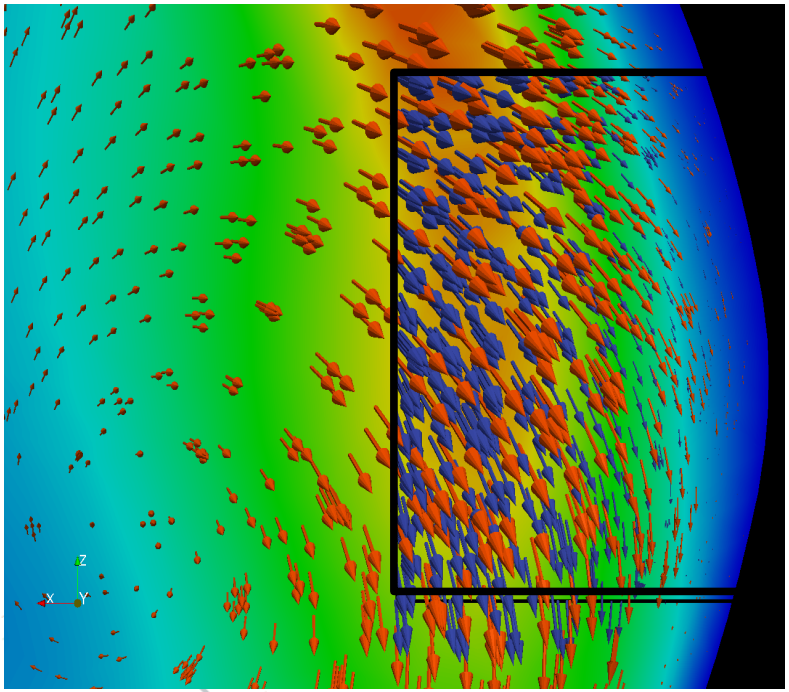
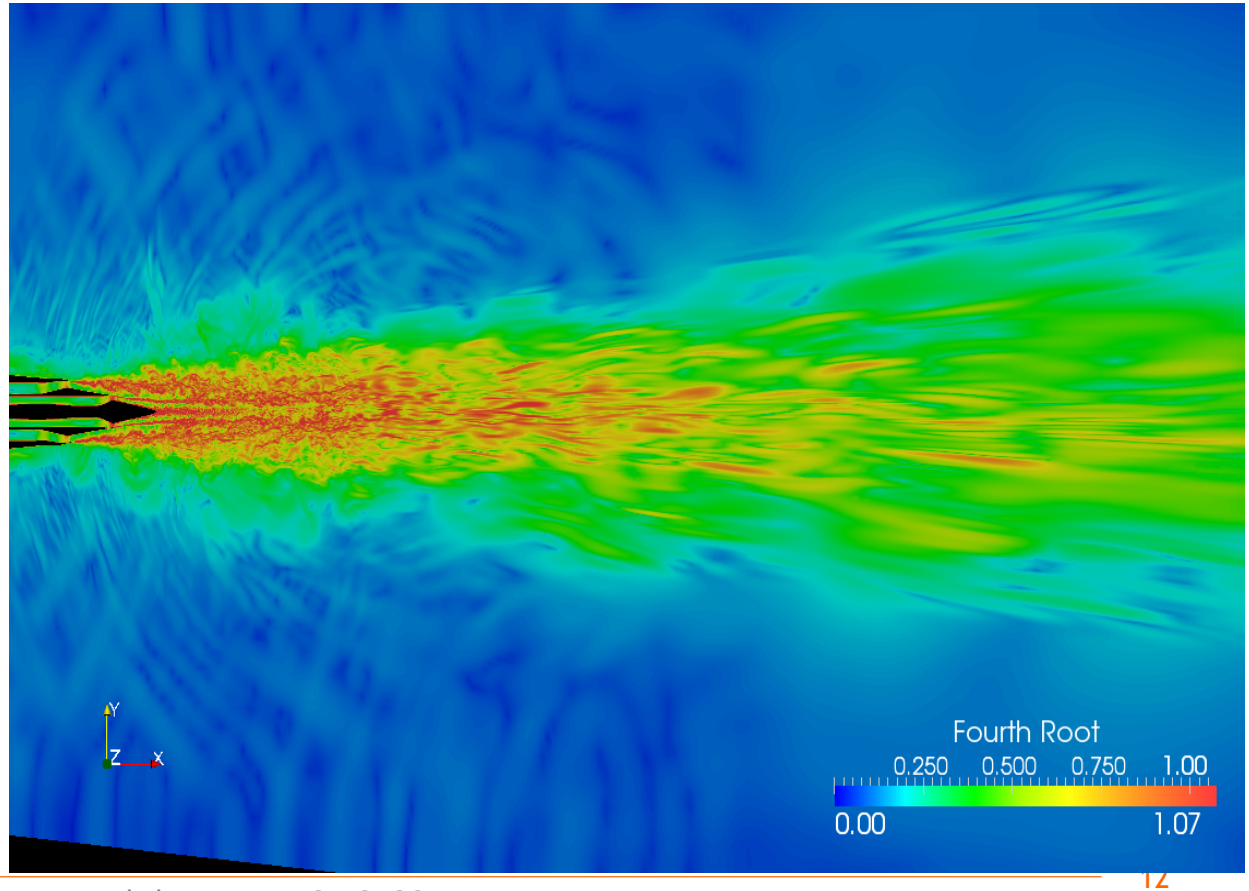
Data Representations: Cutting Planes

