LaMEM short course

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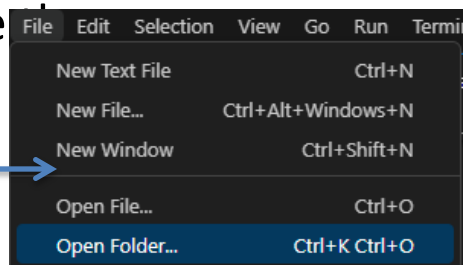
First LaMEM model

- Using VScode and the Julia REPL

→ go to 00_falling_block_3D/ directory using cd (“path”) or use
shell ; for Unix based systems

- you can also open folder in VScode

(this will place the REPL in the right location)



→ load LaMEM, provide input file and run test model

```
julia> using LaMEM

julia> paramFile=("FallingBlock_Multigrid.dat")
"FallingBlock_Multigrid.dat"

julia> run_lamem(paramFile,1)
```

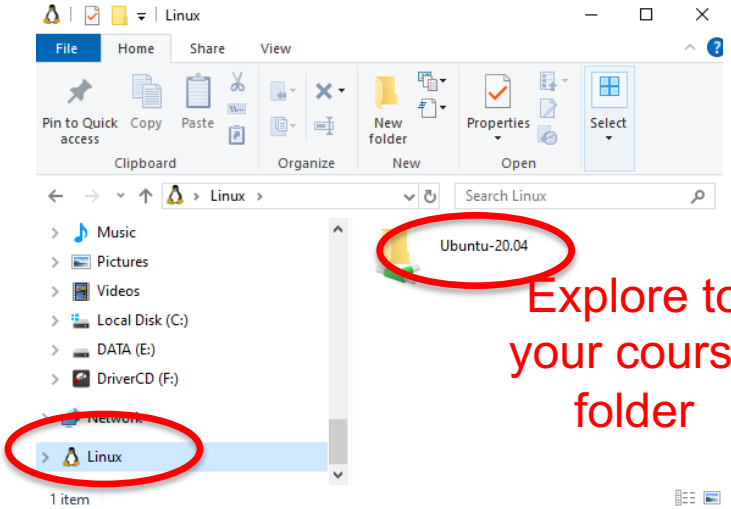
A few moments later…

```
Residual summary:
   Continuity:
      |Div|_inf = 4.955148275832e-07
      |Div|_2   = 4.156760835818e-06
   Momentum:
      |mRes|_2  = 1.842965364402e-03
--------------------------------------------------------------------------
Actual time step : 9.70017 [ ]
--------------------------------------------------------------------------
Marker control [0]: (AVD YZED) injected 8 markers and deleted 0 markers in 8.4110e-04 s
Marker control [0]: (AVD XZED) injected 12 markers and deleted 0 markers in 1.3592e-03 s
Marker control [0]: (AVD XYED) injected 11 markers and deleted 0 markers in 1.4619e-03 s
--------------------------------------------------------------------------
Saving output ... done (1.05814 sec)
--------------------------------------------------------------------------
========================== SOLUTION IS DONE! ===========================
--------------------------------------------------------------------------
Total solution time : 53.4271 (sec)
--------------------------------------------------------------------------

julia>
```

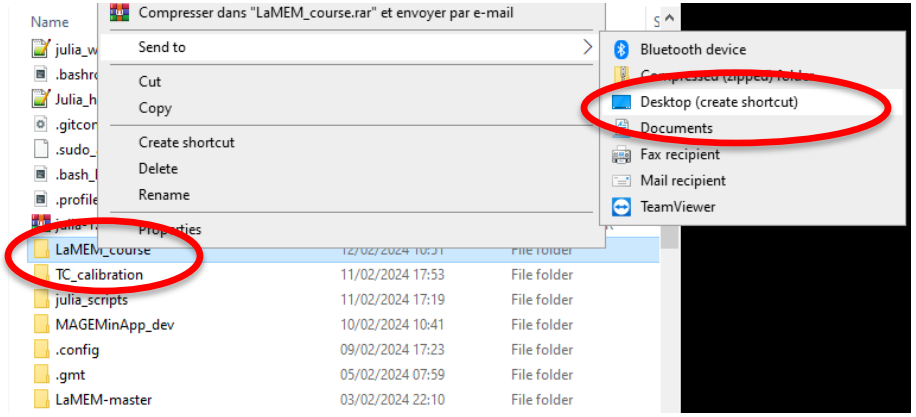
Visualize your first simulation using Paraview

How to access the folder using Paraview? (Windows)



