



Sandia  
National  
Laboratories

SAND2012-2949P



National Nuclear Security Administration

# What's New in ParaView

## DOECGF 2012

April 25, 2012

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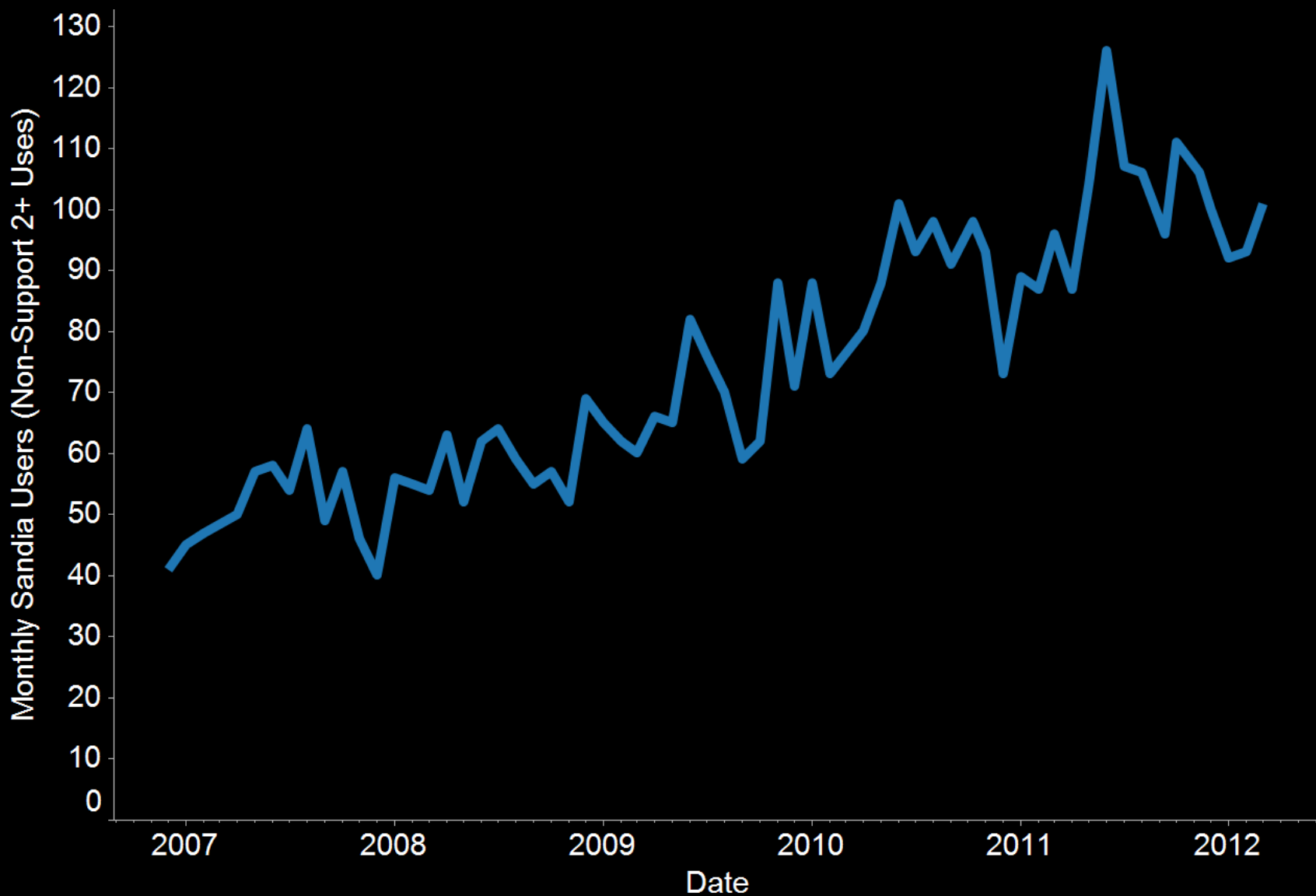
Release Marking (e.g. Not Approved for Release, SAND XXXX, etc.)

