



Cornell University
Center for Advanced Computing

Visit Lab

Aaron Birkland
Cornell Center for Advanced Computing

Data Analysis on Ranger
January 2012



Getting Started

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

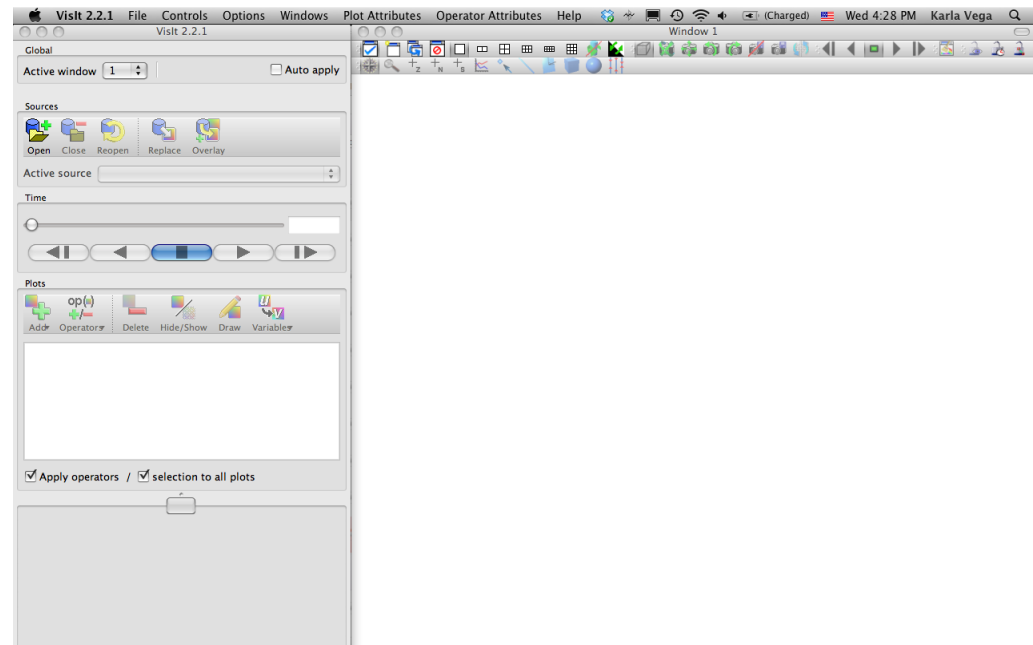
- Open VisIt



VisIt

Today we will:

- Create contours for a scalar variable
- 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 annotations and background
- Add slices to show variable values over a plane
- Create volume rendering



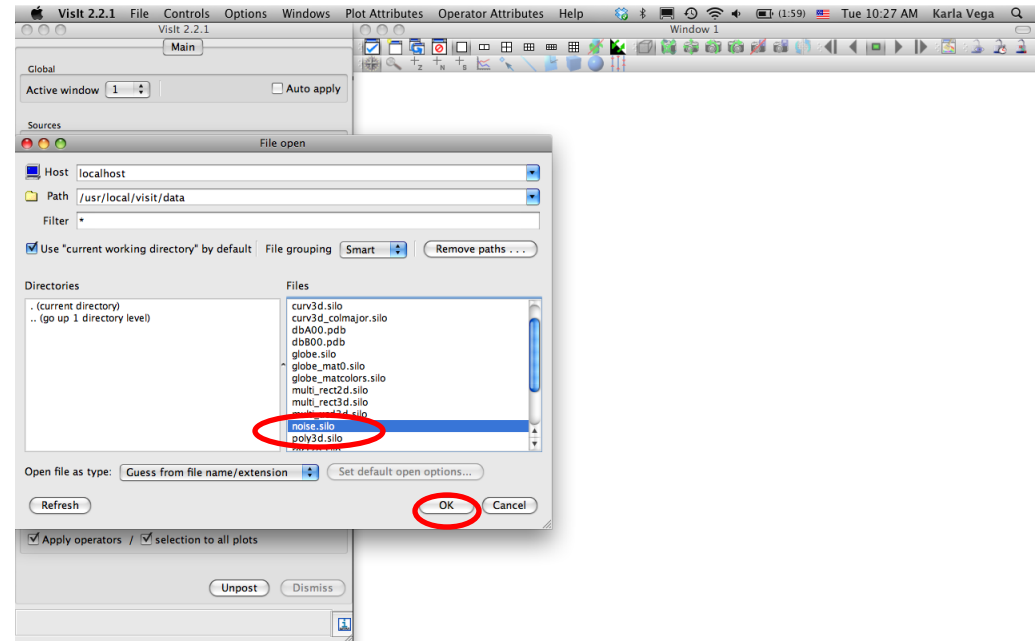


VisIt

Open the file (and display information)

Noise.silo

- Click File -> Open file
- Select noise.silo
- Click OK
- Note name of file under -> Active source
- Click File information
- Close Window



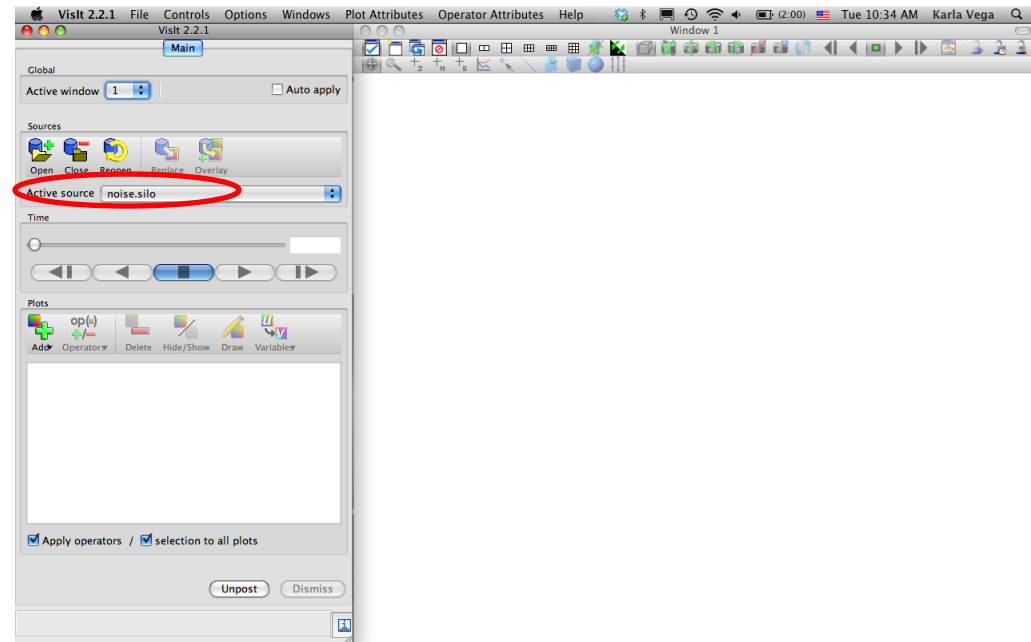


VisIt

Open the file (and display information)

Noise.silo

- Click File -> Open file
- Select noise.silo
- Click OK
- Note name of file under -> Active source
- Click File information
- Close Window



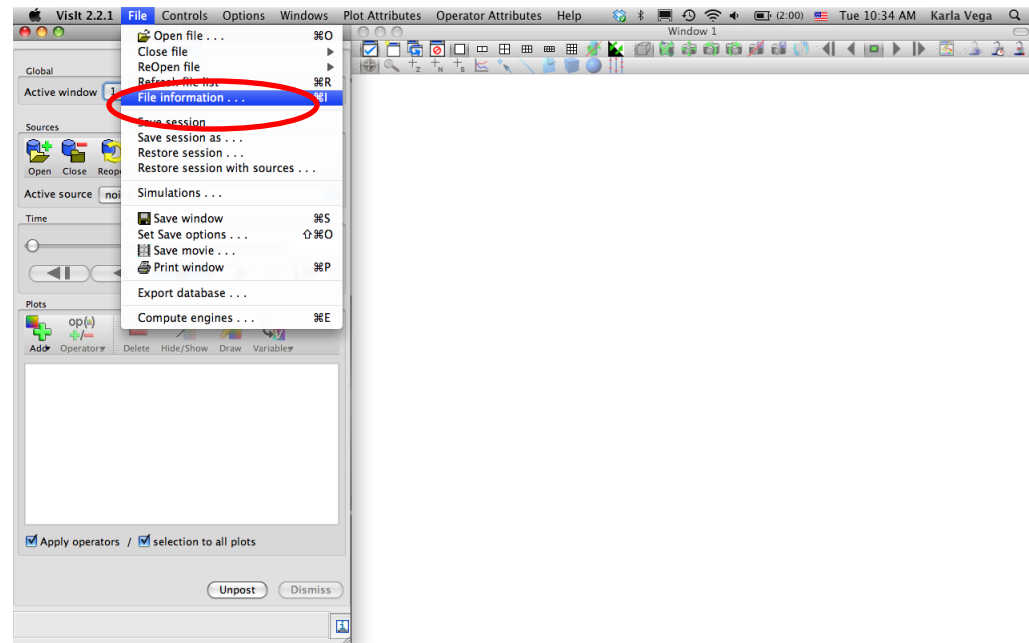


VisIt

Open the file (and display information)

Noise.silo

- Click File -> Open file
- Select noise.silo
- Click OK
- Note name of file under -> Active source
- Click File information
- Close Window



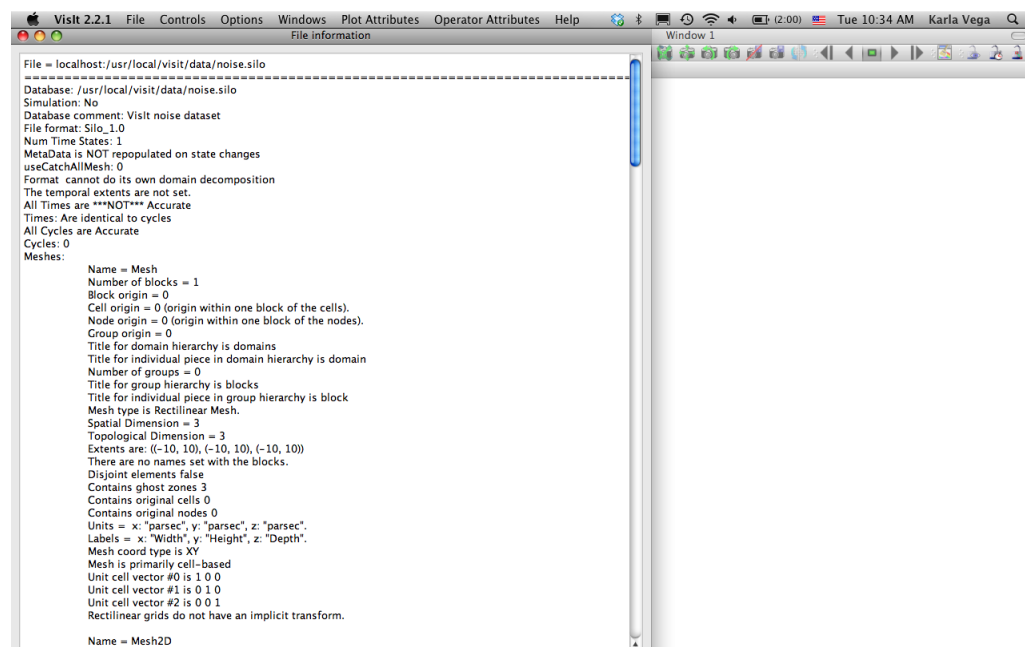


VisIt

Open the file (and display information)

Noise.silo

- Click File -> Open file
- Select noise.silo
- Click OK
- Note name of file under -> Active source
- Click File information
- Close Window

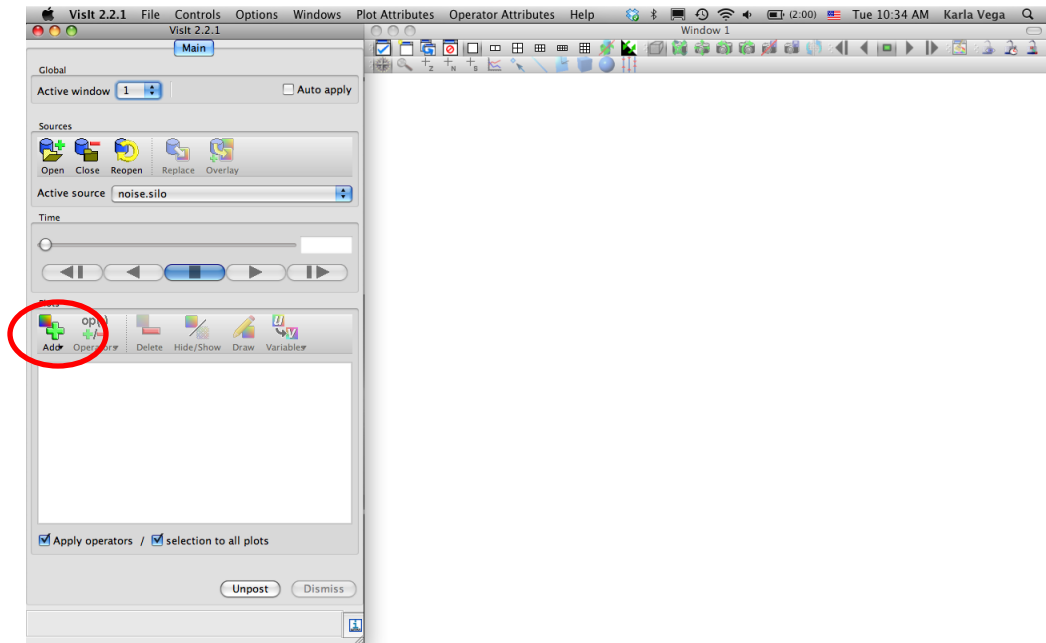




VisIt

Create contour

- Click Add -> Contour -> hardyglobal
- Click Draw
- Double click on Contour (or Right-click ->Edit plot description)
- Under select by choose ->N Levels enter 5
- Change the opacity levels
- Click Apply
- Click Dismiss
- Click Delete

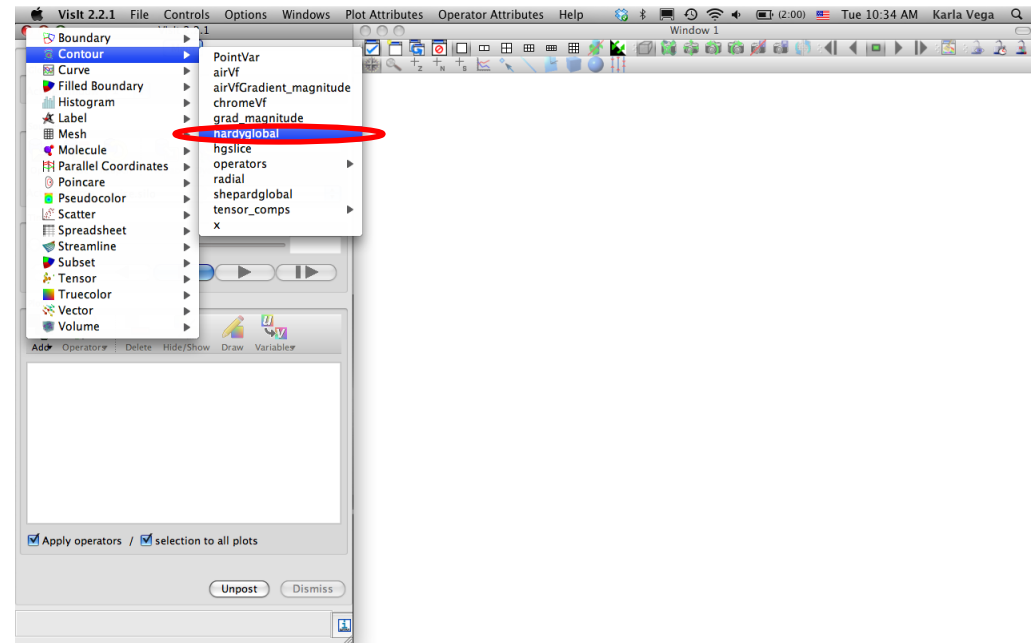




VisIt

Create contour

- Click Add -> Contour -> hardyglobal
- Click Draw
- Double click on Contour (or Right-click ->Edit plot description)
- Under select by choose ->N Levels enter 5
- Change the opacity levels
- Click Apply
- Click Dismiss
- Click Delete

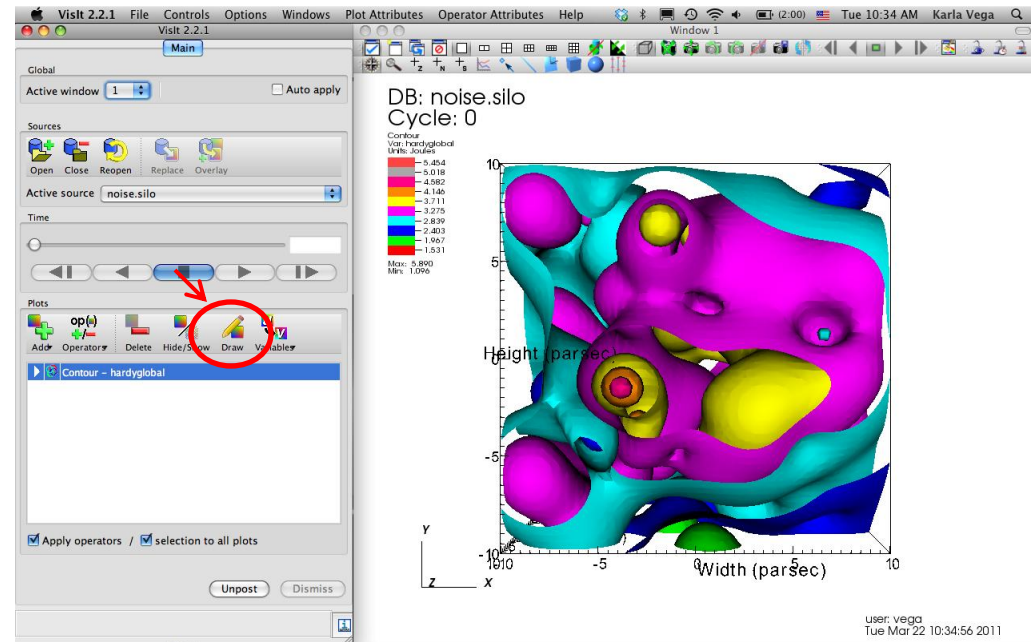




VisIt

Create contour

- Click Add -> Contour -> hardyglobal
- Click Draw
- Double click on Contour (or Right-click ->Edit plot description)
- Under select by choose ->N Levels enter 5
- Change the opacity levels
- Click Apply
- Click Dismiss
- Click Delete

