



Cornell University  
Center for Advanced Computing

# EnVision Lab

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Data Analysis on Ranger  
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## EnVision Guided Visualization

- An easy-to-use web-based tool for remote scientific visualization
- Available through the Longhorn Vis Portal
- Developed at TACC
  - Funded in part by TeraGrid and the DoD PET program
  - Development team: Greg Johnson, Steve Mock, Brandt Westing, Matthew Hanlon



## Run an EnVision session

- Navigate to the “Jobs” tab
- End any currently running jobs
- Select the session type “EnVision guided visualization”

**Start a Job**

Resource: Longhorn  
Project: AdminLonghorn  
Session type:  VNC  EnVision guided visualization  iPlant

**Available Resources**

• Longhorn

Longhorn (longhorn.tacc.utexas.edu), TACC's Dell XD Visualization Cluster, contains 2048 compute cores, 14.5 TB aggregate memory and 512 GPUs. Longhorn has a QDR InfiniBand interconnect and has an attached Lustre parallel file system. Longhorn is connected by 10GigE to Ranger's Lustre parallel file system thus making it more convenient to work on datasets generated on Ranger. Longhorn has 256 nodes + 2 login nodes, with 240 nodes containing 48GB of RAM, 8 Intel Nehalem cores (@ 2.5 GHz), and 2 NVIDIA Quadro FX 5800 GPUs. Longhorn also has an additional 16 large-memory nodes containing 144GB of RAM, 8 Intel Nehalem cores (@ 2.5 GHz), and 2 NVIDIA Quadro FX 5800 GPUs. For more detailed information on Longhorn, please see the [Longhorn User Guide](#).

**Queue information:**

updated at April 9, 2010, 3:58:54 pm (refresh)

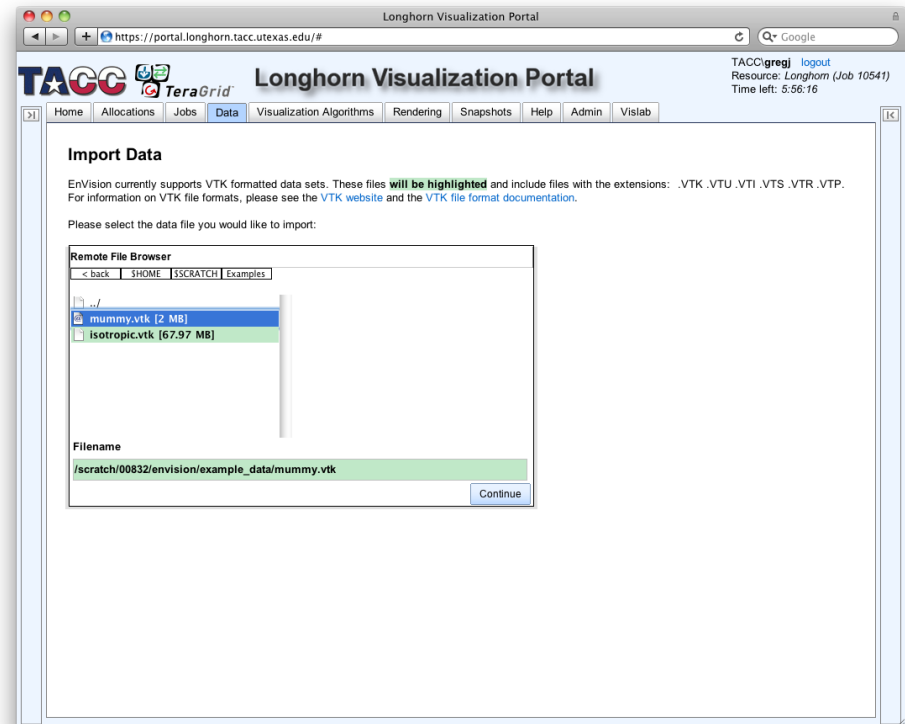
The Longhorn queues are open.  
82 nodes available out of 250 total.