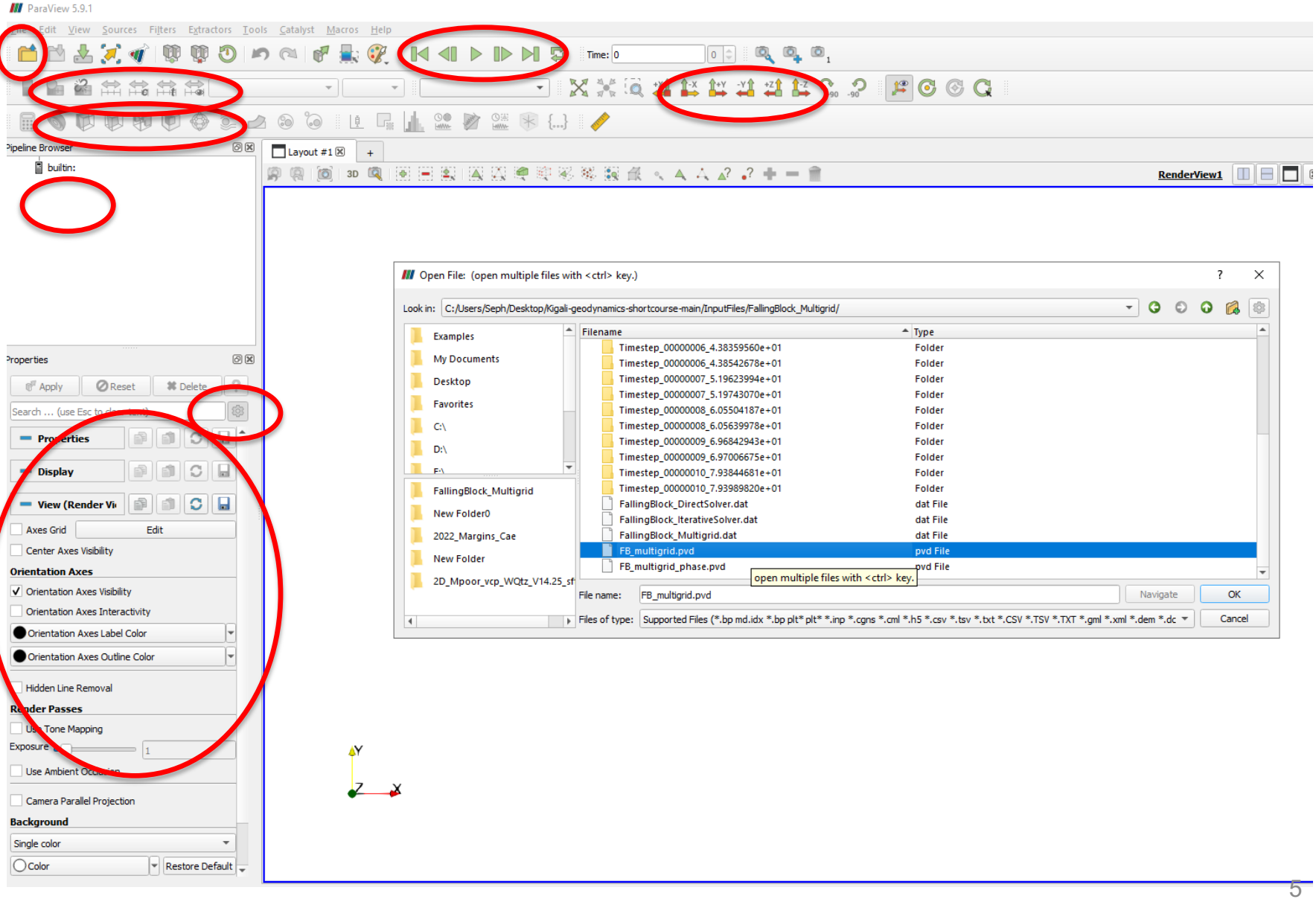
Explore to your course folder

Access your linux



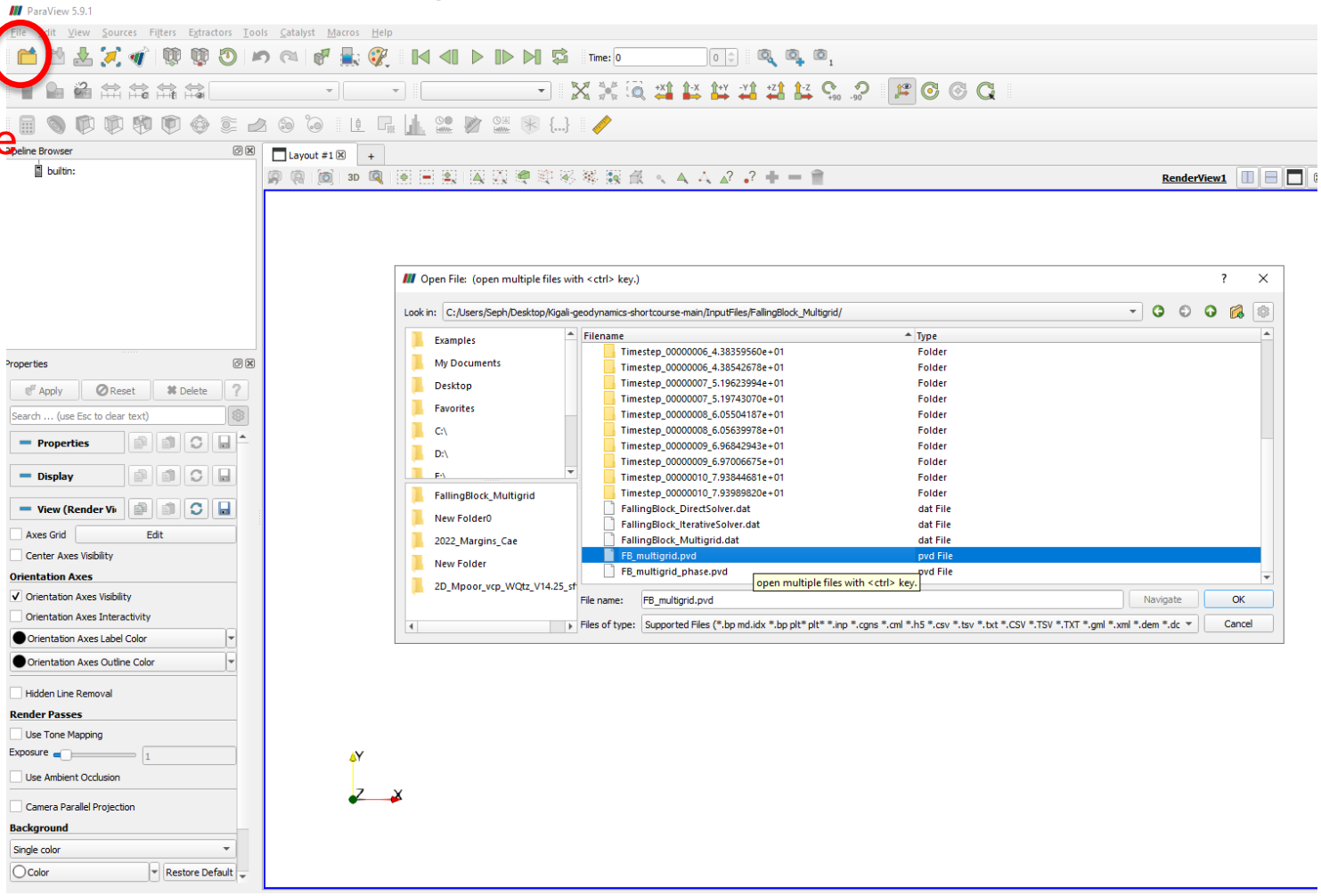
Right click and send a short cut to Desktop

