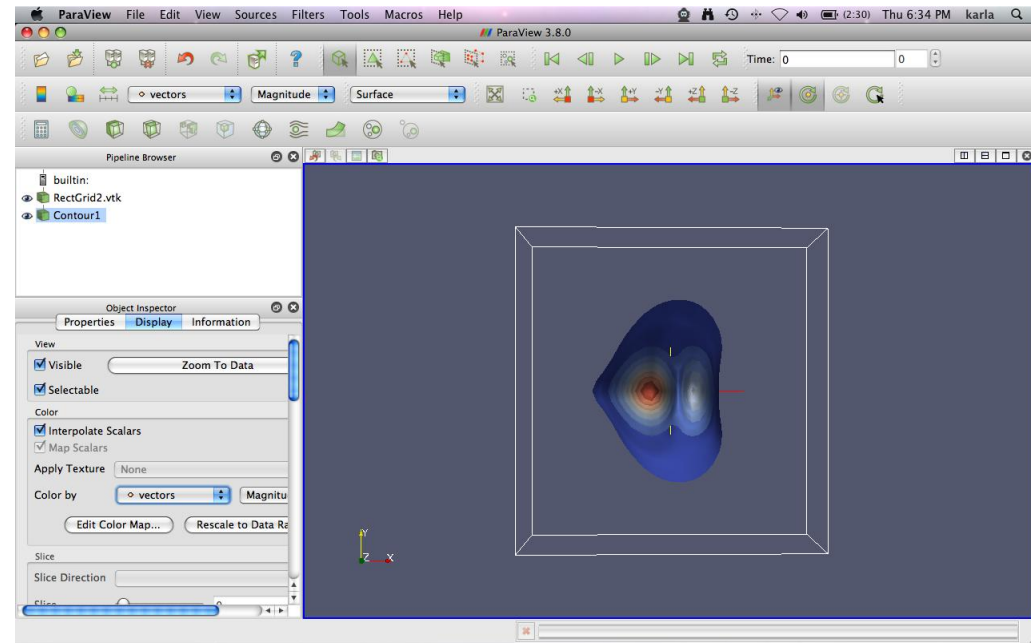




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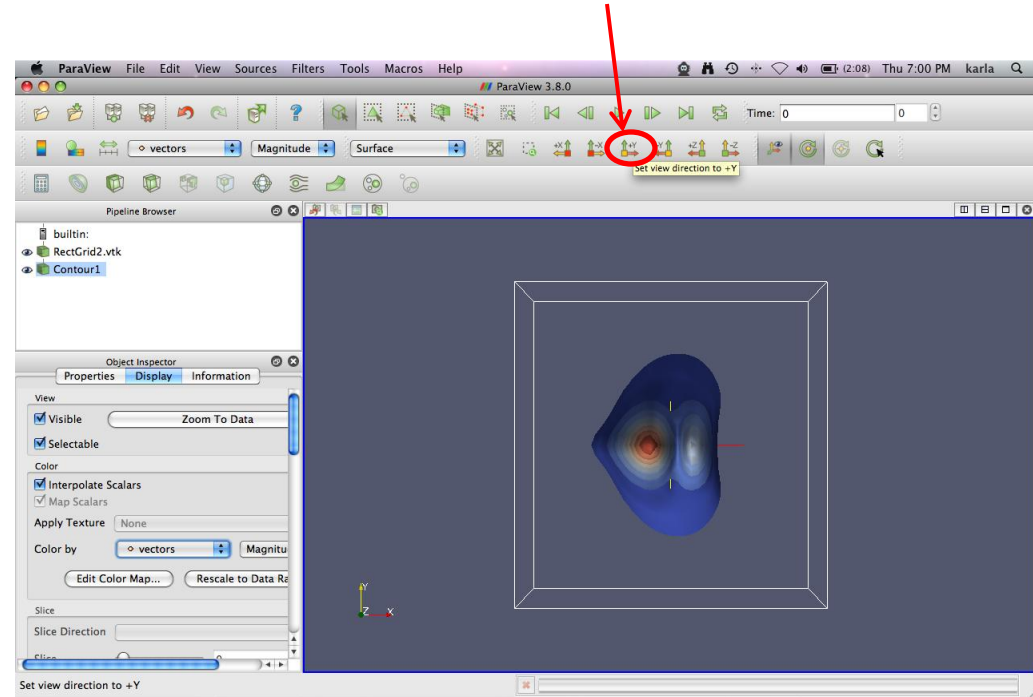




ParaView

Clip isosurfaces

- Click +Y view button
- Click Filters -> Common -> Clip
- Drag arrow point around to front of surface (arrow turns red when selected)
- Click blue Apply
- Click Inside Out checkbox
- Click blue Apply
- Click Show Center button to remove crosshairs

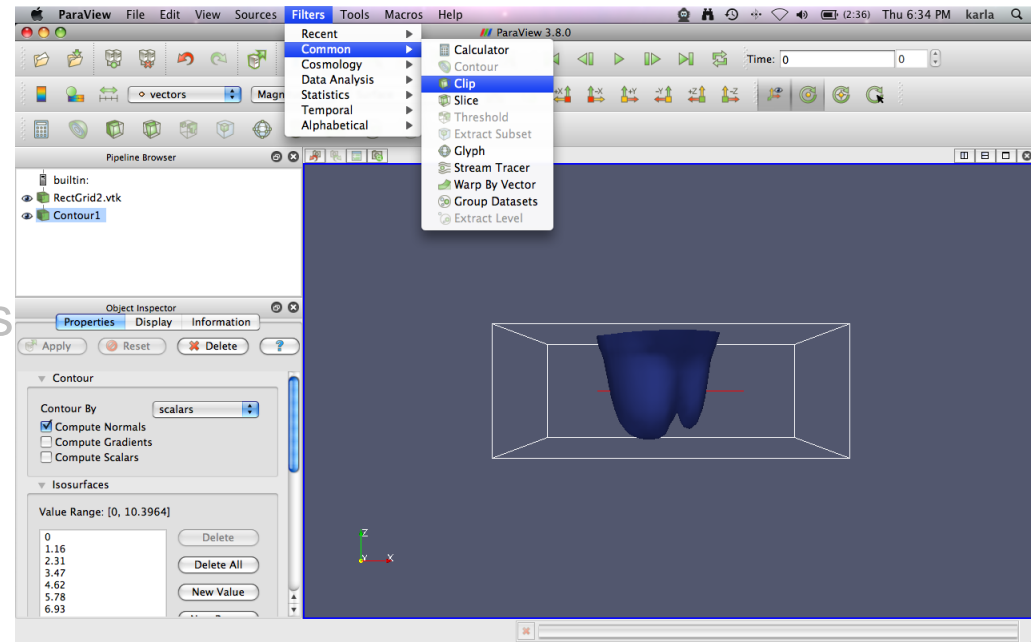




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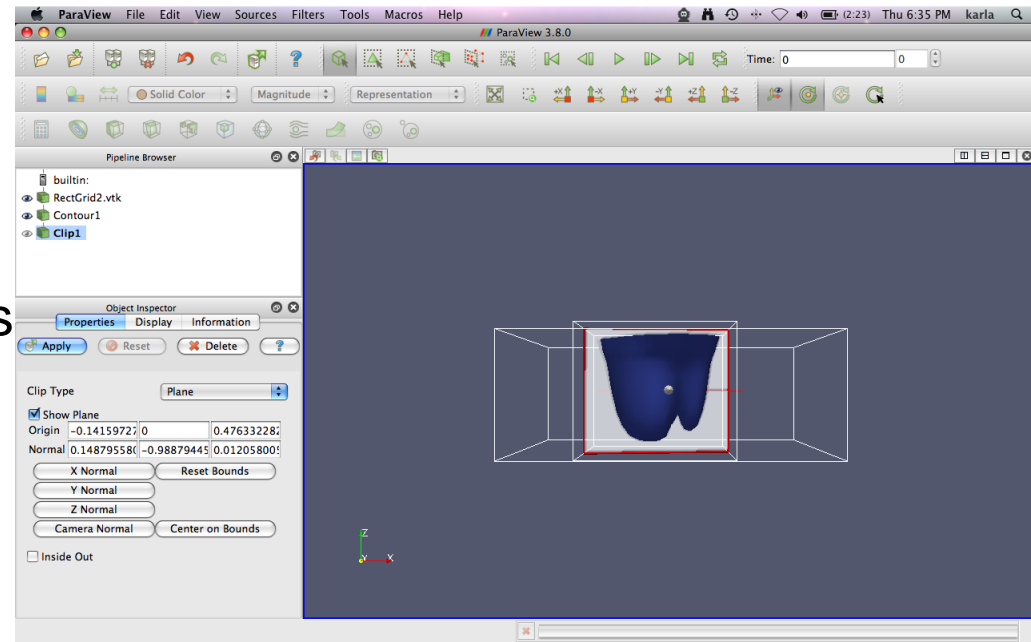




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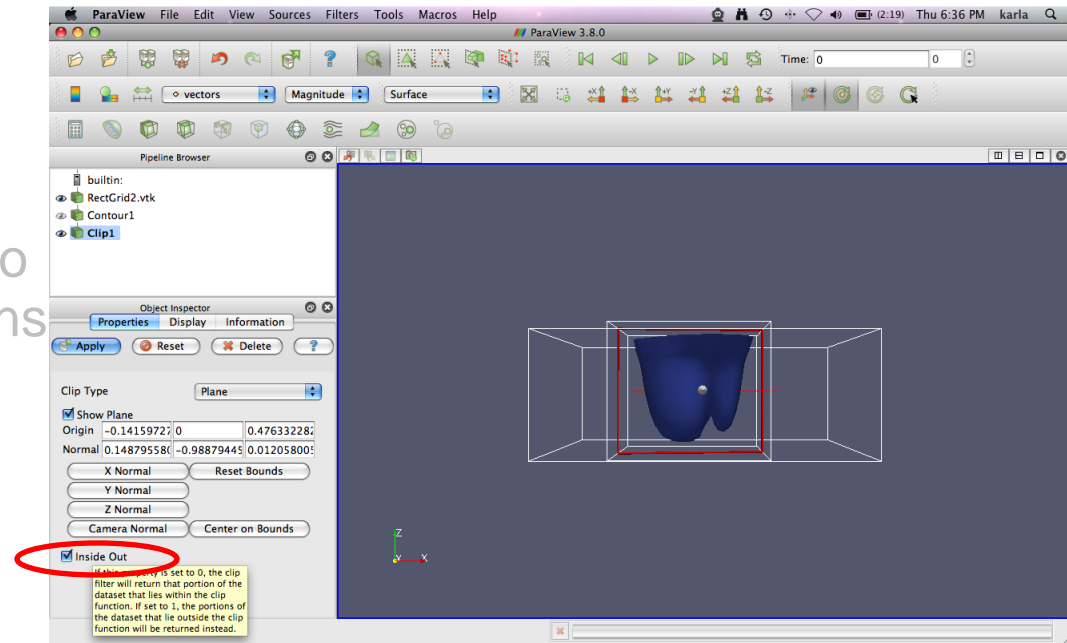




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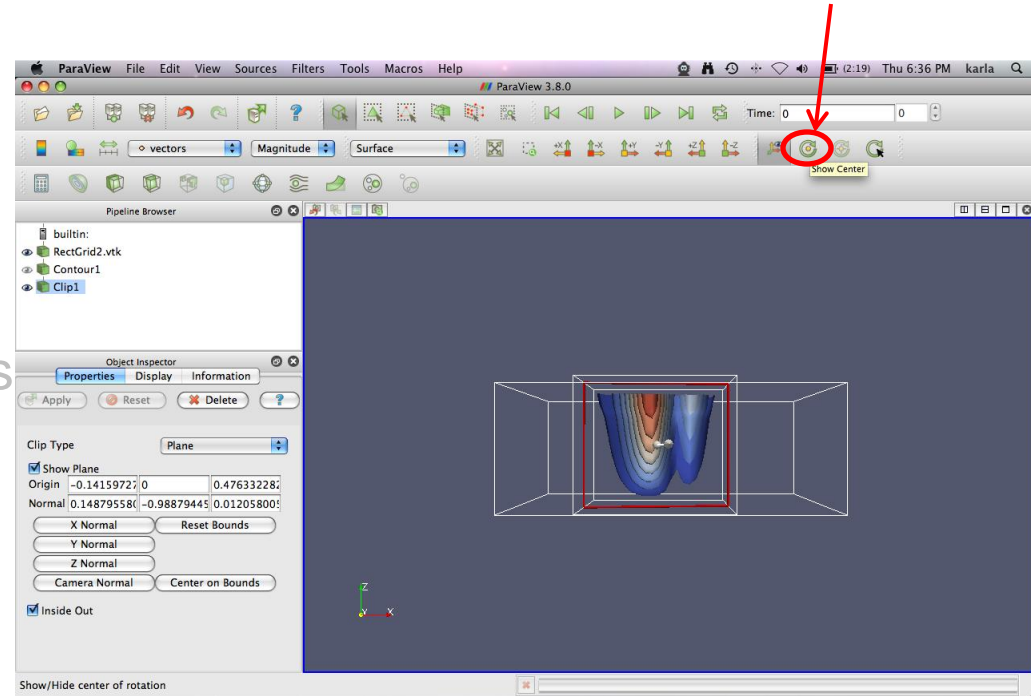