JOBID	JOBNAME	USERNAME	STATE	CORE	REMAINING	STARTTIME
10476	vncserver	gda	Running	512	03:15:34	Fri Apr 9 07:14:28
10485	vncserver	mitchell	Running	128	01:41:49	Fri Apr 9 11:40:43
10489	af-rhom-v7	tg802815	Running	128	01:58:05	Fri Apr 9 11:56:59
10495	job-tr-ste	psav	Running	32	20:10:04	Fri Apr 9 12:28:58
10493	vnc-16Node	mitchell	Running	128	02:30:34	Fri Apr 9 12:29:28
10491	af-rhom-v7	tg802815	Running	128	02:38:19	Fri Apr 9 12:37:13



## Run an EnVision session

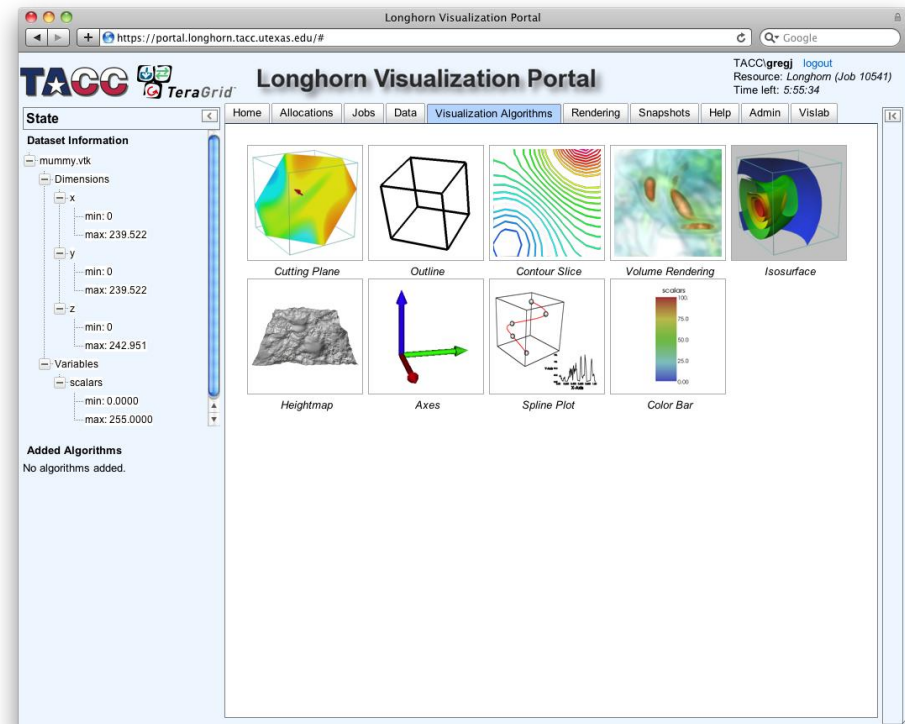
- *Load the mummy data in the remote file browser (click the Examples shortcut)*