Paraview: overview



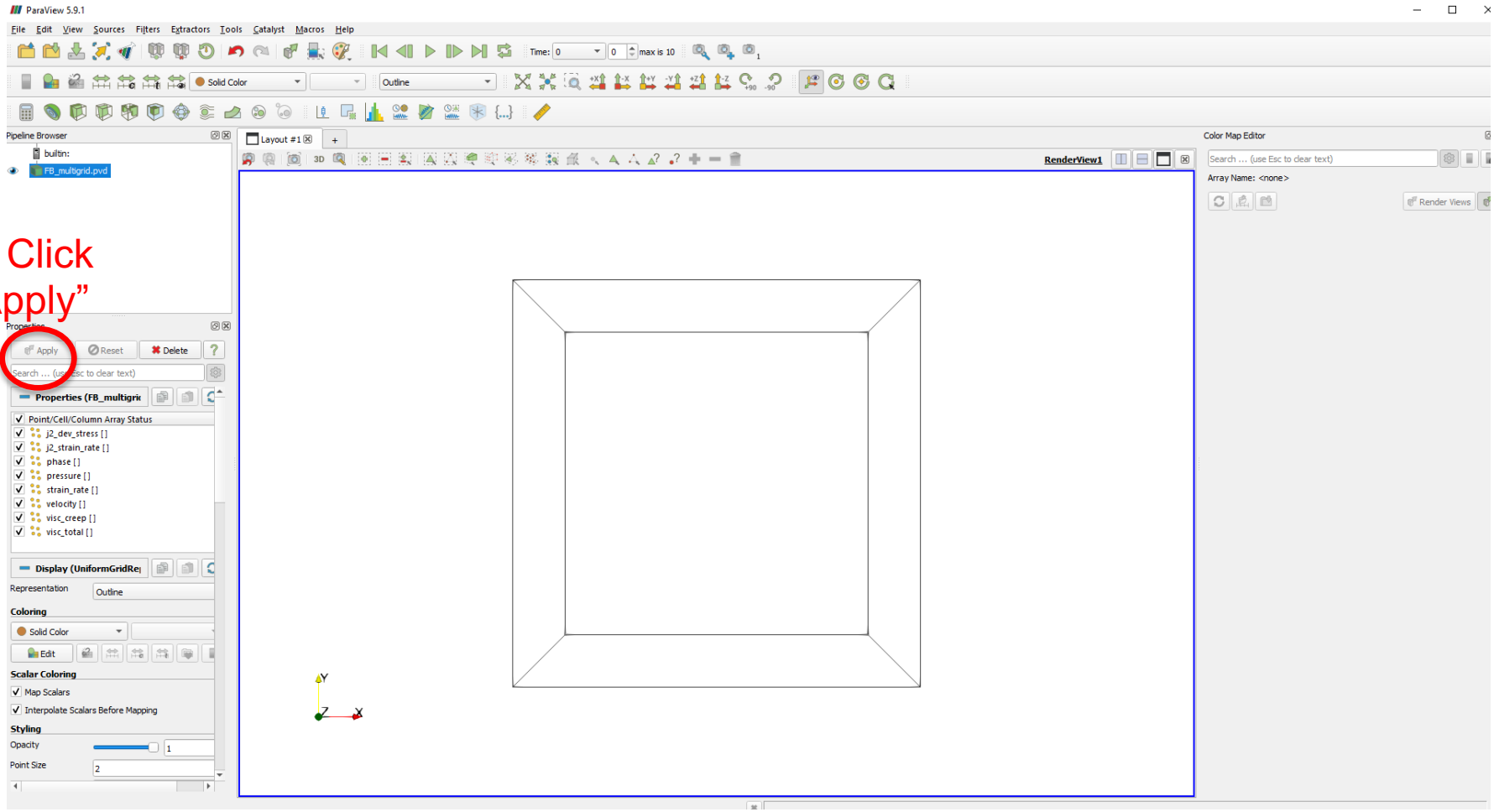
Open Paraview

Open file



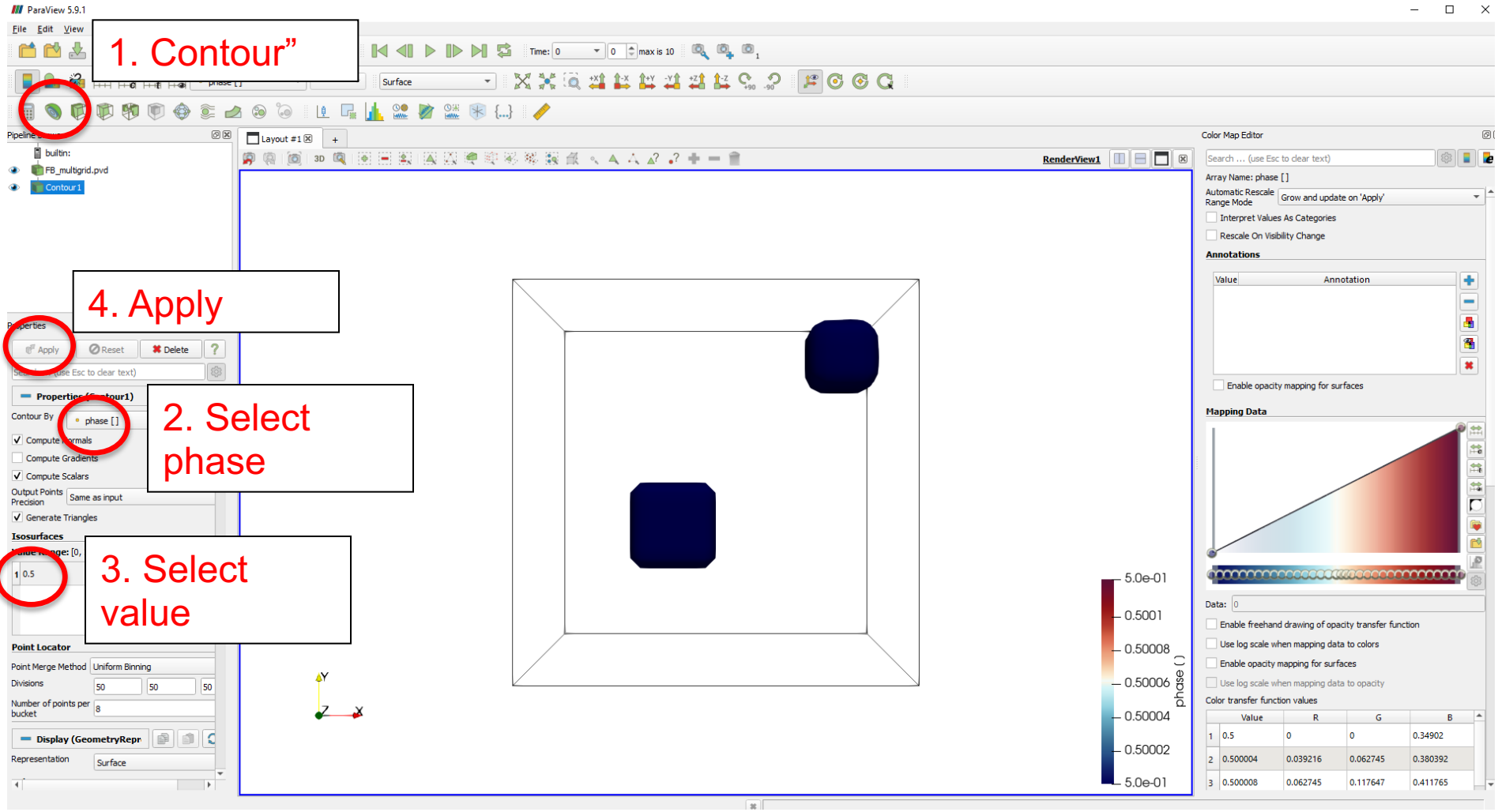
- Open the file “FB_multigrid.pvd” in the folder you just downloaded