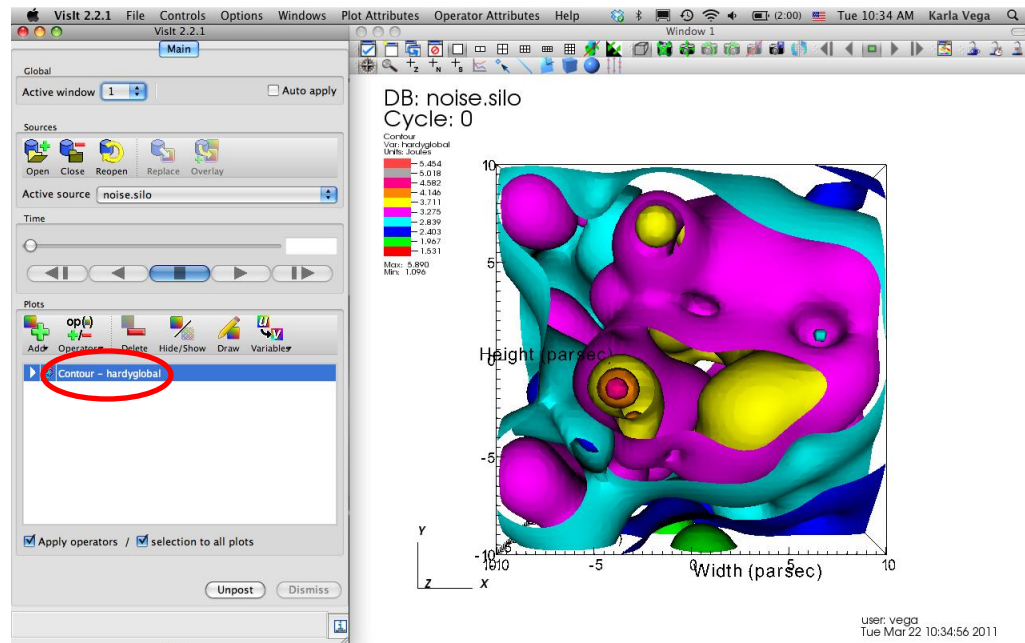




VisIt

Create contour

- Click Add -> Contour -> hardyglobal
- Click Draw
- Double click on Contour (or Right-click ->Edit plot description)
- Under select by choose ->N Levels enter 5
- Change the opacity levels
- Click Apply
- Click Dismiss
- Click Delete

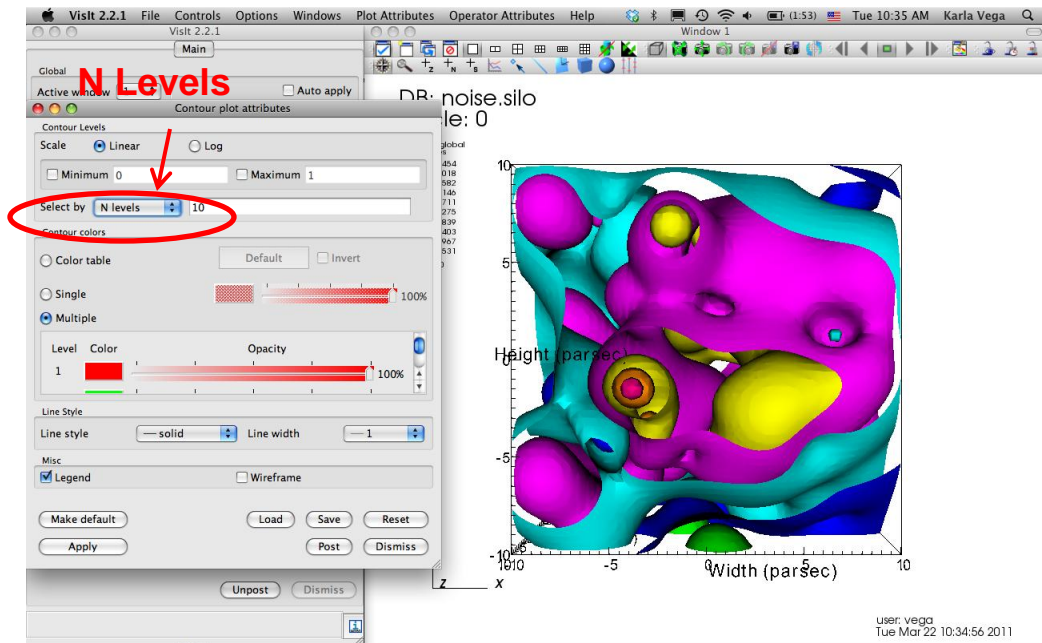




VisIt

Create contour

- Click Add -> Contour -> hardyglobal
- Click Draw
- Double click on Contour (or Right-click ->Edit plot description)
- Under select by choose ->N Levels enter 5
- Change the opacity levels
- Click Apply
- Click Dismiss
- Click Delete

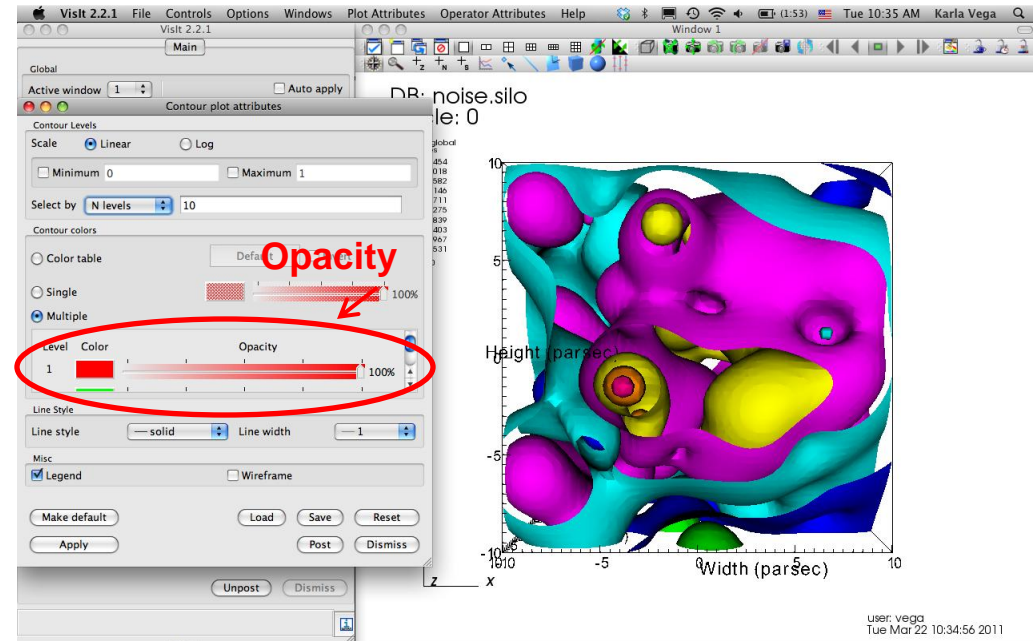




VisIt

Create contour

- Click Add -> Contour -> hardyglobal
- Click Draw
- Double click on Contour (or Right-click ->Edit plot description)
- Under select by choose ->N Levels enter 5
- Change the opacity levels
- Click Apply
- Click Dismiss
- Click Delete

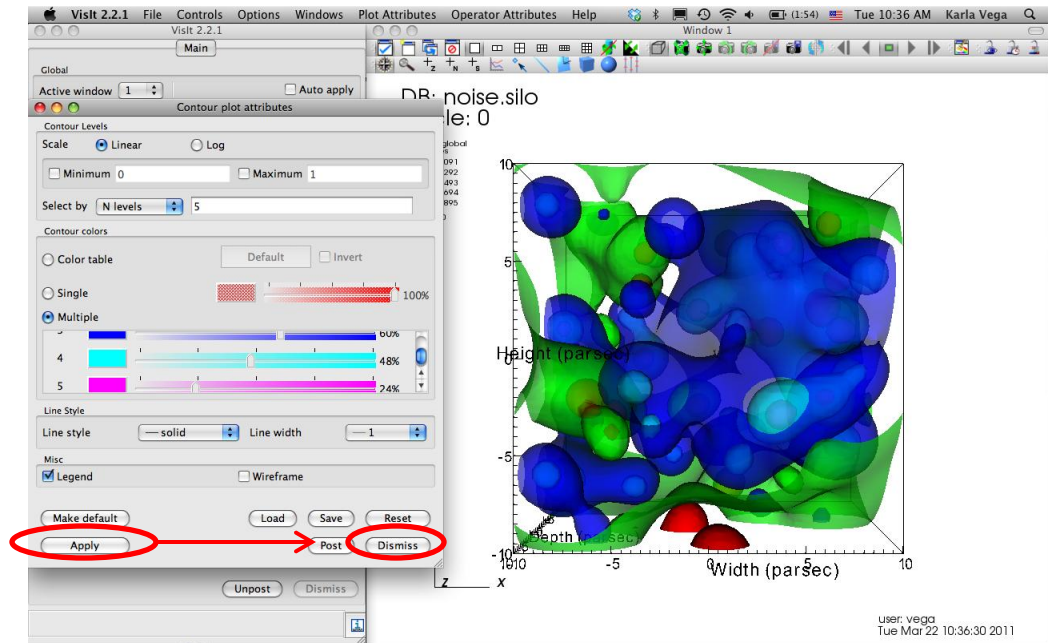




VisIt

Create contour

- Click Add -> Contour -> hardyglobal
- Click Draw
- Double click on Contour (or Right-click ->Edit plot description)
- Under select by choose ->N Levels enter 5
- Change the opacity levels
- Click Apply
- Click Dismiss
- Click Delete

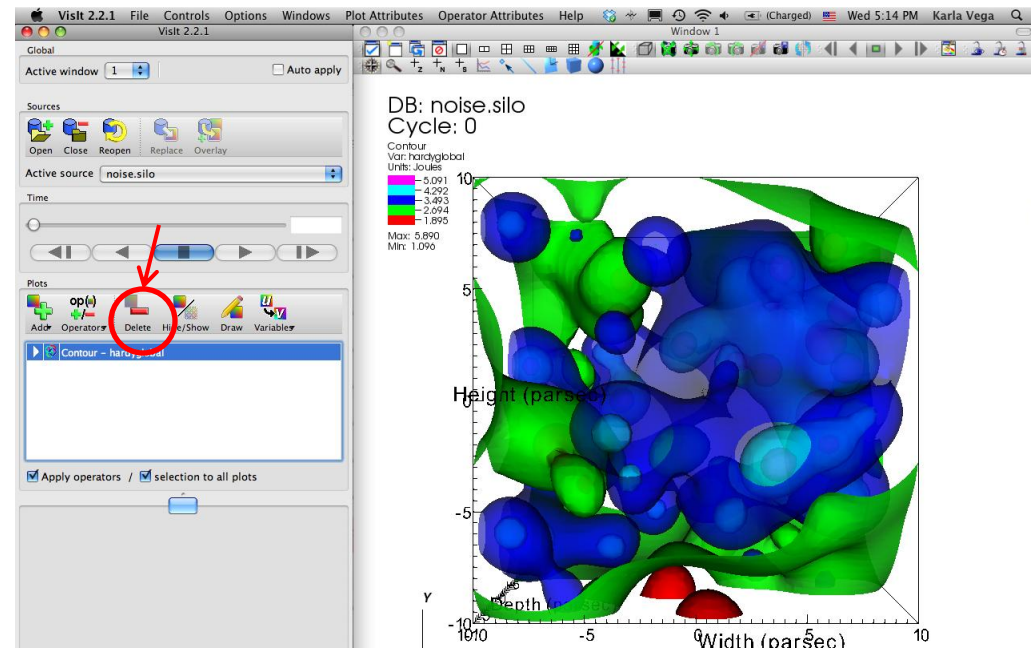




VisIt

Create contour

- Click Add -> Contour -> hardyglobal
- Click Draw
- Double click on Contour (or Right-click ->Edit plot description)
- Under select by choose ->N Levels enter 5
- Change the opacity levels
- Click Dismiss
- Click Delete

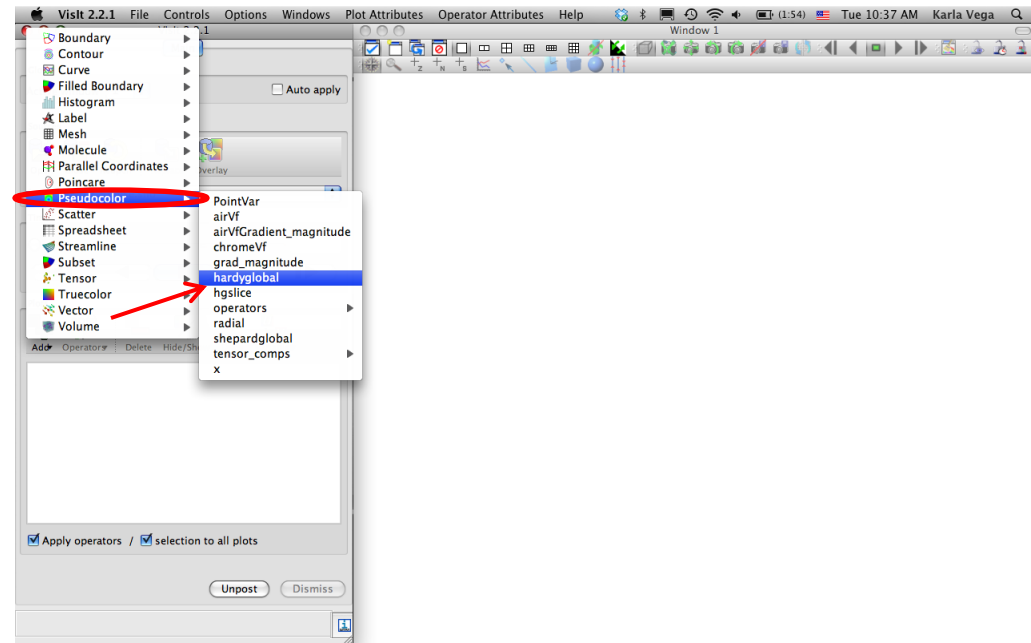




VisIt

Create Pseudocolor and isosurfaces

- Click Add -> Pseudocolor -> hardyglobal
- Click Draw
- Click Operator -> Slicing -> Isosurface
- Click Draw
- Click Arrow to expand
- Double-Click Isosurface
- Under select by choose -> Percent (s) enter 50
- Click Apply & Dismiss

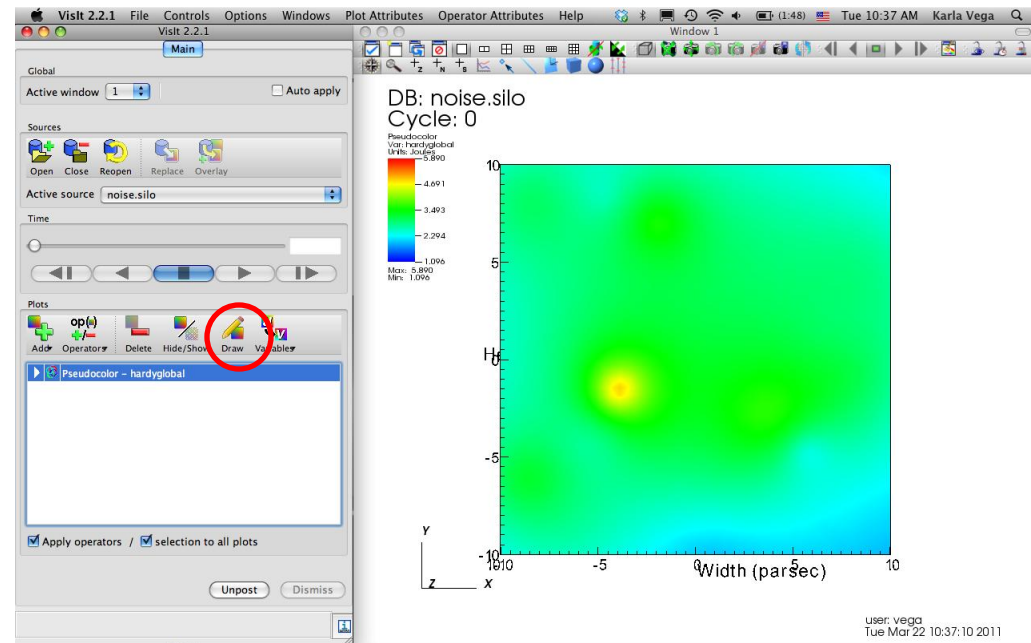




VisIt

Create Pseudocolor and isosurfaces

- Click Add -> Pseudocolor -> hardyglobal
- Click Draw
- Click Operator -> Slicing -> Isosurface
- Click Draw
- Click Arrow to expand
- Double-Click Isosurface
- Under select by choose -> Percent (s) enter 50
- Click Apply & Dismiss

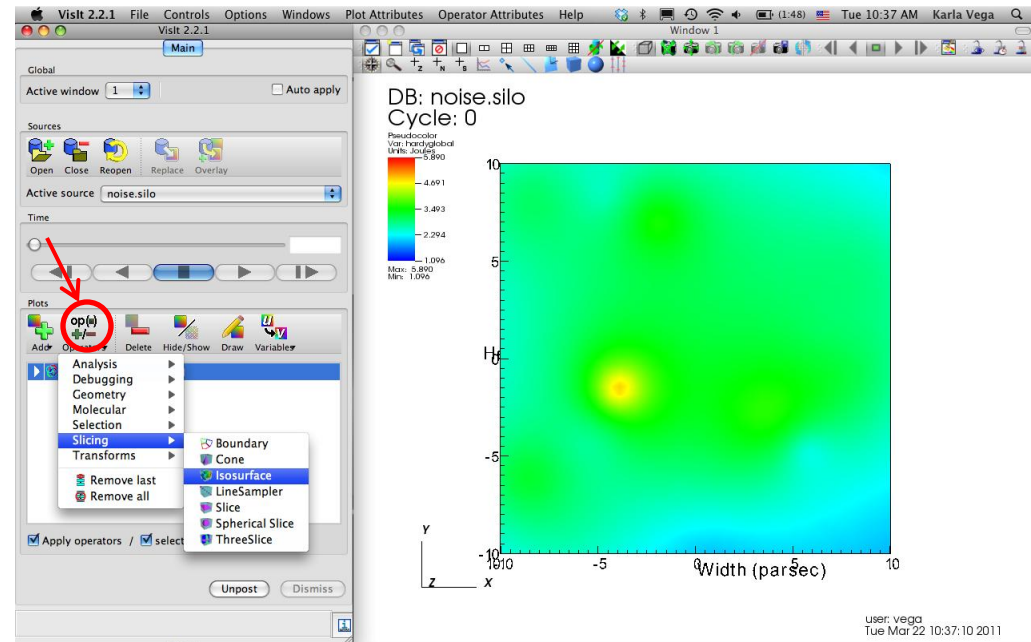




VisIt

Create Pseudocolor and
isosurfaces

- Click Add -> Pseudocolor
-> hardyglobal
- Click Draw
- Click Operator ->
Slicing -> Isosurface
- Click Draw
- Click Arrow to expand
- Double-Click Isosurface
- Under select by choose -
>Percent (s) enter 50
- Click Apply &