## Run an EnVision session

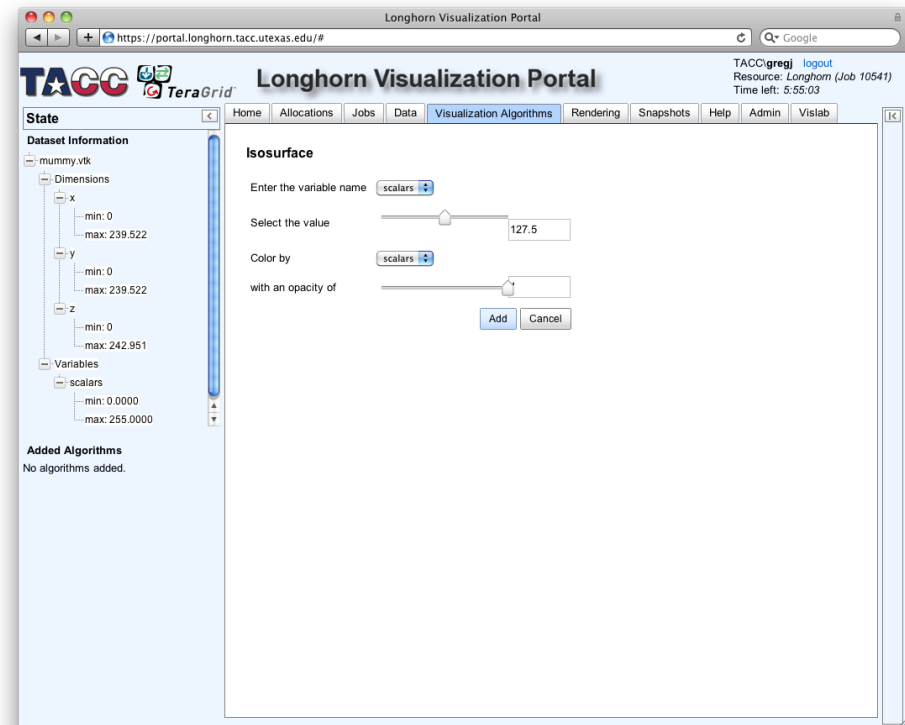
- *Click the Isosurface icon*





## Run an EnVision session

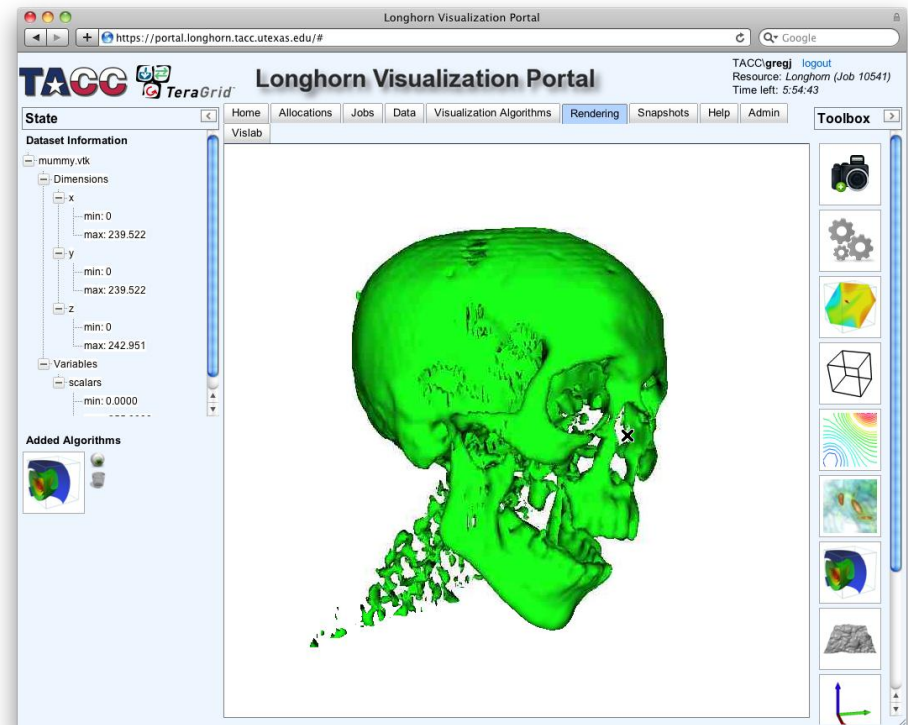
- *Add an isosurface with default parameters*
- Note that the default value is 127.5. This is the midpoint of our range of values. It will draw a surface over all points with that value.