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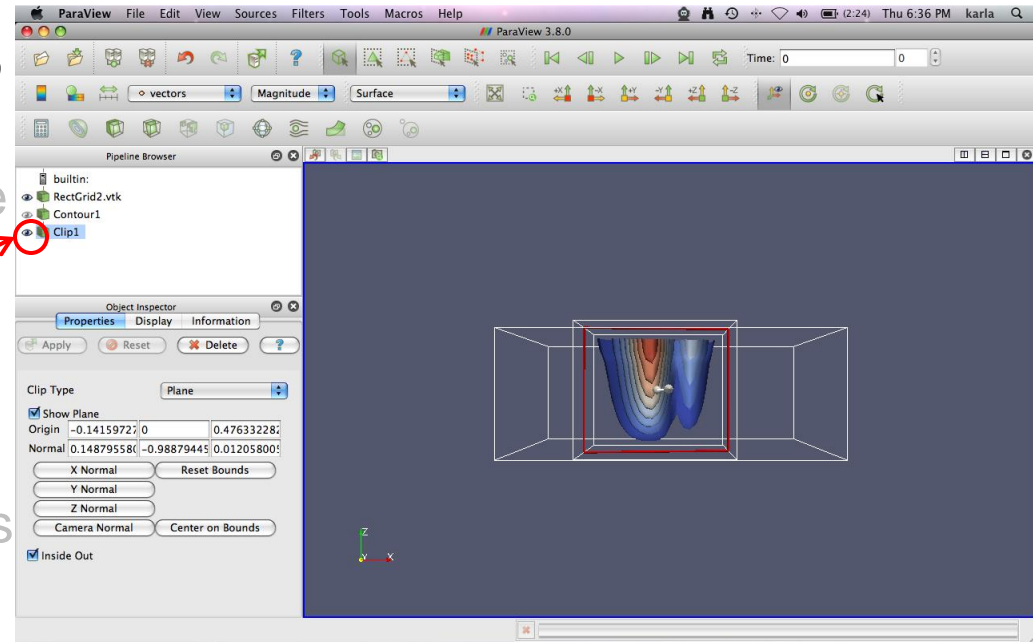




ParaView

Slice isosurfaces

- Click eye next to `Clip1` to hide clip plot
- Click `Contour1` in Pipeline Browser
- Click `Filters` -> `Common` -> `Slice`
- Drag arrow point around to front of surface (arrow turns red when selected)
- Click blue `Apply`

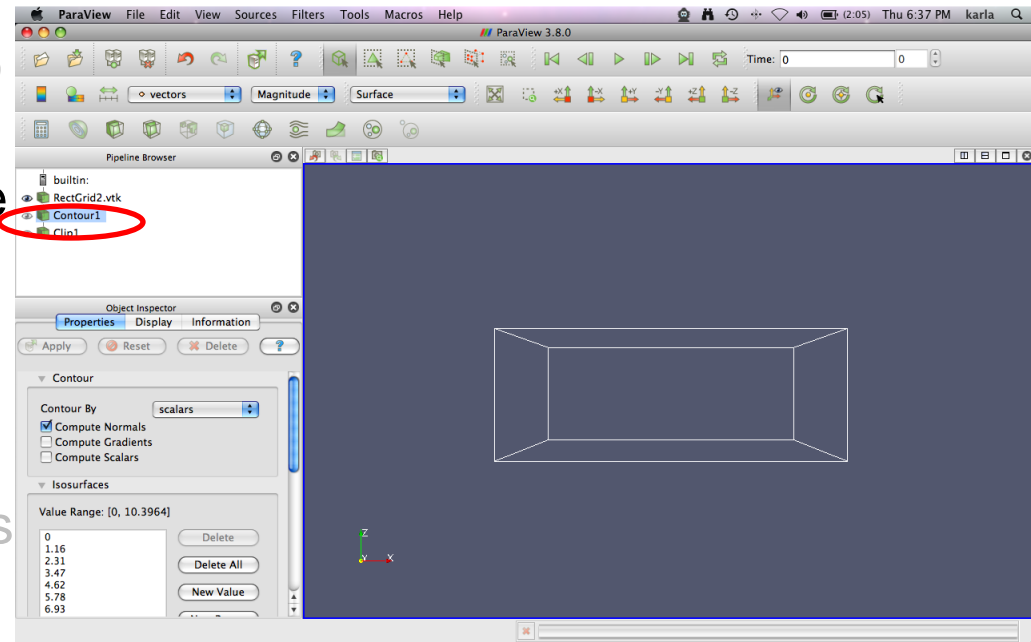




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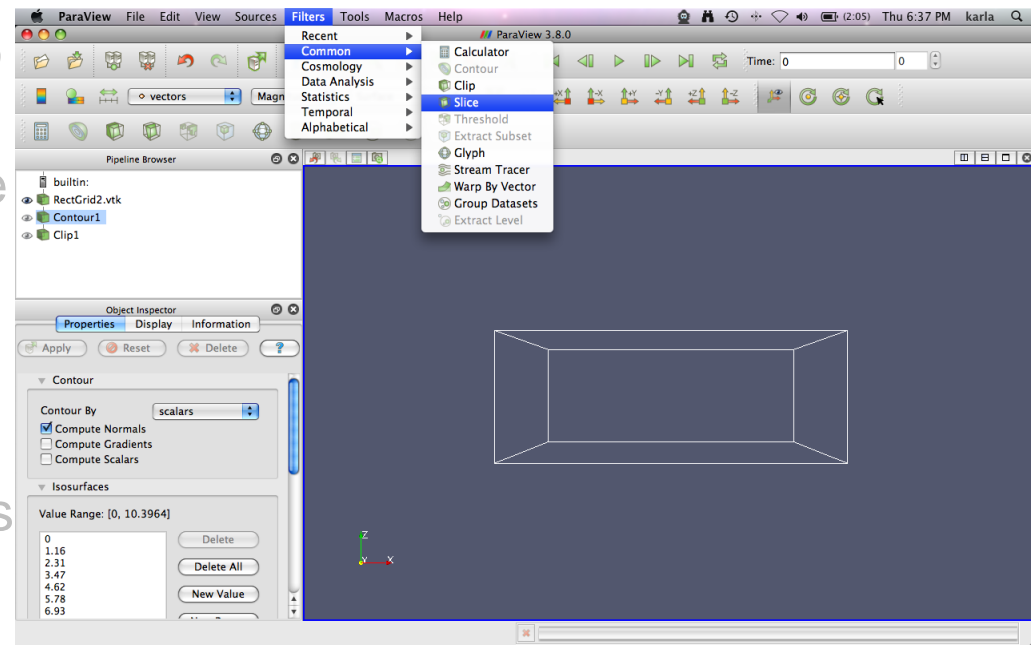




ParaView

Slice isosurfaces

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- Click `Contour1` in Pipeline Browser
- **Click Filters** -> Common -> Slice
- Drag arrow point around to front of surface (arrow turns red when selected)
- Click blue `Apply`



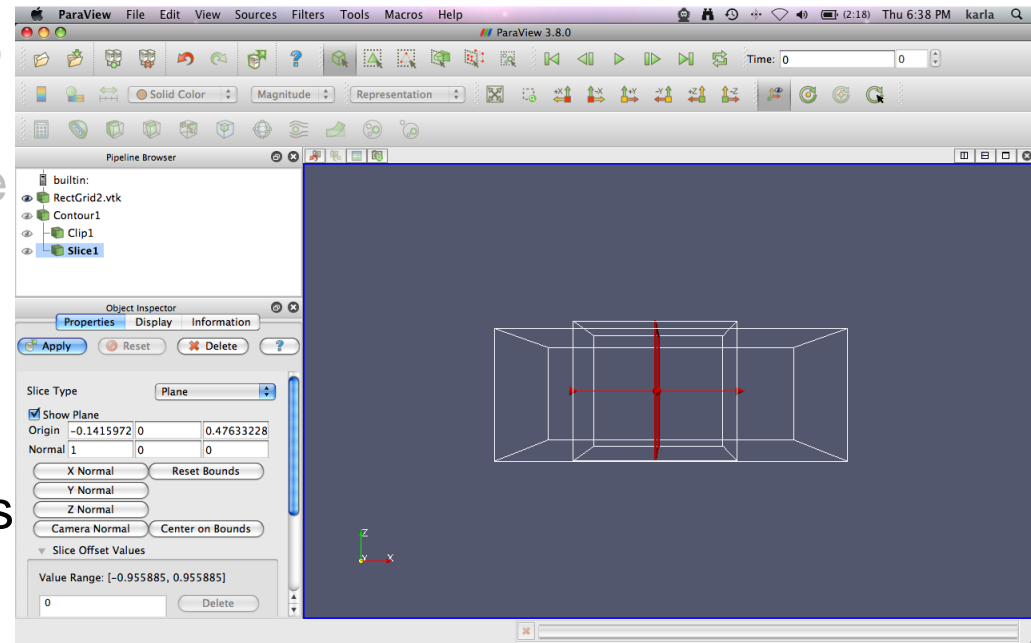


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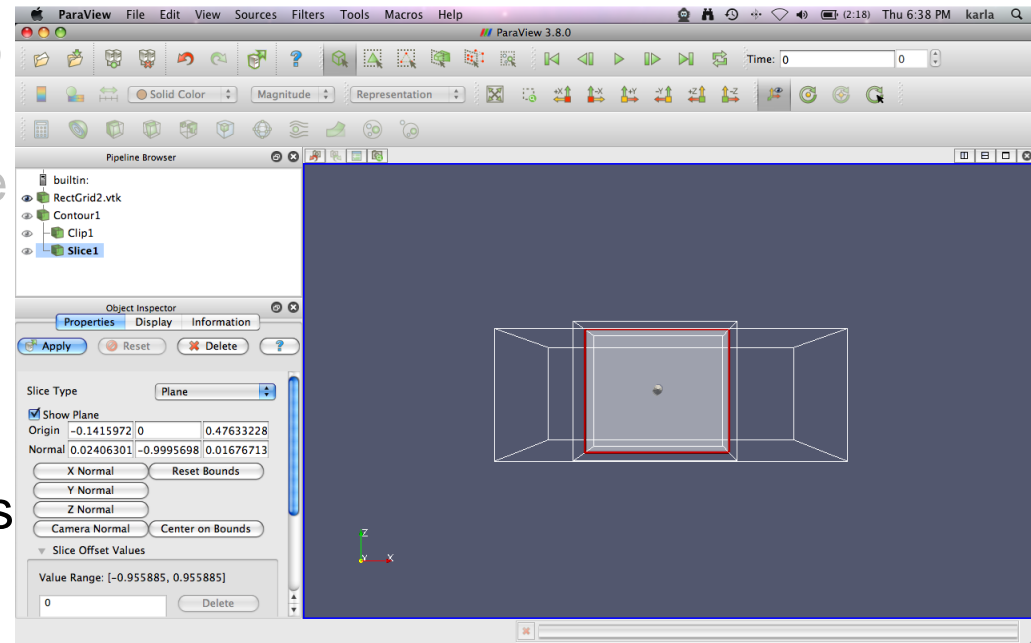




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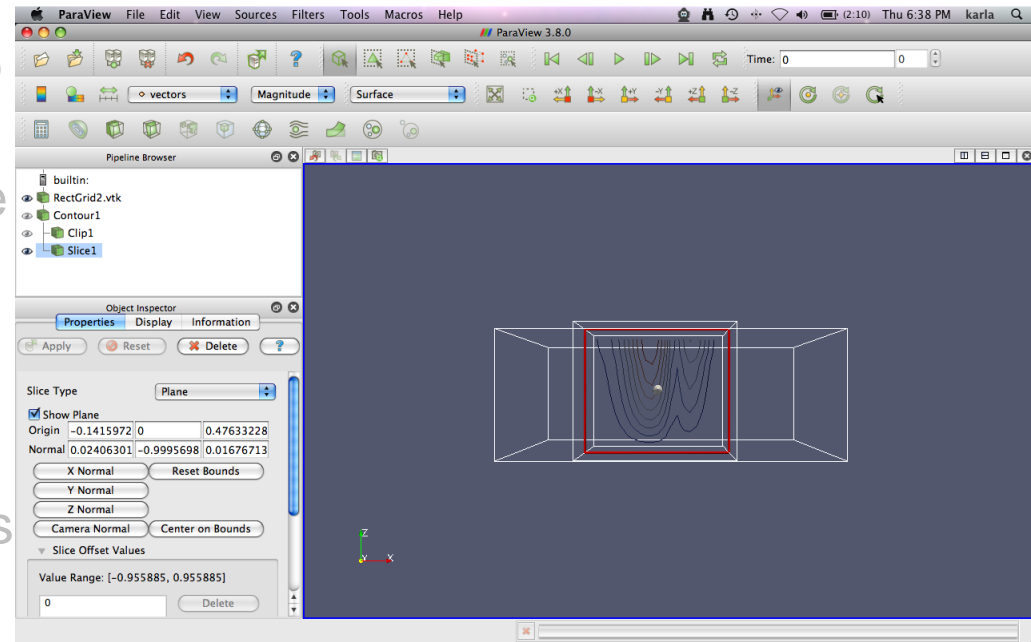




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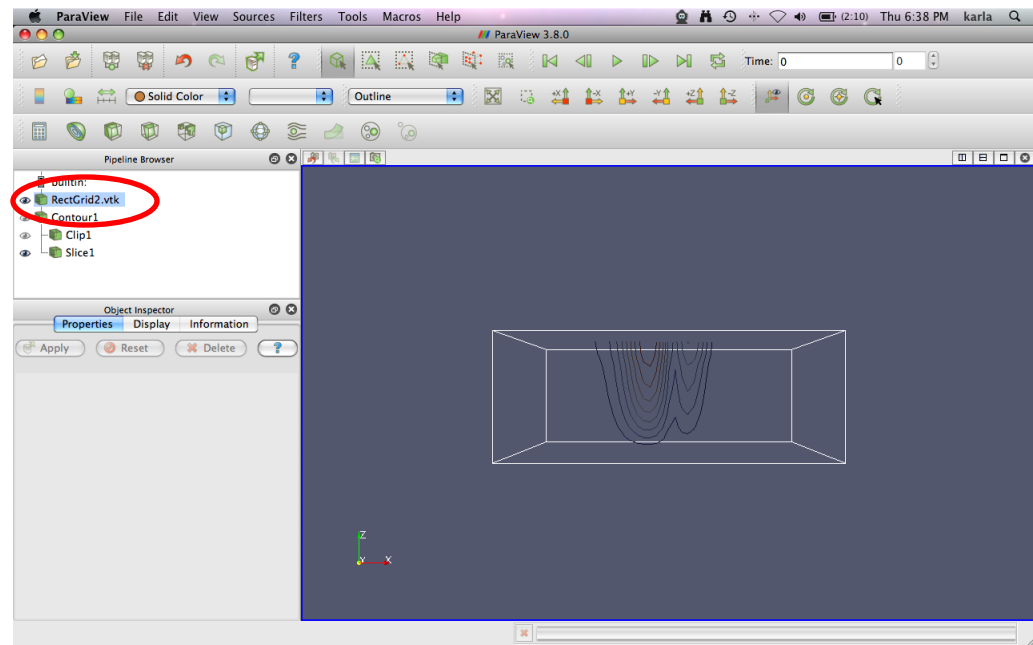