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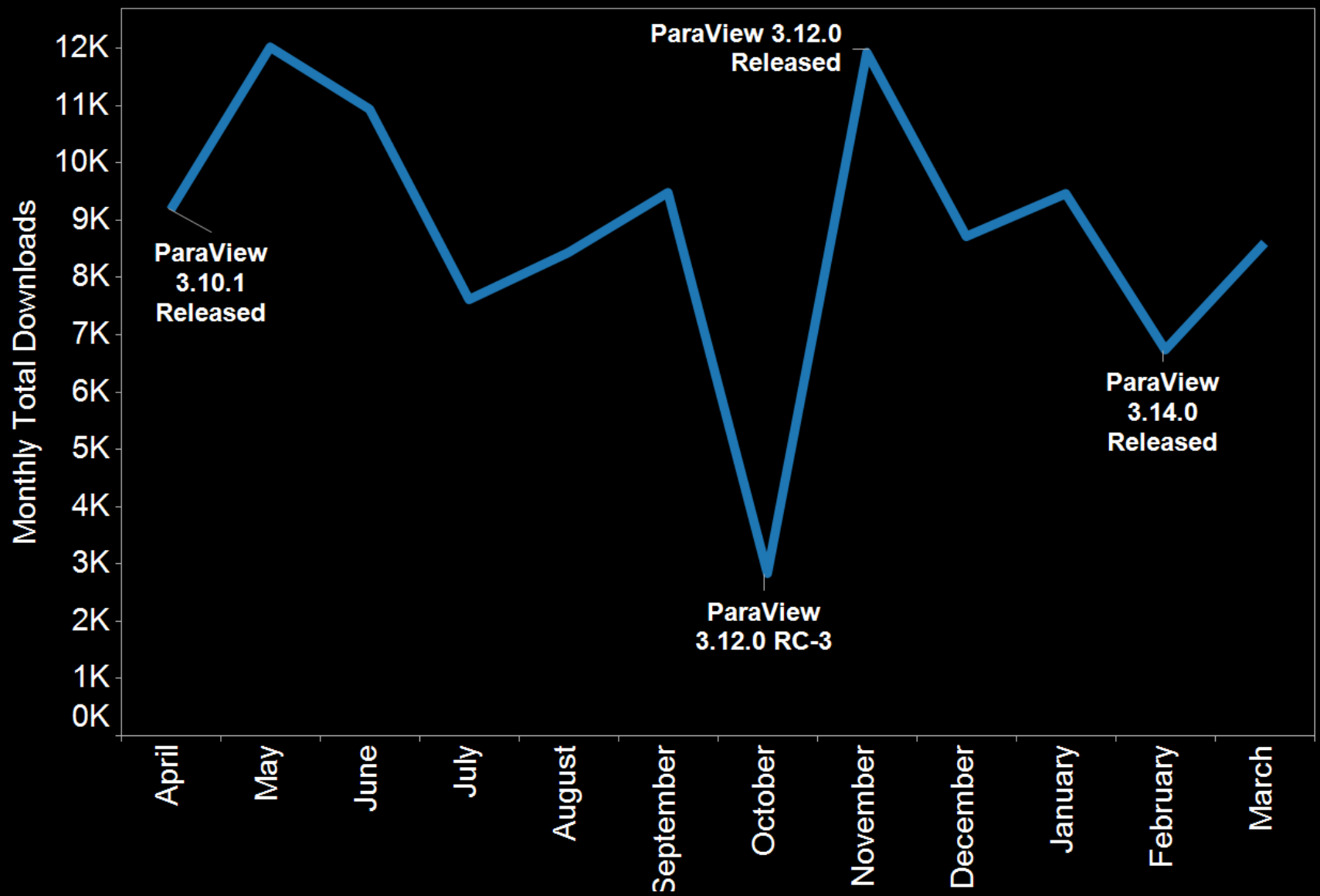
# Boring Crap

- Releases last 12 months: 3.12.0, 3.14.0, 3.14.1
- Tutorials
  - DOD HPCMP-UGC
  - SciDAC 2011
  - Supercomputing 2011 (Basic + In Situ)
- Users at Sandia: ~100/month
  - DART metric: 2+ uses, non-support
- Downloads from Kitware: ~106K