## Run an EnVision session

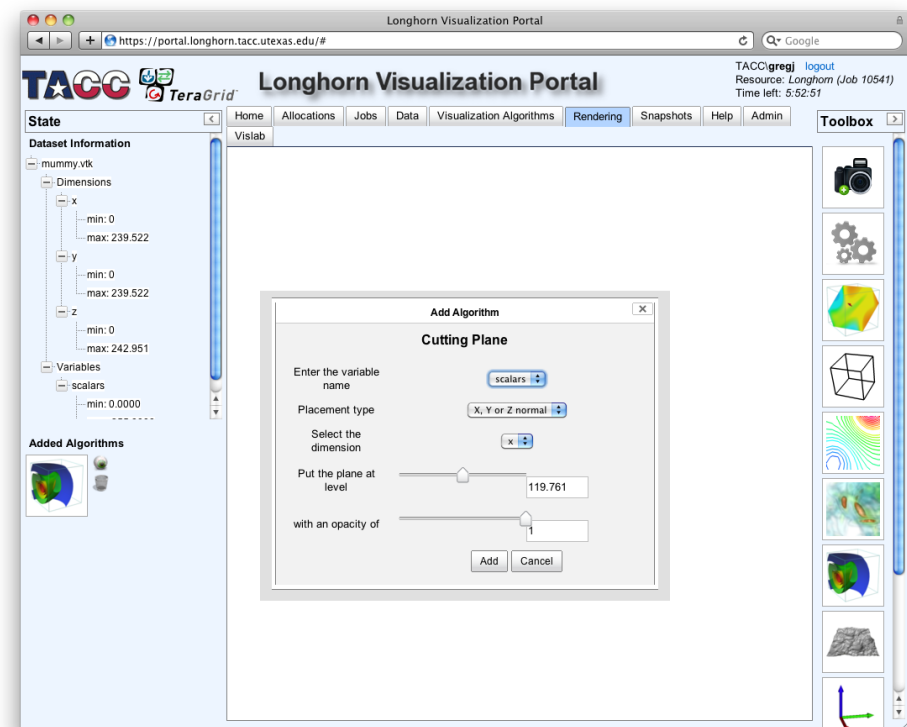
- *See the visualization in the Rendering tab*