ParaView

Create Glyph of Vector Field

- Click RectGrid2.vtk in Pipeline Browser
- Click Filters -> Common -> Glyph
- Click blue Apply

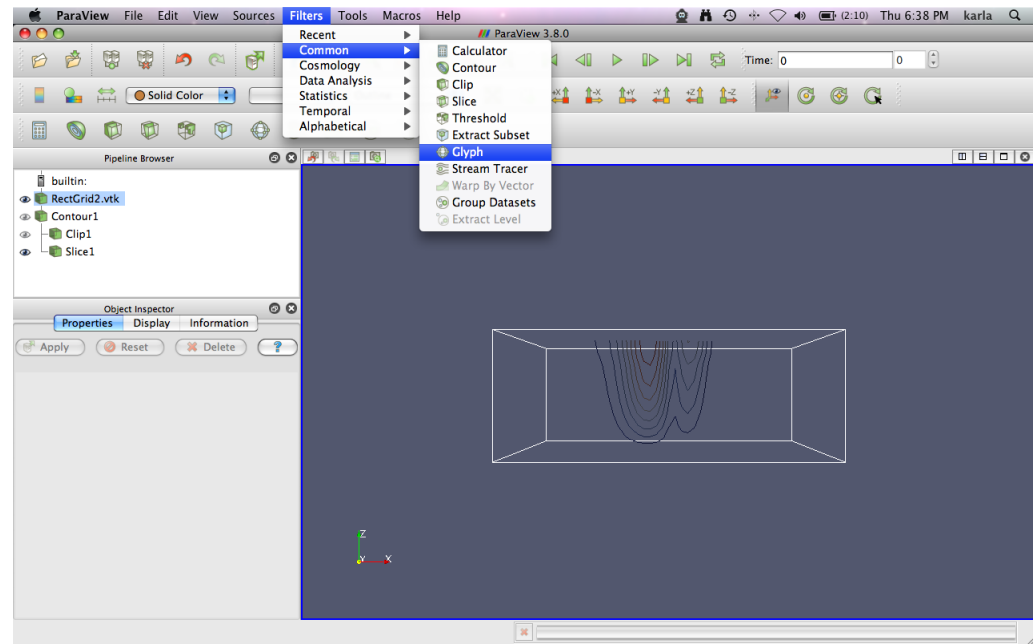




ParaView

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- Click **Filters** -> Common -> Glyph
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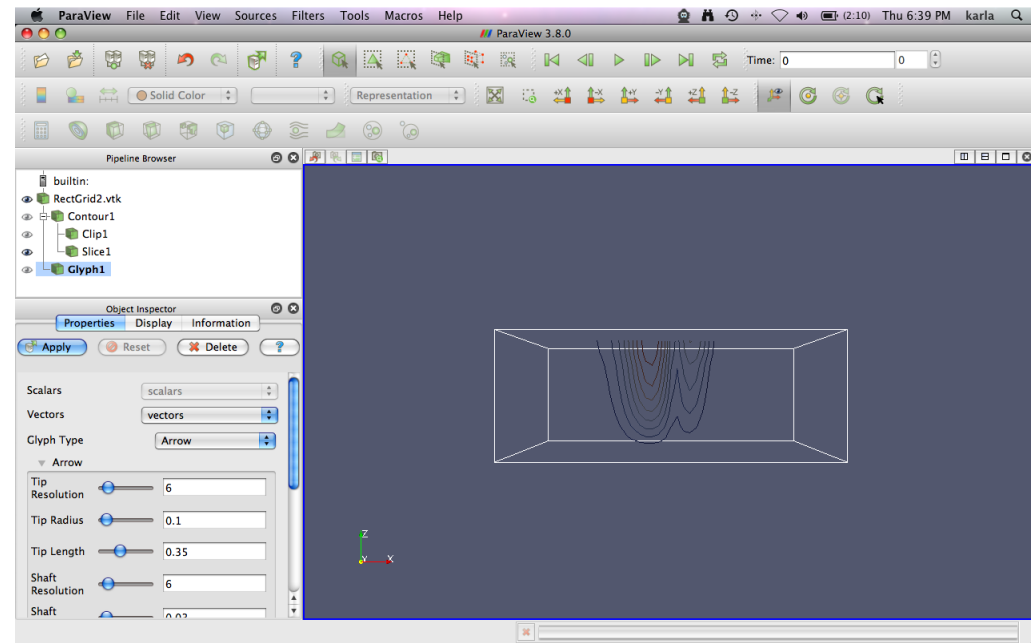




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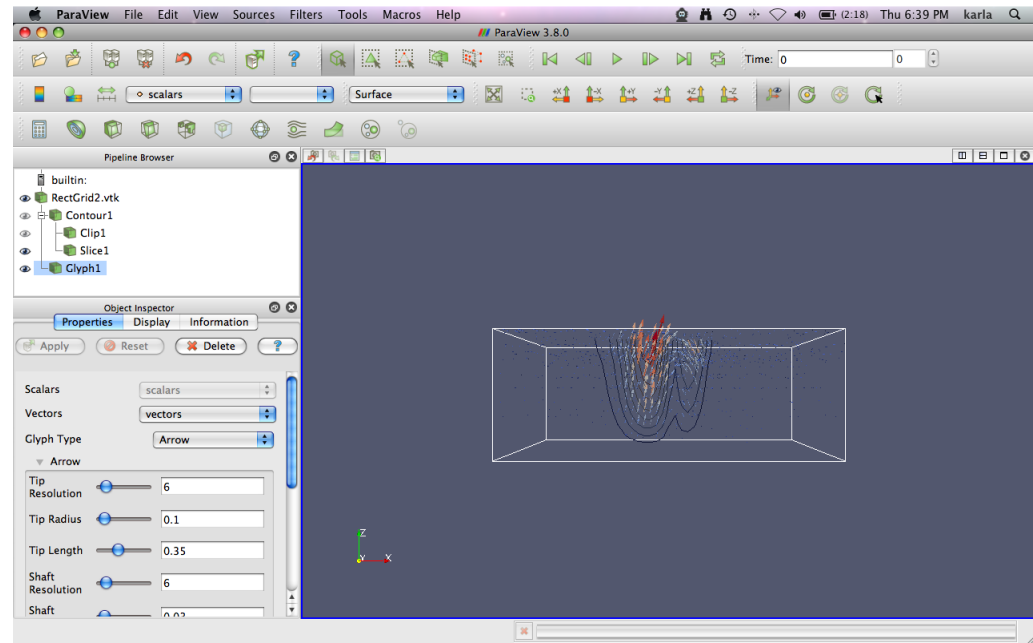




ParaView

Create Glyph of Vector Field

- Click `RectGrid2.vtk` in Pipeline Browser
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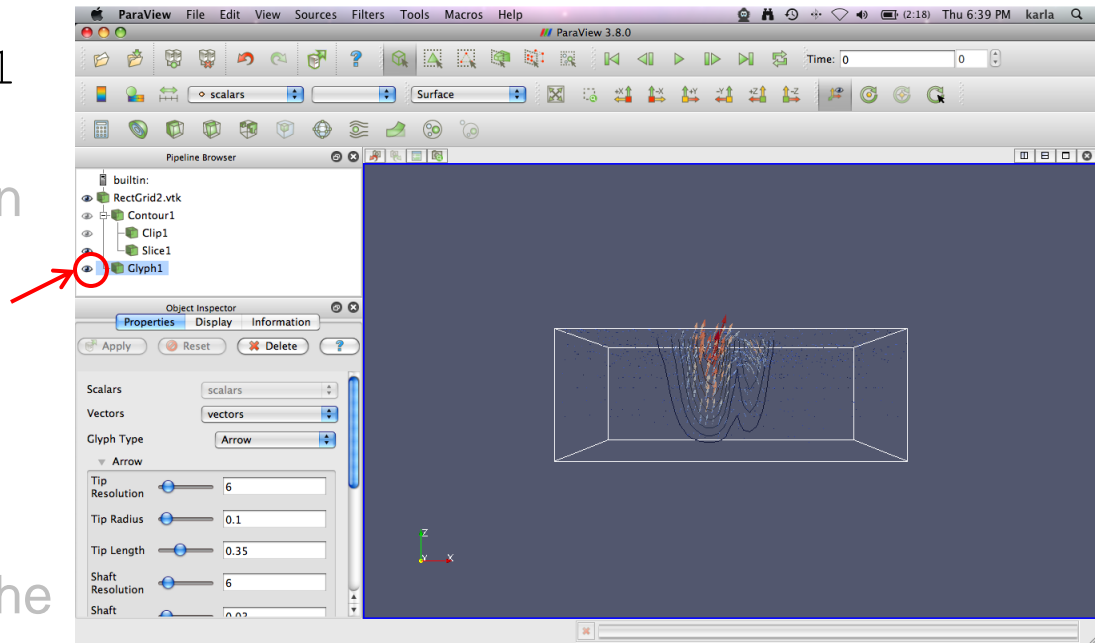




ParaView

Create Streamlines

- Click eye next to Glyph1 to hide glyph plot
- Click RectGrid2.vtk in Pipeline Browser
- Click Filters -> Common -> Stream Tracer
- Click blue Apply
- Under Display tab, in the Color by box, select Vorticity

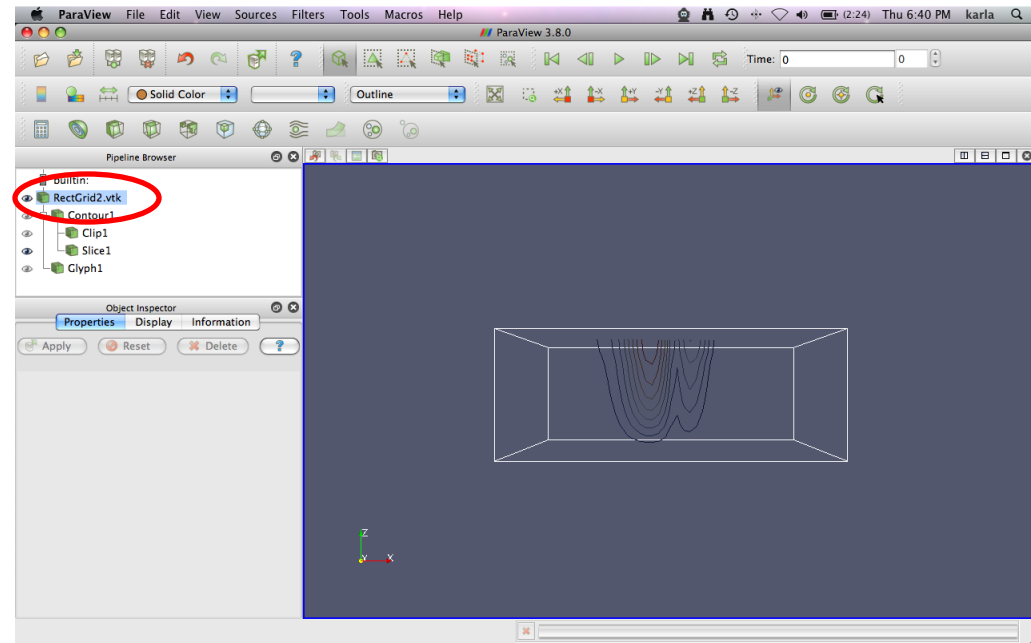




ParaView

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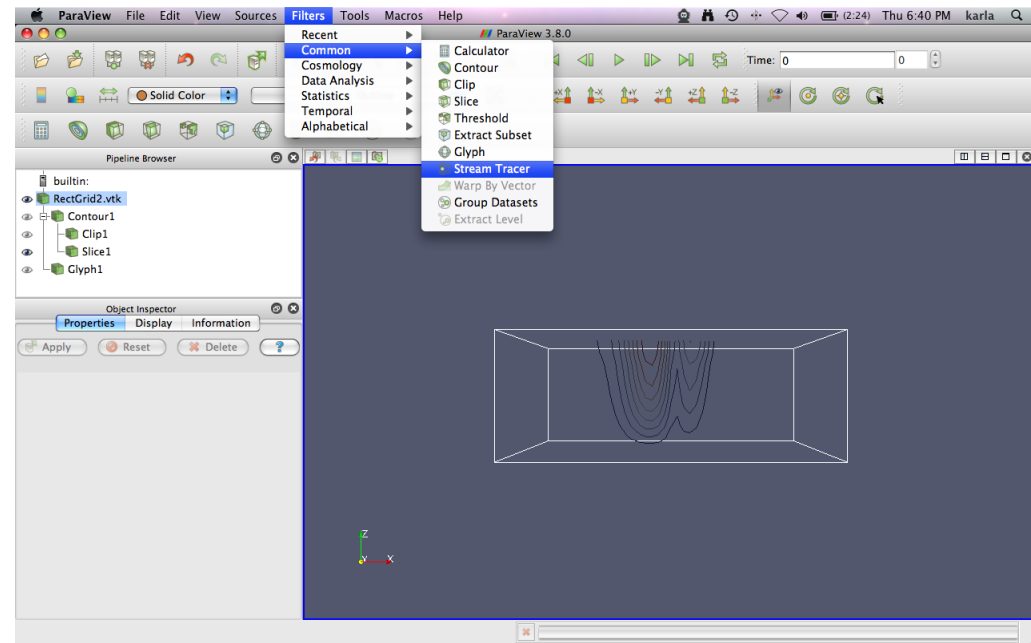