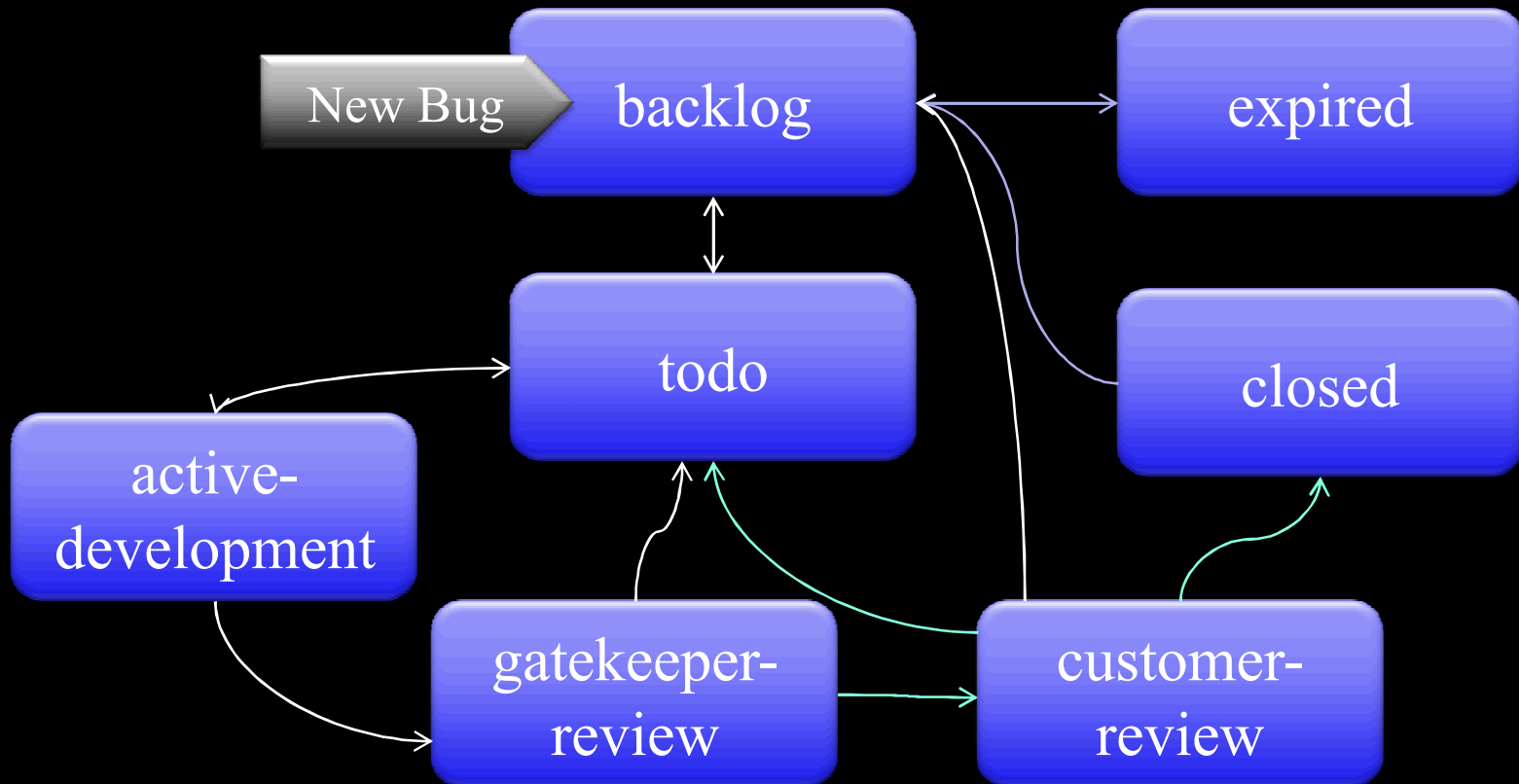
# Sandia Monthly ParaView Usage



# Kitware ParaView Downloads

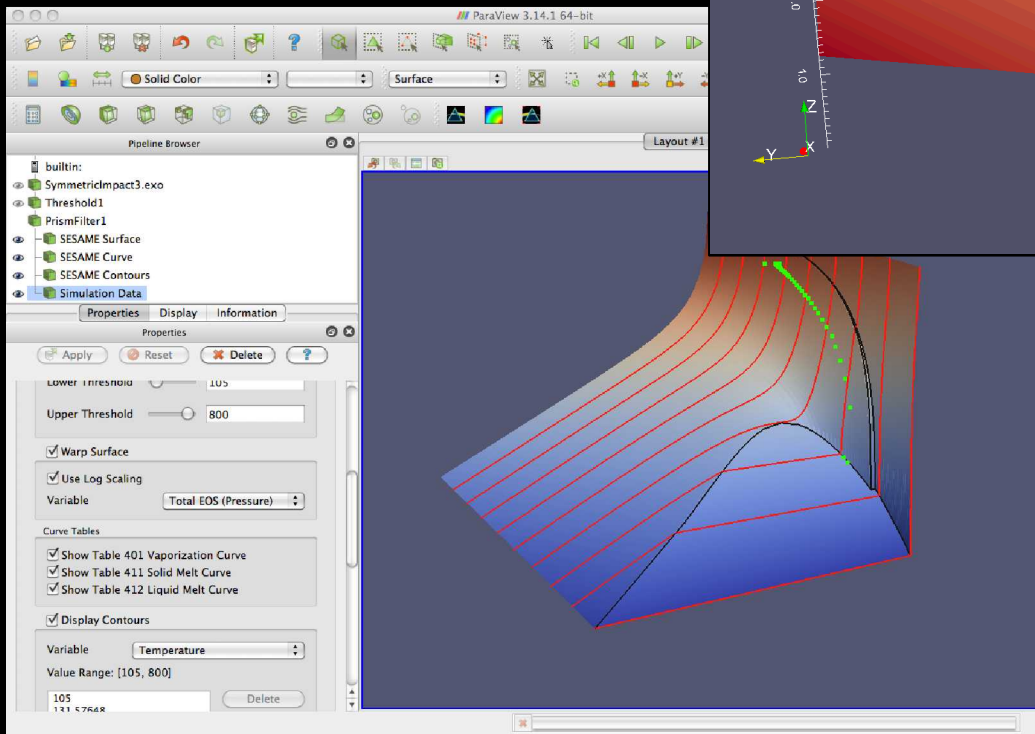
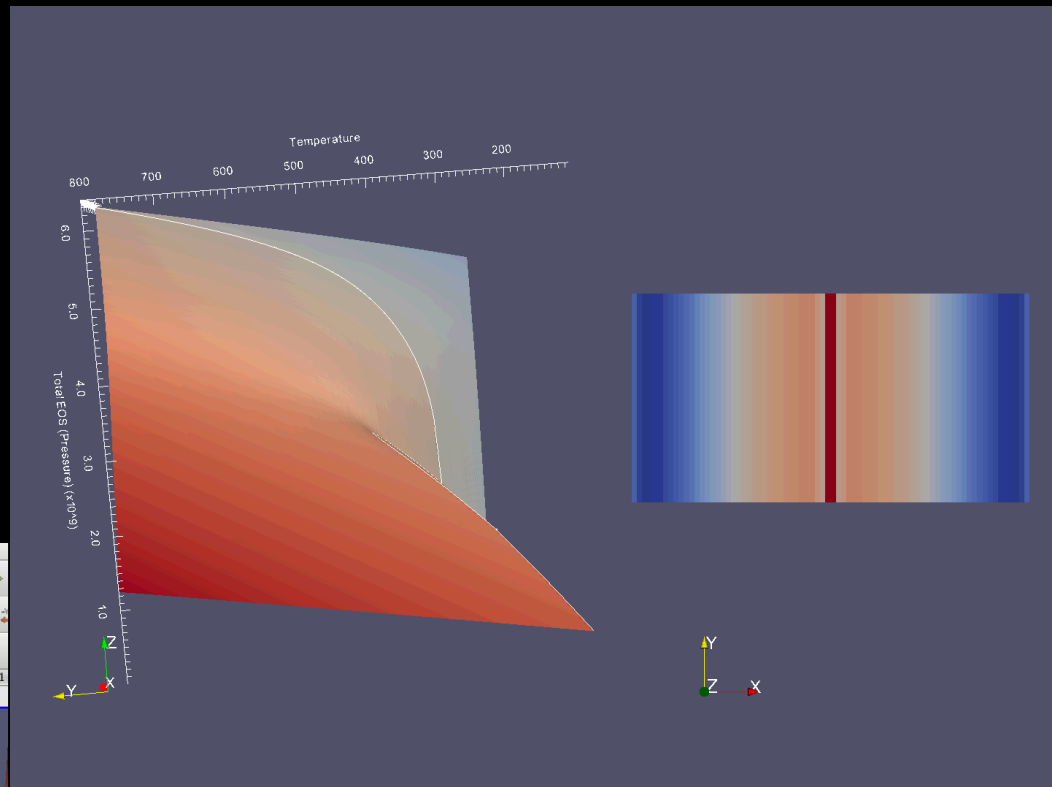


# More Rigorous Development Process



- Issue tracking integrated with git development workflow
- Master/Next topic testing → much more stable intermediate code

