



3D Visualization of DICOM Images for Radiology Applications Tutorial

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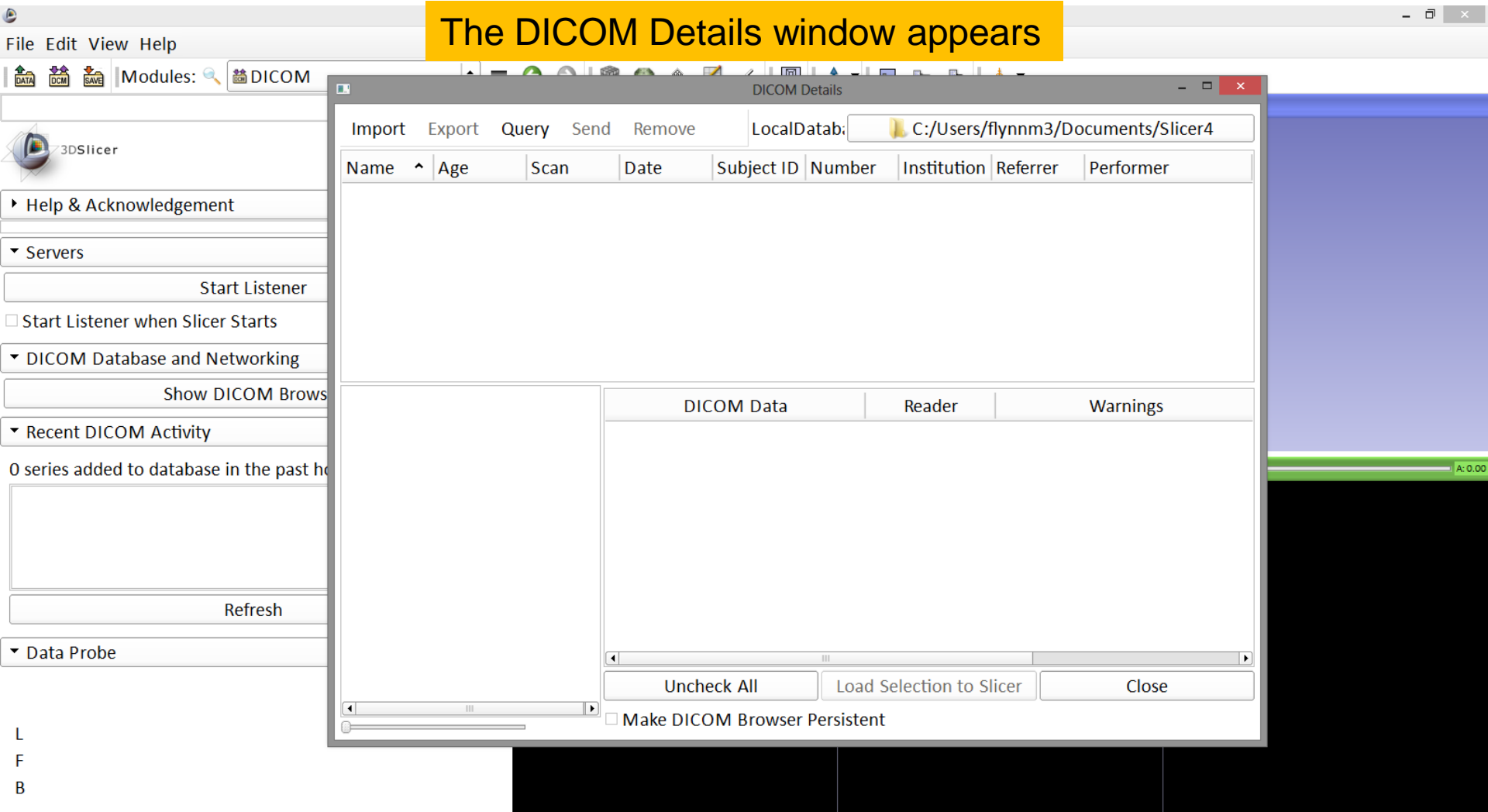
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Loading a DICOM volume

The image shows the 3D Slicer software interface. The title bar reads "3D Slicer 4.2.0-2013-06-11". The menu bar includes "File", "Edit", "View", and "Help". The toolbar contains icons for "DATA", "DCM", "SAVE", and various tool functions. The left sidebar displays the "Welcome" screen with several buttons: "Load DICOM Data", "Load Data", "Customize Slicer", and "Download Sample Data". A red arrow points from a yellow callout box to the "Load DICOM Data" button. The callout box contains the text "First, click on Load DICOM Data". The main 3D view area shows a purple wireframe box with axes labeled "S", "R", "P", "L", and "I". Below the 3D view are three sliders for "R", "Y", and "G", each with a value of "0.00".