## Run an EnVision session

- *Click the cutting plane icon in the toolbox.*

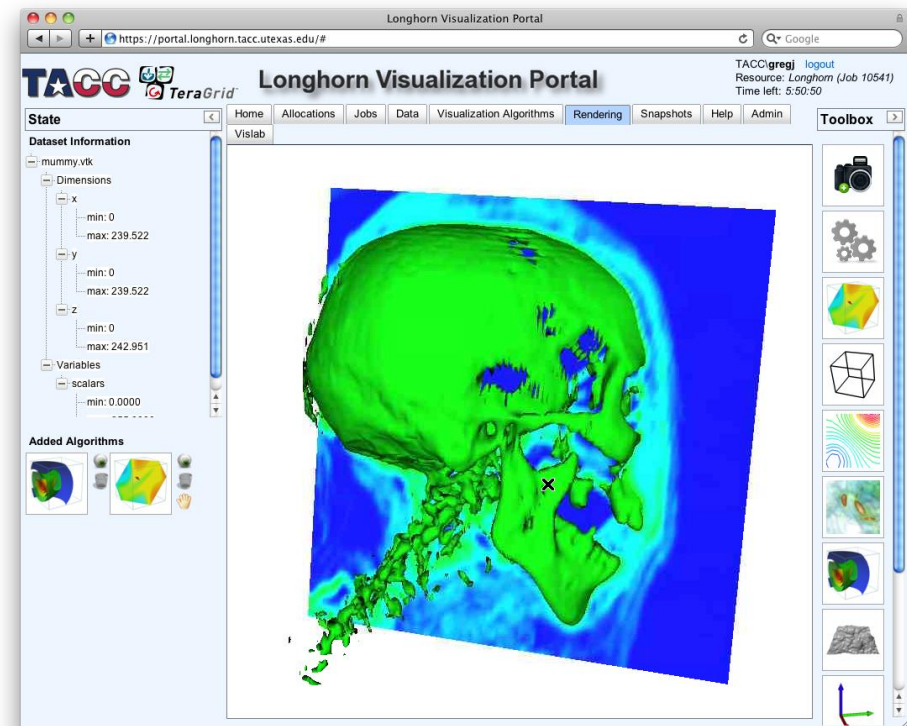






## Run an EnVision session

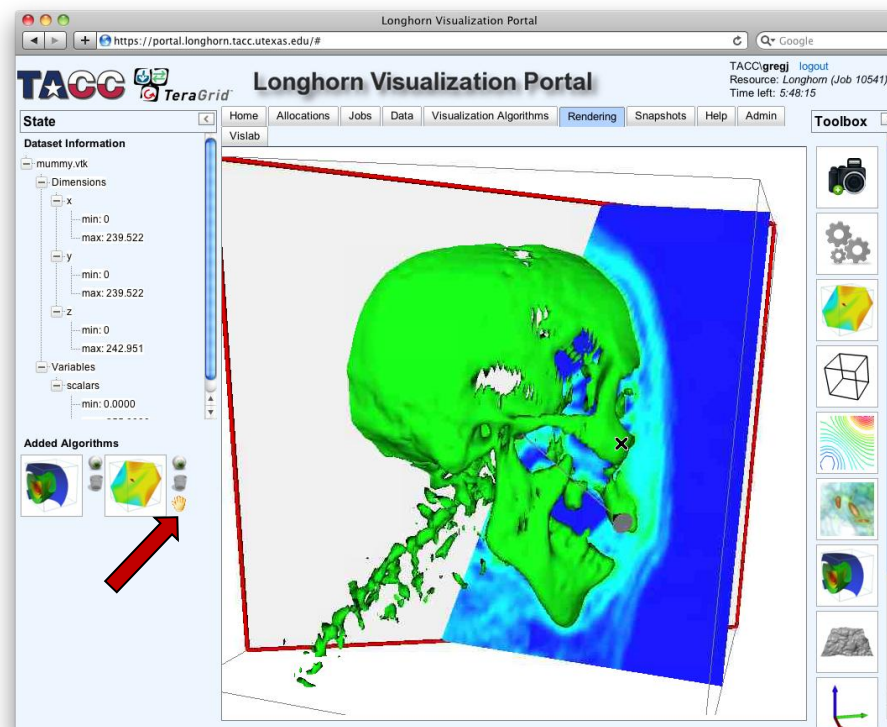
- *Keep the default values;  
click Add*





## Run an EnVision session

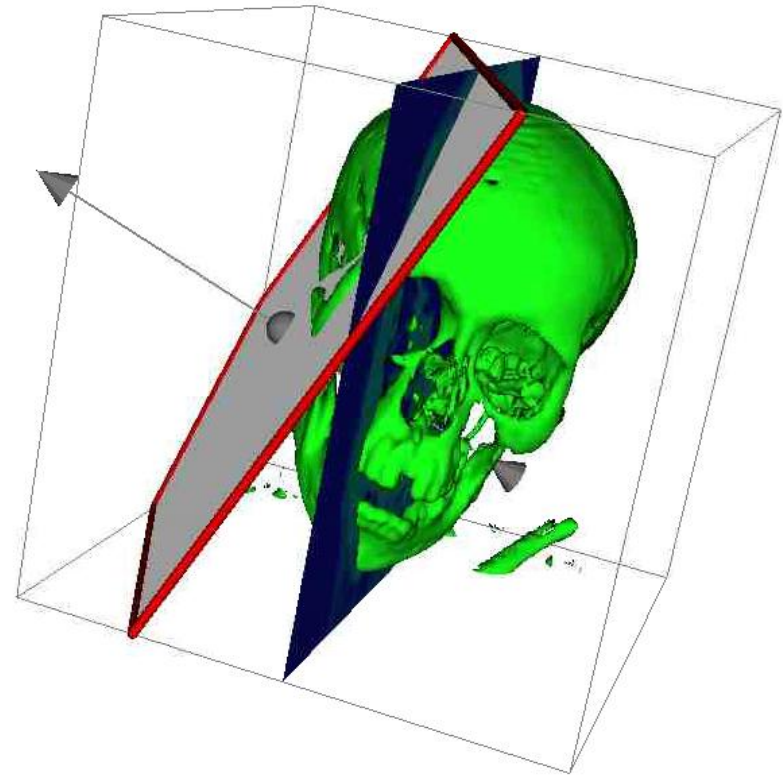
- *Click the hand next to the cutting plane under Added Algorithms; use the widget to interact*