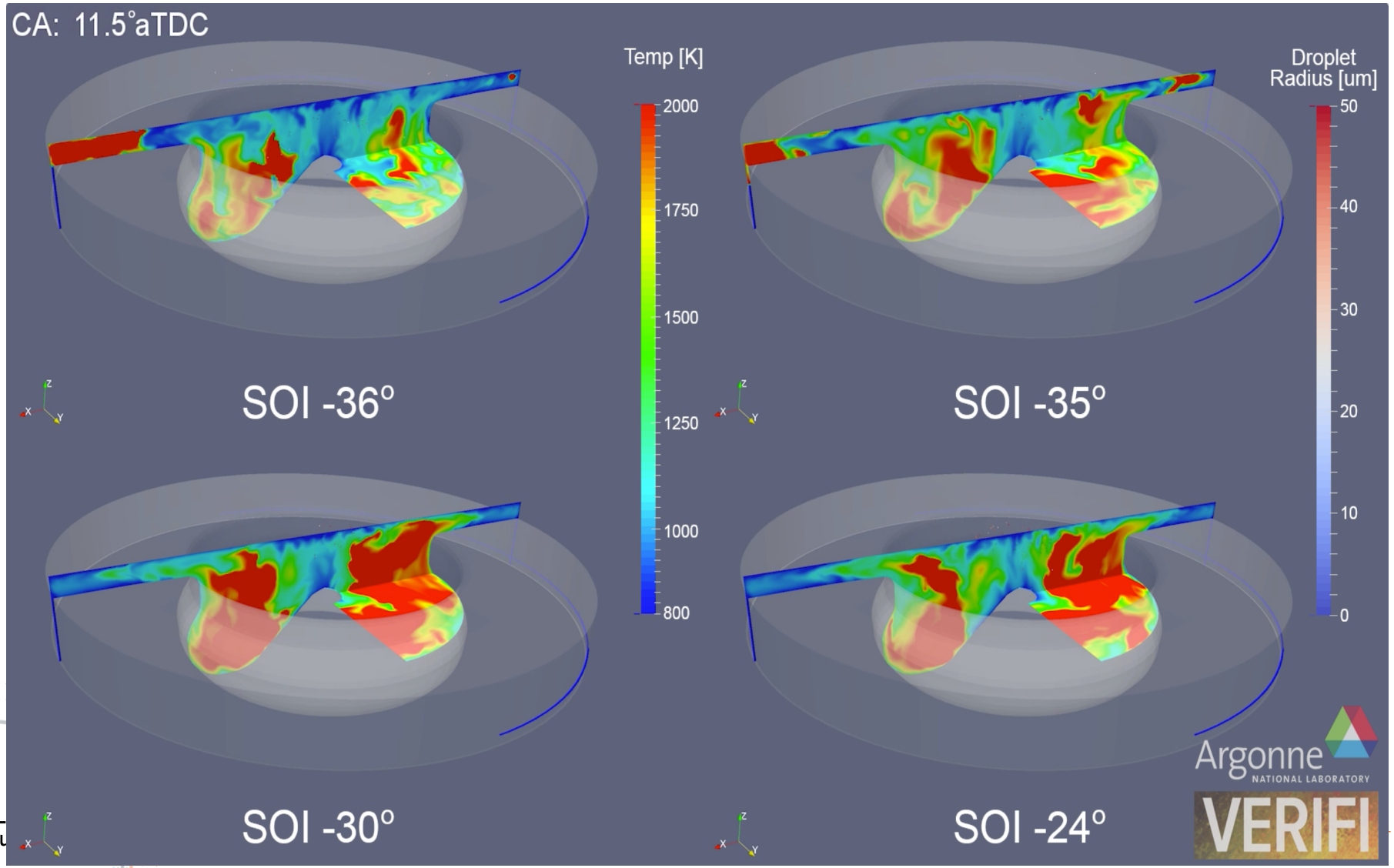
- Slice a plane through the data
  - Can apply additional visualization methods to resulting plane