Loading a DICOM volume

The DICOM Details window appears



Loading a DICOM volume

3D Slicer 4.2.0-2013-07-08

File Edit View Help

Modules: DICOM

3DSlicer

Help & Acknowledgement

Servers

Start Listener

Start Listener when Slicer Starts

DICOM Database and Networking

Show DICOM Brows

Recent DICOM Activity

0 series added to database in the past h

Refresh

Data Probe

L
F
B

DICOM Details

Import Export Query Send » LocalDatabase: C:/Users/flynnm3/Desktop/3Dvisualization_DICOM_Data-Par

Name	Age	Scan	Date	Subject ID	Number	Institution	Referrer	Performer
------	-----	------	------	------------	--------	-------------	----------	-----------

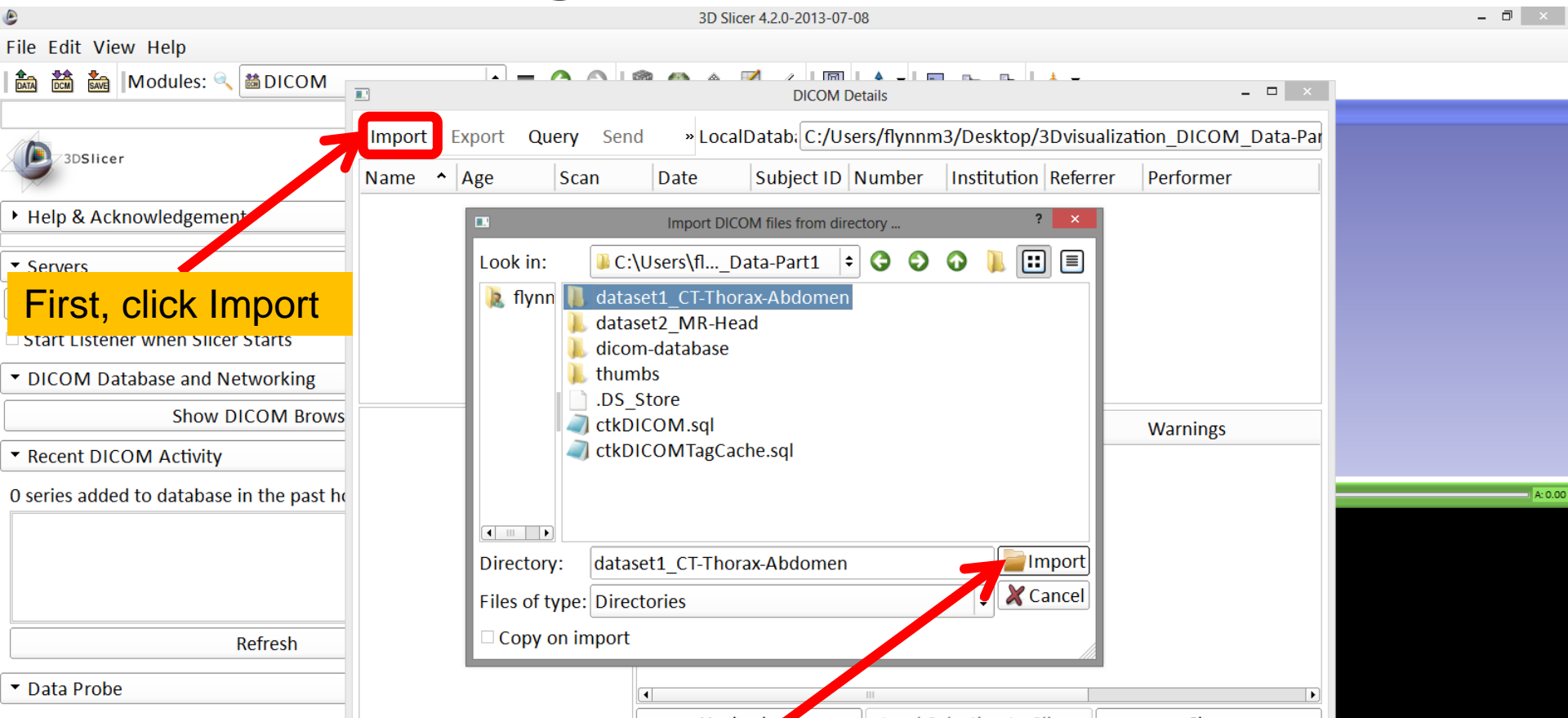
DICOM Data Reader Warnings

Uncheck All Load Selection to Slicer Close

Make DICOM Browser Persistent

Click on LocalDatabase and select the folder 3Dvisualization_DICOM_Data-Part1

Loading a DICOM volume



Then, locate and select the folder **dataset1_CT-Thorax-Abdomen** in the **3Dvisualization_DICOM_Data-Part1** directory, then click **Import** to import the selected volume

Loading a DICOM volume

The screenshot shows the 3D Slicer interface. The 'DICOM Details' window is open, displaying a table with columns: Name, Age, Scan, Date, Subject ID, Number, Institution, Referrer, and Performer. The first row contains 'patient1' in the Name column, which is highlighted with a red box. A 'DICOM Directory Import' dialog box is overlaid on the table, showing a message: 'Directory import completed.' Below the message, it lists: '1 New Patients', '1 New Studies', '1 New Series', and '291 New Instances'. An 'OK' button is visible at the bottom right of the dialog box, with a red arrow pointing to it. The background shows the 3D Slicer interface with various toolbars and panels.