## Run an EnVision session

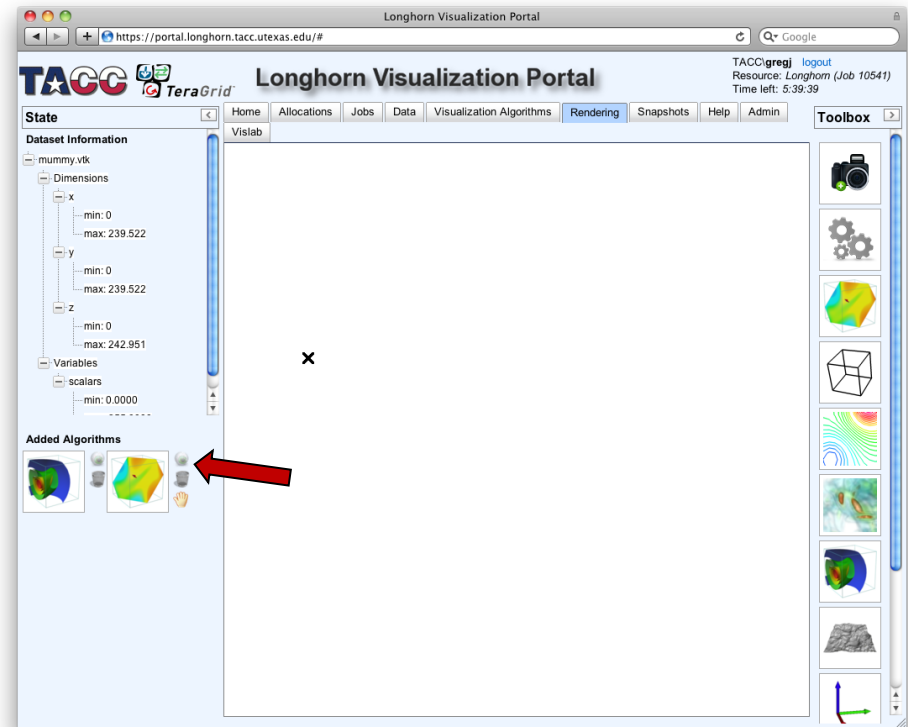
- *Drag the arrow point(s). What do they do?*
- *Drag the ball in the center of the slice. What does that do? What are the limitations on its movement?*
- *Drag the frame surrounding the slice. What does that do?*
- *Click the hand to finalize.*