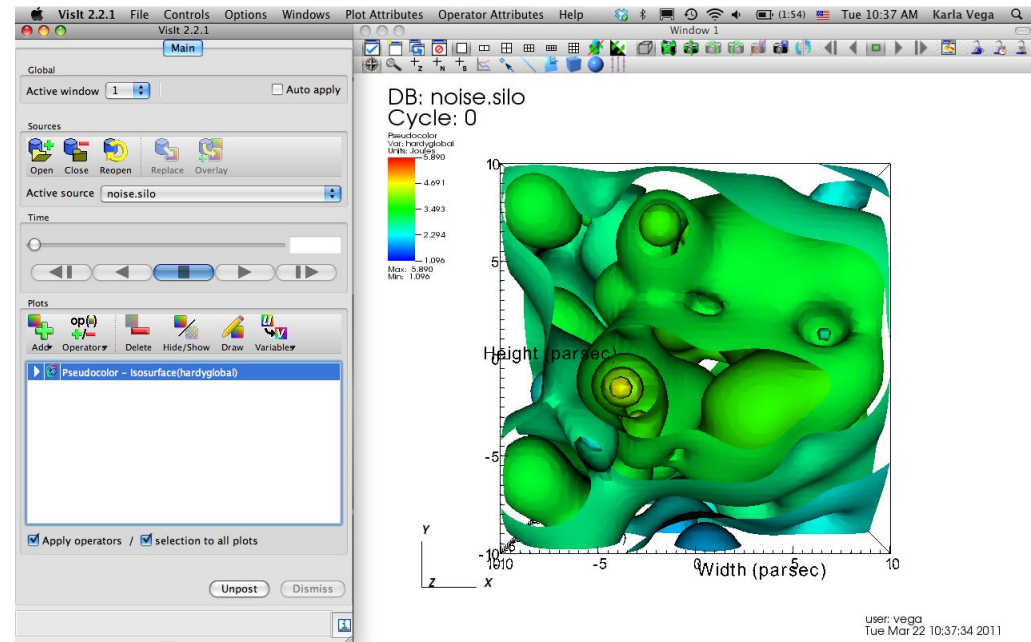




VisIt

Create Pseudocolor and
isosurfaces

- Click Add -> Pseudocolor
-> hardyglobal
- Click Draw
- Click Operator ->
Slicing -> Isosurface
- Click Draw
- Click Arrow to expand
- Double-Click Isosurface
- Under select by choose -
>Percent (s) enter 50
- Click Apply &

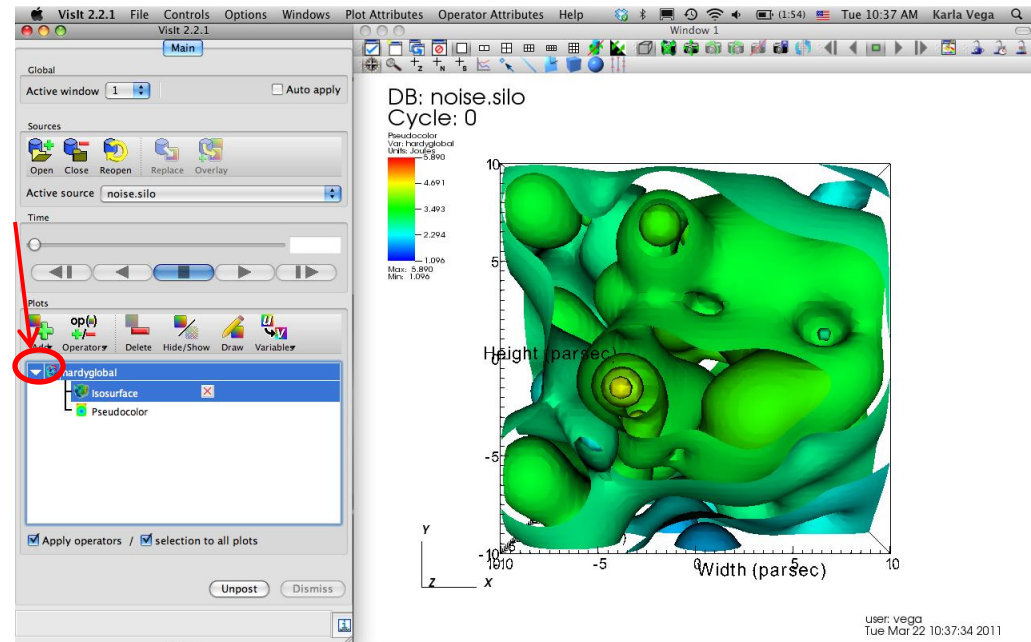




VisIt

Create Pseudocolor and
isosurfaces

- Click Add -> Pseudocolor
-> hardyglobal
- Click Draw
- Click Operator ->
Slicing -> Isosurface
- Click Draw
- Click Arrow to expand
- **Double-Click** Isosurface
- Under select by choose -
>Percent (s) enter 50
- Click Apply

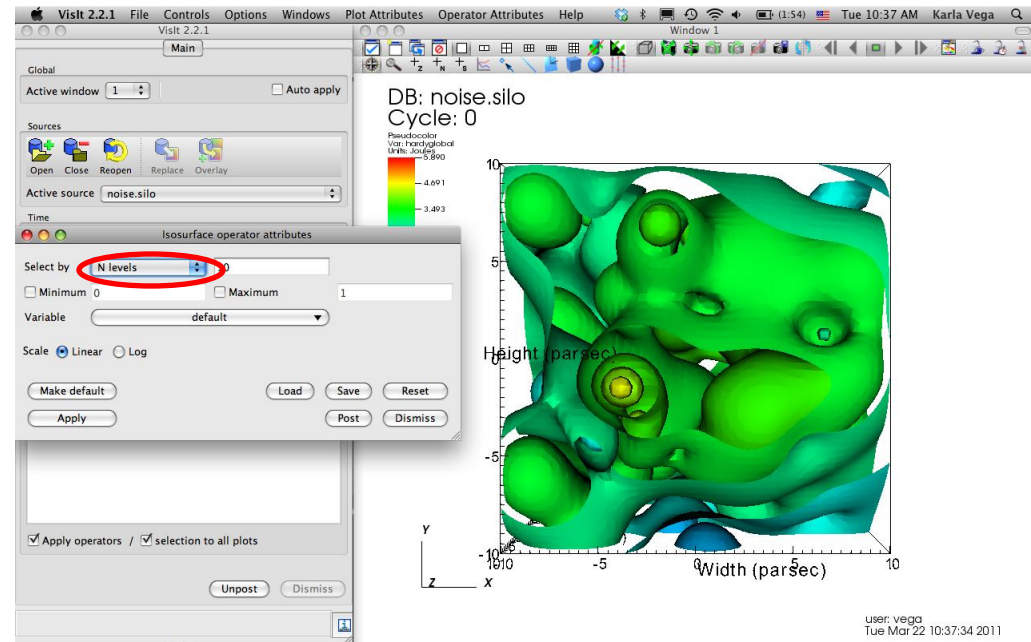




VisIt

Create Pseudocolor and
isosurfaces

- Click Add -> Pseudocolor
-> hardyglobal
- Click Draw
- Click Operator ->
Slicing -> Isosurface
- Click Draw
- Click Arrow to expand
- Double-Click Isosurface
- Under select by choose -
>Percent (s) **enter** 50
- Click Apply & Dismiss

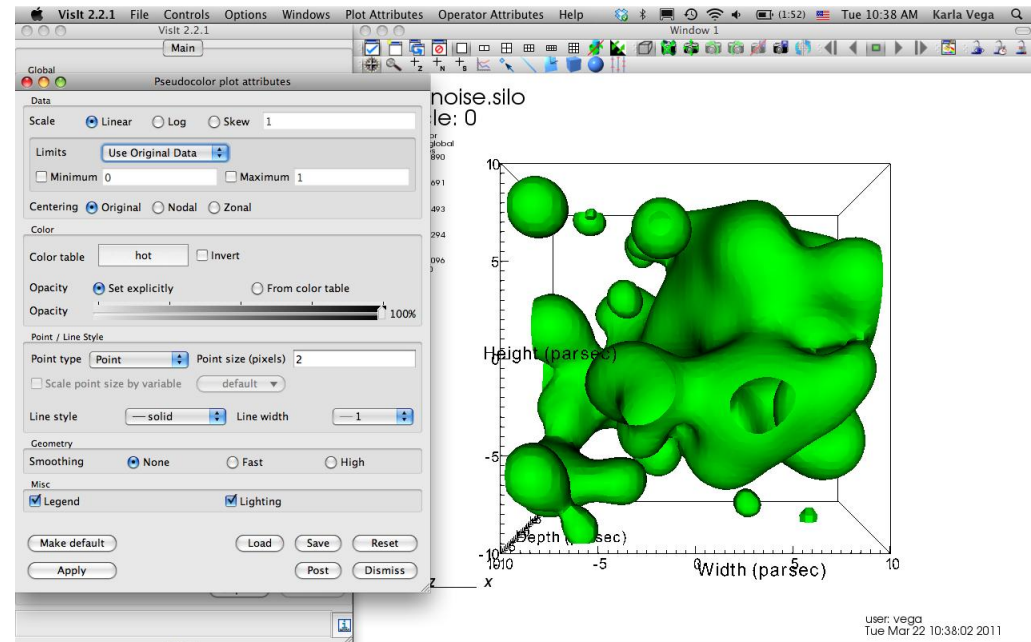




VisIt

Create Pseudocolor and isosurfaces

- Double-Click -> Pseudocolor
- Change Opacity
- Click Apply
- Unselect Apply operators/Selection to all plots
- Click Add -> Pseudocolor -> hardyglobal
- Click Operator -> Slicing -> Isosurface
- Click Arrow to expand
- Double-Click Isosurface
- Under select by choose -> Percent(s) enter 80
- Click Apply -> Dismiss -> Draw

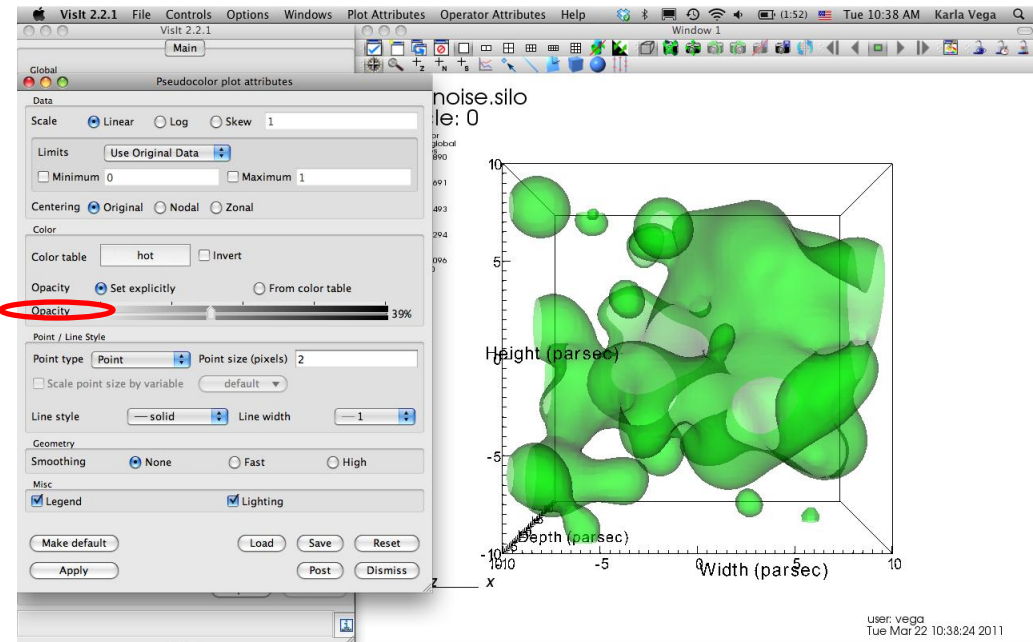




VisIt

Create Pseudocolor and isosurfaces

- Double-Click -> Pseudocolor
- Change Opacity
- Click Apply
- Unselect Apply operators/Selection to all plots
- Click Add -> Pseudocolor -> hardyglobal
- Click Operator -> Slicing -> Isosurface
- Click Arrow to expand
- Double-Click Isosurface
- Under select by choose -> Percent(s) enter 80
- Click Apply -> Dismiss -> Draw

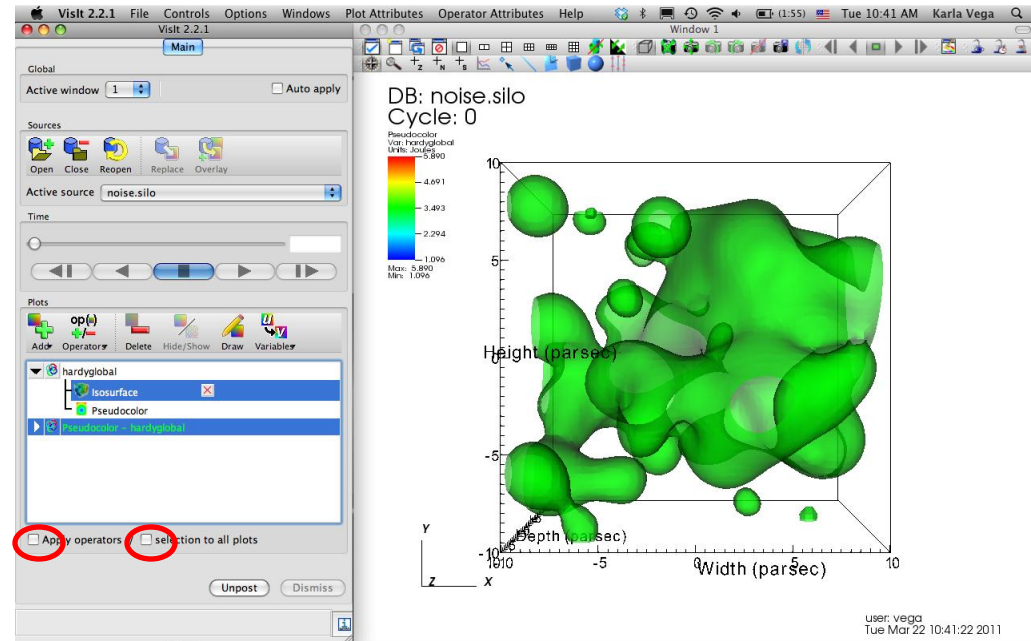




VisIt

Create Pseudocolor and isosurfaces

- Double-Click -> Pseudocolor
- Change Opacity
- Click Apply
- Unselect Apply operators/Selection to all plots
- Click Add -> Pseudocolor -> hardyglobal
- Click Operator -> Slicing -> Isosurface
- Click Arrow to expand
- Double-Click Isosurface
- Under select by choose -> Percent(s) enter 80
- Click Apply -> Dismiss -> Draw

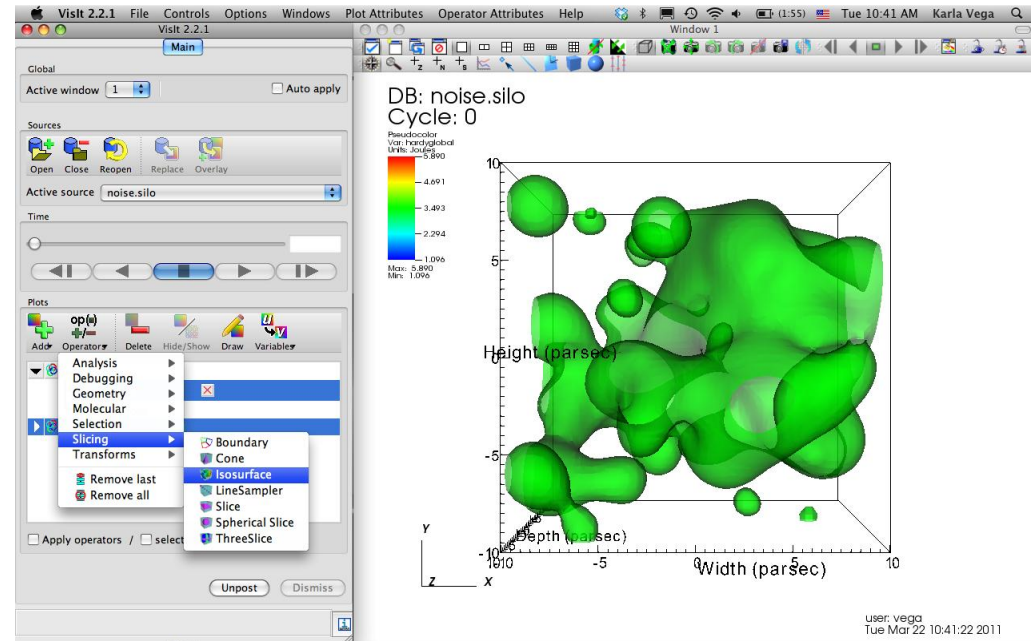




VisIt

Create Pseudocolor and isosurfaces

- Double-Click -> Pseudocolor
- Change Opacity
- Click Apply
- Unselect Apply operators/Selection to all plots
- Click Add -> Pseudocolor -> hardyglobal
- Click Operator -> Slicing -> Isosurface
- Click Arrow to expand
- Double-Click Isosurface
- Under select by choose -> Percent(s) enter 80
- Click Apply -> Dismiss -> Draw