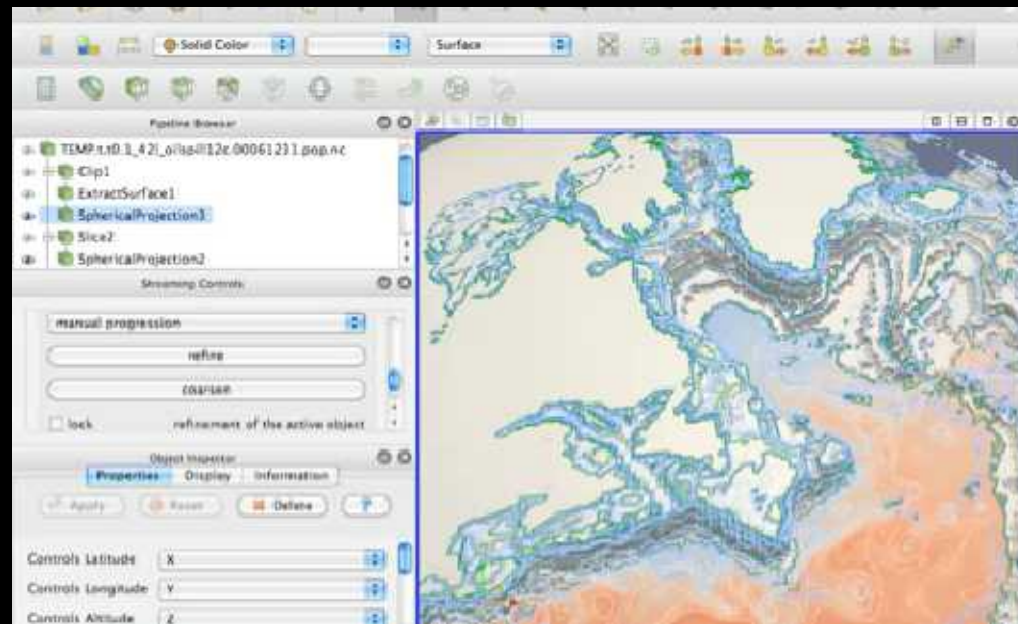
# Prism



ParaView 3.14.1 64-bit interface showing simulation data and properties. The Pipeline Browser on the left lists the following steps: builtin, SymmetricImpact3.exo, Threshold1, PrismFilter1, SESAME Surface, SESAME Curve, SESAME Contours, and Simulation Data. The Properties panel on the right shows the following settings:

- Lower Threshold: 105
- Upper Threshold: 800
- Warp Surface:
- Use Log Scaling:
- Variable: Total EOS (Pressure)
- Curve Tables:
  - Show Table 401 Vaporization Curve:
  - Show Table 411 Solid Melt Curve:
  - Show Table 412 Liquid Melt Curve:
- Display Contours:
- Variable: Temperature
- Value Range: [105, 800]

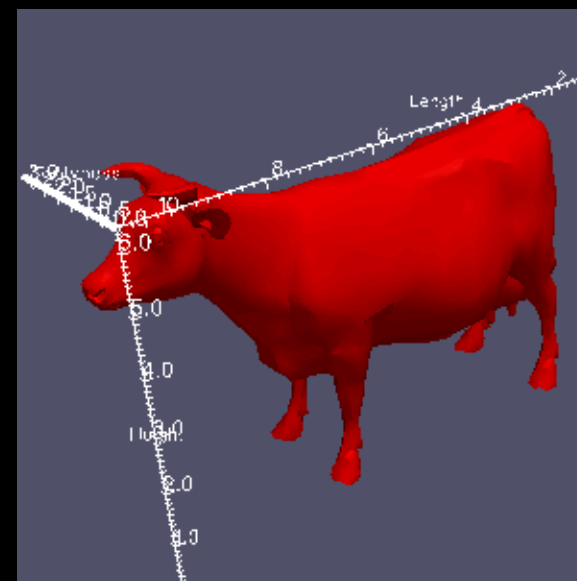
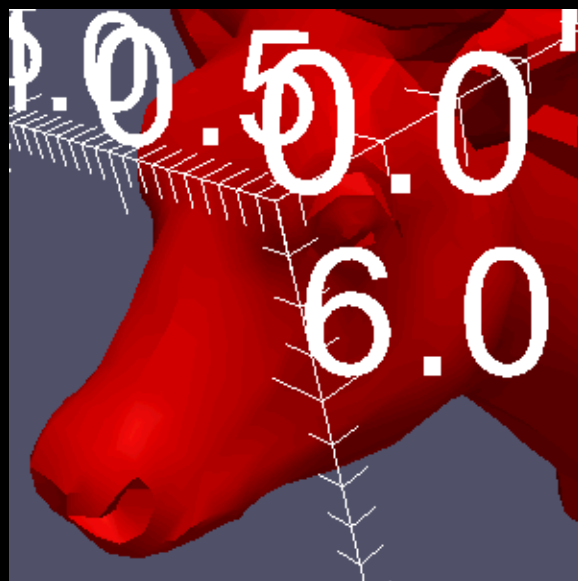
# Streaming View