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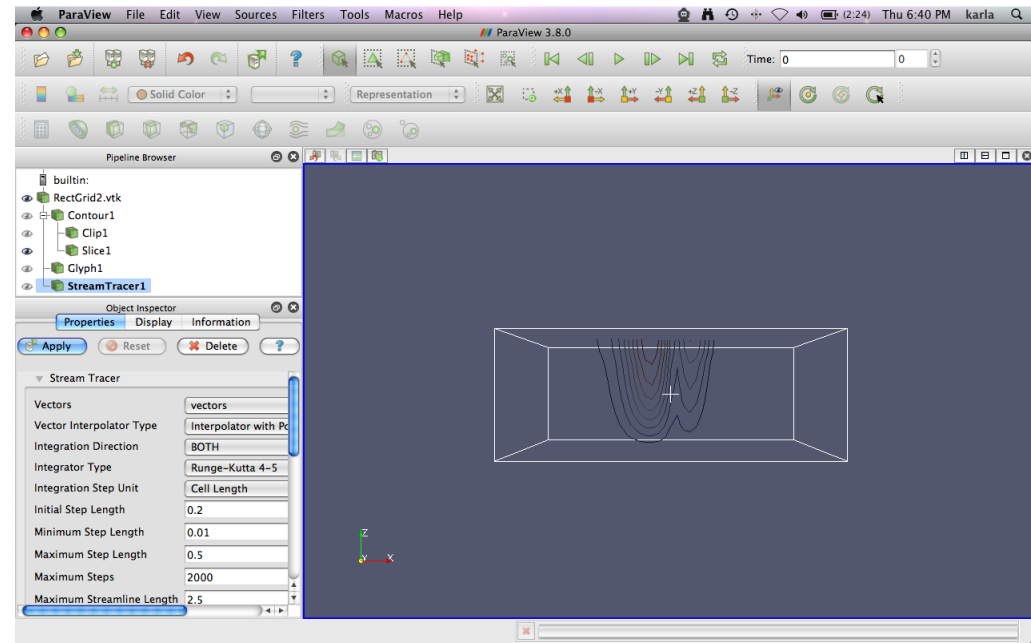




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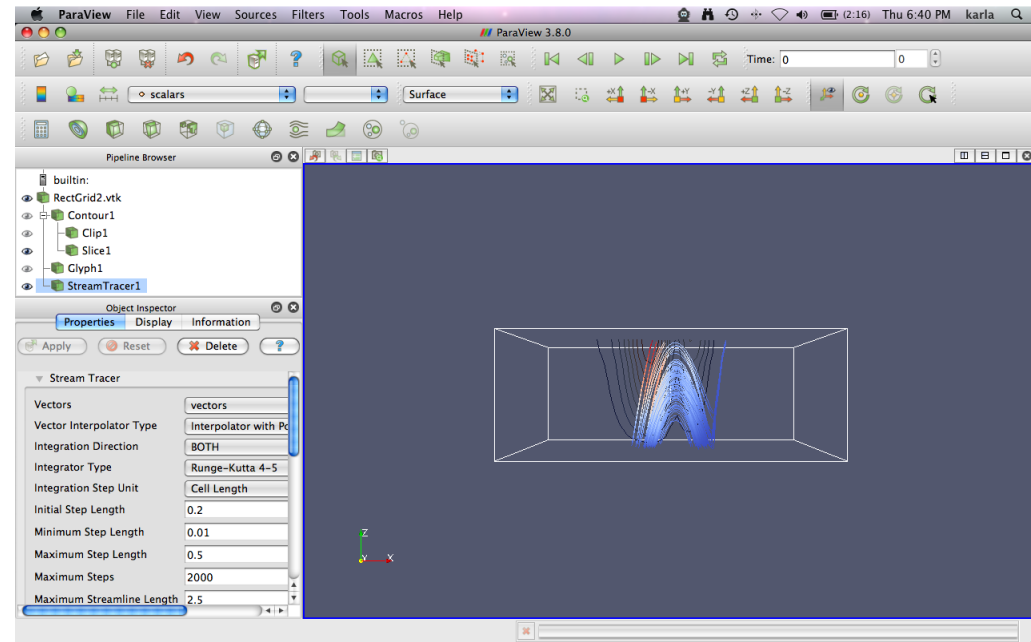




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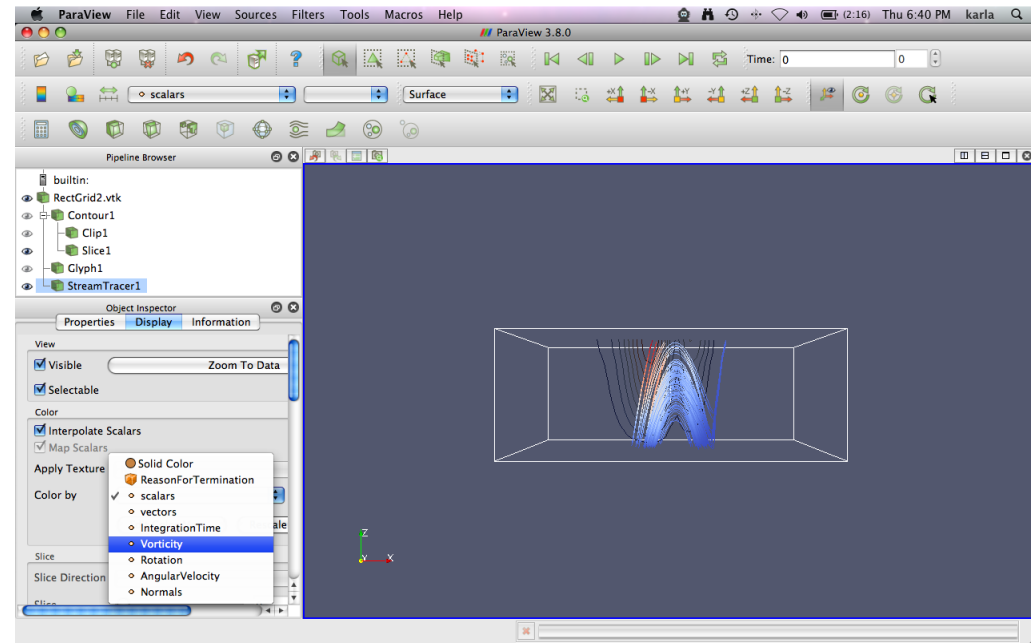




ParaView

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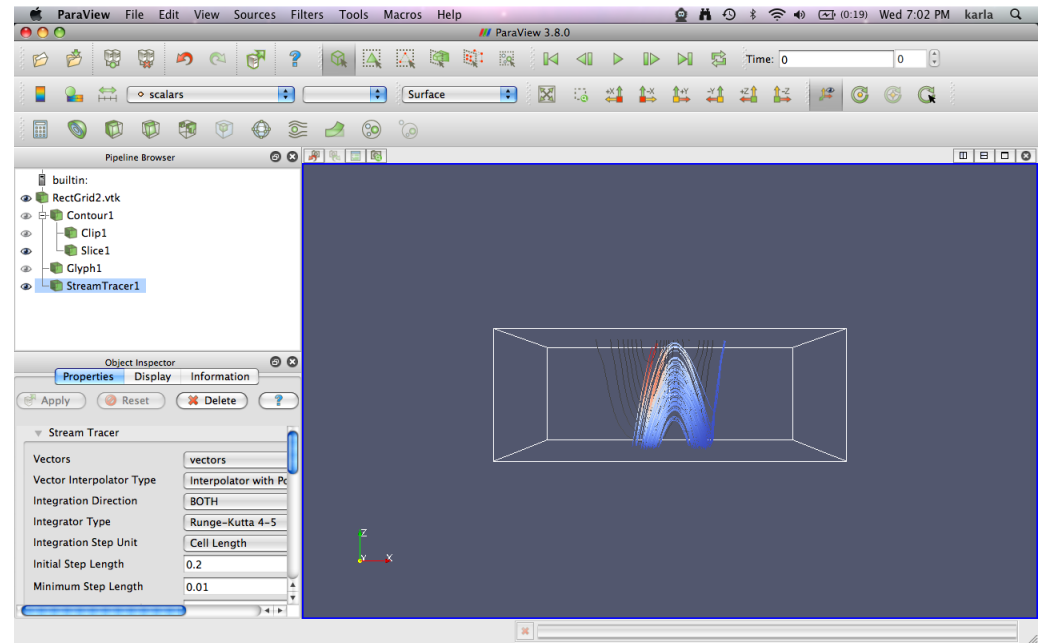




ParaView

Create Tubes

- Click StreamTracer1 in Pipeline Browser
- Click Filters -> Alphabetical -> Tube
- Click blue Apply

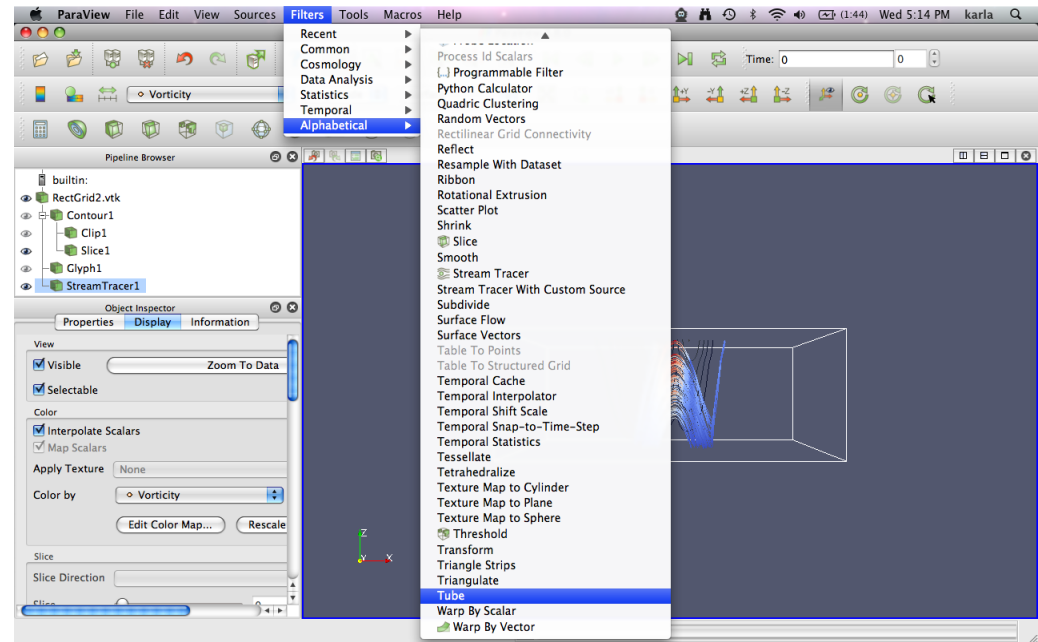




ParaView

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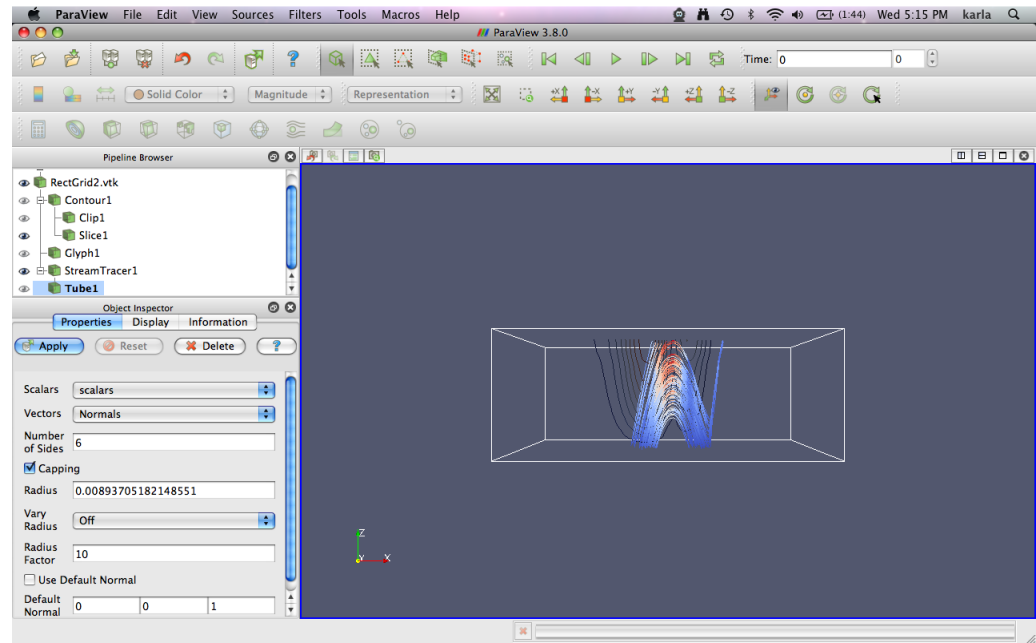