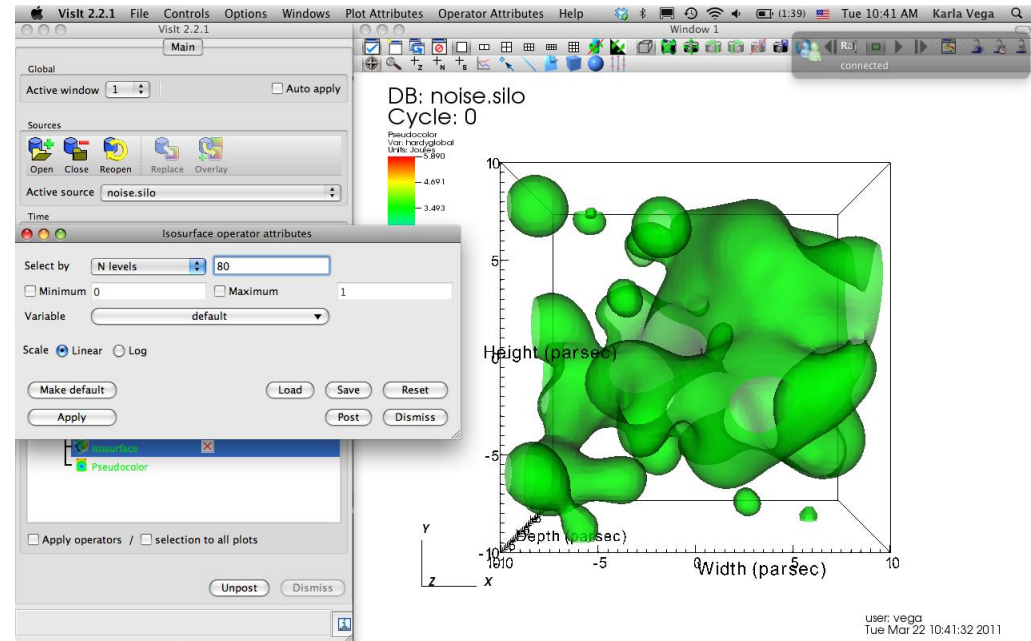




VisIt

Create Pseudocolor and isosurfaces

- Double-Click -> Pseudocolor
- Change Opacity
- Click Apply
- Unselect Apply operators/Selection to all plots
- Click Add -> Pseudocolor -> hardyglobal
- Click Operator -> Slicing -> Isosurface
- Click Arrow to expand
- Double-Click Isosurface
- Under select by choose -> Percent (s) enter 80
- Click Apply -> Dismiss -> Draw

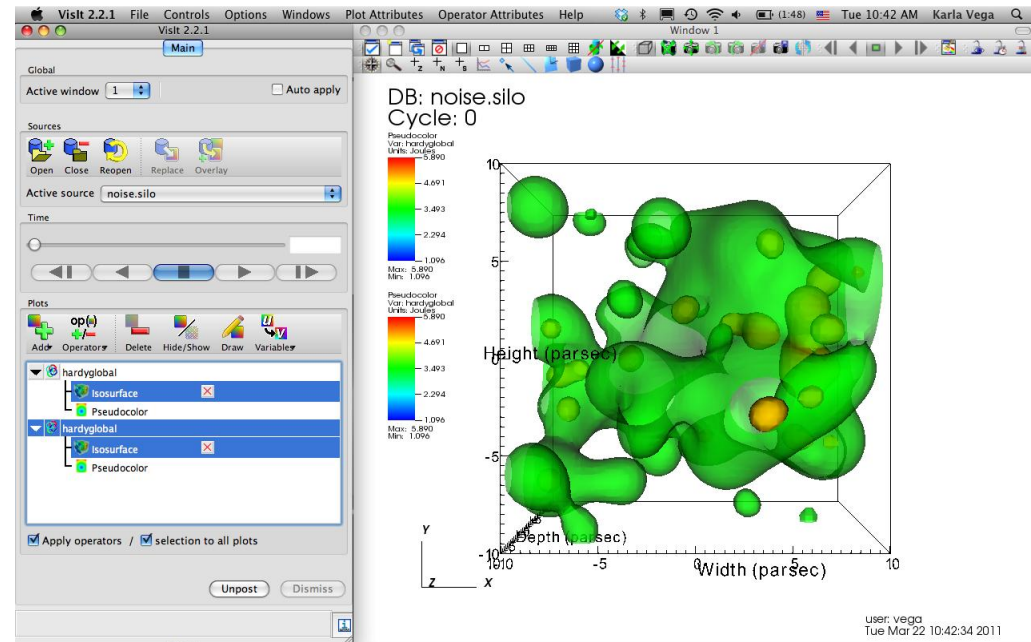




VisIt

Create Pseudocolor and isosurfaces

- Double-Click -> Pseudocolor
- Change Opacity
- Click Apply
- Unselect Apply operators/Selection to all plots
- Click Add -> Pseudocolor -> hardyglobal
- Click Operator -> Slicing -> Isosurface
- Click Arrow to expand
- Double-Click Isosurface
- Under select by choose -> Percent (s) enter 80
- Click Apply -> Dismiss -> Draw

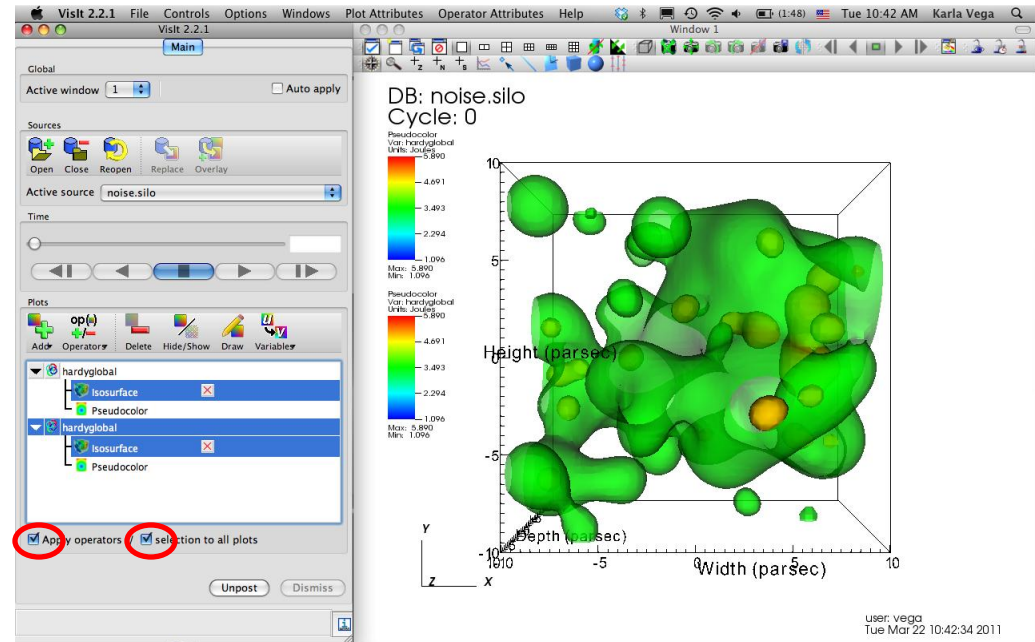




VisIt

Clip Isosurfaces

- **Select** -> apply operators and selection to all plots
- Click Operators -> Selection -> Clip
- Click Draw
- Double-Click -> Clip
- Click Plane 2
- Click Apply & Dismiss
- Click x (to delete)
- Click Draw

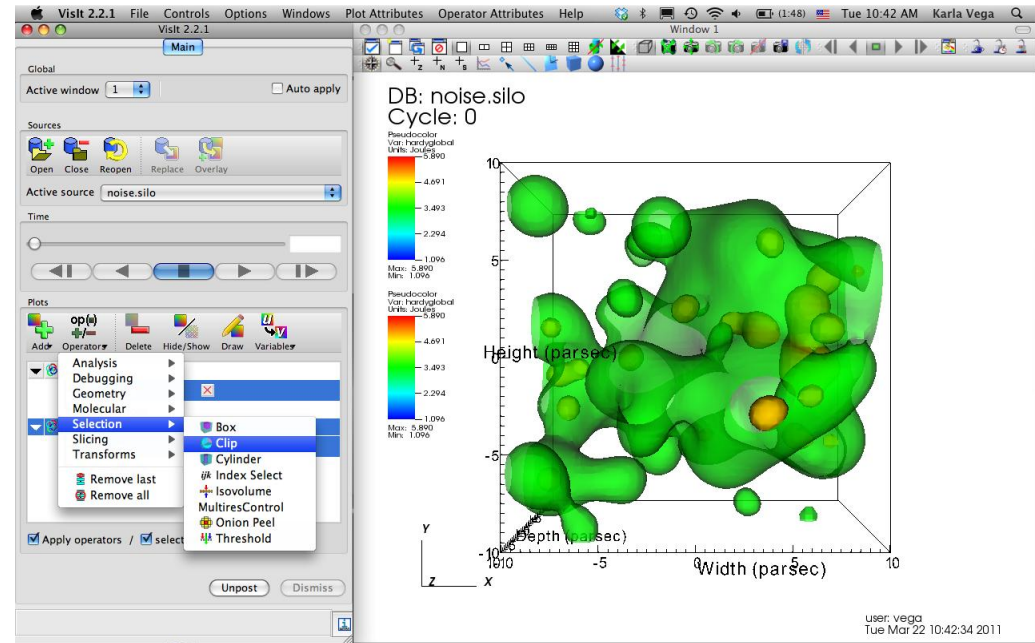




VisIt

Clip Isosurfaces

- Select -> apply operators and selection to all plots
- Click Operators -> Selection -> Clip
- Click Draw
- Double-Click -> Clip
- Click Plane 2
- Click Apply & Dismiss
- Click x (to delete)
- Click Draw

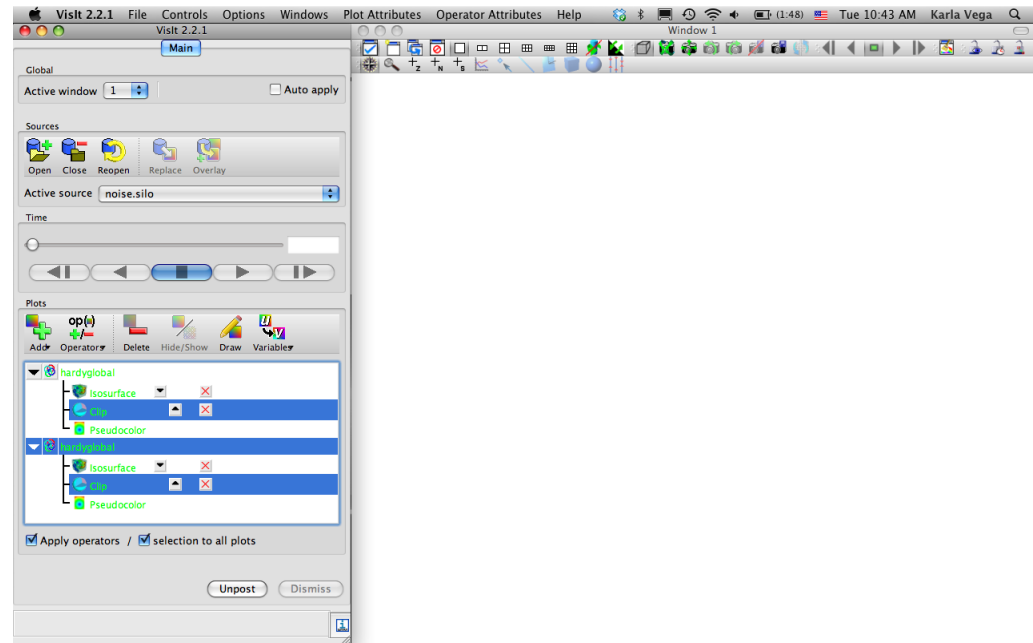




VisIt

Clip Isosurfaces

- Select -> apply operators and selection to all plots
- Click Operators -> Selection
- Click Draw
- Double-Click -> Clip
- Click Plane 2
- Click Apply & Dismiss
- Click x (to delete)
- Click Draw

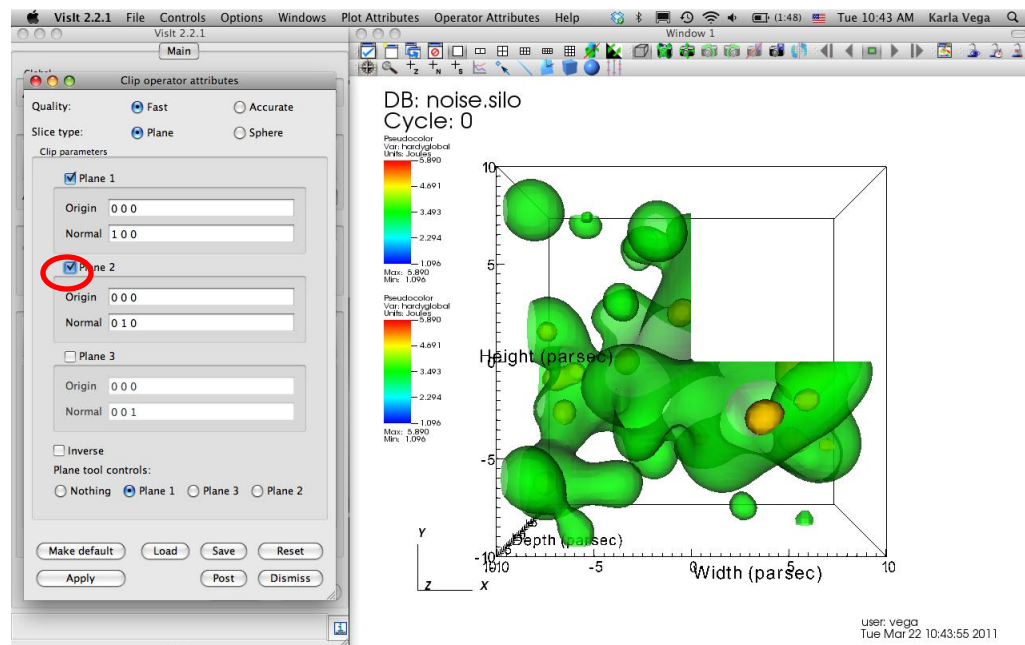




VisIt

Clip Isosurfaces

- Select -> apply operators and selection to all plots
- Click Operators -> Selection -> Clip
- Click Draw
- Double-Click -> Clip
- Click Plane 2
- Click Apply & Dismiss
- Click x (to delete)
- Click Draw

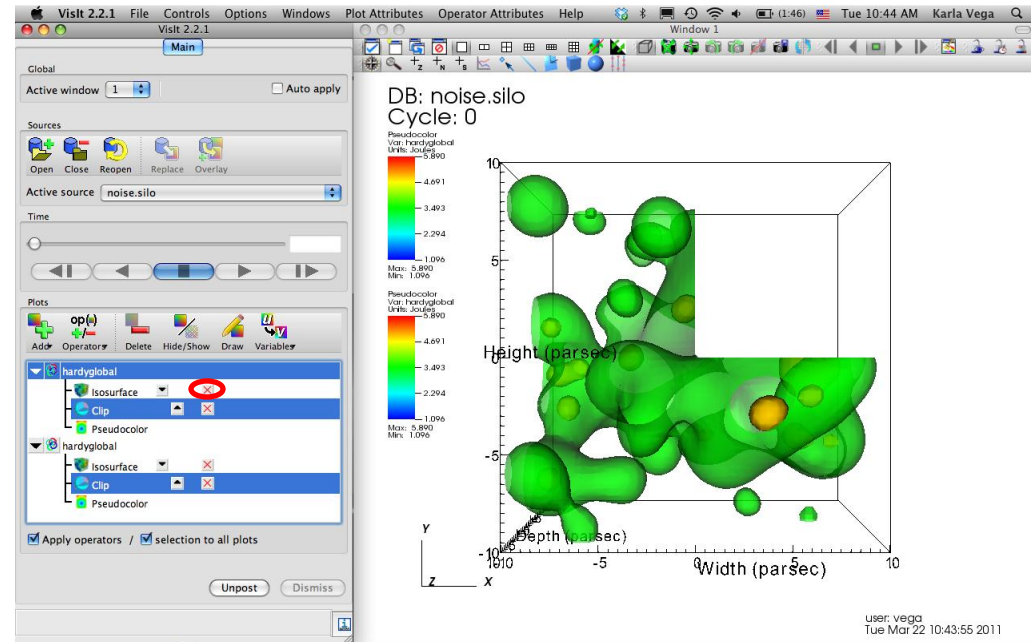




VisIt

Clip Isosurfaces

- Select -> apply operators and selection to all plots
- Click Operators -> Selection -> Clip
- Click Draw
- Double-Click -> Clip
- Click Plane 2
- Click Apply
- Click x (to delete)
- Click Draw

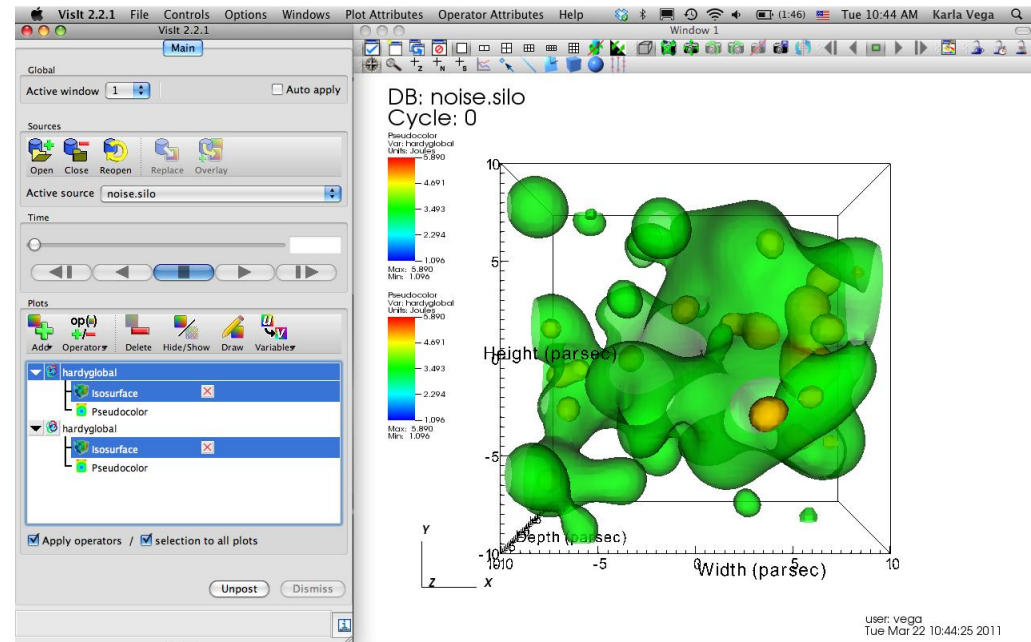




VisIt

Clip Isosurfaces

- Select -> apply operators and selection to all plots
- Click Operators -> Selection -> Clip
- Click Draw
- Double-Click -> Clip
- Click Plane 2
- Click Apply & Dismiss
- Click x (to
- Click Draw