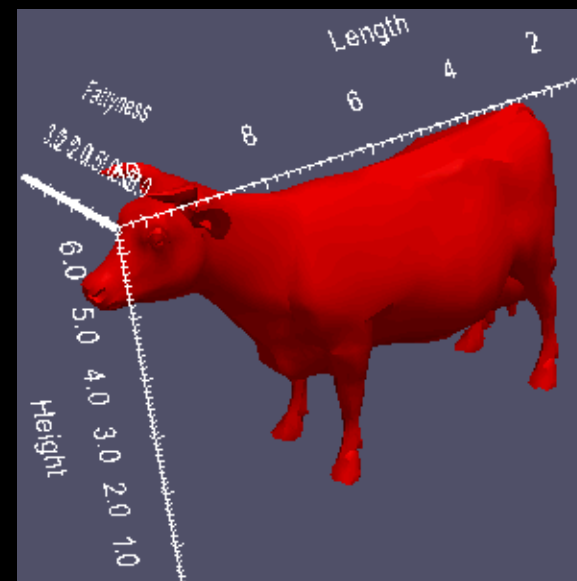
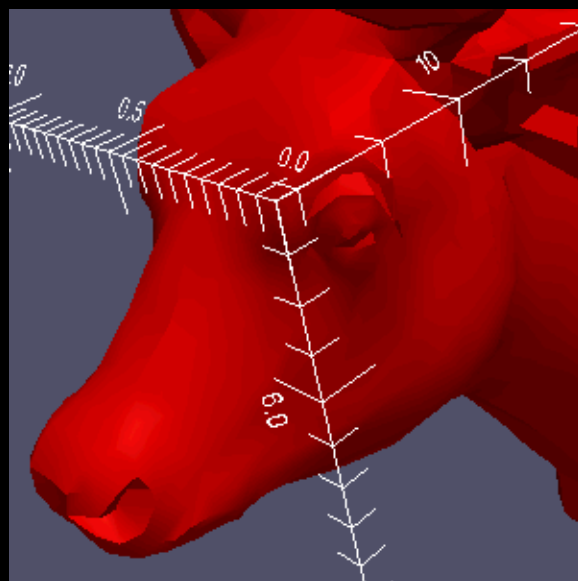
- Limits refinement based on screen resolution
- Faster
- Warped data maintains prioritizations (e.g. earth warp)