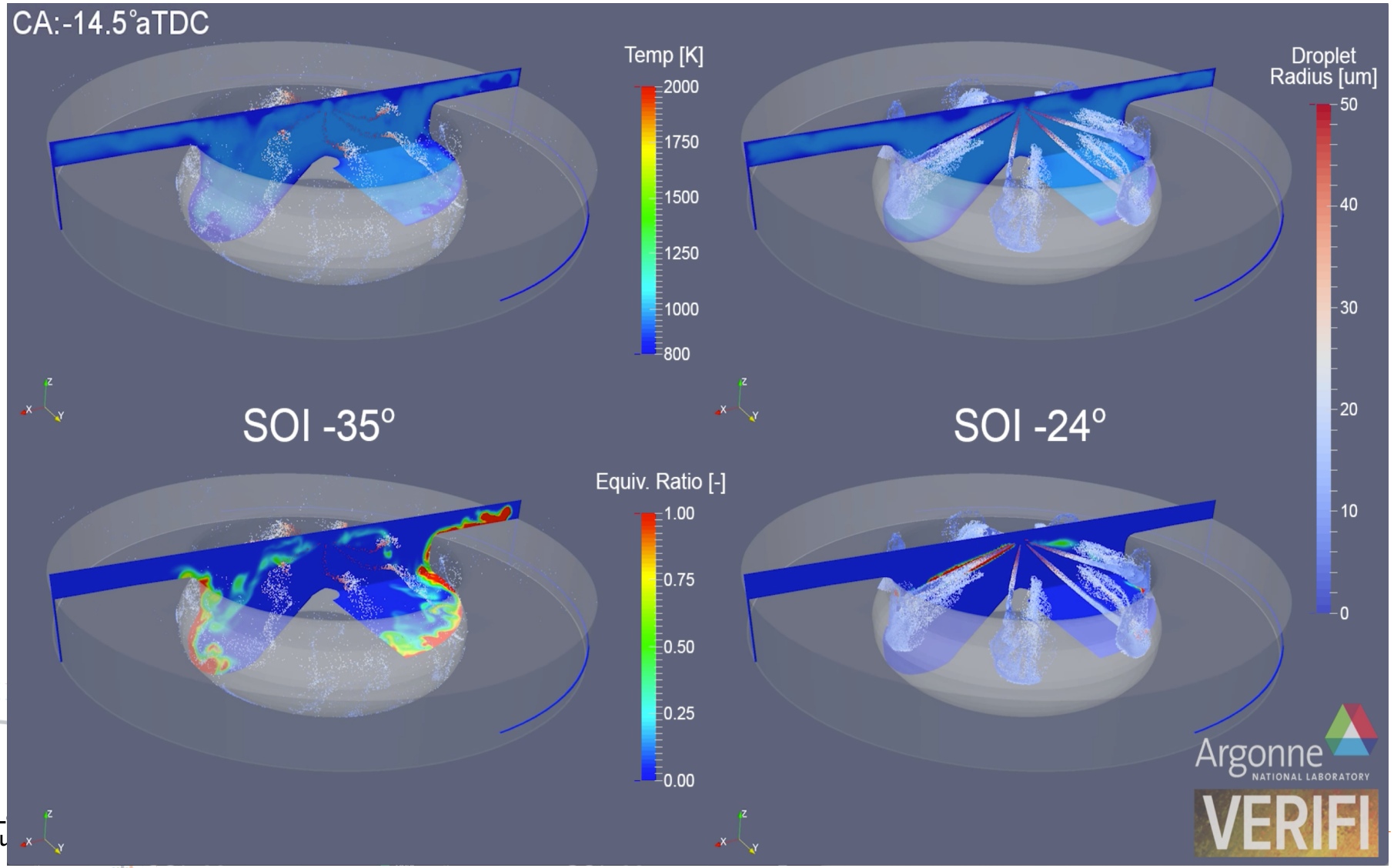


Visualization of VERIFI Data with ParaView

Multi-case Temperature