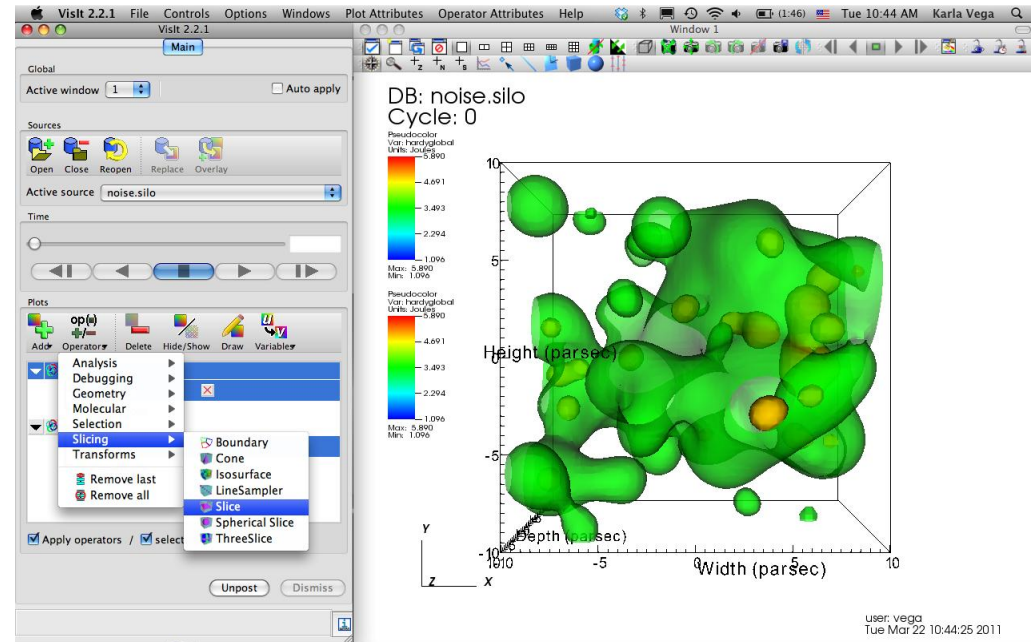




VisIt

Slice Isosurfaces

- Click Operators -> Slicing -> Slice
- Click Draw
- Double-Click -> Slice
- Select Z-Axis & Unselect Project to 2D
- Click Apply
- Click Dismiss

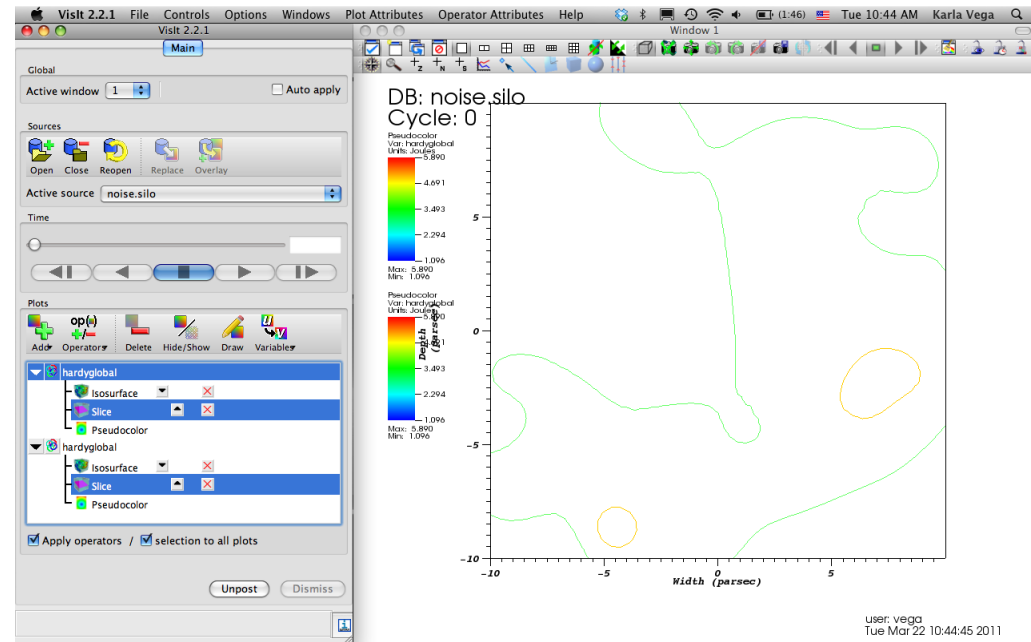




VisIt

Slice Isosurfaces

- Click Operators -> Slicing -> Slice
- Click Draw
- **Double-Click** -> Slice
- Select Z-Axis & Unselect Project to 2D
- Click Apply
- Click Dismiss

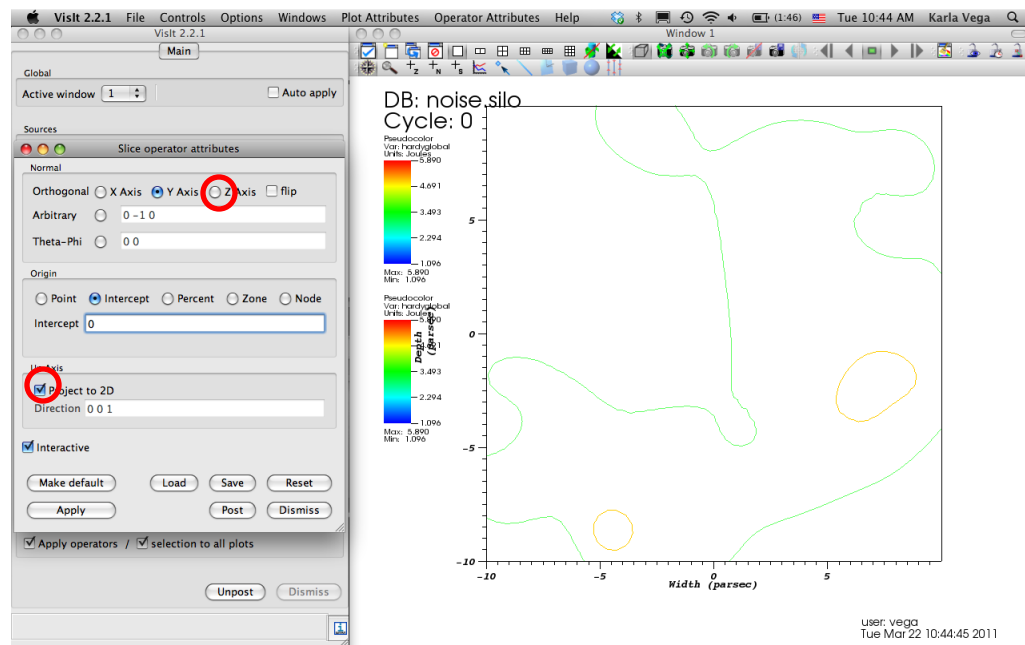




VisIt

Slice Isosurfaces

- Click Operators -> Slicing -> Slice
- Click Draw
- Double-Click ->
- **Select Z-Axis & Unselect Project to 2D**
- Click Apply
- Click Dismiss

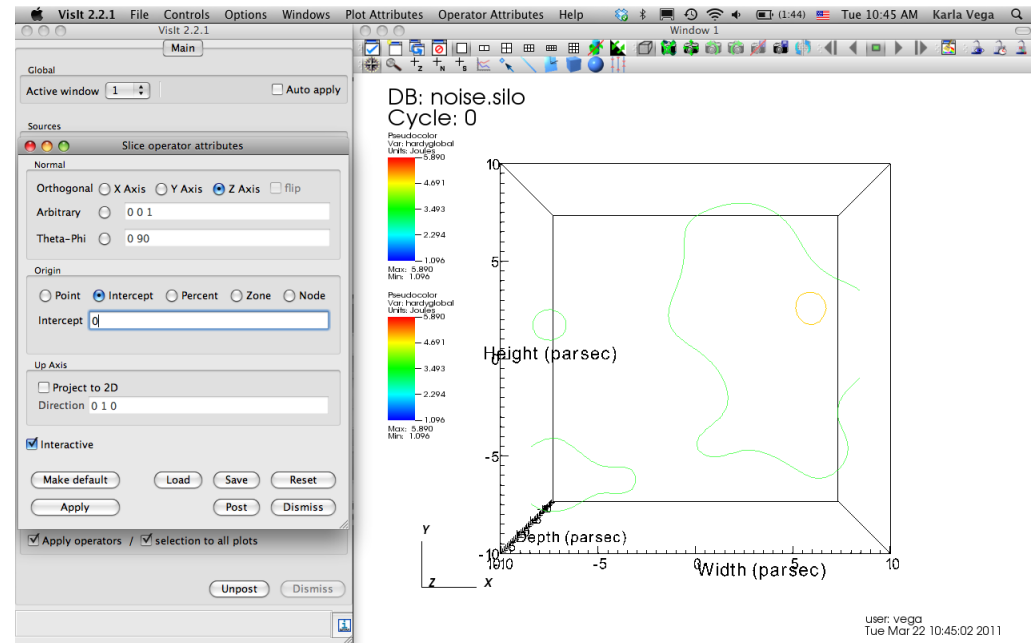




VisIt

Slice Isosurfaces

- Click Operators -> Slicing -> Slice
- Click Draw
- Double-Click -> Slice
- Select Z-Axis & Unselect Project to 2D
- Click Apply
- Click Dismiss

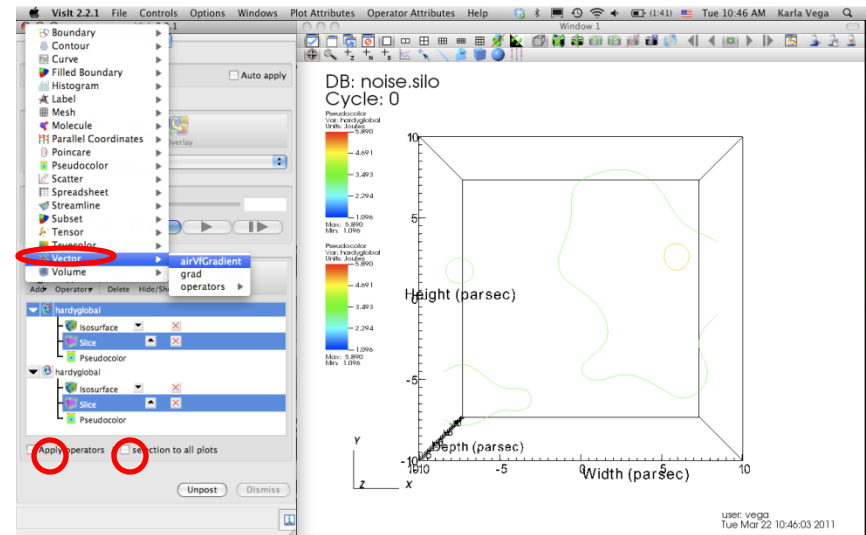




VisIt

Create Glyph of Vector

- Unselect Apply operators/selection to all plots
- Click Add -> Vector -> airVfGradient
- Click Draw
- Double click on Vector
- Under Vector amount enter 1000
- Click Apply
- Click Dismiss
- Click Hide/Show

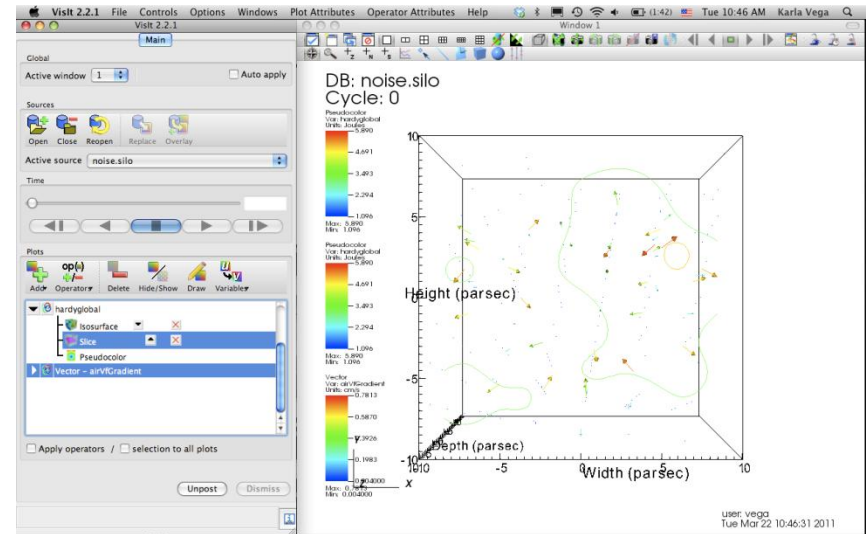




VisIt

Create Glyph of Vector

- Unselect Apply operators/selection to all plots
- Click Add -> Vector -> airVfGradient
- Click Draw
- Double click on Vector
- Under Vector amount enter 1000
- Click Apply
- Click Dismiss
- Click Hide/Show

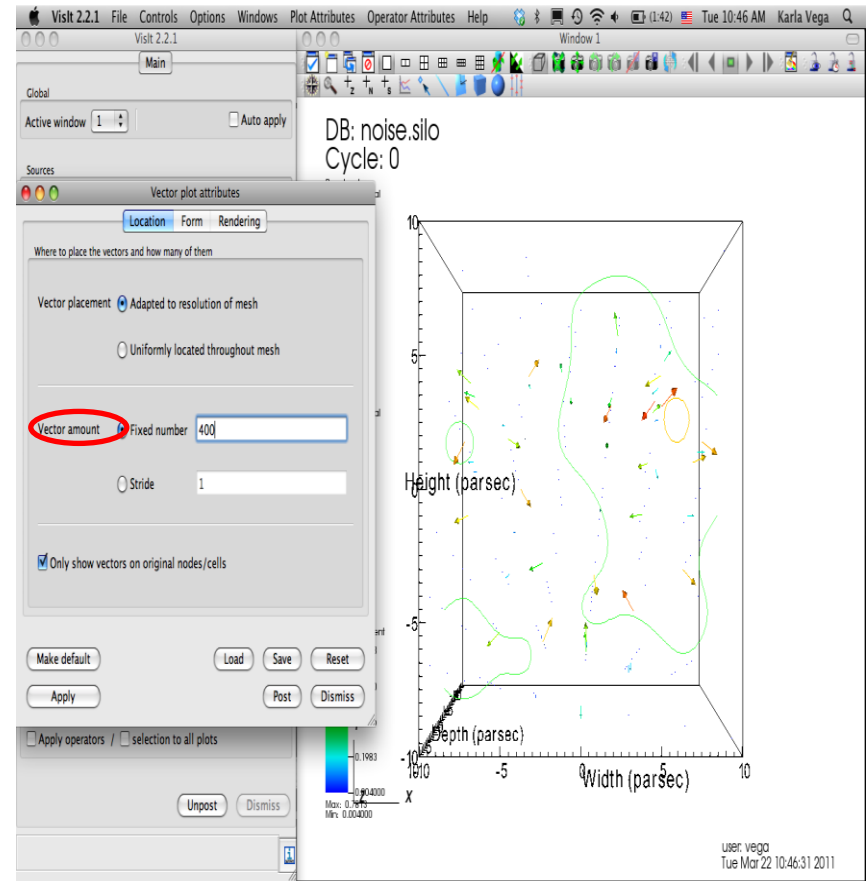




VisIt

Create Glyph of Vector

- Unselect Apply operators/selection to all plots
- Click Add -> Vector -> airVfGradient
- Click Draw
- Double click on Vector
- Under Vector amount enter 1000
- Click Apply
- Click Dismiss
- Click Hide/Show

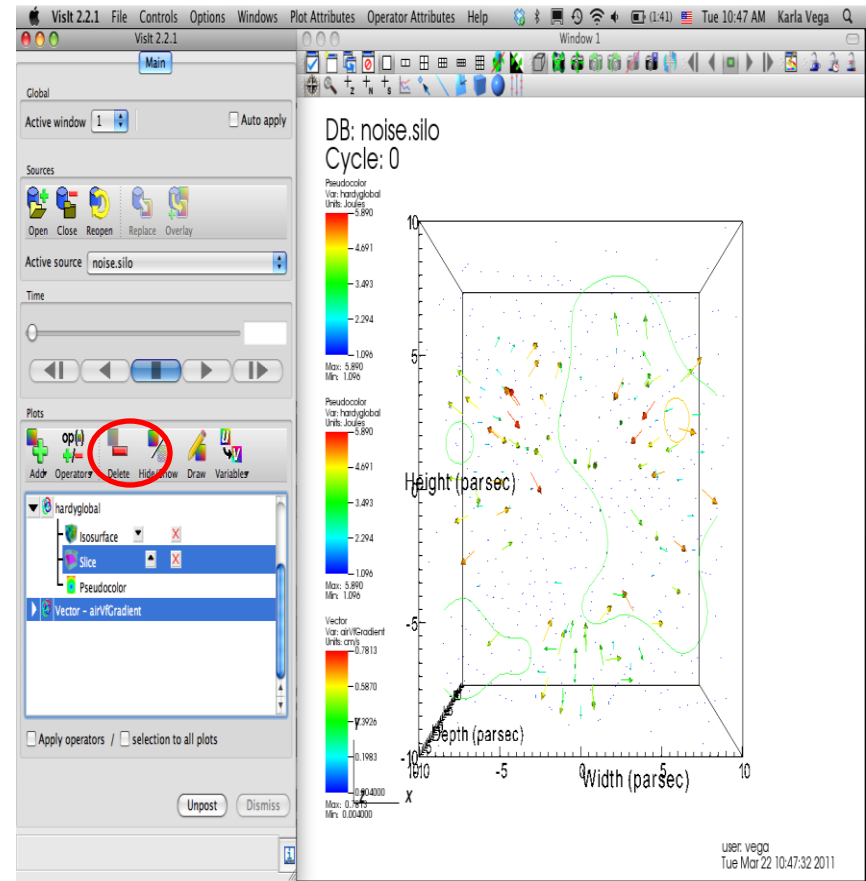




VisIt

Create Glyph of Vector

- Unselect Apply operators/selection to all plots
- Click Add -> Vector -> airVfGradient
- Click Draw
- Double click on Vector
- Under Vector amount enter 1000
- Click Apply
- Click Dismiss
- Click Hide/Show