Load data

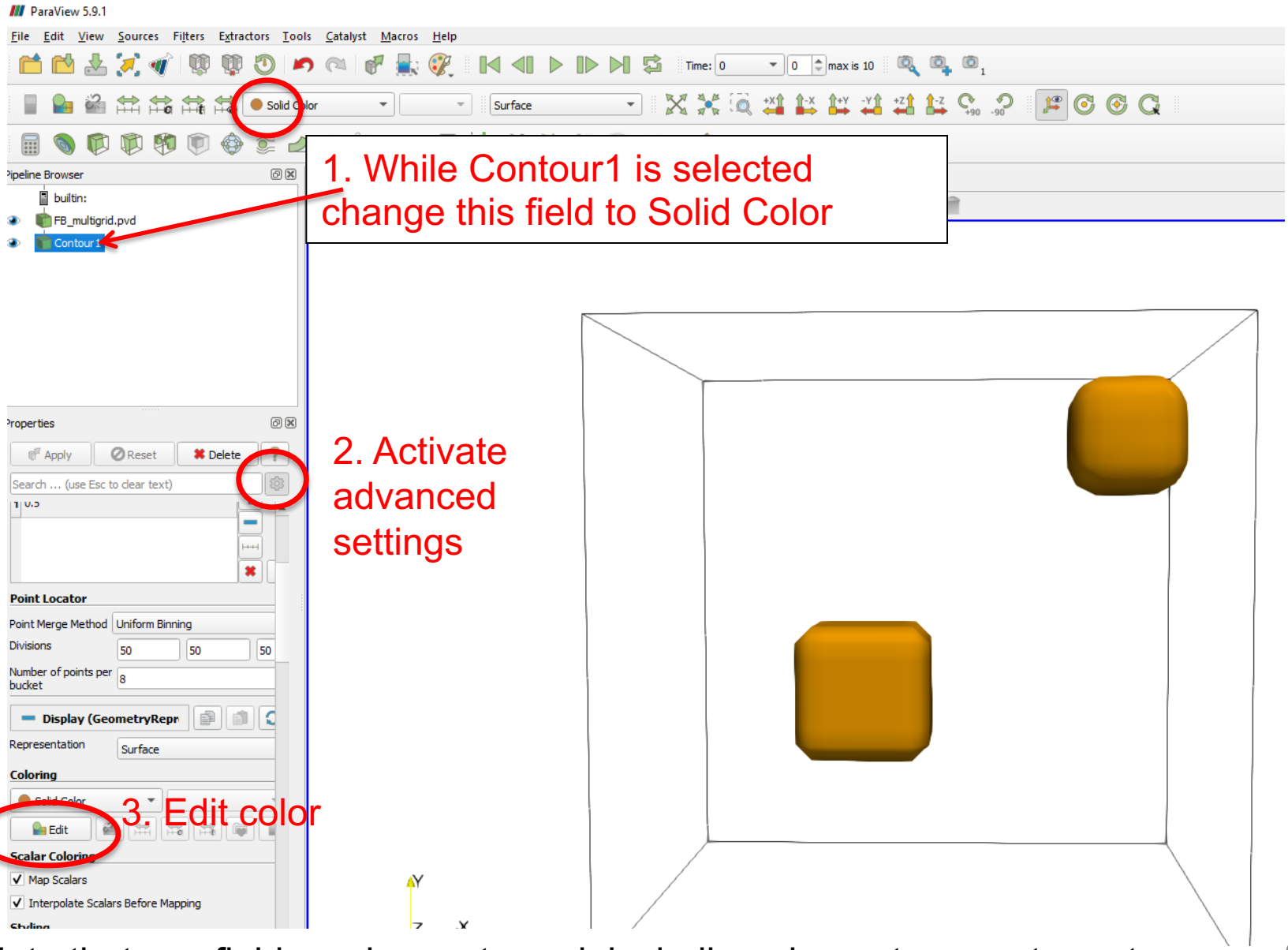


1. Click "Apply"

Display falling blocks

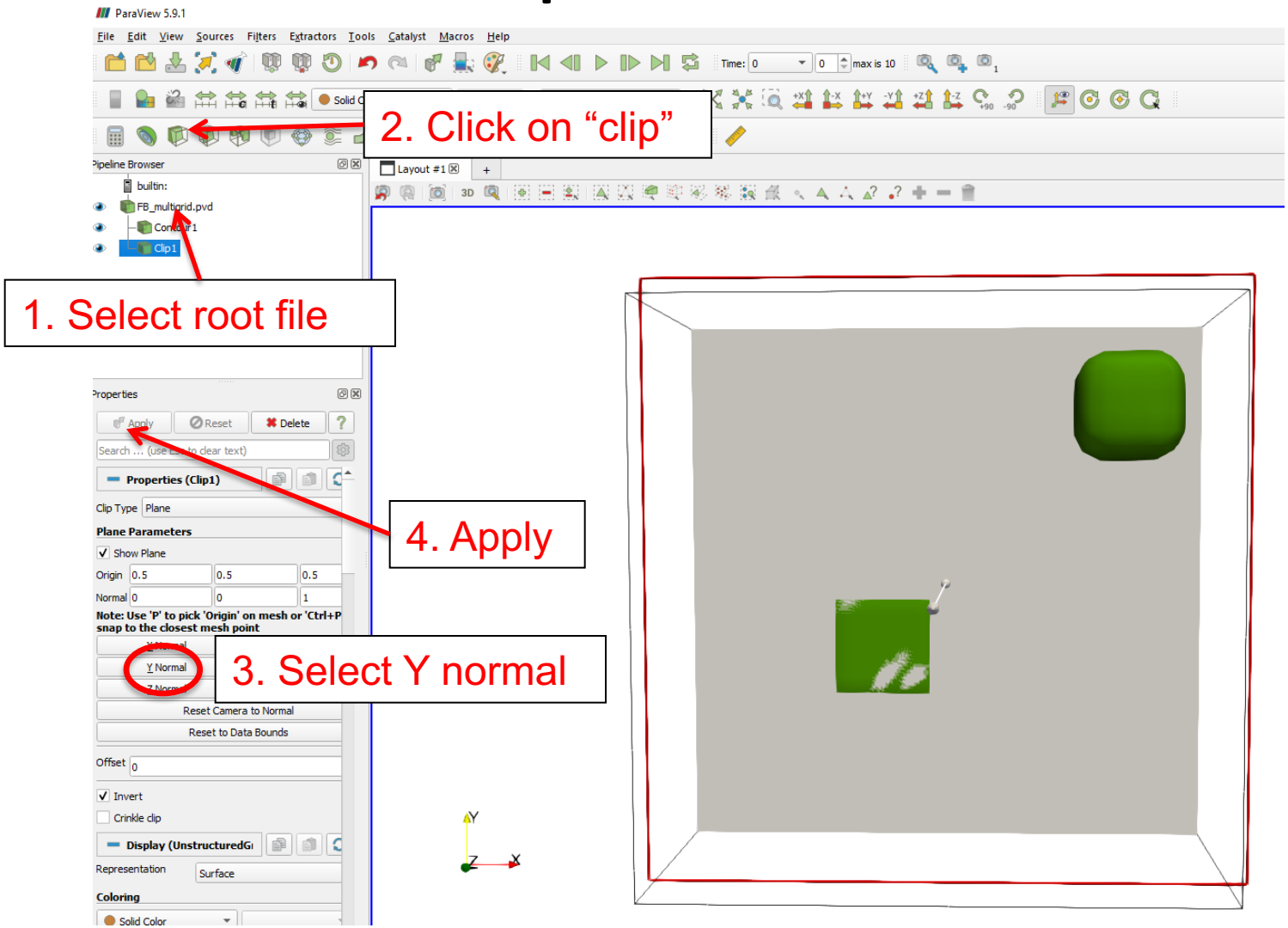


Change block color

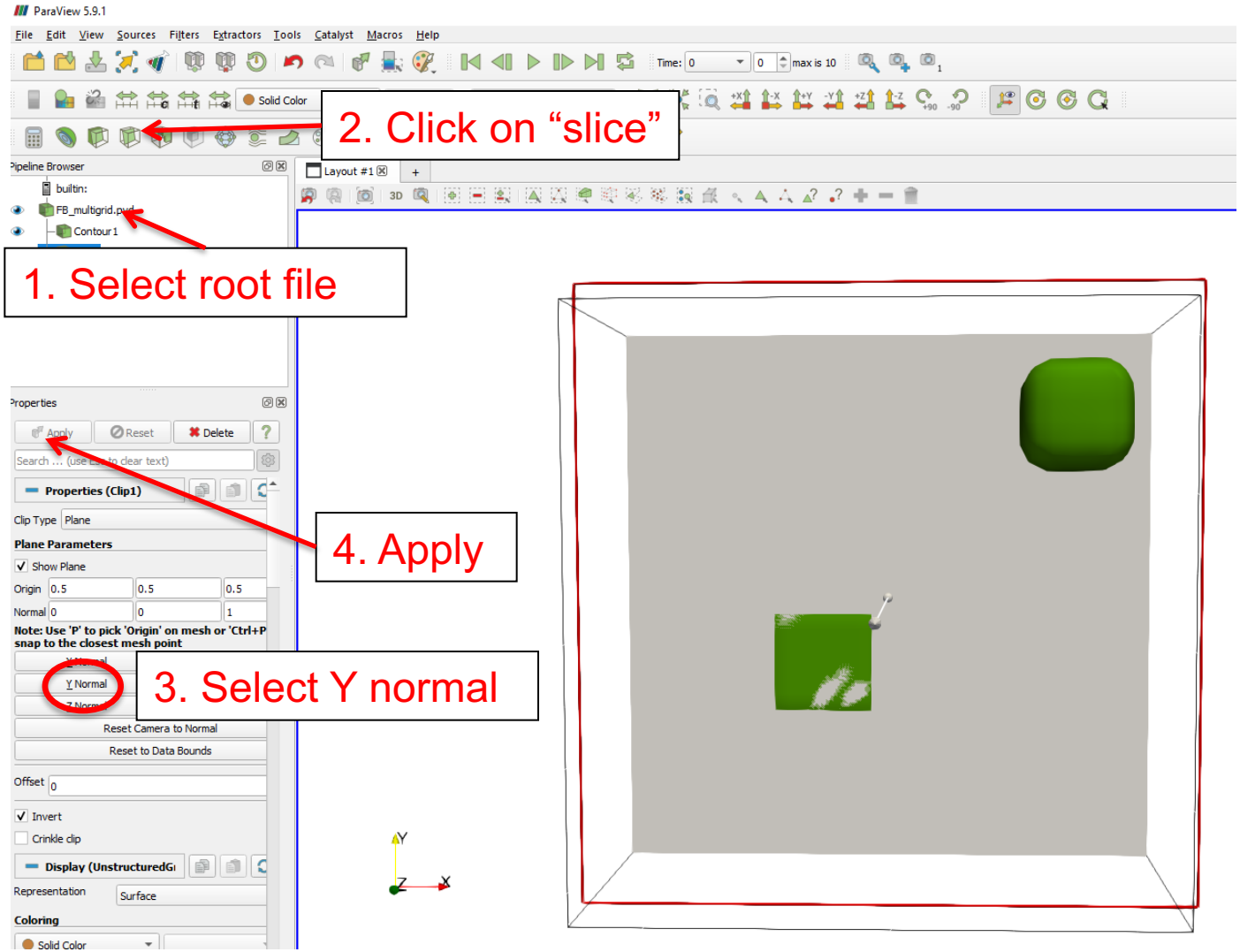


- Note that any field can be contoured: including phase, temperature etc.