## Run an EnVision session

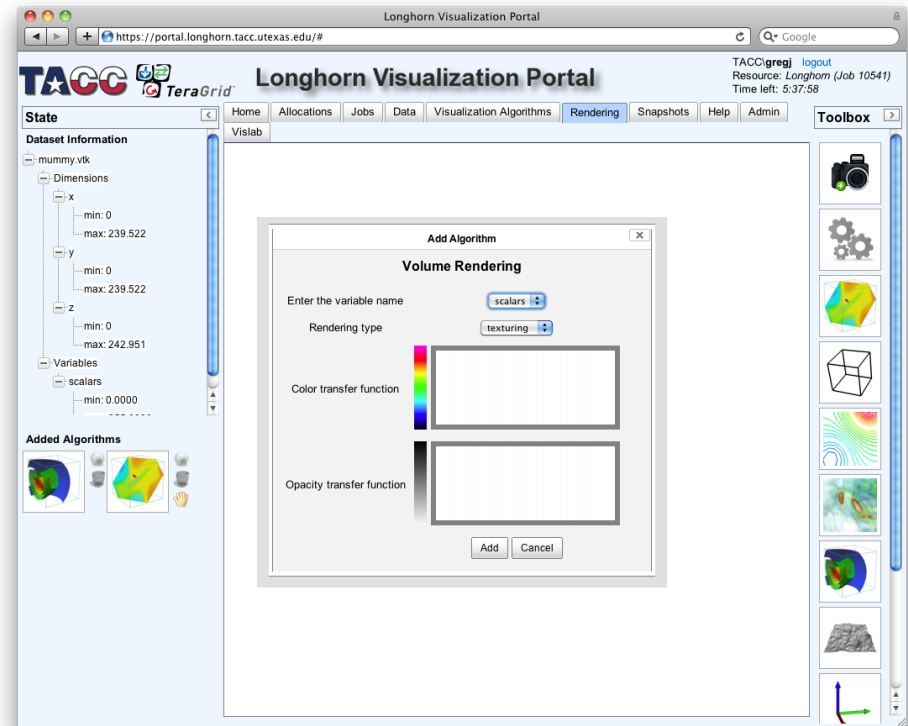
- *Click the Eye next to each added visualization algorithm to hide*





## Run an EnVision session

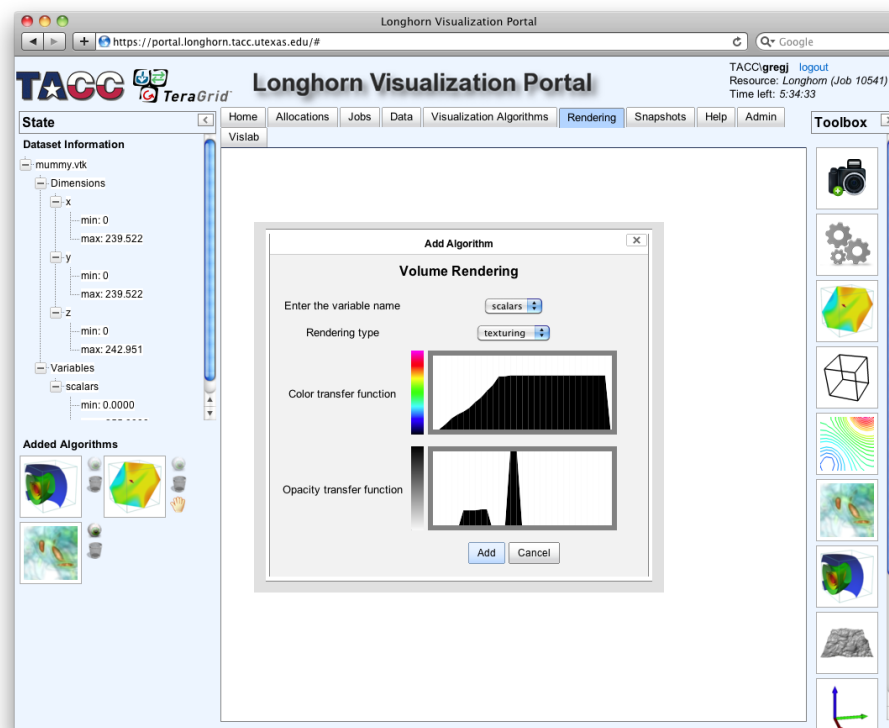
- *Click volume rendering icon in the toolbox*
- The transfer function maps dataset values to colors or opacity
- Transfer function boxes are empty. Clicking or dragging the mouse pointer shapes this mapping