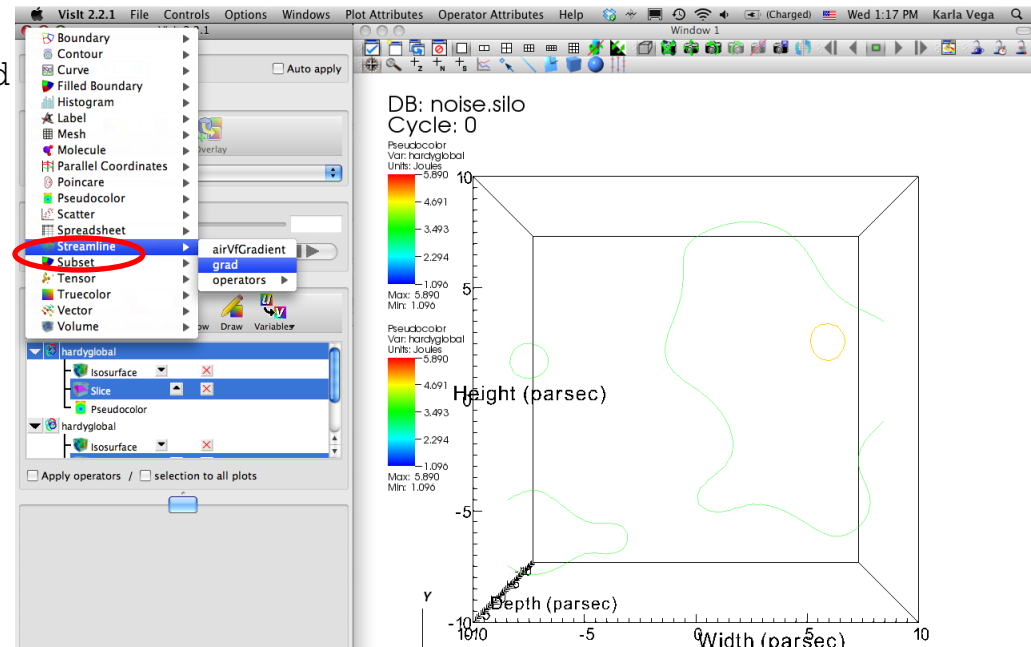




VisIt

Create Streamlines

- Click Add -> Streamline -> grad
- Double click on Streamline
- Under Source Type Select Plane
Enter:
 - Samples in X and Y: 15
 - Distance in X and Y: 20
 - Streamline Direction Both
 - Select limit Maximum Time Step
- Click Apply
- Click Dismiss
- Click Draw and Dismiss warning
- Double click on Streamline

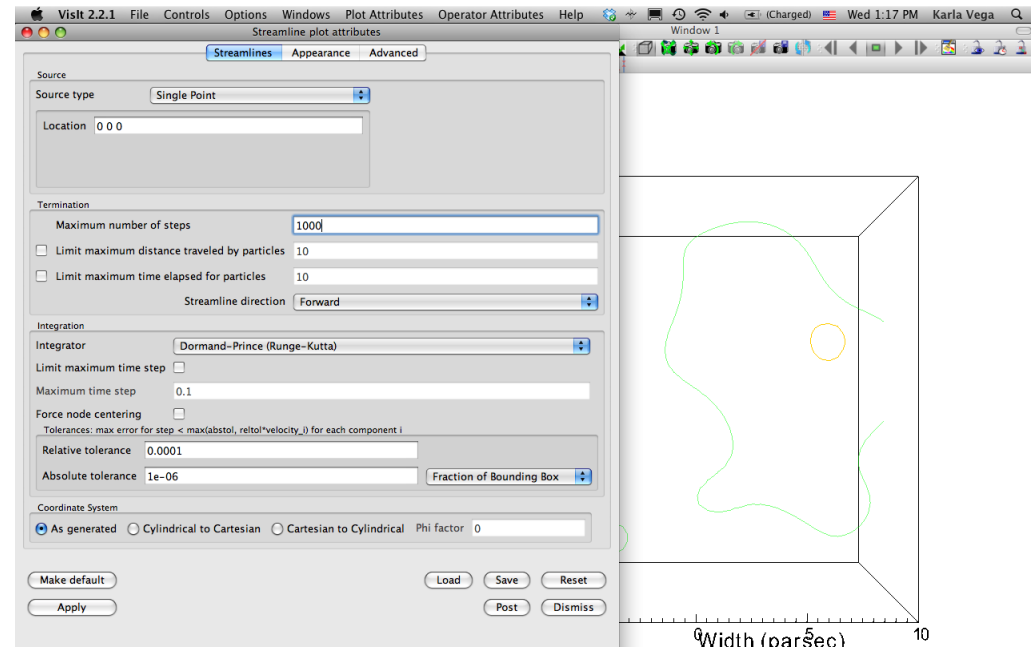




VisIt

Create Streamlines

- Click Add -> Streamline ->
- Double click on Streamline
- Under Source Type Select Plane
Enter:
 - Samples in X and Y: 15
 - Distance in X and Y: 20
 - Streamline Direction Both
 - Select limit Maximum Time Step
- Click Apply
- Click Dismiss
- Click Draw and Dismiss warning
- Double click on Streamline

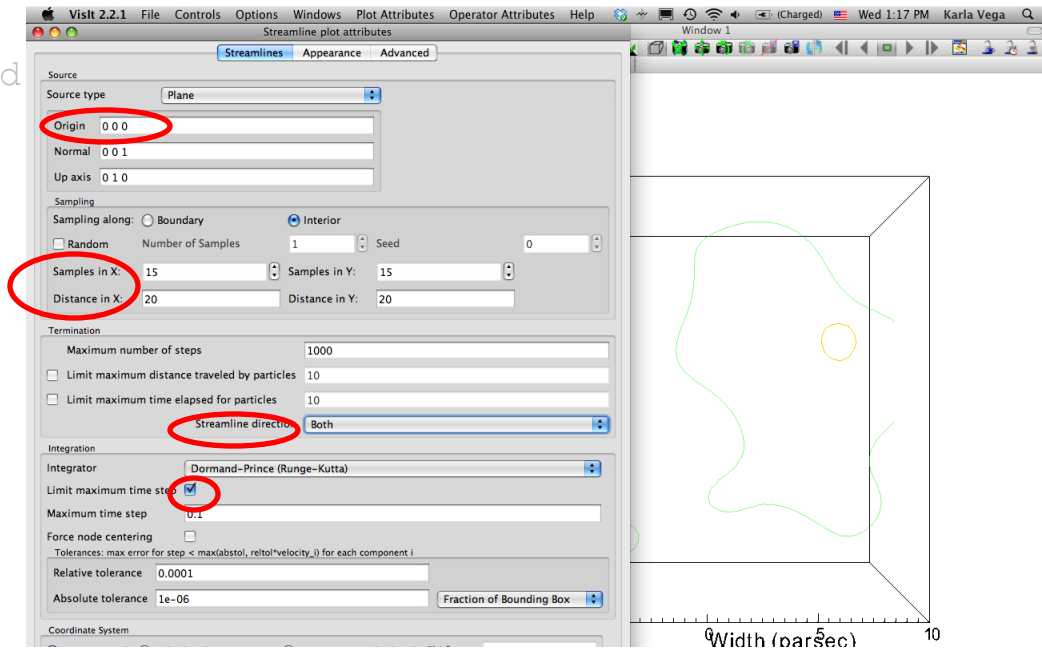




VisIt

Create Streamlines

- Click Add -> Streamline -> grad
- Double click on Streamline
- Under Source Type Select Plane
- Enter:
 - Samples in X and Y: 15
 - Distance in X and Y: 20
 - Streamline Direction Both
 - Select limit Maximum Time Step
- Click Apply
- Click Dismiss
- Click Draw and Dismiss warning
- Double click on Streamline

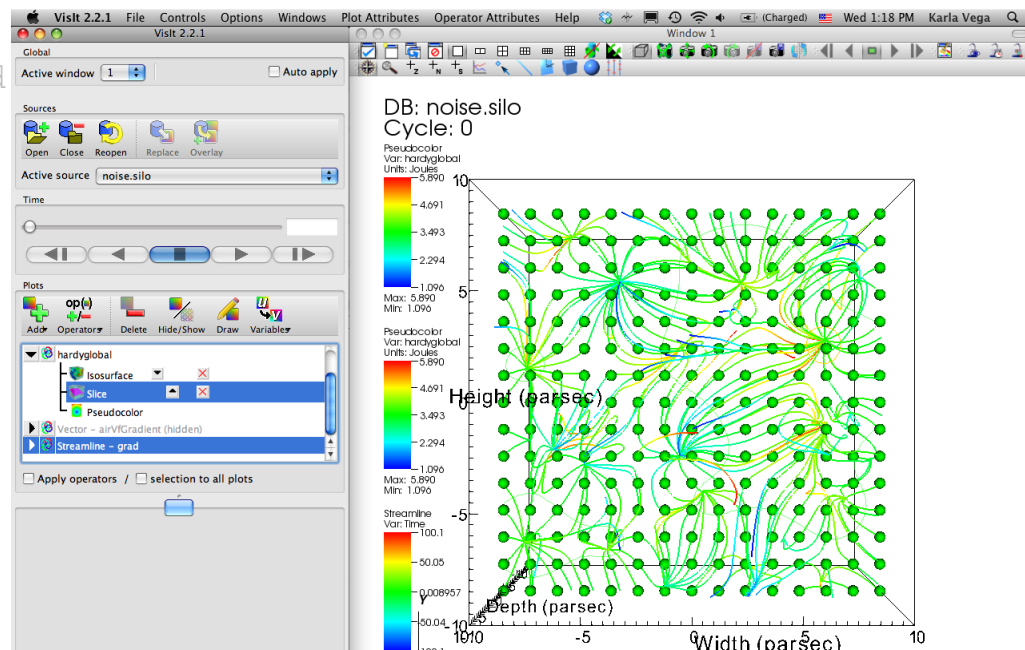




VisIt

Create Streamlines

- Click Add -> Streamline -> grad
- Double click on Streamline
- Under Source Type Select Plane
- Enter:
 - Samples in X and Y: 15
 - Distance in X and Y: 20
 - Streamline Direction Both
 - Select limit Maximum Time Step
- Click Apply
- Click Dismiss
- Click Draw and Dismiss warning
- Double click on Streamline

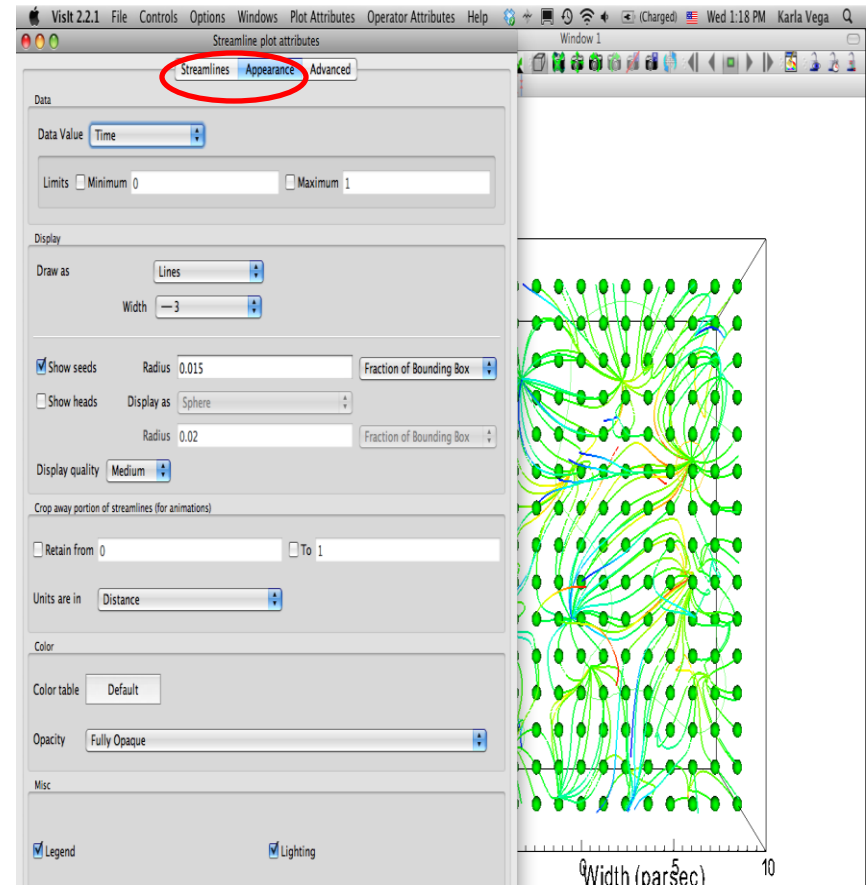




VisIt

Create Streamlines

- Click on Appearance
- Under Draw as select Tubes -> Radius 0.005
- Unselect Show seeds
- Unselect Legend
- Click Apply
- Under Data Value select Variable -> Scalars -> hardyglobal
- Click Apply
- Under Color -> Color table, click Default Choose bluehot
- Click Apply & Dismiss

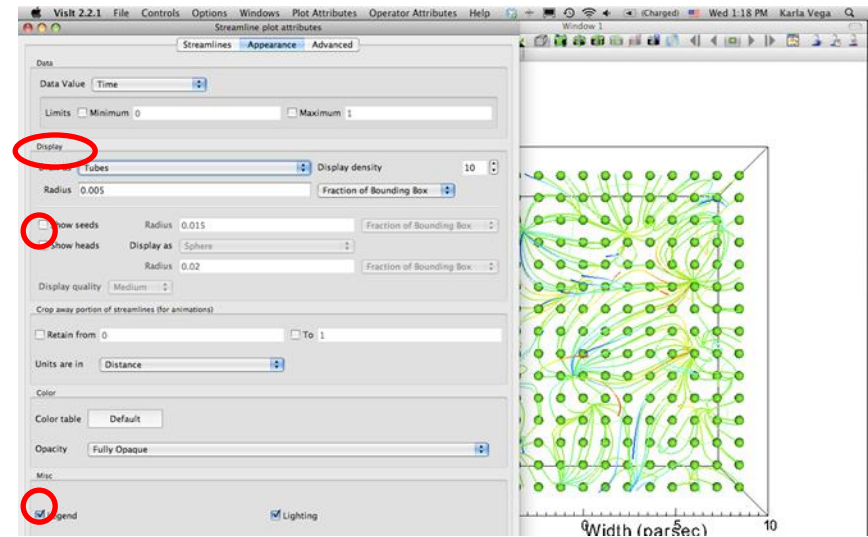




VisIt

Create Streamlines

- Click on Appearance
- Under Draw as select Tubes -> Radius 0.005
- Unselect Show seeds
- Unselect Legend
- Click Apply
- Under Data Value select Variable -> Scalars -> hardyglobal
- Click Apply
- Under Color -> Color table, click Default Choose bluehot
- Click Apply & Dismiss

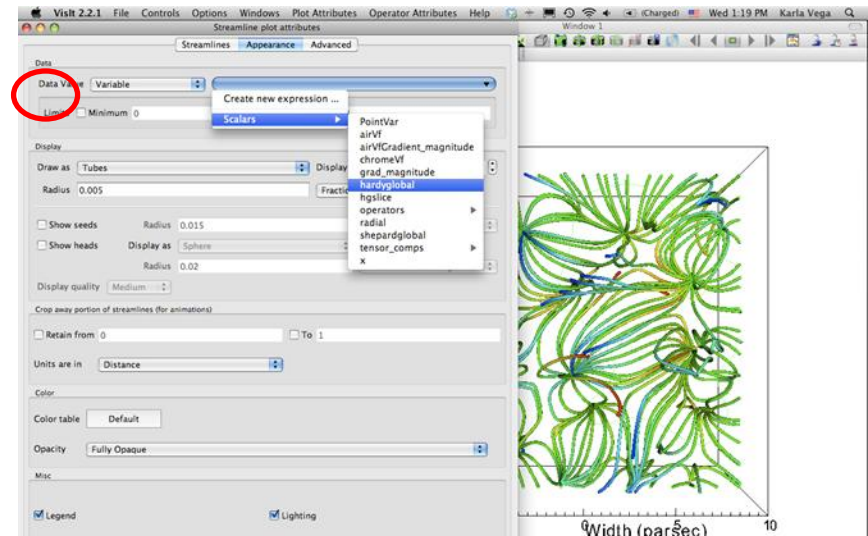




VisIt

Create Streamlines

- Click on Appearance
- Under Draw as select Tubes \rightarrow Radius 0.005
- Unselect Show seeds
- Unselect Legend
- Click Apply
- Under Data Value select Variable \rightarrow Scalars \rightarrow hardyglobal
- Click Apply
- Under Color \rightarrow Color table, click Default Choose bluehot
- Click Apply & Dismiss

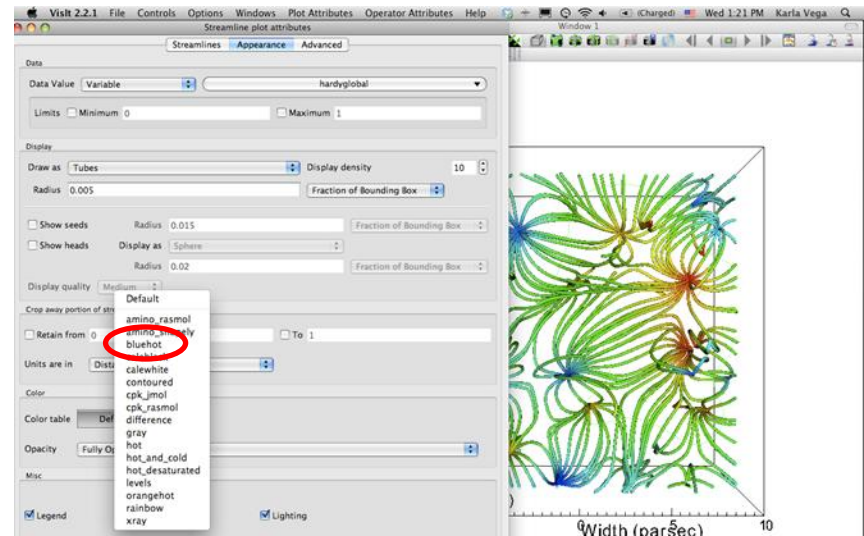




VisIt

Create Streamlines

- Click on Appearance
- Under Draw as select Tubes \rightarrow Radius 0.005
- Unselect Show seeds
- Unselect Legend
- Click Apply
- Under Data Value select Variable \rightarrow Scalars \rightarrow hardyglobal
- Click Apply
- Under Color \rightarrow Color table, click Default Choose bluehot
- Click Apply & Dismiss