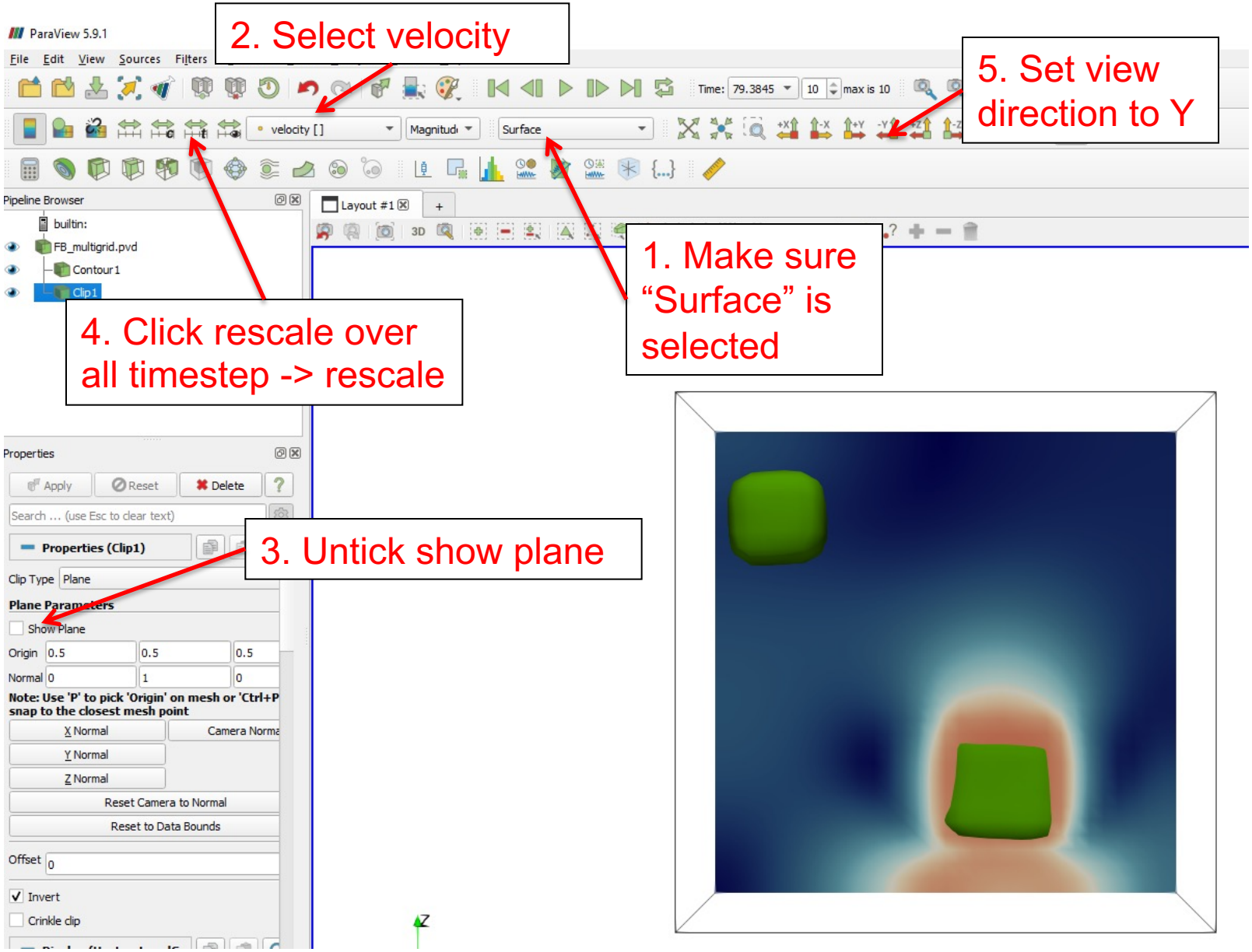
Clip host material



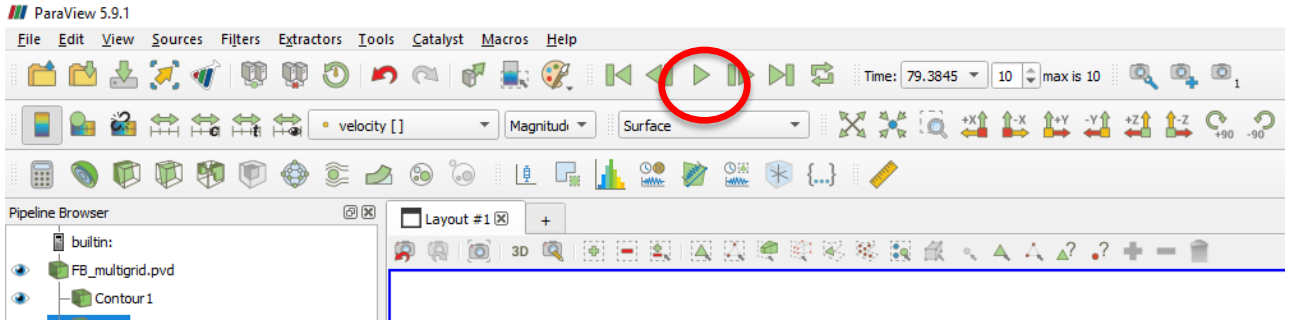
Or slice material



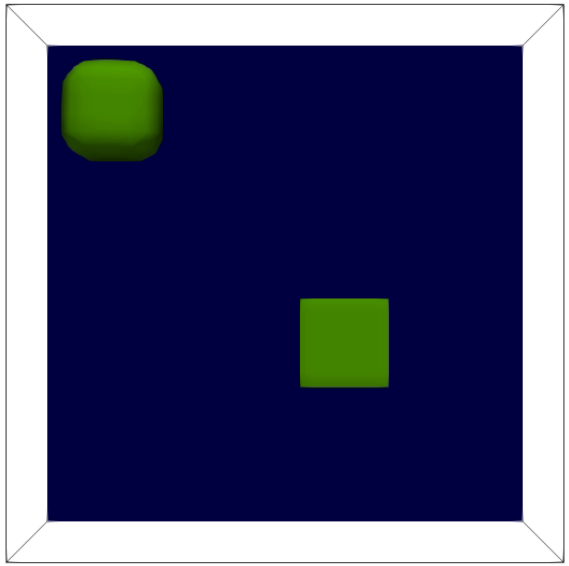
Display field

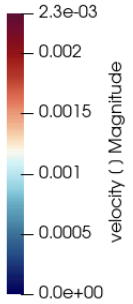


Play the timesteps

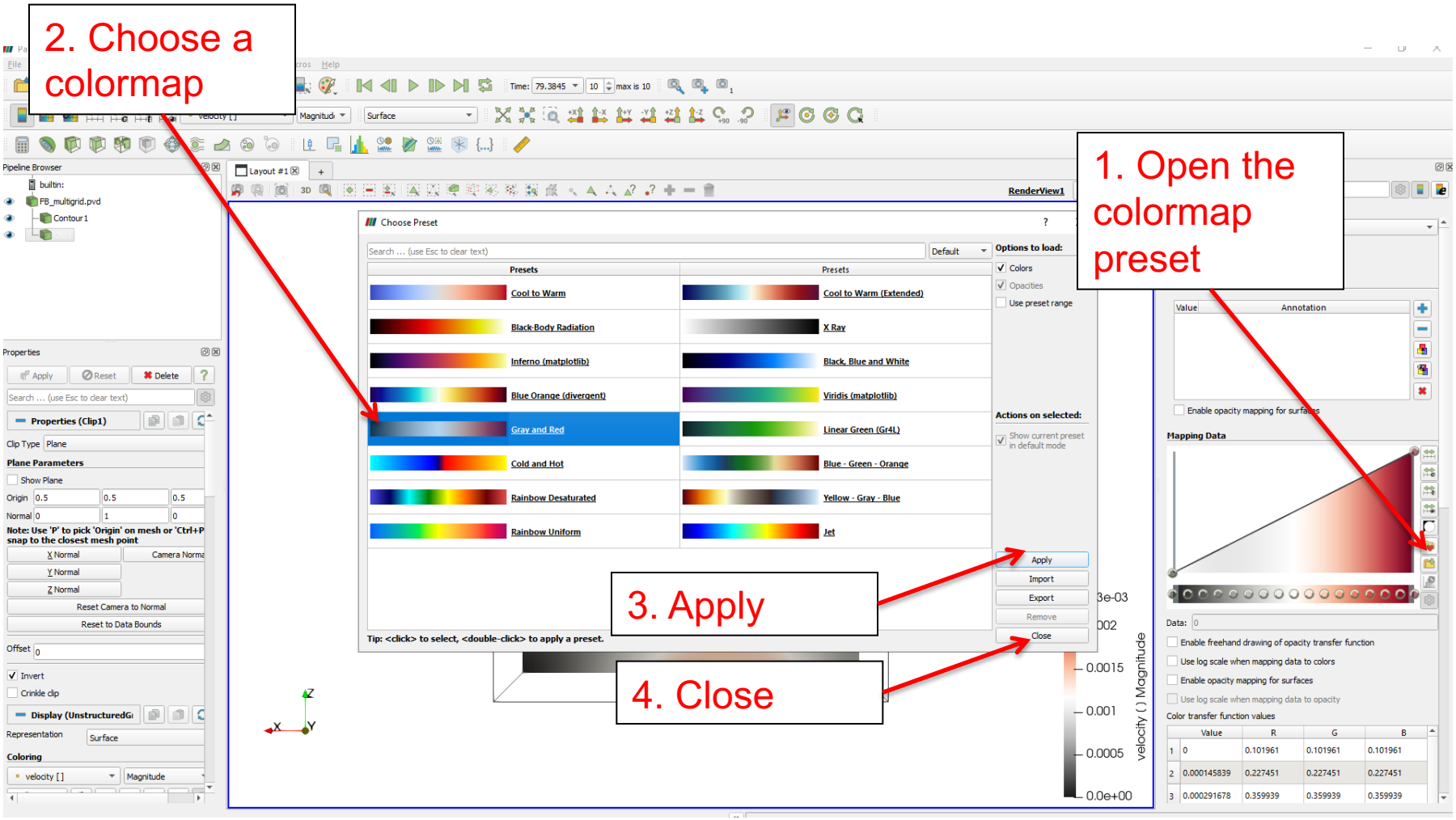


… it should look like this:

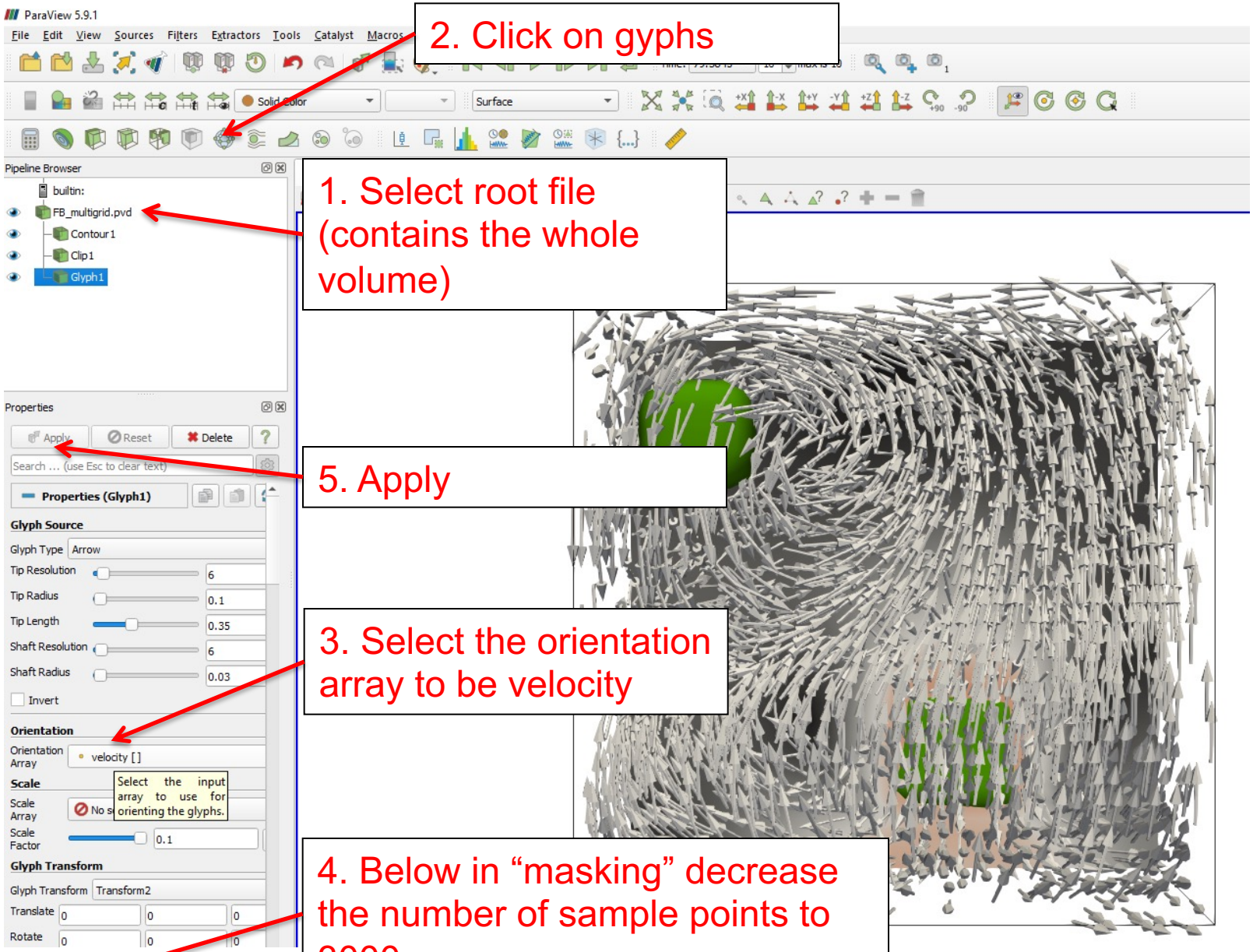




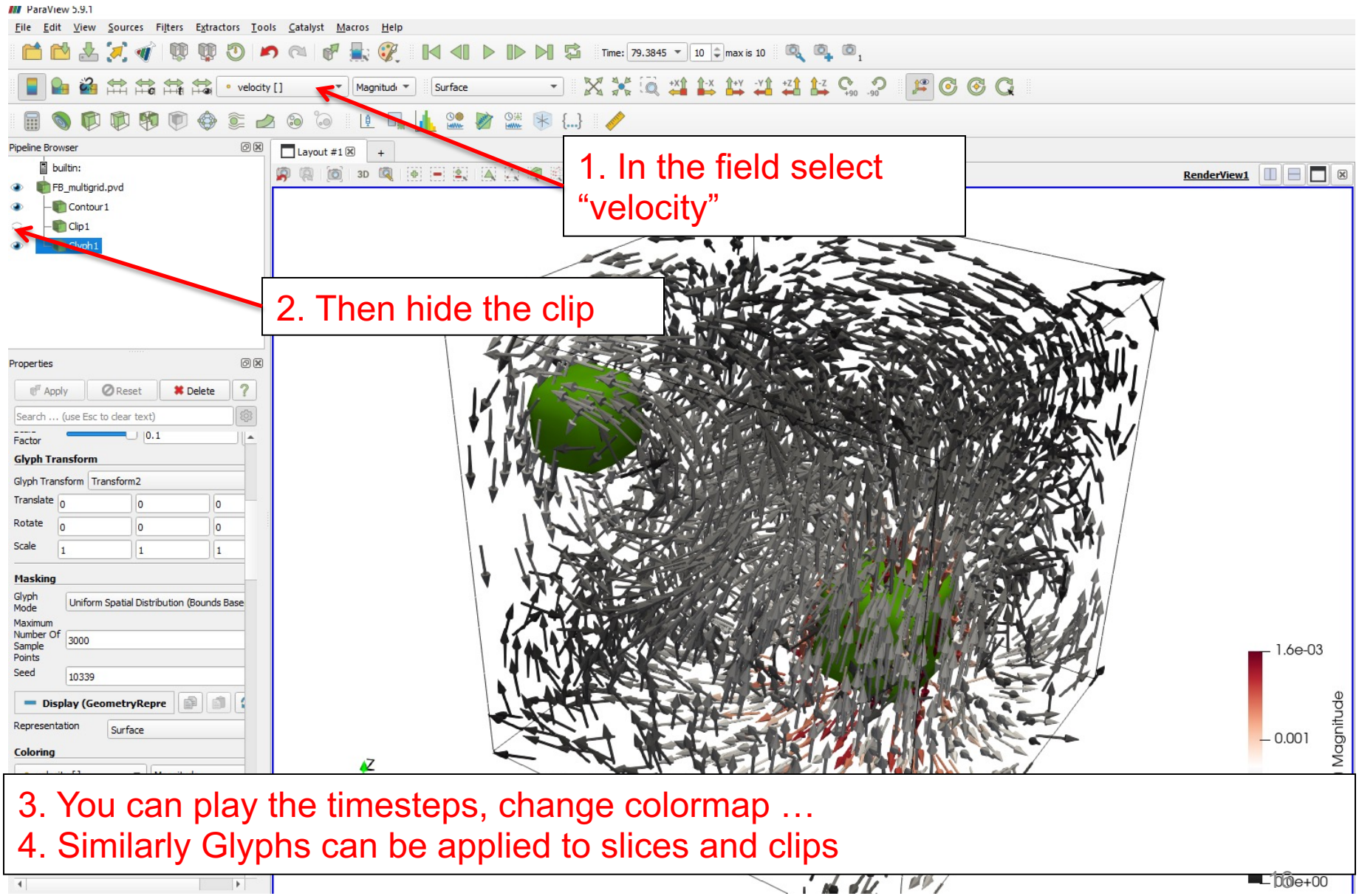
Change colormap



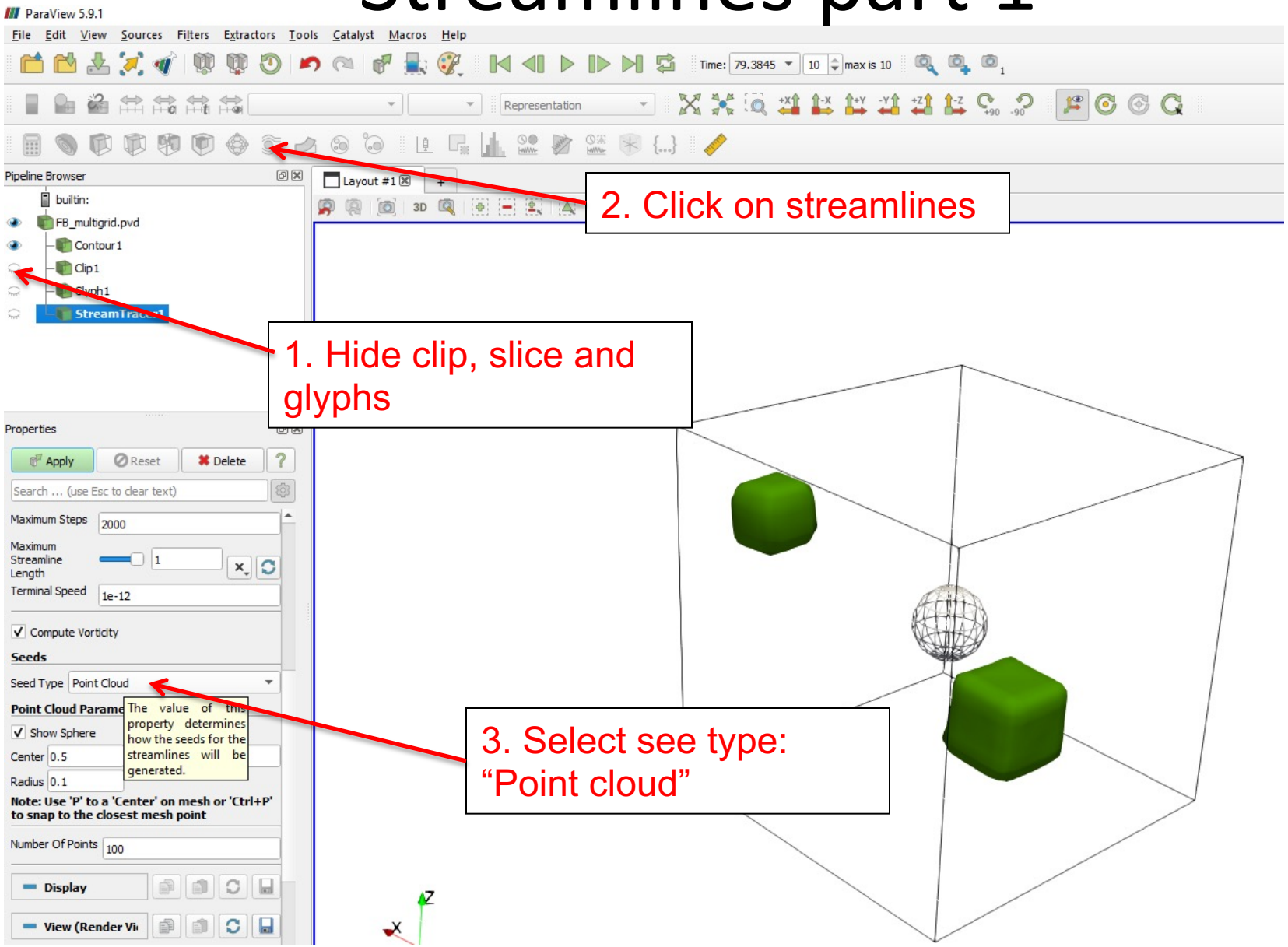
Add velocity vectors (Glyphs) part 1



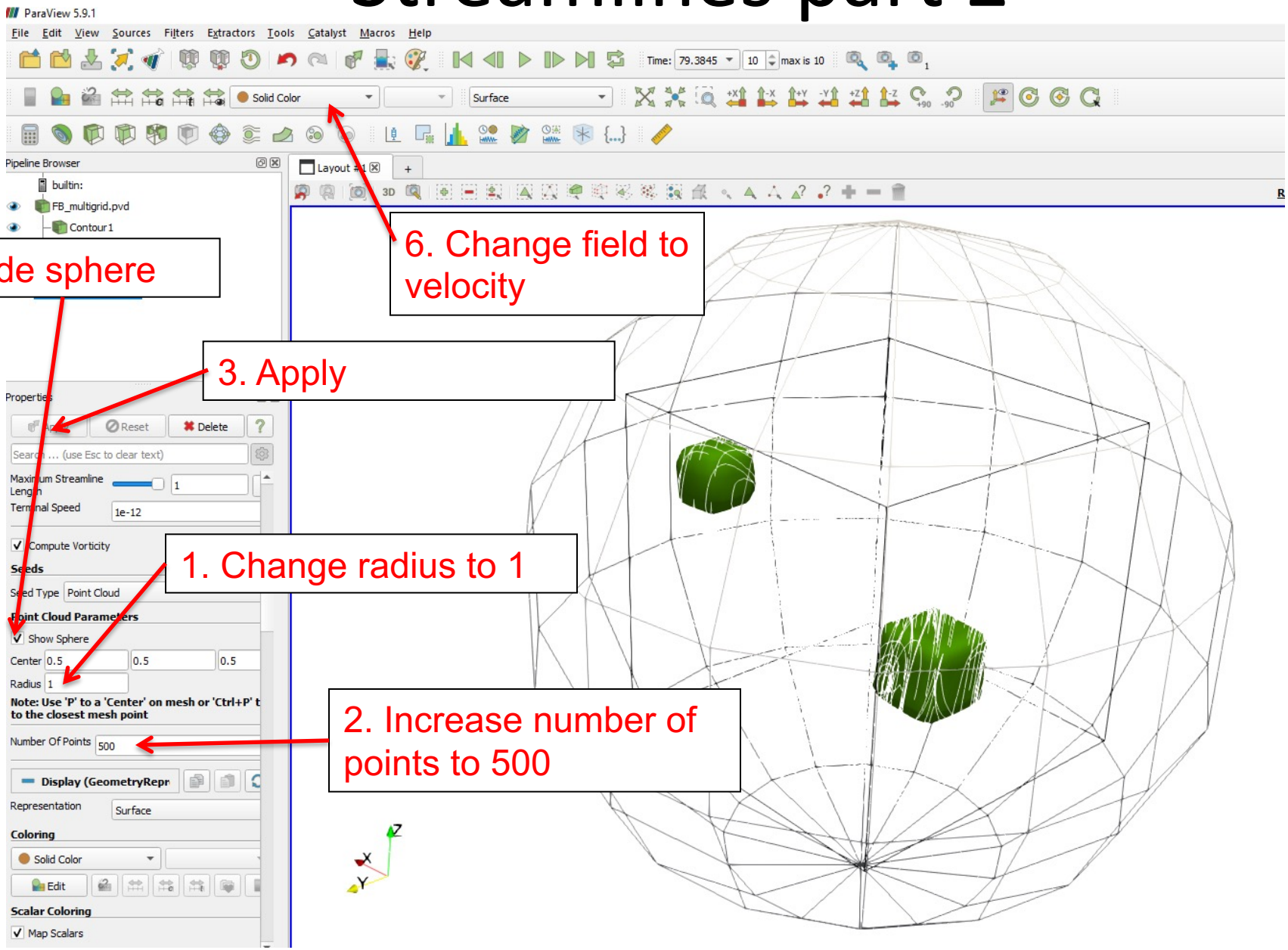
Add velocity vectors (Glyphs) part 2



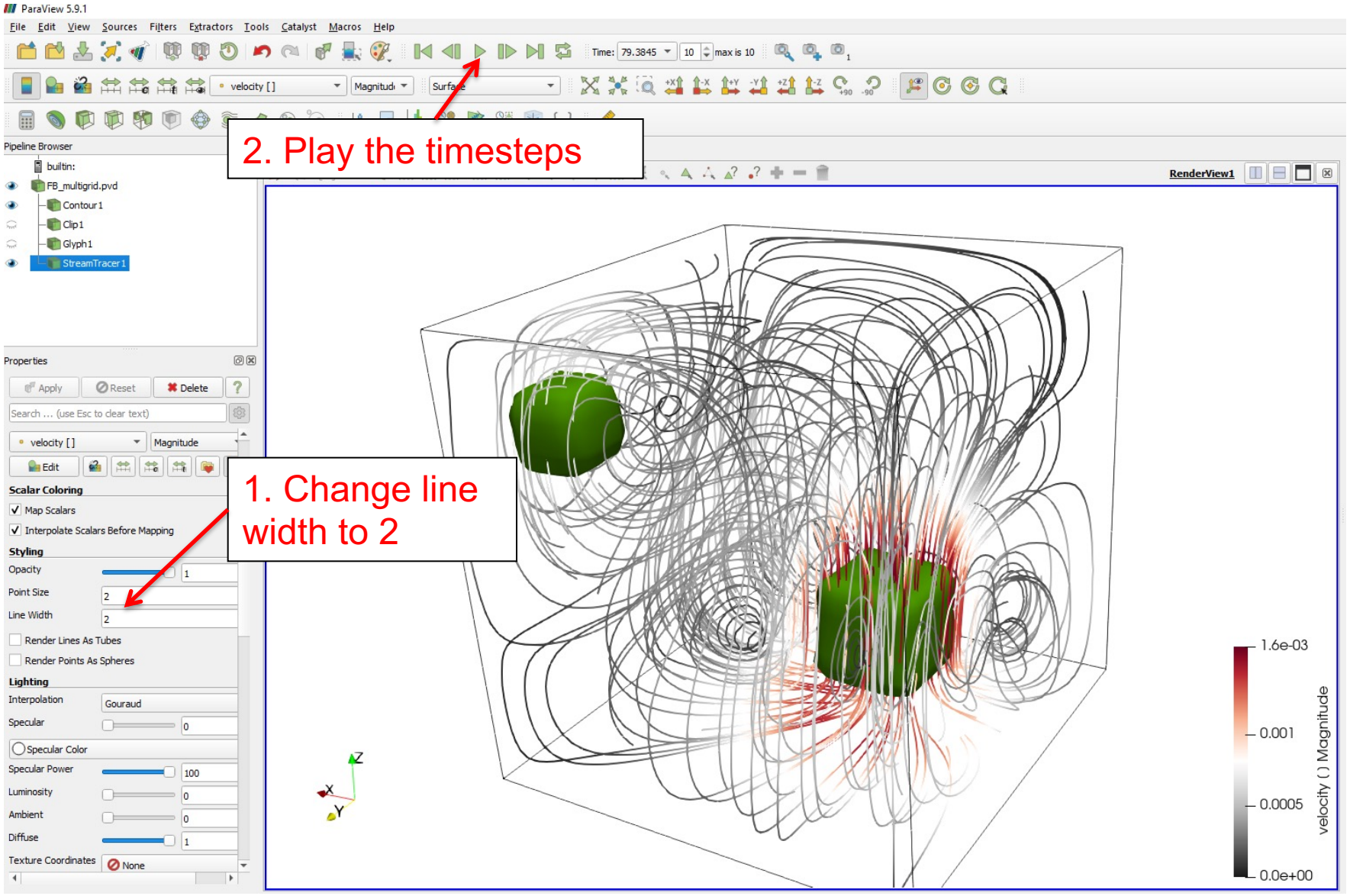