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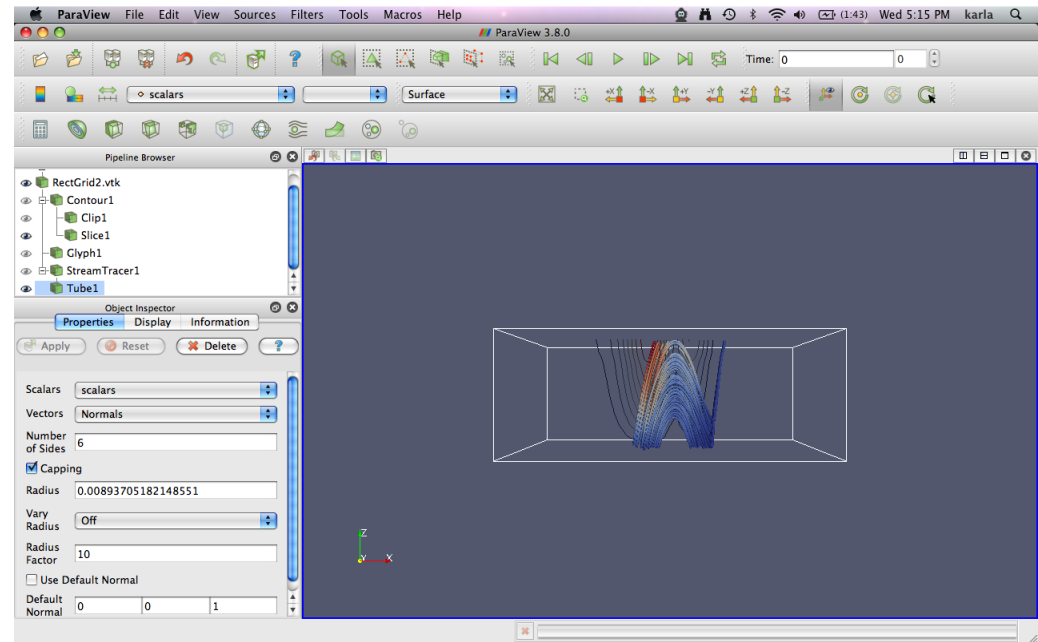




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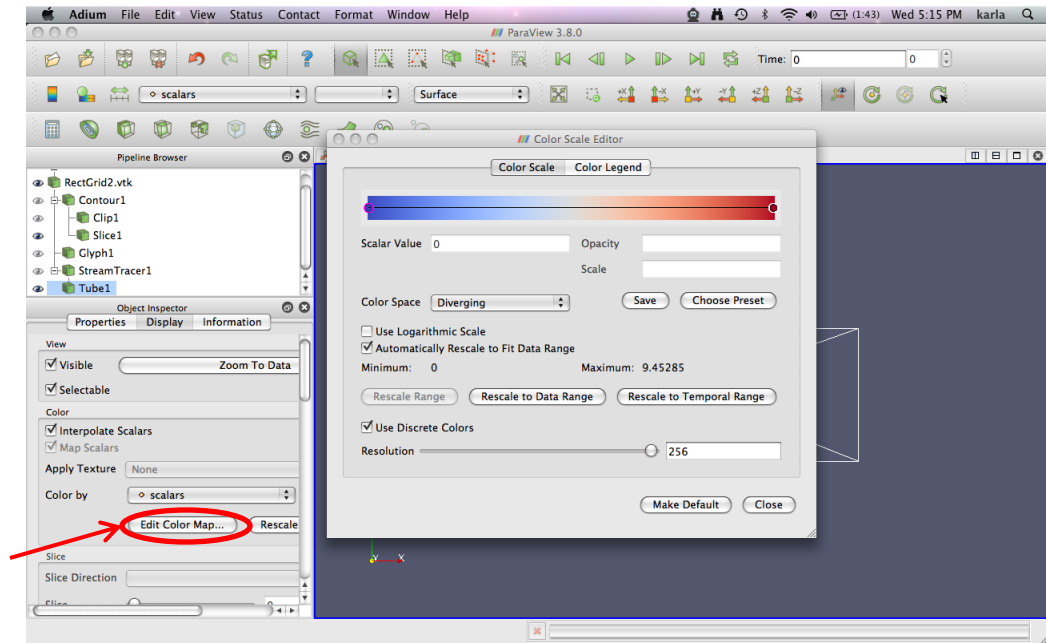




ParaView

Edit Color Map

- Click Edit Color Map
- Click Choose Preset
- Select BLUE...HSV
- Click blue OK
- Click blue Close

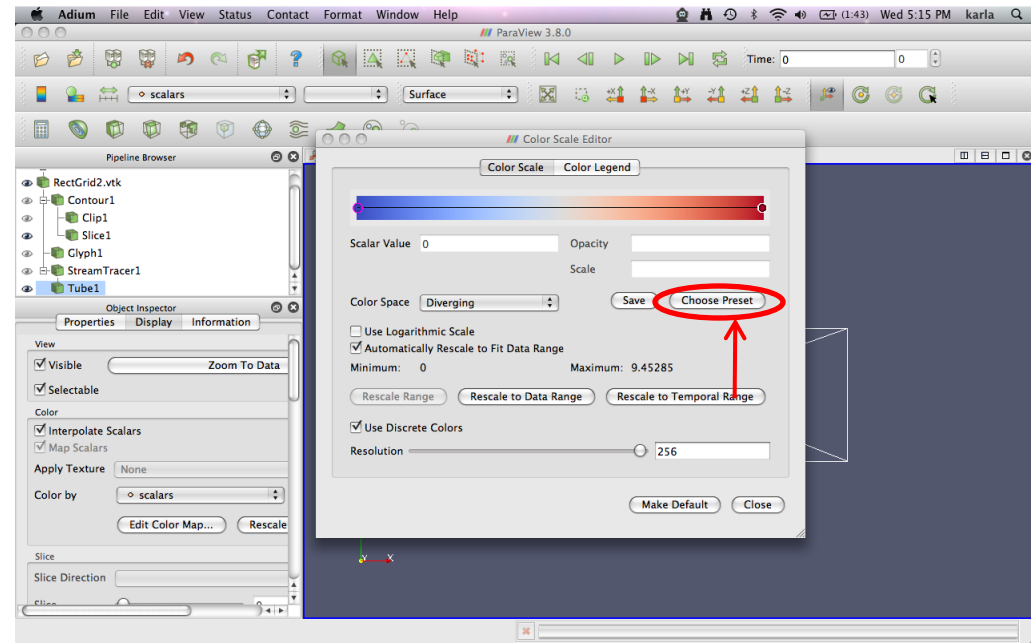




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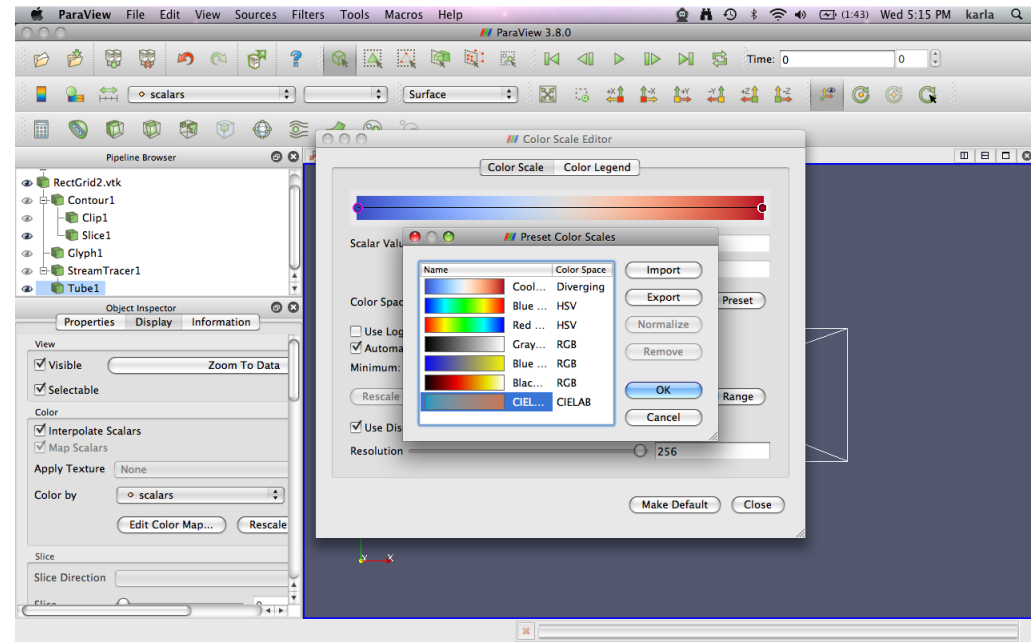




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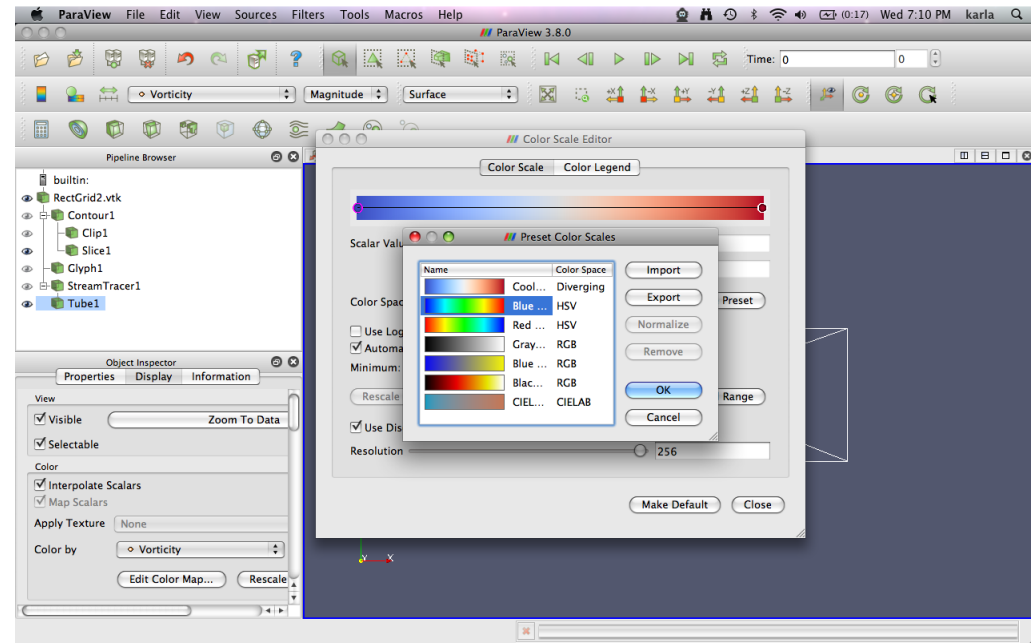




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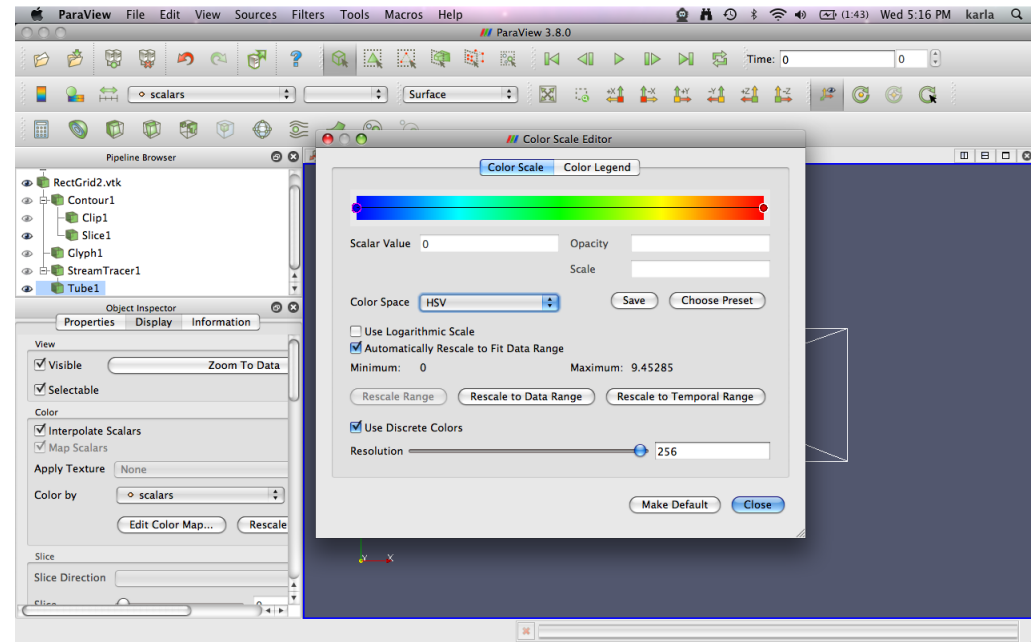




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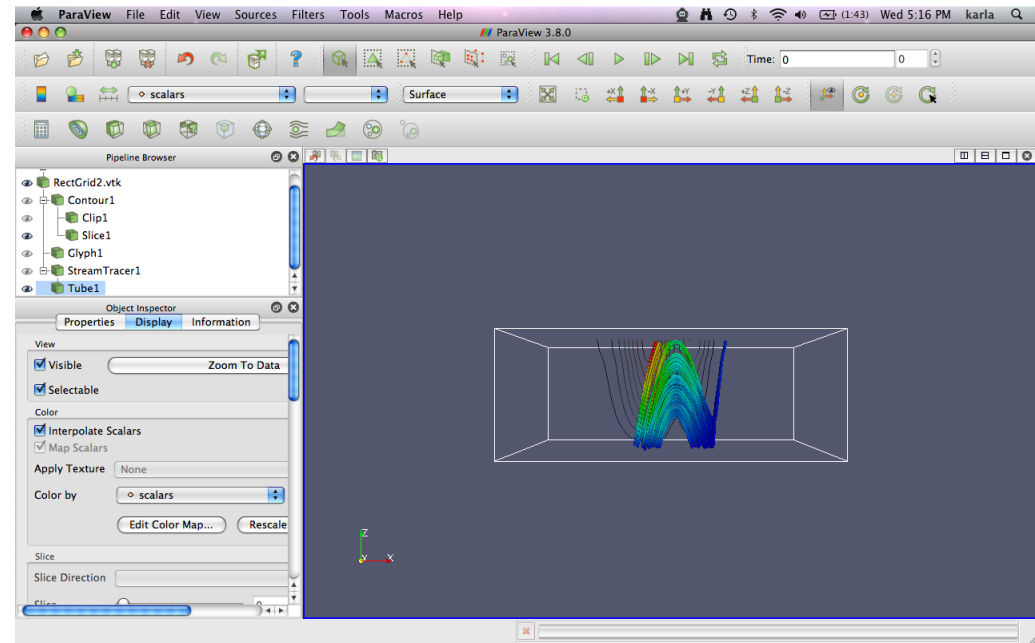