A window indicating the completion of the DICOM volumes appears, as well as the patient1 dataset. Click **OK** to close the window, then click on the **patient1** dataset

Loading a DICOM volume

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DICOM Details

Import Export Query Send » LocalDatab: C:/Users/flynnm3/Desktop/3Dvisualization_DICOM_Data-Par

Name	Age	Scan	Date	Subject ID	Number	Institution	Referrer	Pe
patient1								patient1...
CT_Thorax_Abdomen			2005-06-...		6936864	oEfZQhR...		
CT_Thorax_Abdomen CT		6	2005-06-...	HEART	14			

CT_Thorax_Abdomen

DICOM Data	Reader	Warnings
<input checked="" type="checkbox"/> 6: CT_Thorax_Abdomen	Scalar Volume	
<input type="checkbox"/> 6: CT_Thorax_Abdomen for...	Scalar Volume	
<input type="checkbox"/> 6: CT_Thorax_Abdomen for...	Scalar Volume	
<input type="checkbox"/> 6: CT_Thorax_Abdomen for...	Scalar Volume	
<input type="checkbox"/> 6: CT_Thorax_Abdomen for...	Scalar Volume	
<input type="checkbox"/> 6: CT_Thorax_Abdomen for...	Scalar Volume	
<input type="checkbox"/> 6: CT_Thorax_Abdomen for...	Scalar Volume	
<input type="checkbox"/> 6: CT_Thorax_Abdomen for...	Scalar Volume	

Uncheck All Load Selection to Slicer Close

Make DICOM Browser Persistent

The file hierarchy appears after patient1 is selected. Click on CT_Thorax_Abdomen, then click on CT_Thorax_Abdomen CT.

Loading a DICOM volume

Once **CT_Thorax_Abdomen CT** is selected, the snapshots of the DICOM images of the file are displayed in the bottom-left corner of the DICOM Details window. Click **Load Selection to Slicer** to load the volume to Slicer