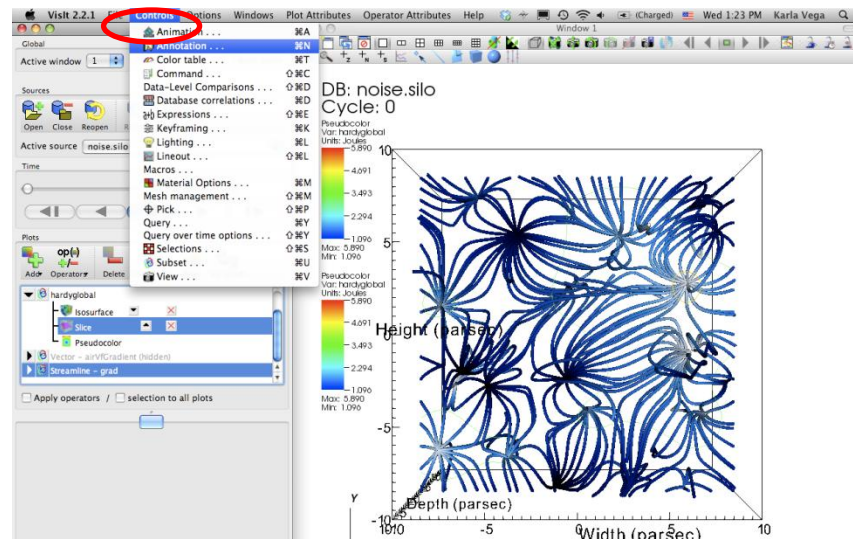




VisIt

Background Color and Legend

- Click on Controls -> Annotation
- Click on Colors
- Select Black for Background and White for Foreground
- Click Apply
- Click on General
- Click no annotations
- Select legend
- Click Apply & Dismiss
- Hide Pseudocolor Plots

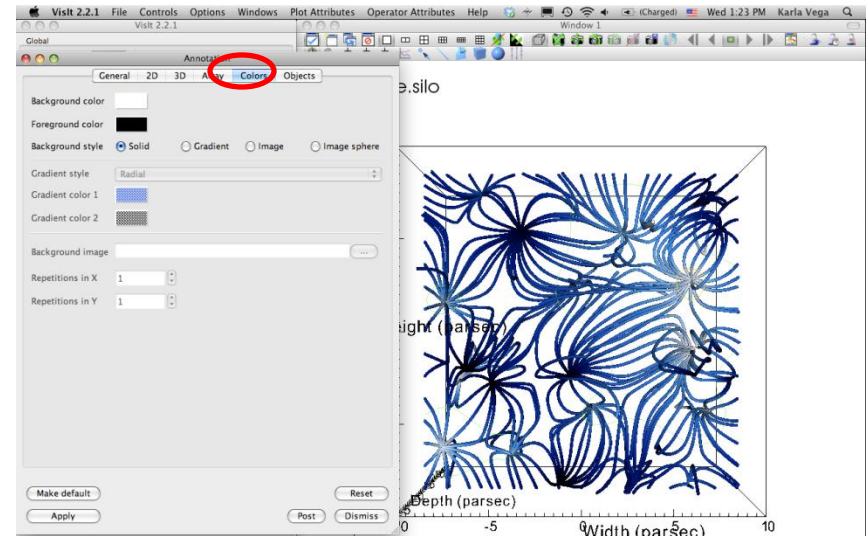




VisIt

Background Color and Legend

- Click on Controls -> Annotation
- Click on Colors
- Select Black for Background and White for Foreground
- Click Apply
- Click on General
- Click no annotations
- Select legend
- Click Apply & Dismiss
- Hide Pseudocolor Plots

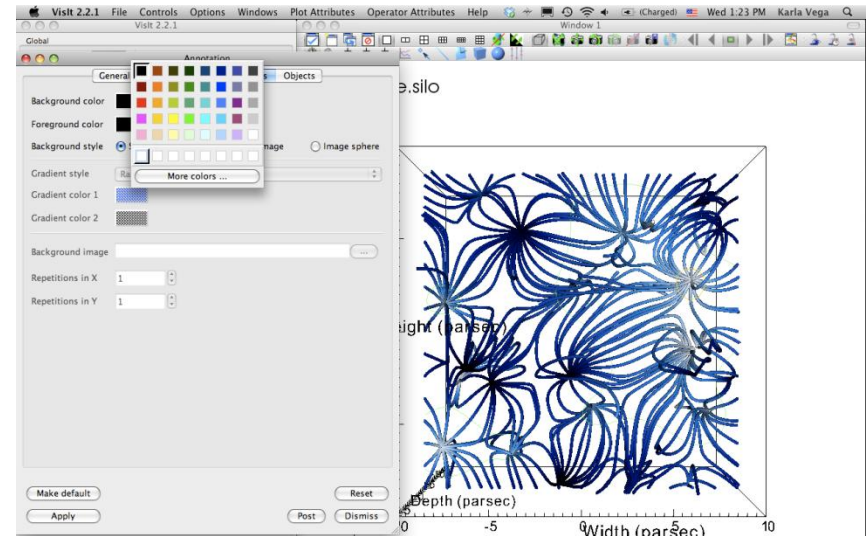




VisIt

Background Color and Legend

- Click on Controls -> Annotation
- Click on Colors
- Select Black for Background and White for Foreground
- Click Apply
- Click on General
- Click no annotations
- Select legend
- Click Apply & Dismiss
- Hide Pseudocolor Plots

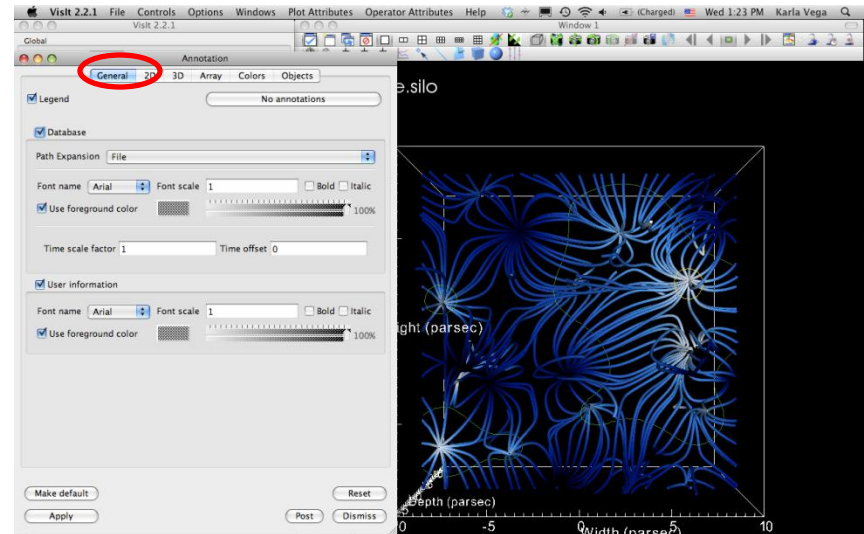




VisIt

Background Color and Legend

- Click on Controls -> Annotation
- Click on Colors
- Select Black for Background and White for Foreground
- Click Apply
- Click on General
- Click no annotations
- Select legend
- Click Apply & Dismiss
- Hide Pseudocolor Plots

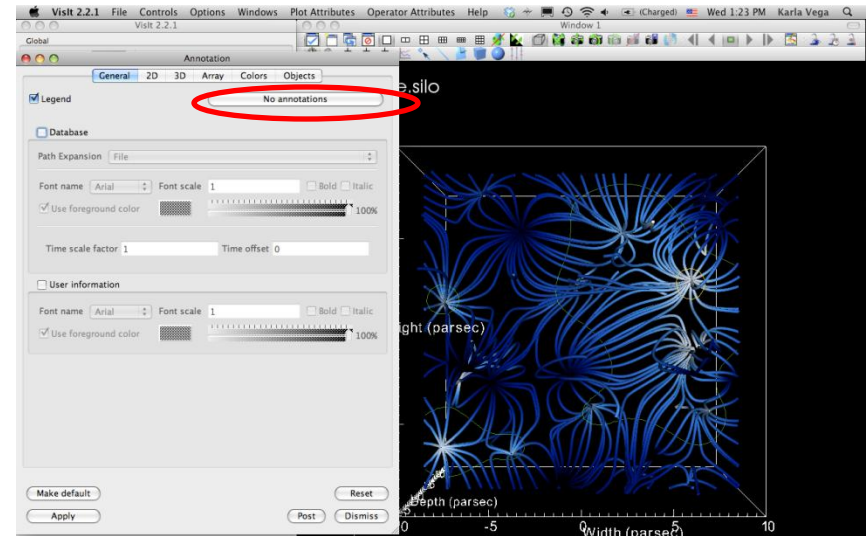




VisIt

Background Color and Legend

- Click on Controls -> Annotation
- Click on Colors
- Select Black for Background and White for Foreground
- Click Apply
- Click on General
- Click no annotations
- Select legend
- Click Apply & Dismiss
- Hide Pseudocolor Plots

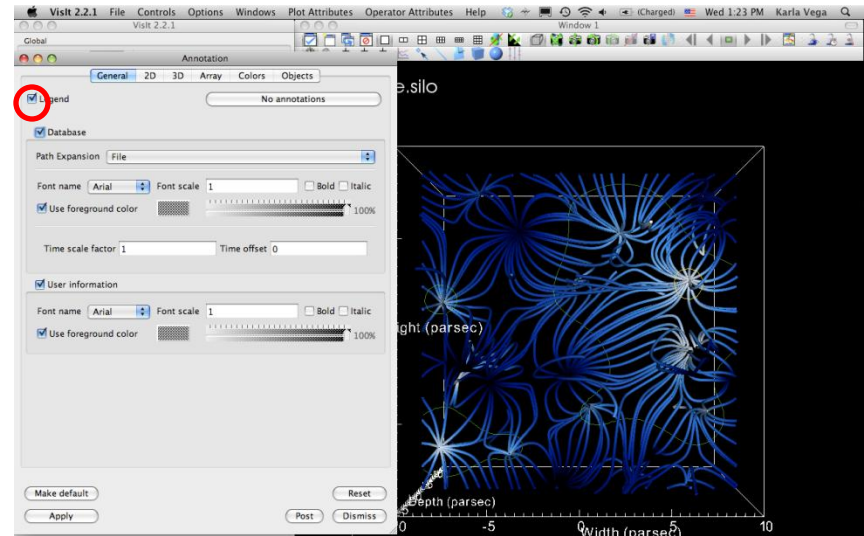




VisIt

Background Color and Legend

- Click on Controls -> Annotation
- Click on Colors
- Select Black for Background and White for Foreground
- Click Apply
- Click on General
- Click no annotations
- Select legend
- Click Apply & Dismiss
- Hide Pseudocolor Plots

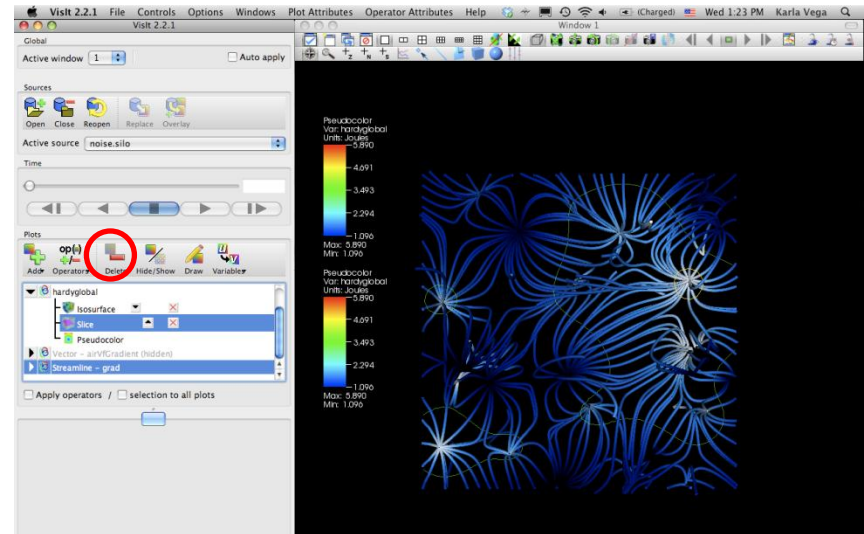




VisIt

Background Color and Legend

- Click on Controls -> Annotation
- Click on Colors
- Select Black for Background and White for Foreground
- Click Apply
- Click on General
- Click no annotations
- Select legend
- Click Apply & Dismiss
- Hide Pseudocolor Plots

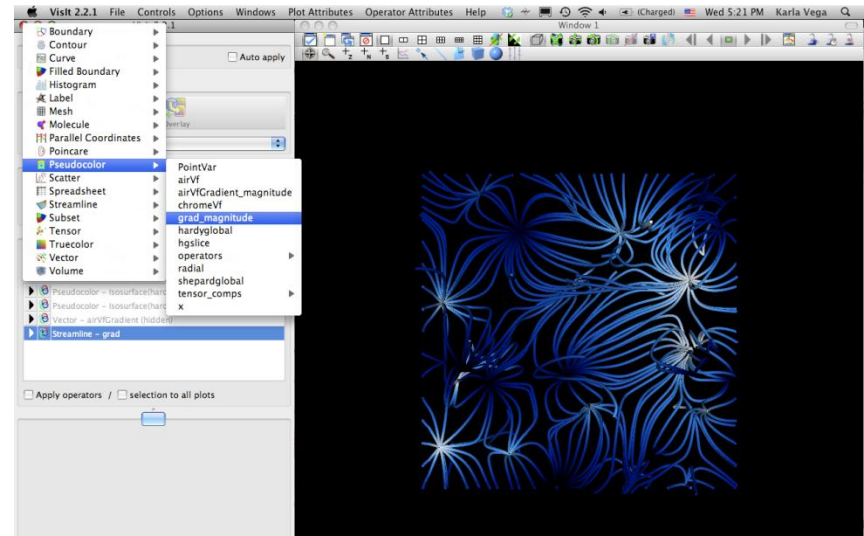




VisIt

Create Slice

- Click Add -> Pseudocolor -> grad_magnitude
- Click Draw
- Click Operator -> Slicing -> Slice
- Double click on Slice
- Select Z Axis
- Unselect project to 2D
- Click Apply & Dismiss
- Click Draw
- Click Hide/Show

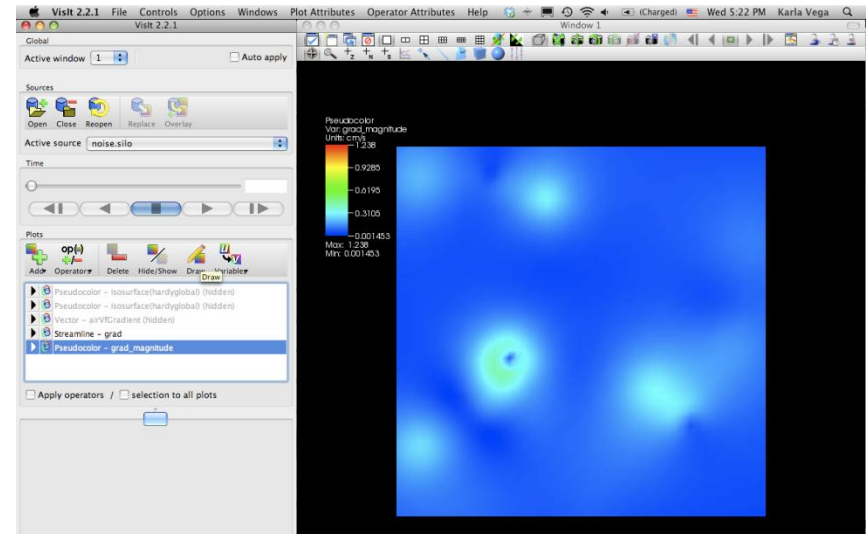




VisIt

Create Slice

- Click Add -> Pseudocolor -> grad_magnitude
- Click Draw
- Click Operator -> Slicing -> Slice
- Double click on Slice
- Select Z Axis
- Unselect project to 2D
- Click Apply & Dismiss
- Click Draw
- Click Hide/Show

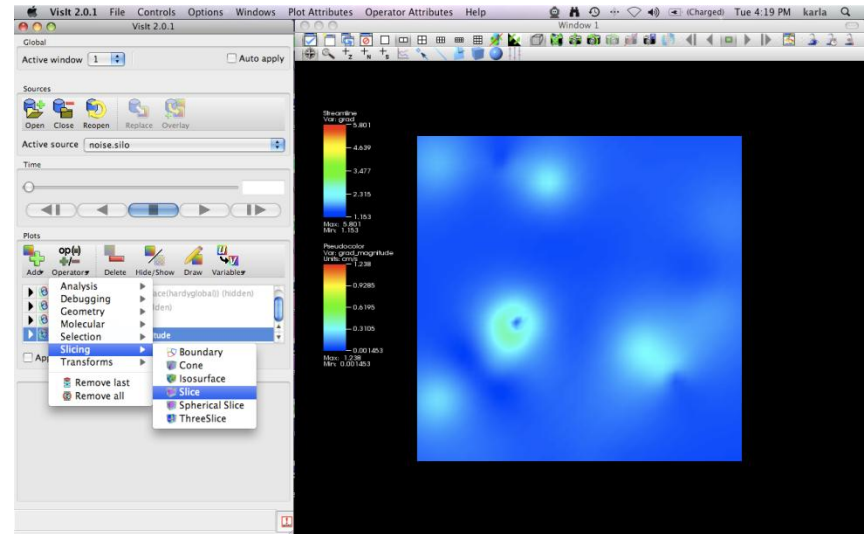




VisIt

Create Slice

- Click Add -> Pseudocolor -> grad_magnitude
- Click Draw
- Click Operator -> Slicing -> Slice
- Double click on Slice
- Select Z Axis
- Unselect project to 2D
- Click Apply & Dismiss
- Click Draw
- Click Hide/Show

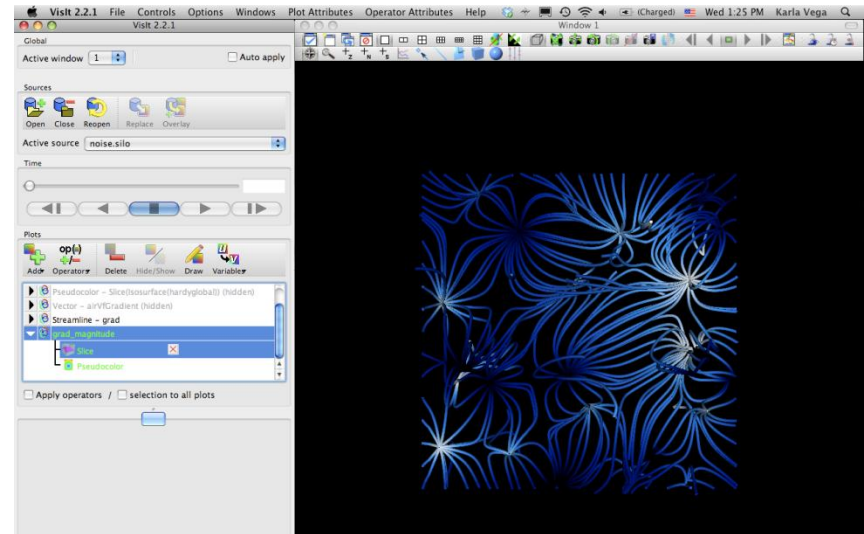




VisIt

Create Slice

- Click Add -> Pseudocolor -> grad_magnitude
- Click Draw
- Click Operator -> Slicing -> Slice
- Double click on Slice
- Select Z Axis
- Unselect project to 2D
- Click Apply & Dismiss
- Click Draw
- Click Hide/Show