## Run an EnVision session

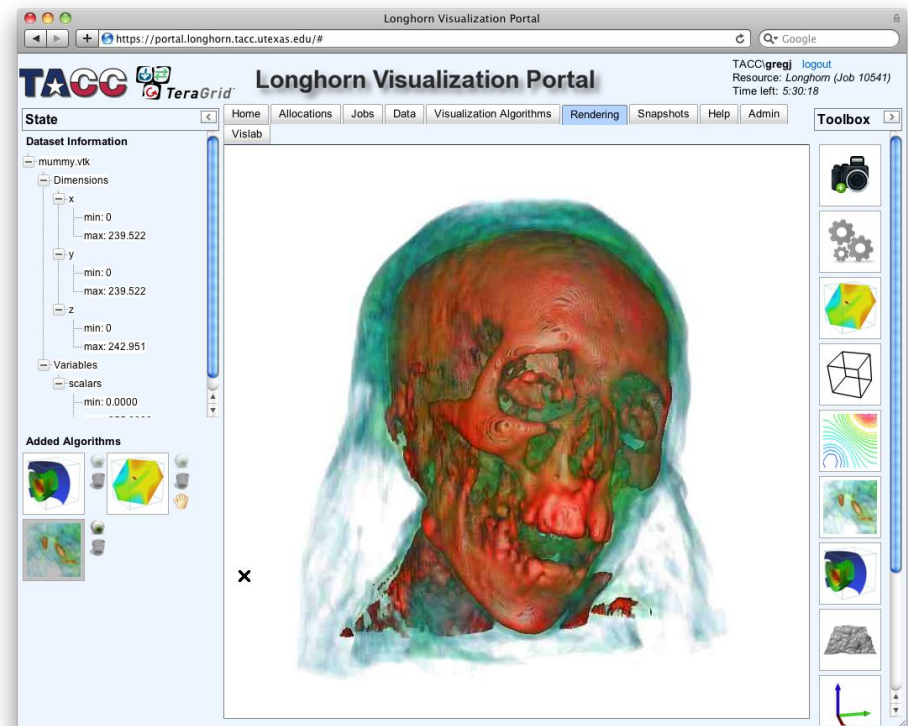
- *Manipulate the transfer function boxes until you get something that looks as shown.*
- The dataset value range is implied by box width. As these boxes are for quick/easy/rough selection, they are not labelled with values.





## Run an EnVision session

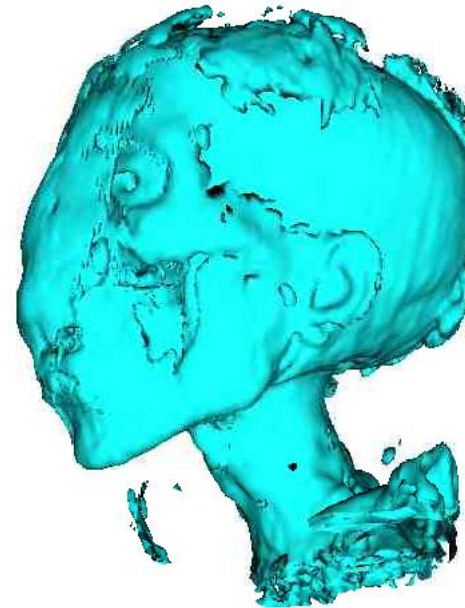
- *The opacity and color transfer function emphasizes certain value ranges*
- *Enable/disable the isosurface and slice visualizations. Is there a correlation with the volume rendering?*





## Run an EnVision session

- *Click volume rendering icon in lower left to try different transfer functions.*
- *Try different values for the isosurface visualization. These images are for values of 8.5, 64.6, 127.5, and 220. What is this showing? Why?*







## Run an EnVision session

- Explore the isotropic turbulence example data on your own