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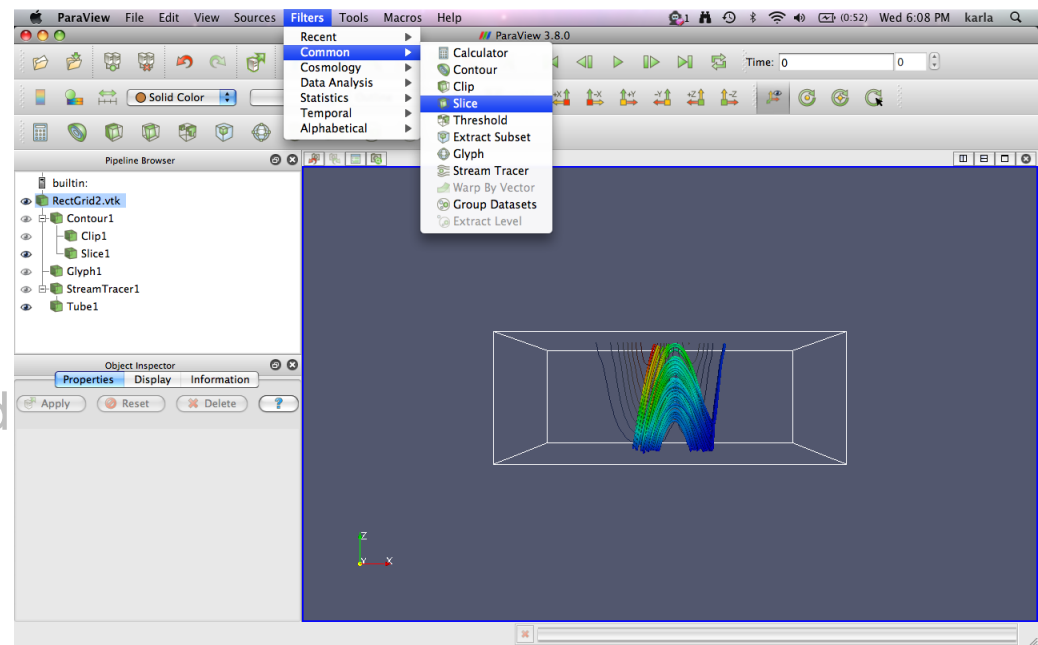




ParaView

Create Slice

- Click RectGrid2.vtk in Pipeline Browser
- Click Filters -> Common -> Slice
- Drag arrow point around to front of surface (arrow turns red when selected)
- Or click Y Normal
- Click blue Apply
- Click Show Plane

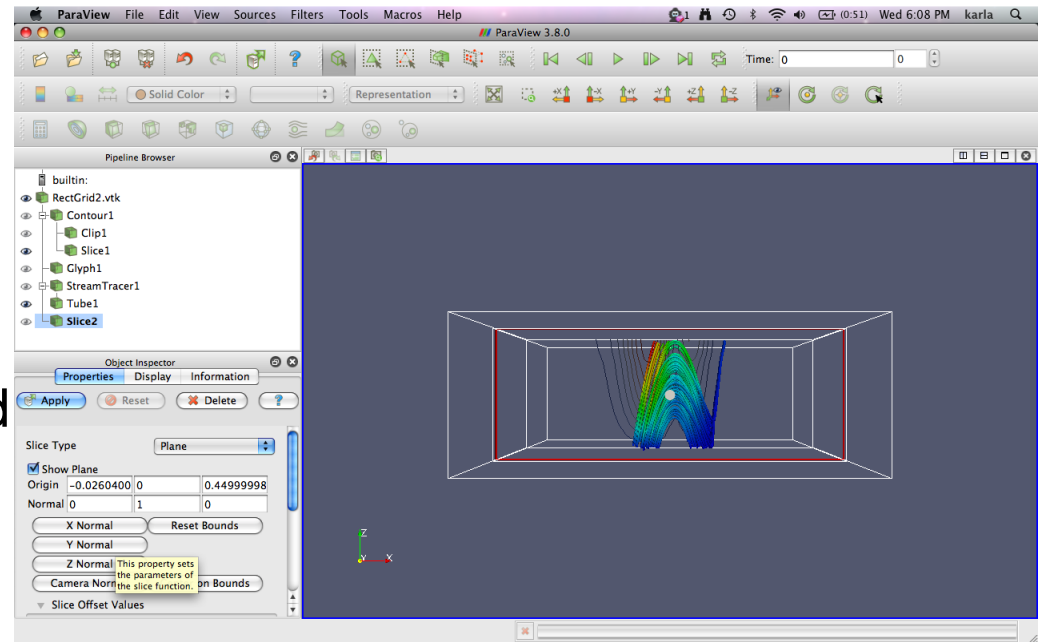




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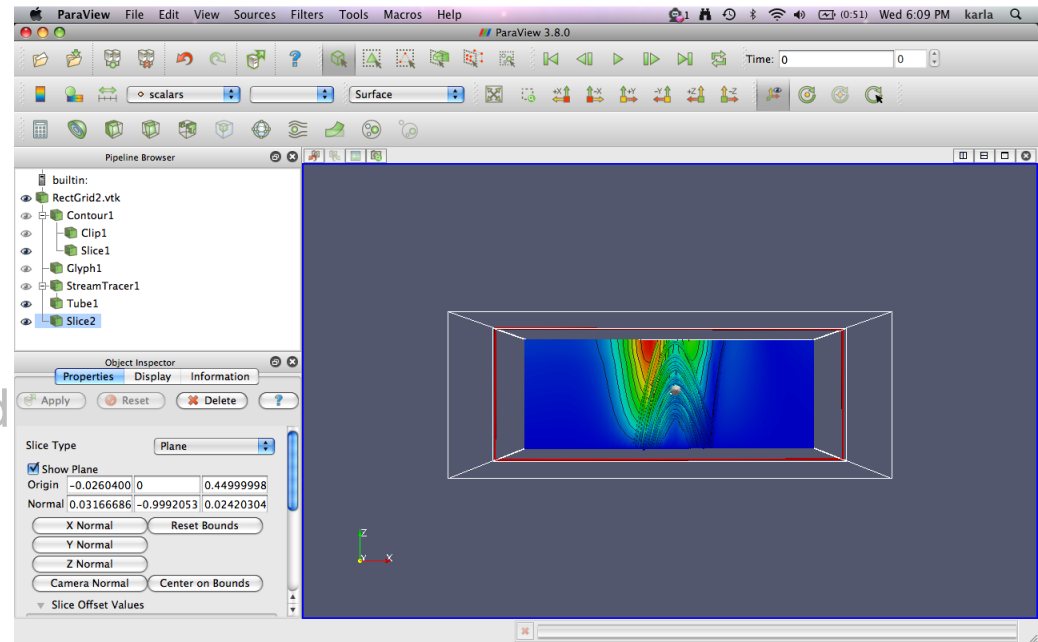




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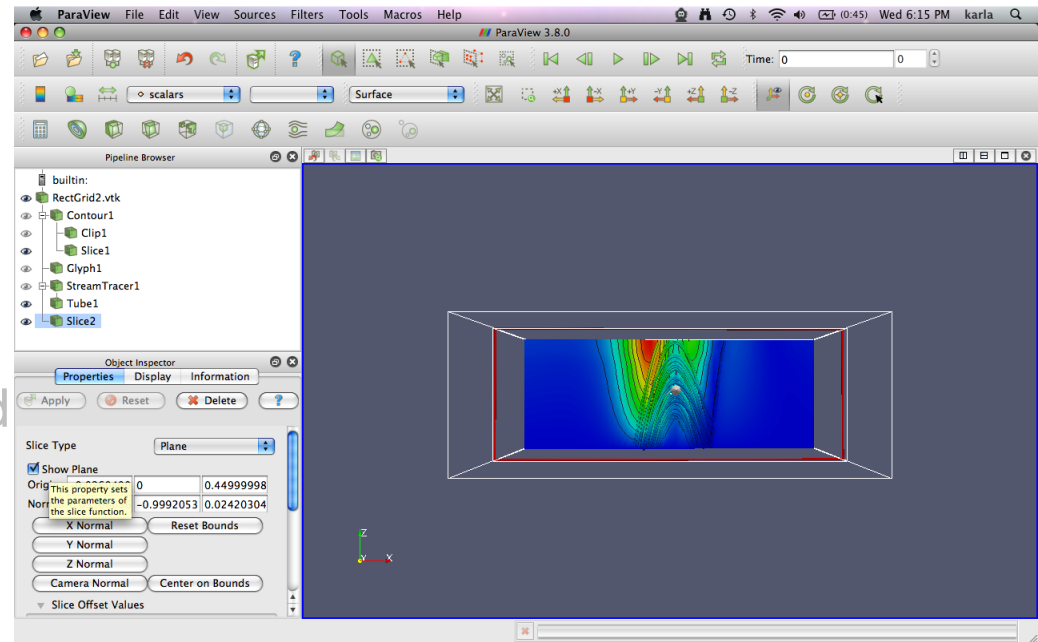




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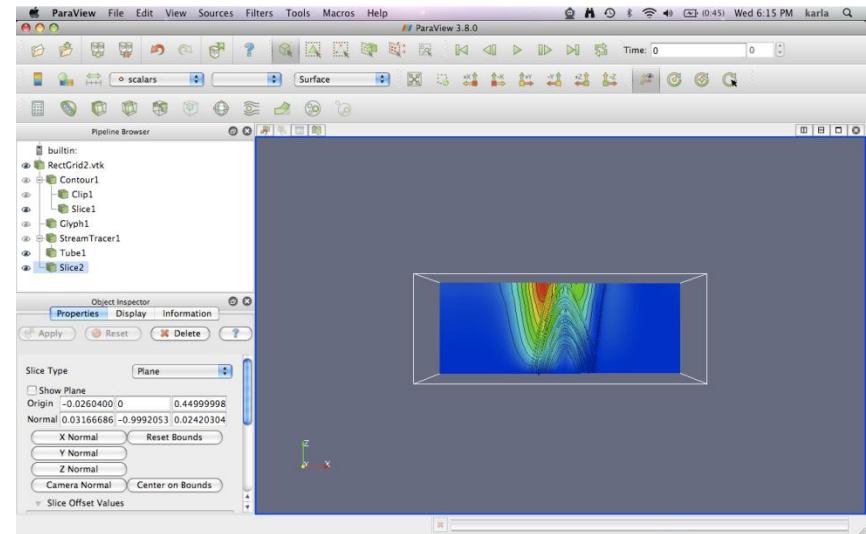




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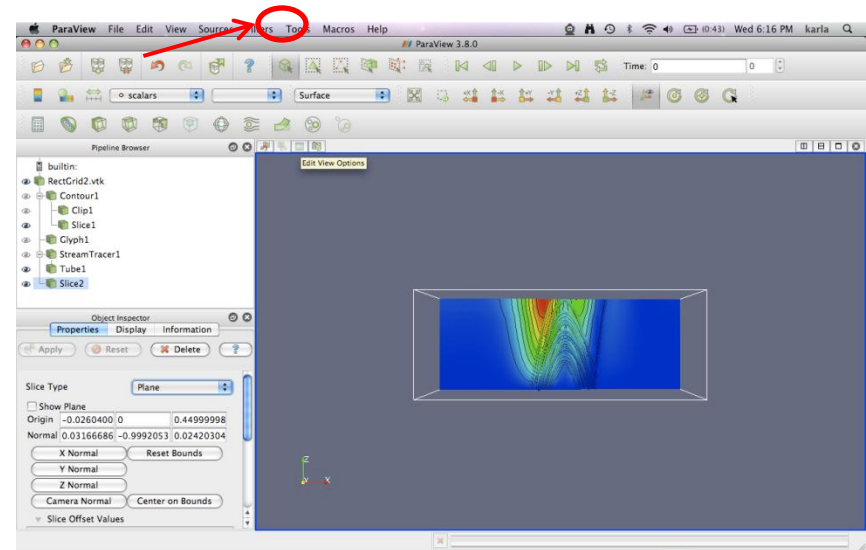




ParaView

Background Color




- Click the  button above the 3D view
- Click Choose Color
- Drag box to black
- Click blue Ok
- Click blue Ok

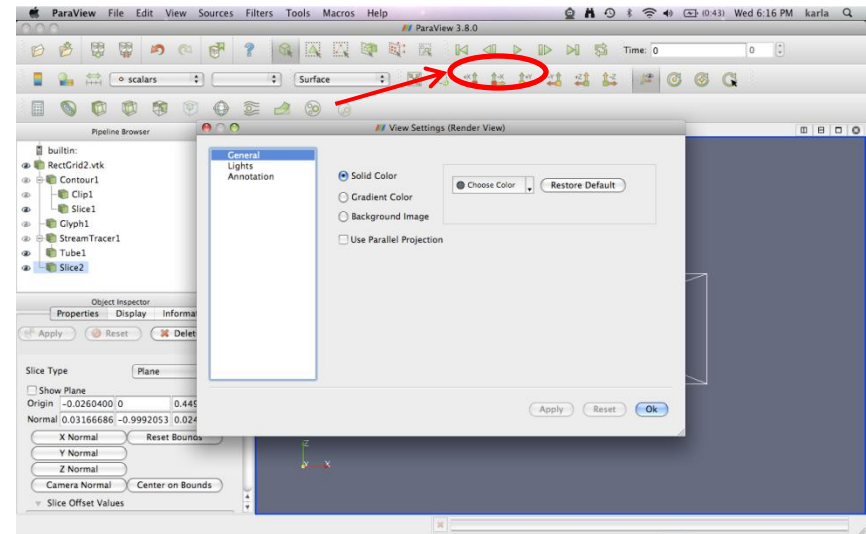




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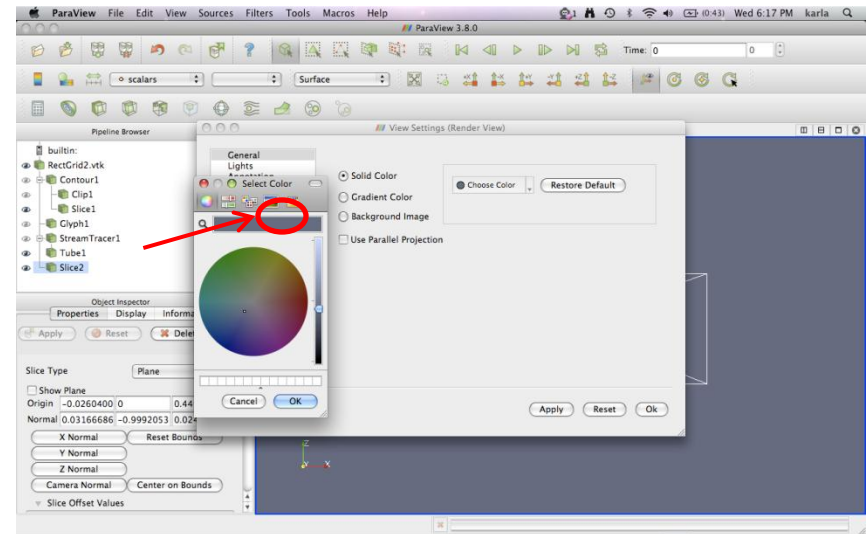