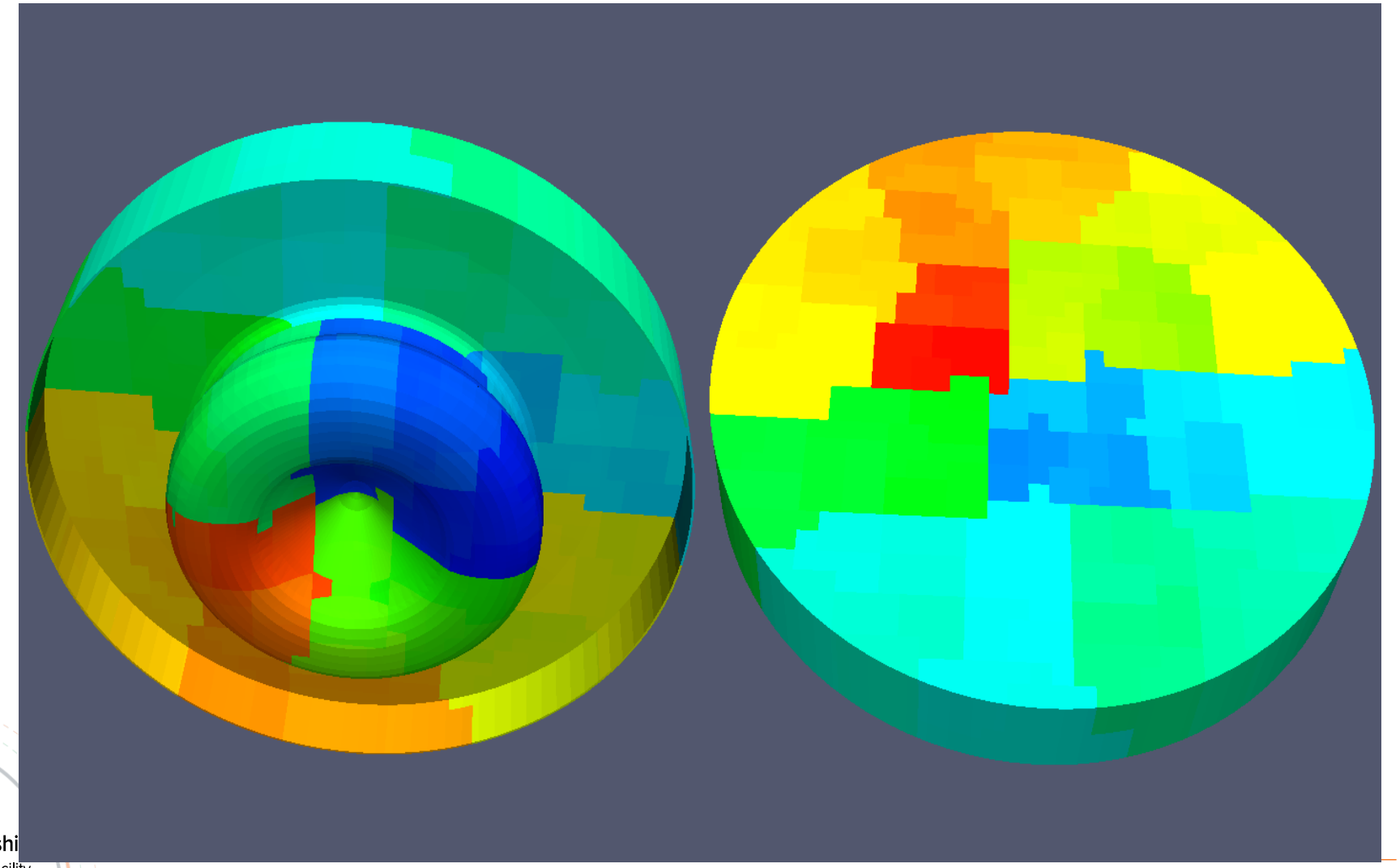
SOI-36 and SOI-24, Temperature & Equiv Ratio