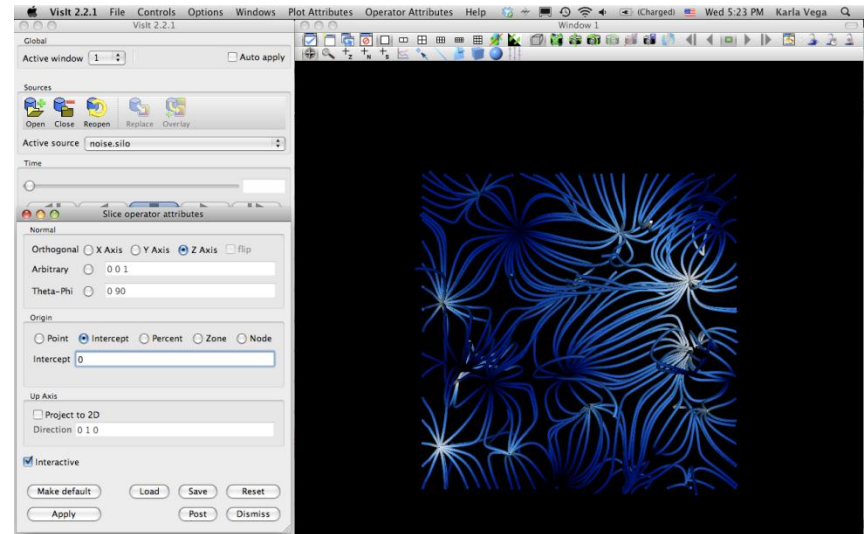




VisIt

Create Slice

- Click Add -> Pseudocolor -> grad_magnitude
- Click Draw
- Click Operator -> Slicing -> Slice
- Double click on Slice
- Select Z Axis
- Unselect project to 2D
- Click Apply & Dismiss
- Click Draw
- Click Hide/Show

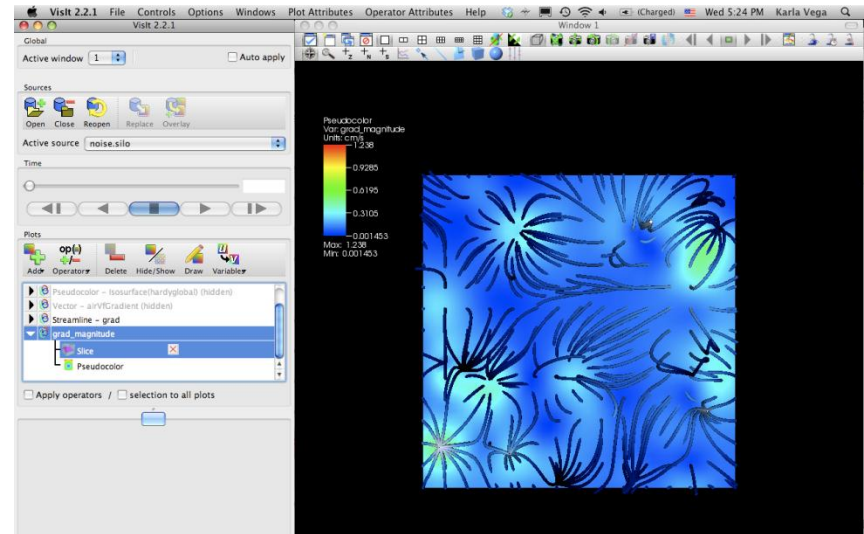




VisIt

Create Slice

- Click Add -> Pseudocolor -> grad_magnitude
- Click Draw
- Click Operator -> Slicing -> Slice
- Double click on Slice
- Select Z Axis
- Unselect project to 2D
- Click Apply & Dismiss
- Click Draw
- Click Hide/Show

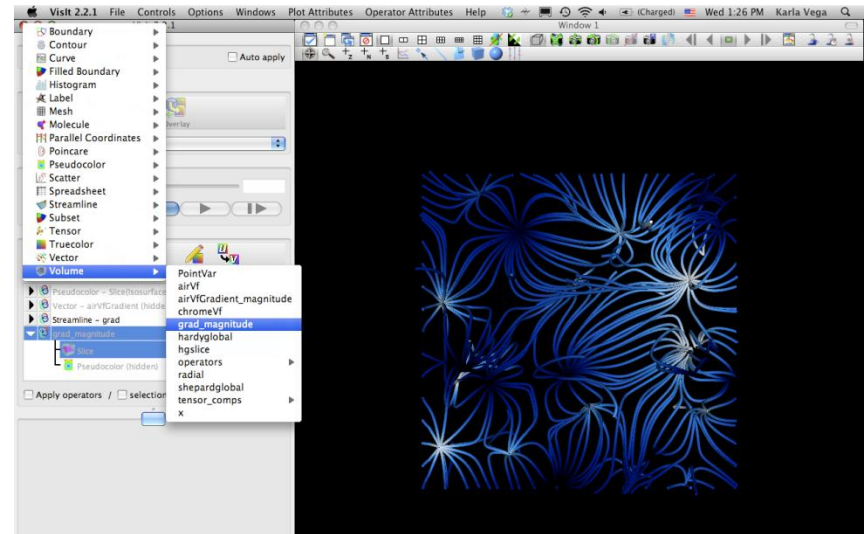




VisIt

Create Volume Rendering

- Click Add -> Volume -> grad_magnitude
- Click Draw
- Double click on Volume
- Click on 1D transfer function
- Change Transfer Function (Under Opacity)
- Click Apply
- Click Dismiss

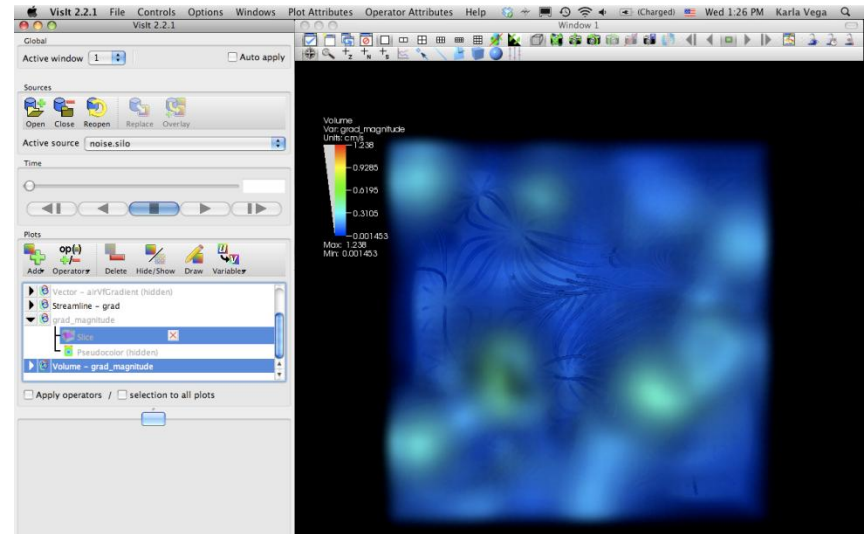




VisIt

Create Volume Rendering

- Click Add -> Volume -> grad_magnitude
- Click Draw
- Double click on Volume
- Click on 1D transfer function
- Change Transfer Function (Under Opacity)
- Click Apply
- Click Dismiss

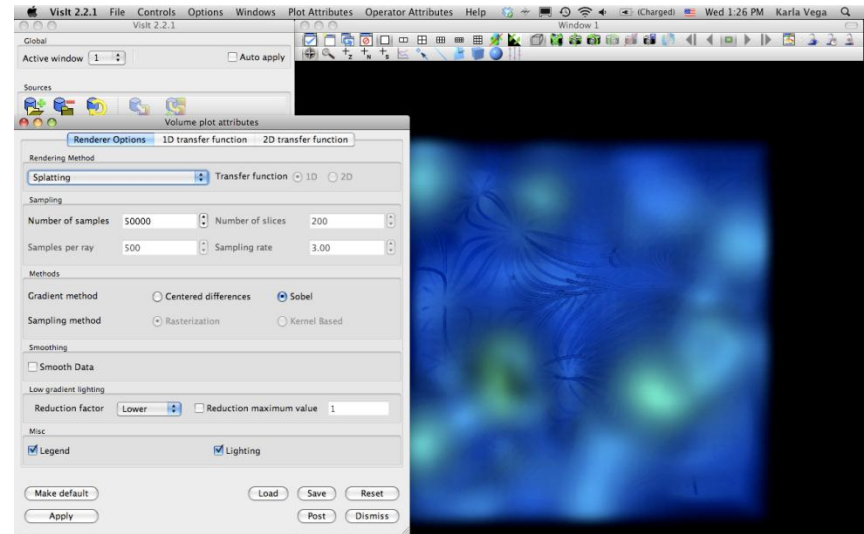




VisIt

Create Volume Rendering

- Click Add -> Volume -> grad_magnitude
- Click Draw
- Double click on Volume
- Click on 1D transfer function
- Change Transfer Function (Under Opacity)
- Click Apply
- Click Dismiss

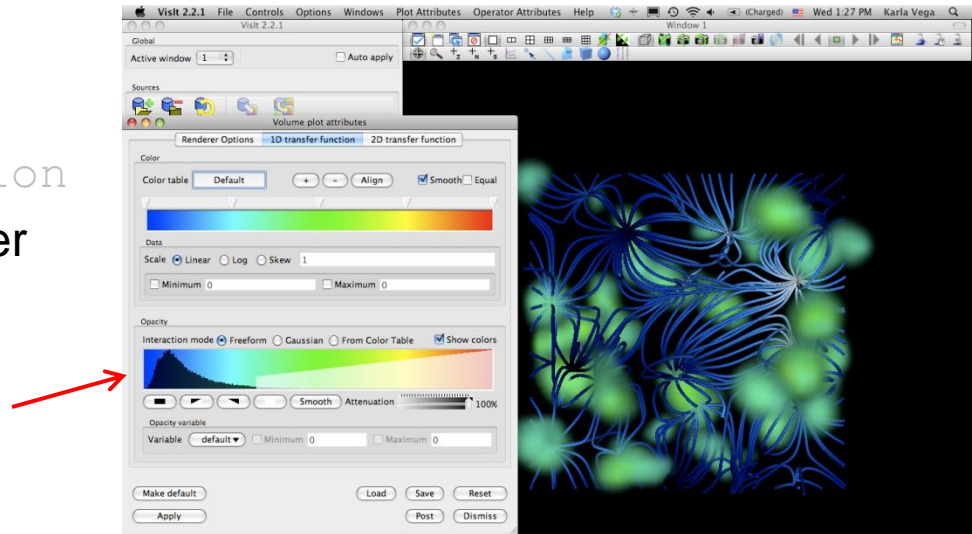




VisIt

Create Volume Rendering

- Click Add -> Volume -> grad_magnitude
- Click Draw
- Double click on Volume
- Click on 1D transfer function
- Change Transfer Function (Under Opacity)
- Click Apply
- Click Dismiss

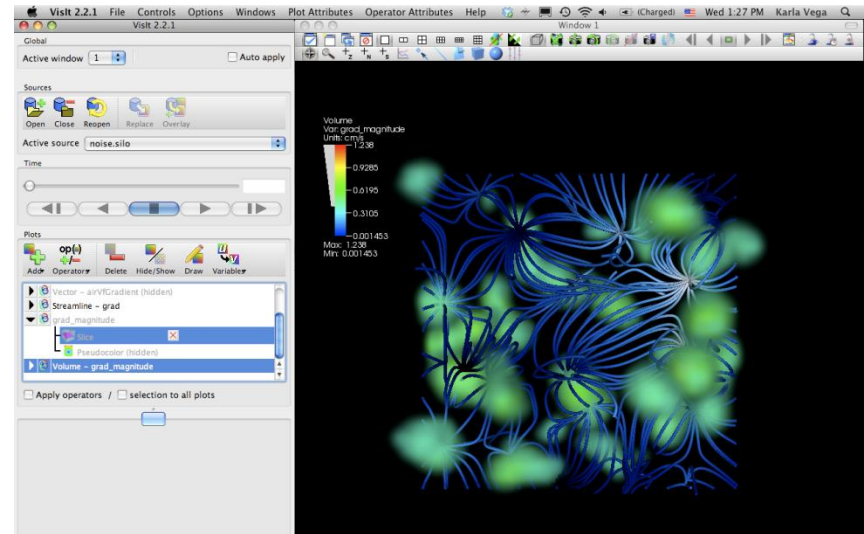


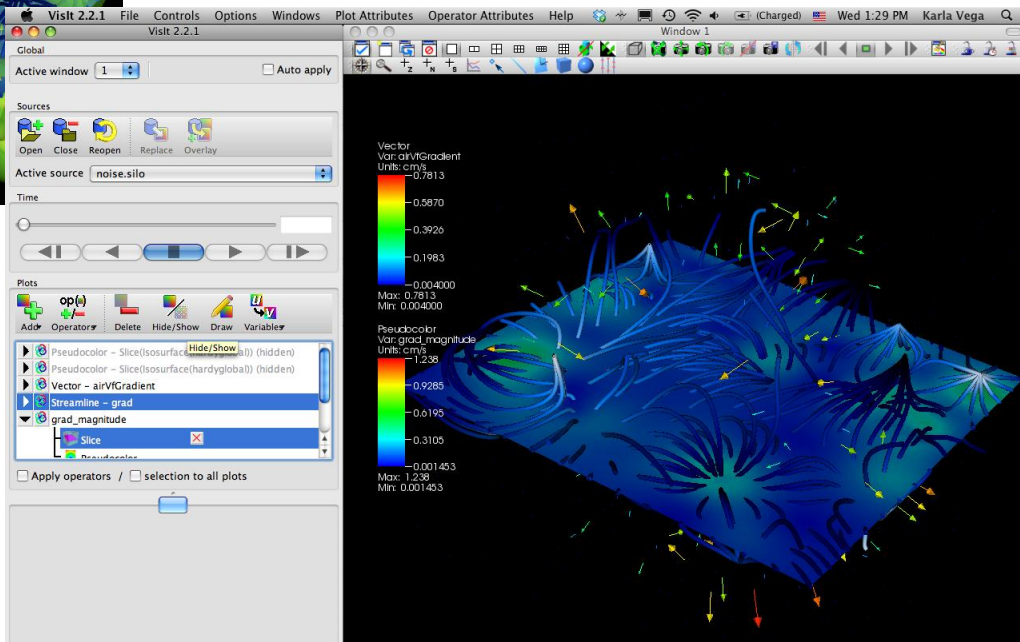
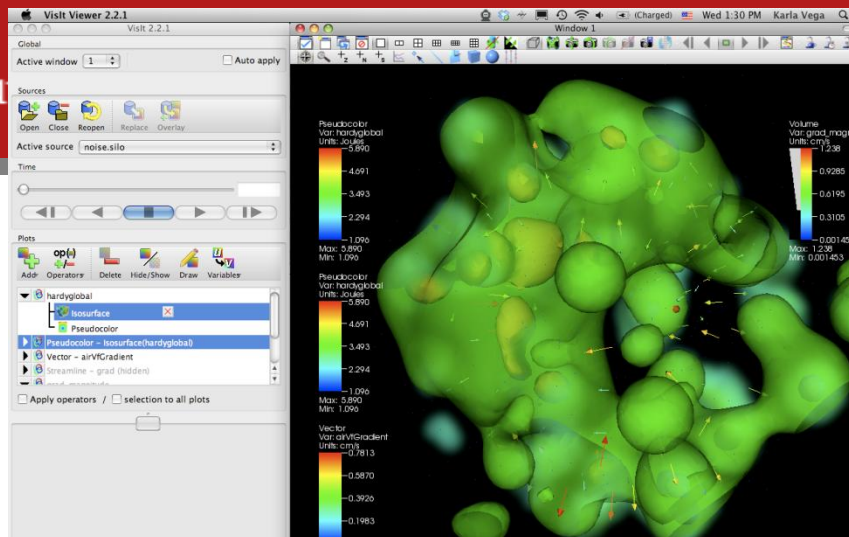
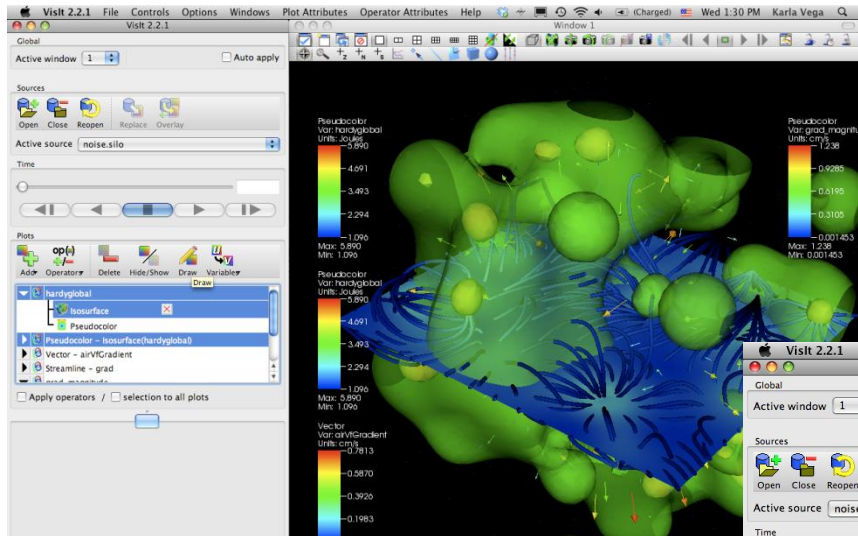


VisIt

Create Volume Rendering

- Click Add -> Volume -> grad_magnitude
- Click Draw
- Double click on Volume
- Click on 1D transfer function
- Change Transfer Function (Under Opacity)
- Click Apply
- Click Dismiss







Questions?

- More tutorials available:
 - <https://wci.llnl.gov/codes/visit/manuals.html>
- More information:
 - <http://visituers.org>
- More help:
 - Visit User mailing list: visit-users@email.ornl.gov