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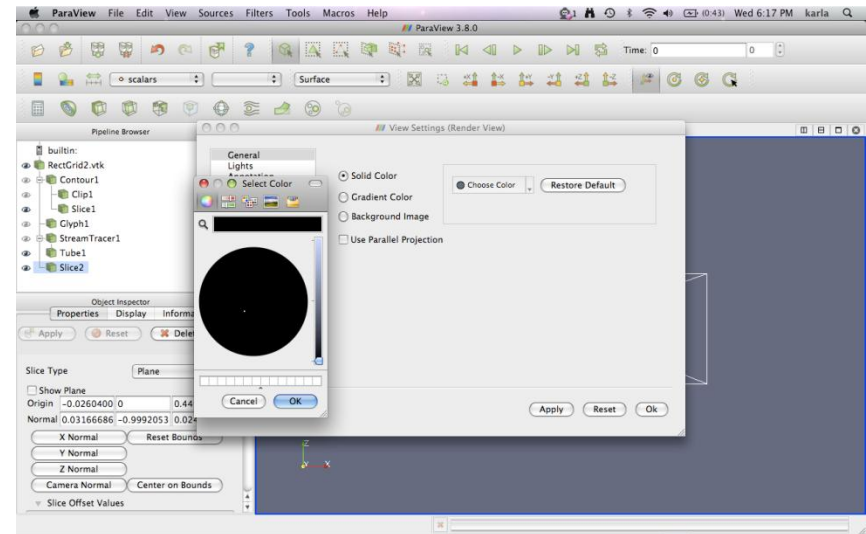




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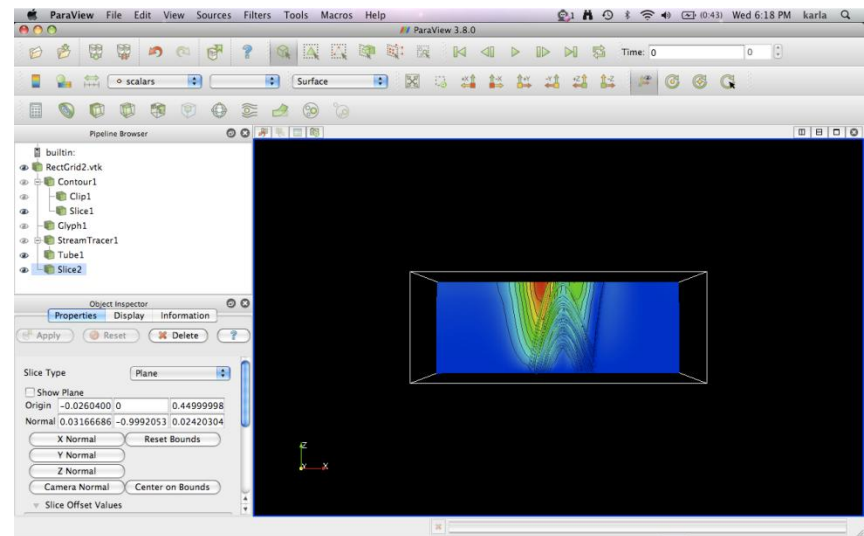




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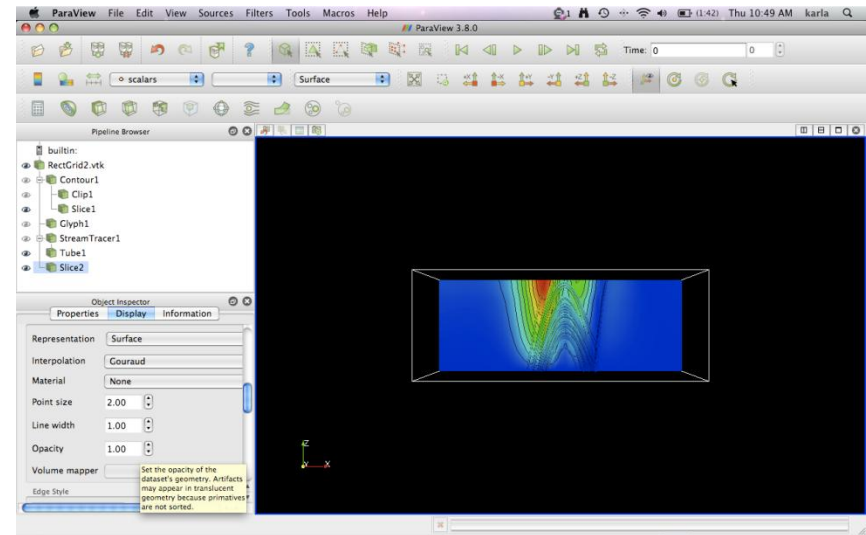




ParaView

Object Opacity

- Click `Slice2` in Pipeline Browser
- Click `Display`
- Change `Opacity` to `0.70` -> Enter
- Click `Color by vectors`
- Click eye next to `RectGrid2.vtk` to hide box outline

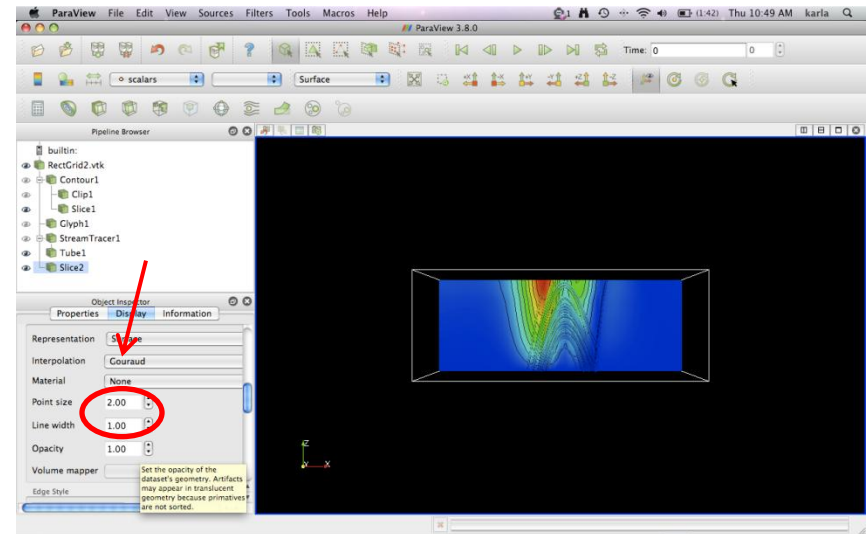




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- Click `Color by vectors`
- Click eye next to `RectGrid2.vtk` to hide box outline

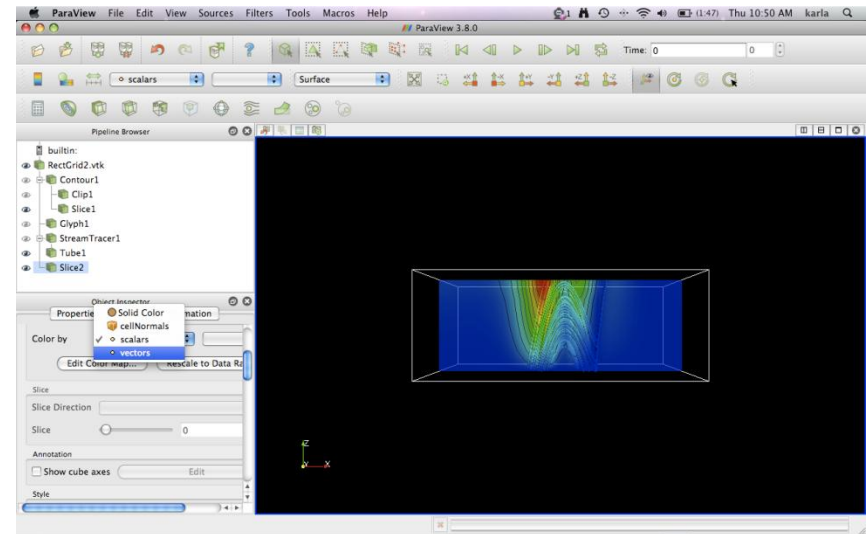




ParaView

Object Opacity

- Click `Slice2` in Pipeline Browser
- Click `Display`
- Change `Opacity` to `0.70` → Enter
- Click `Color by vectors`
- Click eye next to `RectGrid2.vtk` to hide box outline

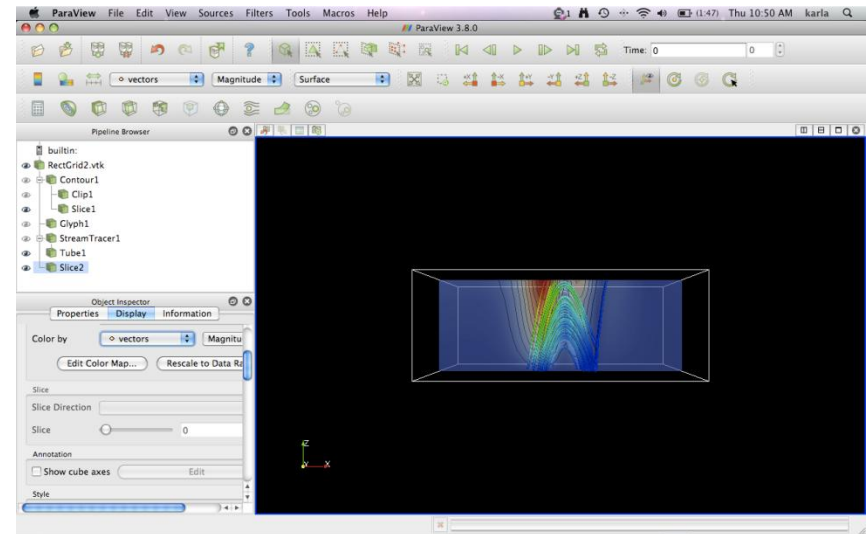




ParaView

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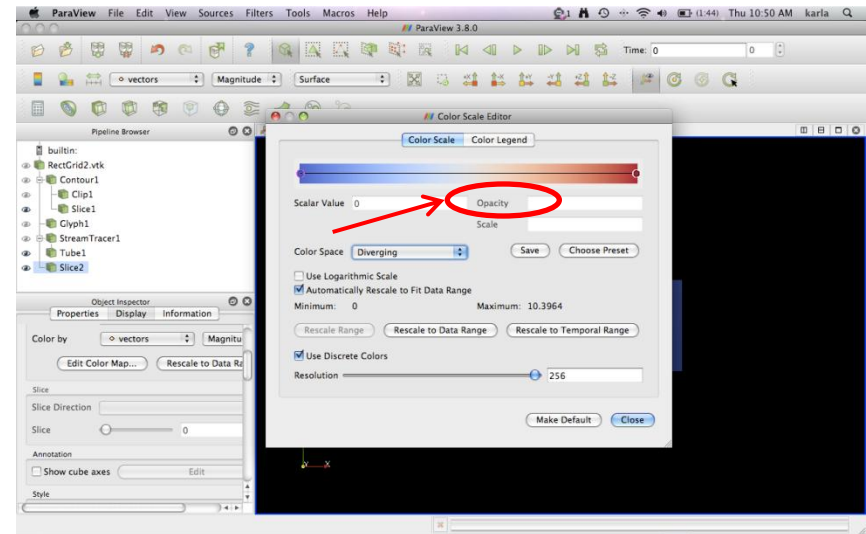




ParaView

Enable Color Legend

- Click Display
- Click Edit Color Map
- Click Color Legend
- Click Show Color Legend
- Click -> Blue Close
- Select Color Legend (notice white rectangle) and move to top of 3D viewer