# Cube Axis Improvements

Old

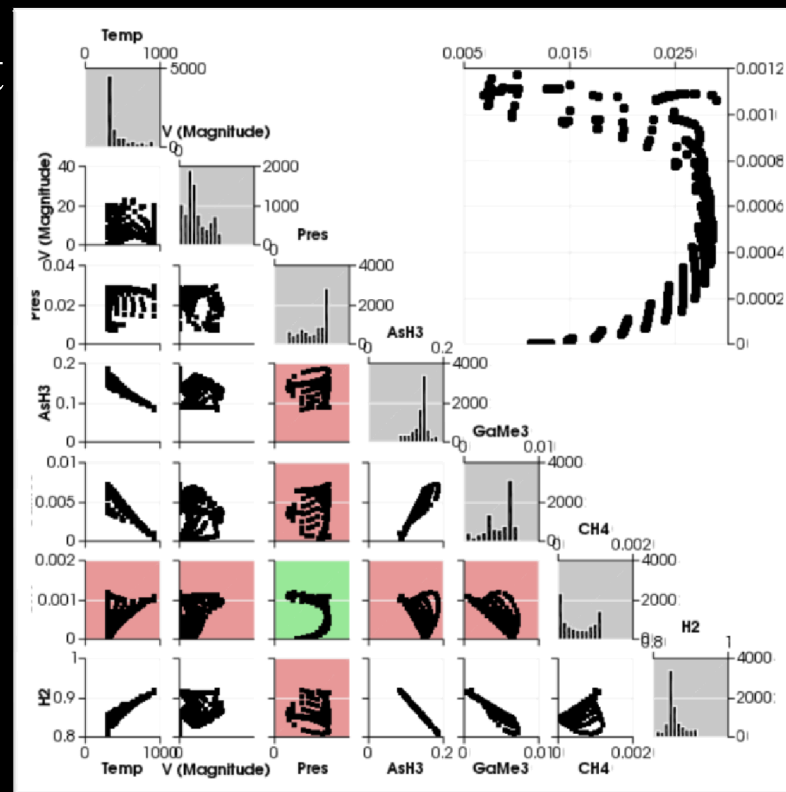


New

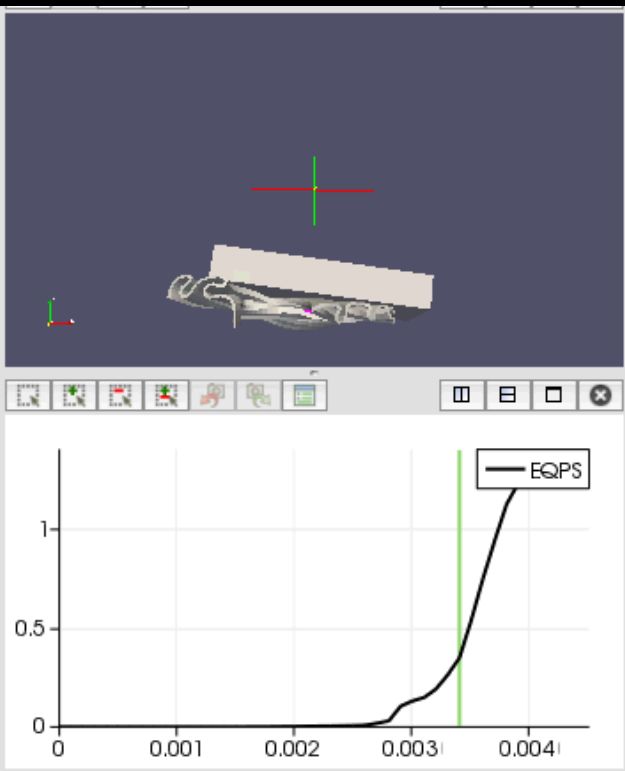


# Chart Improvements

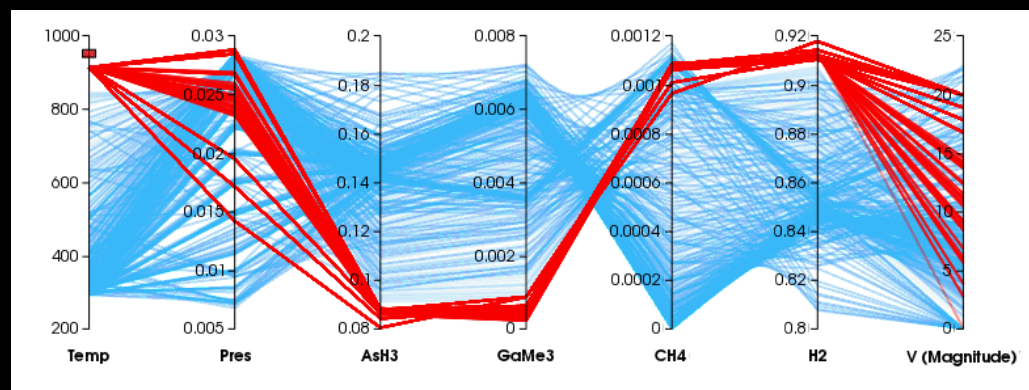
Scatterplot  
Matrix



Current  
Timestep  
Annotation

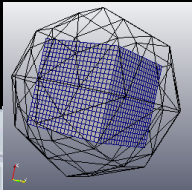


Parallel Coordinates

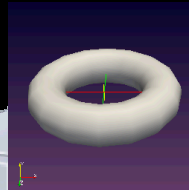


# Client Connections to Multiple Servers

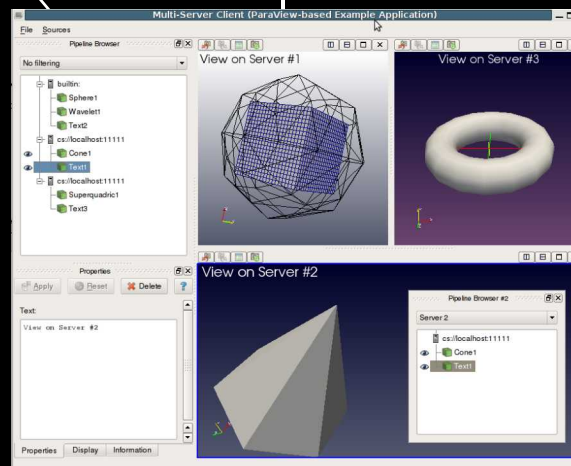
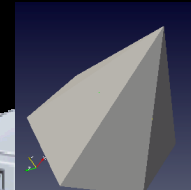
Server 1



Server 2

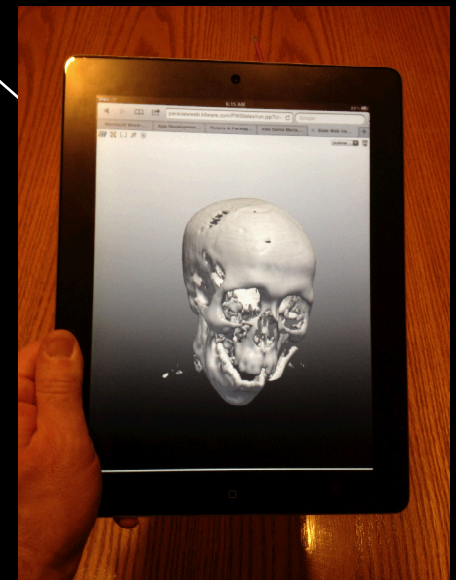
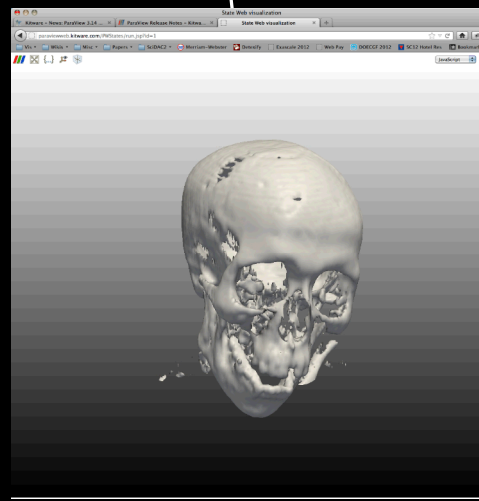
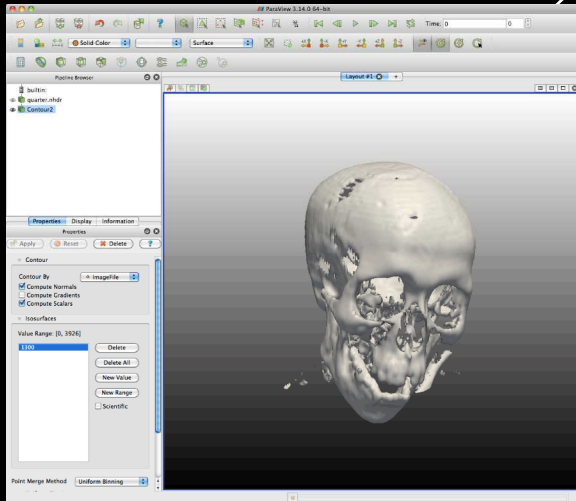


Server 3



Client

# Server Connected to Multiple Clients



# HPC Installations

- ANL: Eureka, Gadzooks
  - DOD HPCMP: Aspen, Harold, MJM, Mana
  - LANL: Cielo
  - NERSC: Hopper, Franklin, Euclid
  - NICS: Kraken, Nautilus
  - PSC: Blacklight
  - SNL: Redsky, Glory, Unity, Whitney, Tunnison, Angren
  - TACC: Longhorn, Lonestar
- 
- ANL: Intrepid
  - ORNL: Lens, Jaguar

# Scaling

# Miscellany

- Build/install/run overhaul – Superbuild – Nightly binaries
- Performance Improvements
  - Improved GUI render event management
  - Progress events overhaul
- Online documentation professionally edited
- Documentation imported from plugins
- Virtual Reality: Cave improved, VR devices framework
- Improvements to Material Interface Filter
- Memory Inspector: helps diagnose server problems
- In Situ awesomeness