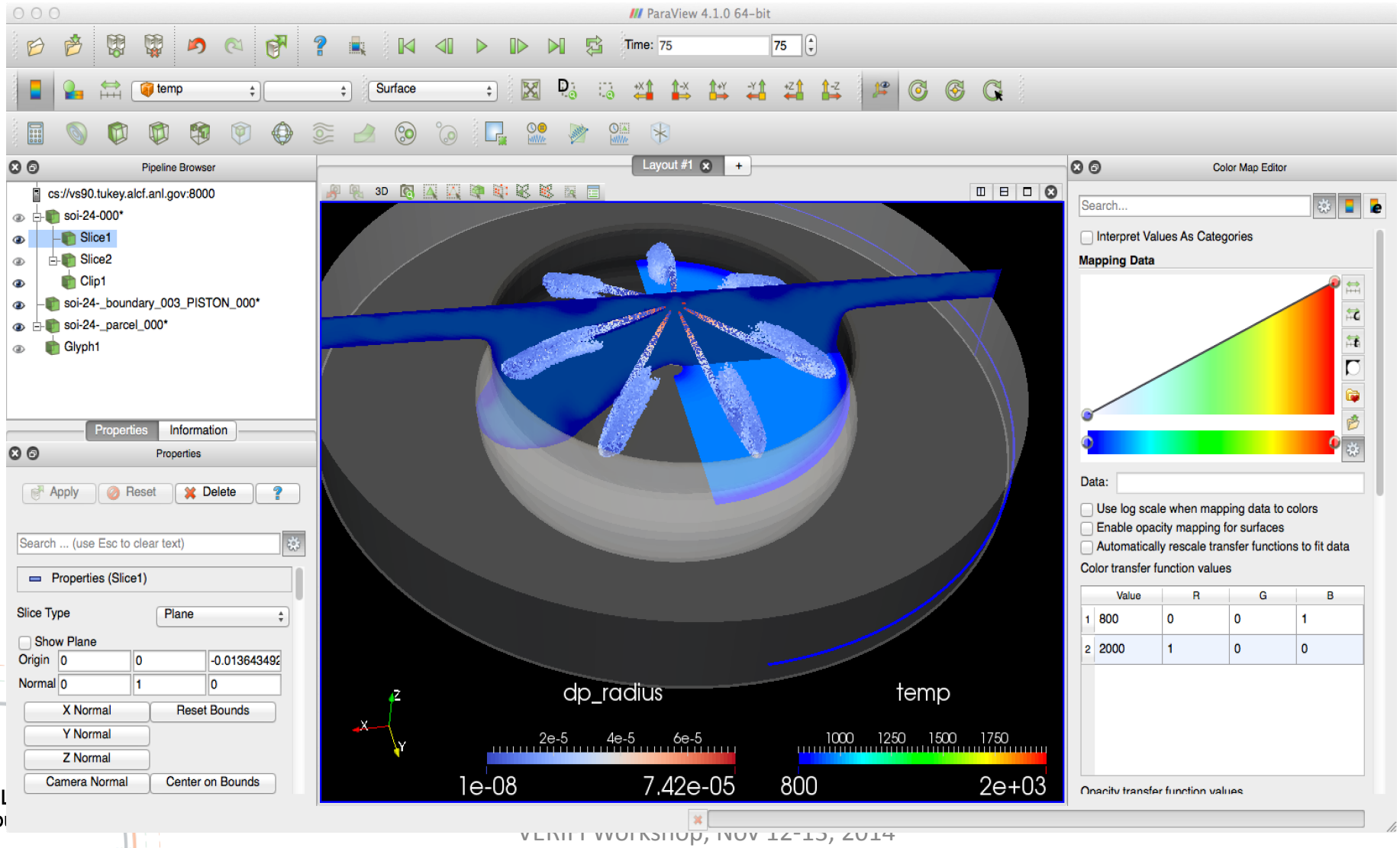
Post convert and Data sizes

- 4 cases (SIO -36, -35, -30, -24)
- Each case:
  - 330 time steps
  - Post files: ~400GB
  - VTK files: ~1.1TB
- Post_convert improvements for VTK
  - Access of values of parcel data
  - Addition of crank angle and time values in VTK files
  - Recommendation for partitioned binary files
    - Reduce data size
    - Increase I/O performance

Data decomposition by simulation rank



ParaView Demonstration



ParaView States and Scripting

- Choose File →Save State…
  - .pvsm (for restoring state in interactive mode)
  - saved on the client side

- Choose File →Save State…
  - .py (for use with pvbatch)
  - saved on the client side

- Edit .py script
  - short example, loop over time steps, saving images

ParaView States and Scripting

```
IMAGE_DIR="/projects/my_project/FRAMES/”
IN_DATA_CELL_BASE=”/projects/my_project/DATA/soi-24-"
STEP_START=2
STEP_COUNT=330
STEP_INC=1

start_frame=int(sys.argv[1])
num_frames=int(sys.argv[2])

CELL_DATA_FILES = []