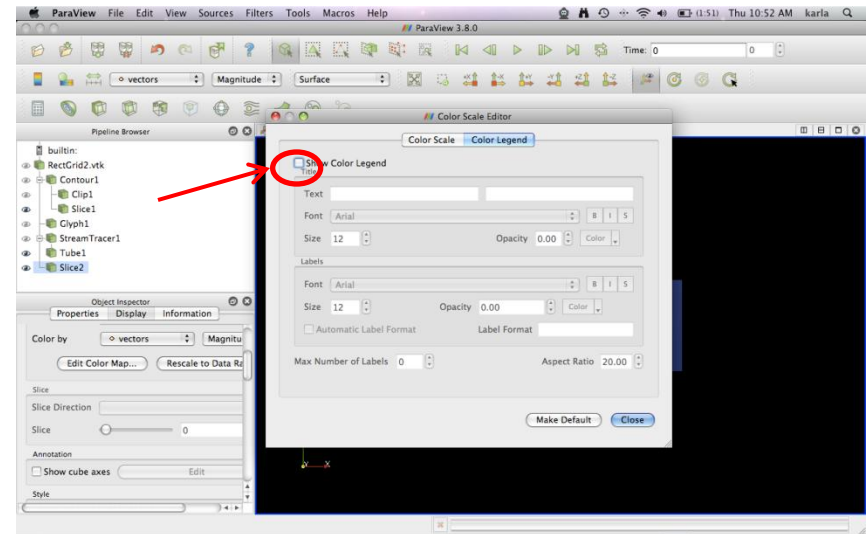




ParaView

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- **Click Show Color Legend**
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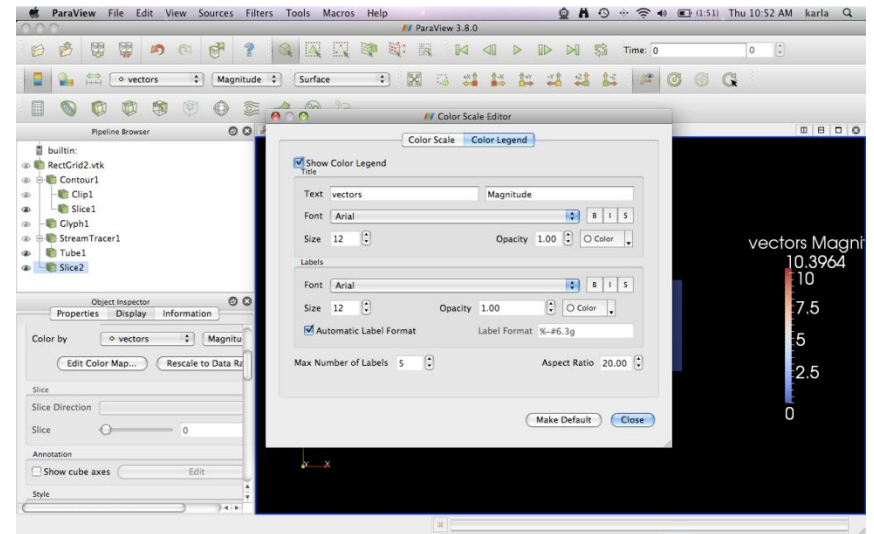




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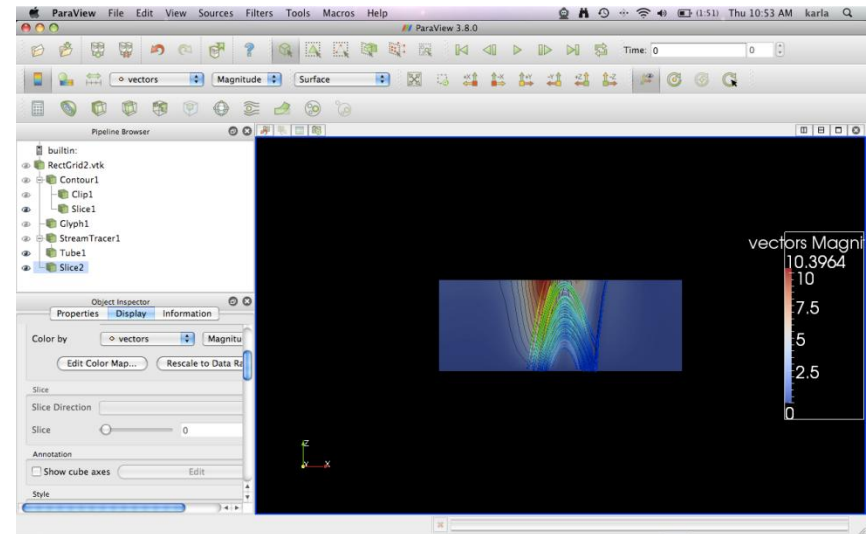




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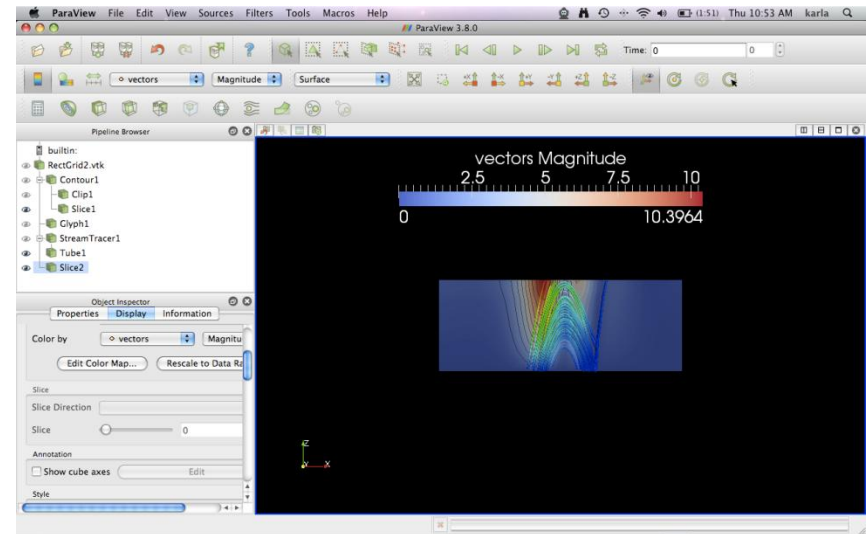




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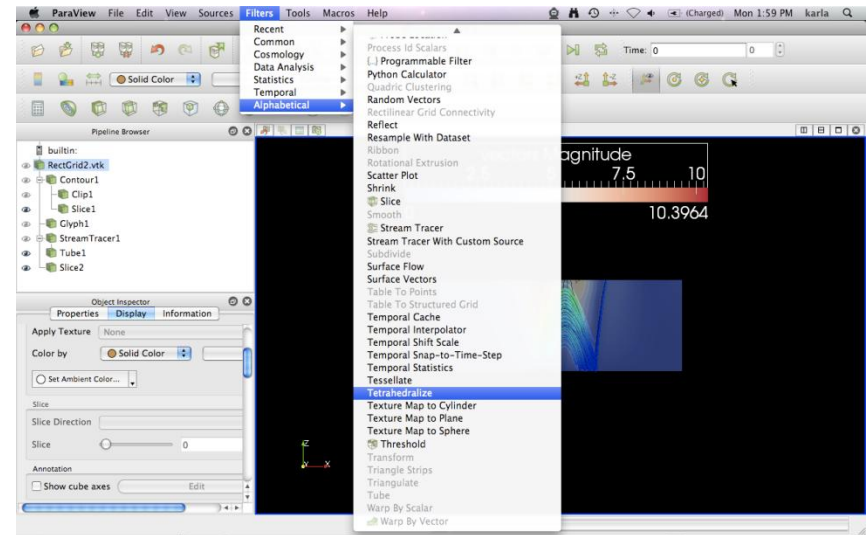




ParaView

Create Volume Rendering

- Click `RectGrid2.vtk` in Pipeline Browser
- Click `Filters` -> `Alphabetical` -> `Tetrahedralize`
- Click -> `Apply`
- Click `Display`
- Click `Representation`
- `Select Volume`
- Click -> `Edit Color Map`
(To edit transfer function)

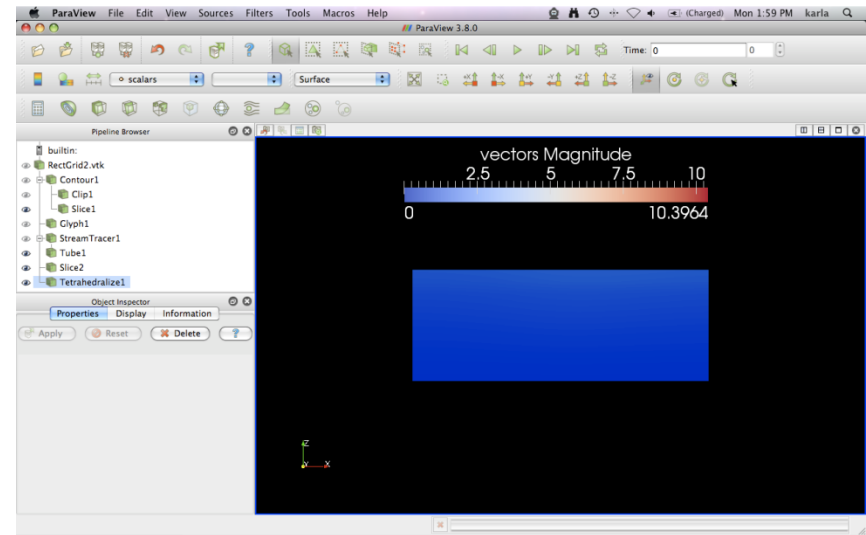




ParaView

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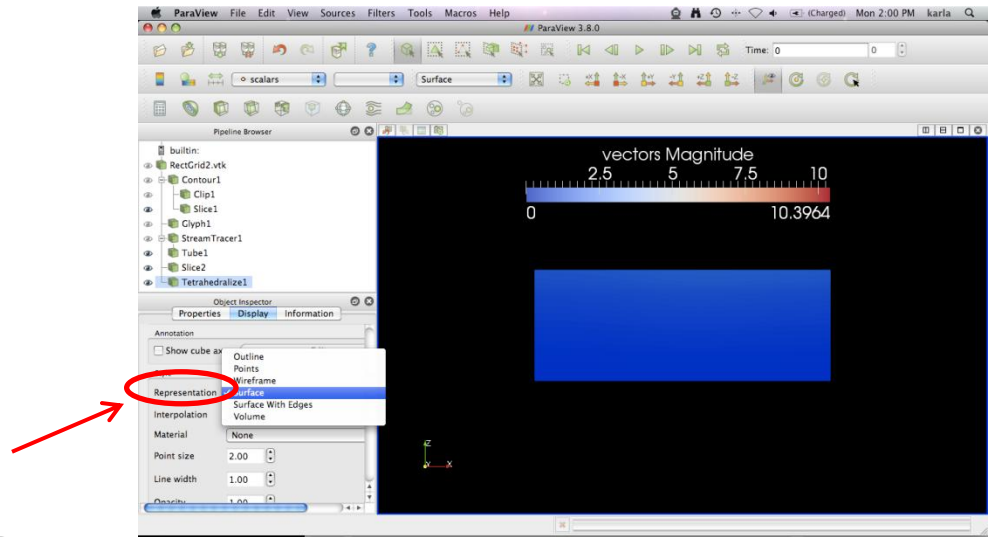




ParaView

Create Volume Rendering

- Click `RectGrid2.vtk` in Pipeline Browser
- Click `Filters` -> `Alphabetical` -> `Tetrahedralize`
- Click -> `Apply`
- Click `Display`
- **Click Representation**
- **Select Volume**
- Click -> `Edit Color Map`
(To edit transfer function)

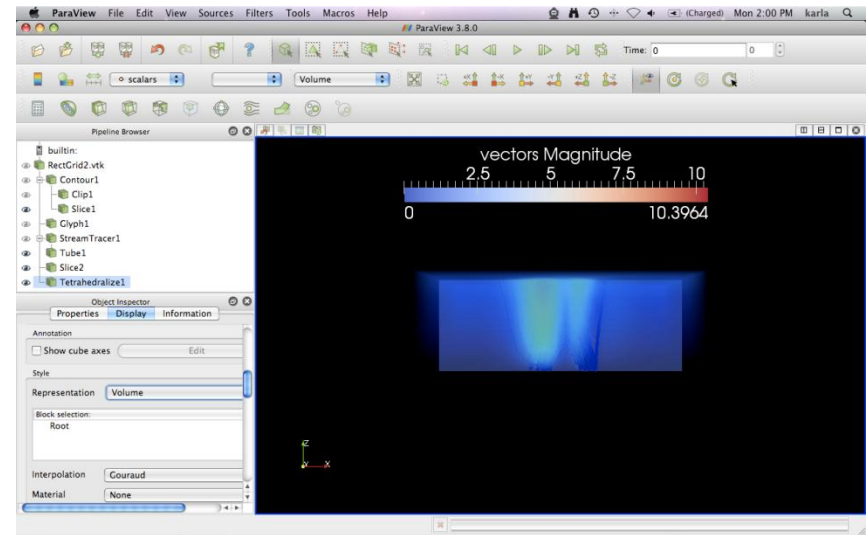




ParaView

Create Volume Rendering

- Click `RectGrid2.vtk` in Pipeline Browser
- Click `Filters` -> Alphabetical -> Tetrahedralize
- Click -> Apply
- Click `Display`
- Click `Representation`
- Select `Volume`
- Click -> `Edit Color Map` (to edit transfer function)

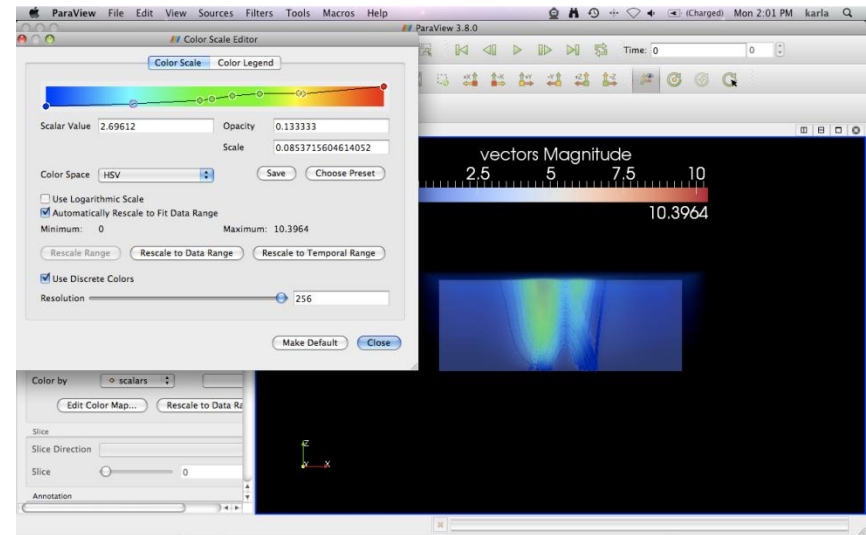




ParaView

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Questions?

- More tutorials available:
 - http://www.paraview.org/Wiki/The_ParaView_Tutorial