Streamlines part 1



Streamlines part 2

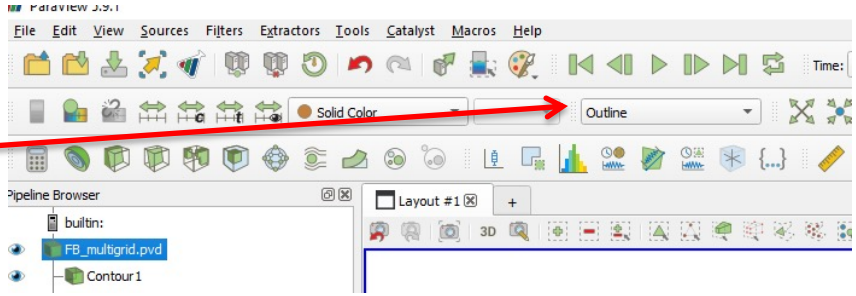


Streamlines part 3

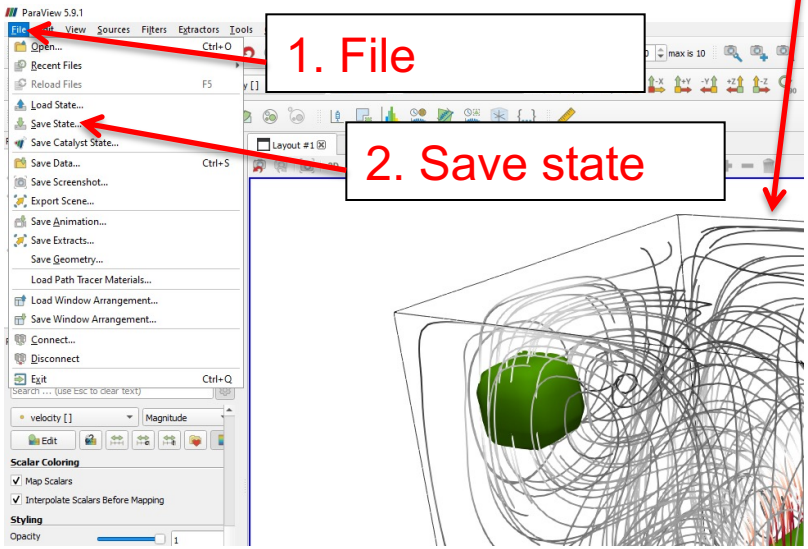


Paraview useful tips

- Note that we did not change the root file display from “outline”. This allow to see the edges of the modeling volume