for i in range(STEP_START, STEP_START+(STEP_COUNT*STEP_INC), STEP_INC):
   TEMP_FILE=”%s%06d%s" % (IN_DATA_CELL_BASE, i, “.vtu”)
   CELL_DATA_FILES.append(TEMP_FILE)
```

ParaView States and Scripting

```
...
try: paraview.simple
except: from paraview.simple import *
paraview.simple._DisableFirstRenderCameraReset()
RenderView1 = CreateRenderView()
RenderView1.ViewSize = [1920, 1080]
...
soi24000 = XMLUnstructuredGridReader( guiName="soi-24-000*", CellArrayStatus=['temp',
'equiv_ratio', 'rank'], FileName=CELL_DATA_FILES)
```

ParaView States and Scripting

```
...
#Render()

time_vals = soi24000.TimestepValues

for i in range(start_frame, start_frame+num_frames):

    RenderView1.ViewTime = time_vals[i]
    RenderView1.StillRender()

    IMAGE_FILE="%s/frame_%04d.png" % (IMAGE_DIR, i)
    print "saving: " + IMAGE_FILE
    WriteImage(IMAGE_FILE)
```

More info…

- ParaView:
  - www.paraview.org
- Tukey user guide:
  - www.alcf.anl.gov/user-guides/tukey
- ParaView on Tukey:
  - www.alcf.anl.gov/user-guides/paraview-tukey

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