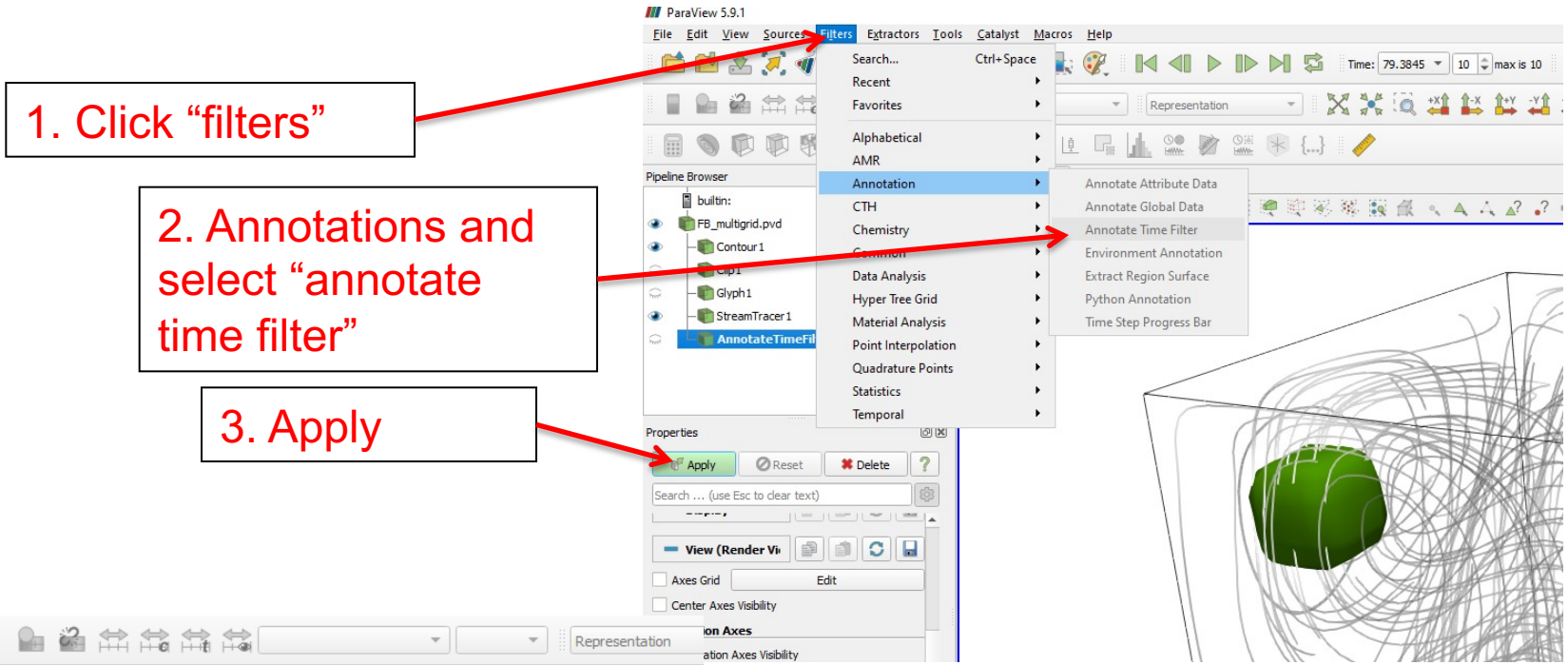
- If you are happy with the visualization output you can save the state (.pvsm file)



- Later you can reset/relaunch paraview
  then file → load state and select a model directory
  (it does not have to be the same model output!)

Paraview useful tips

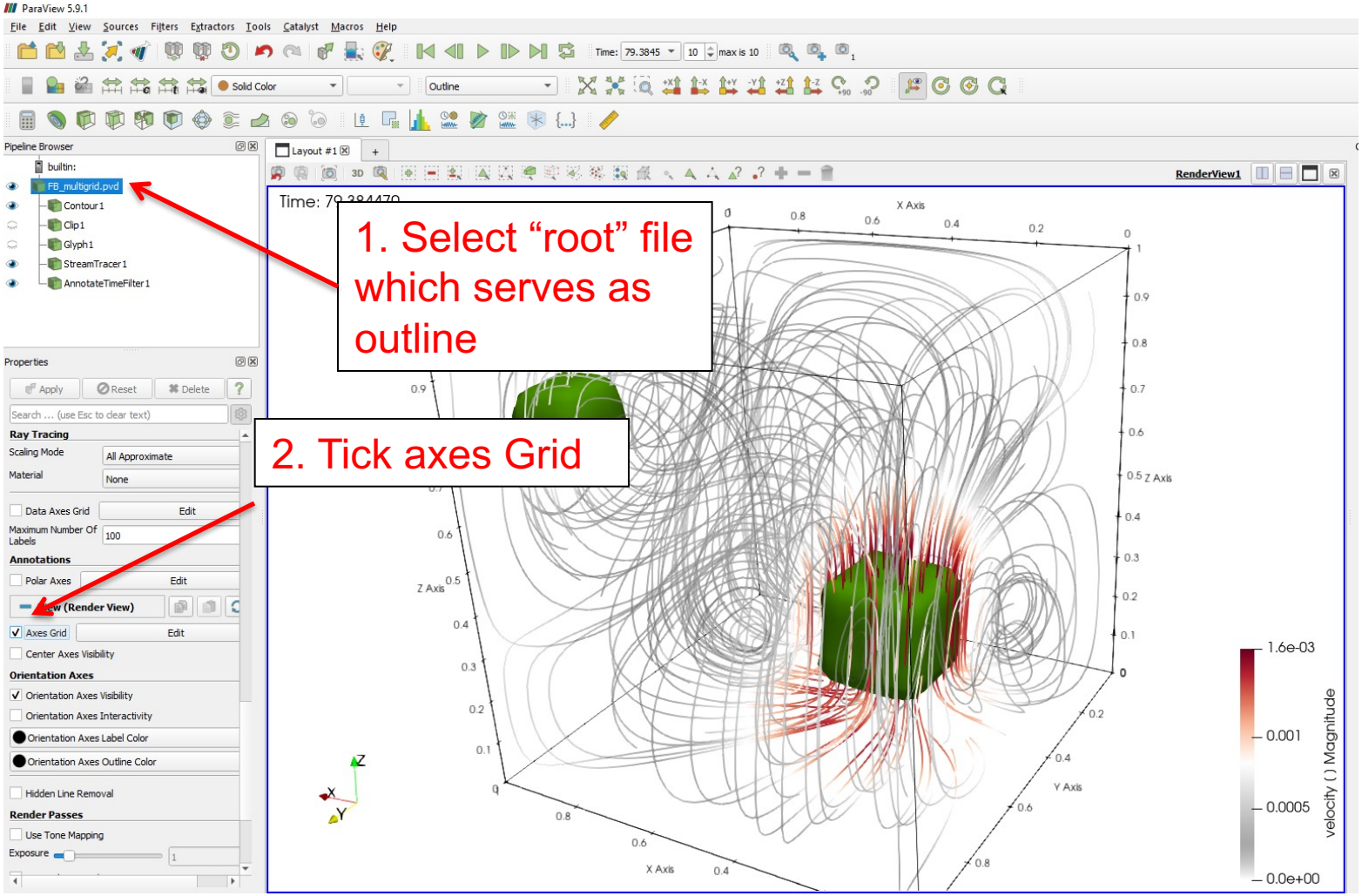
- When producing figures with paraview it is often useful to display the modeling time, this can be done using a time filter:



- Position and size can be changed in the middle left control panel

Paraview useful tips

- Model dimensions can be useful too…



Paraview useful tips

- Screenshots and animation can be saved in the “File” tab