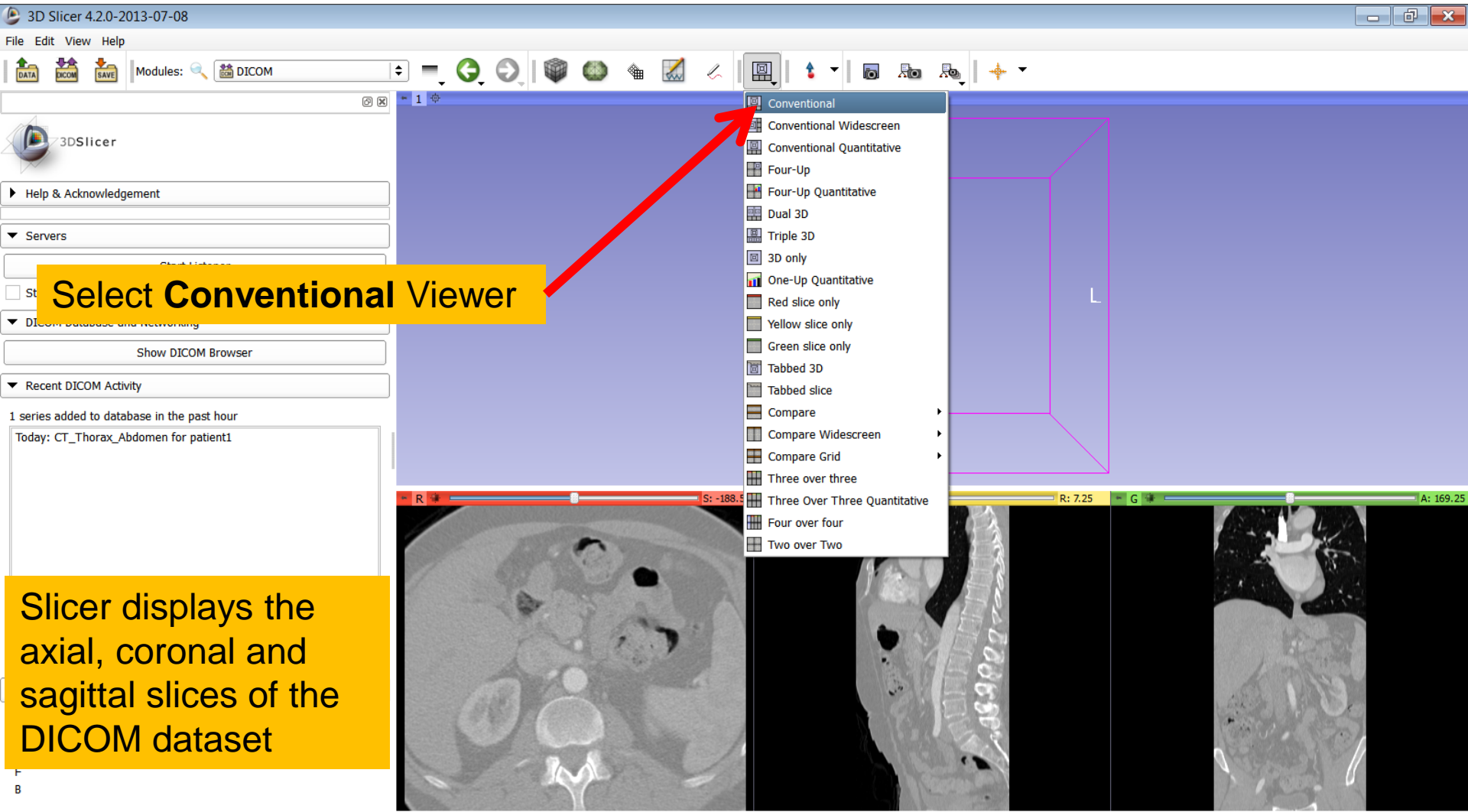
The screenshot shows the 3D Slicer interface. The DICOM Details window is open, displaying a list of DICOM data and a grid of image thumbnails. A red box highlights the thumbnails, and a red arrow points from the text above to the 'Load Selection to Slicer' button.

DICOM Data	Reader	Warnings
<input checked="" type="checkbox"/> 6: CT_Thorax_Abdomen	Scalar Volume	
<input type="checkbox"/> 6: CT_Thorax_Abdomen for...	Scalar Volume	
<input type="checkbox"/> 6: CT_Thorax_Abdomen for...	Scalar Volume	
<input type="checkbox"/> 6: CT_Thorax_Abdomen for...	Scalar Volume	
<input type="checkbox"/> 6: CT_Thorax_Abdomen for...	Scalar Volume	
<input type="checkbox"/> 6: CT_Thorax_Abdomen for...	Scalar Volume	
<input type="checkbox"/> 6: CT_Thorax_Abdomen for...	Scalar Volume	
<input type="checkbox"/> 6: CT_Thorax_Abdomen for...	Scalar Volume	

Buttons: Uncheck All, Load Selection to Slicer, Close

Make DICOM Browser Persistent

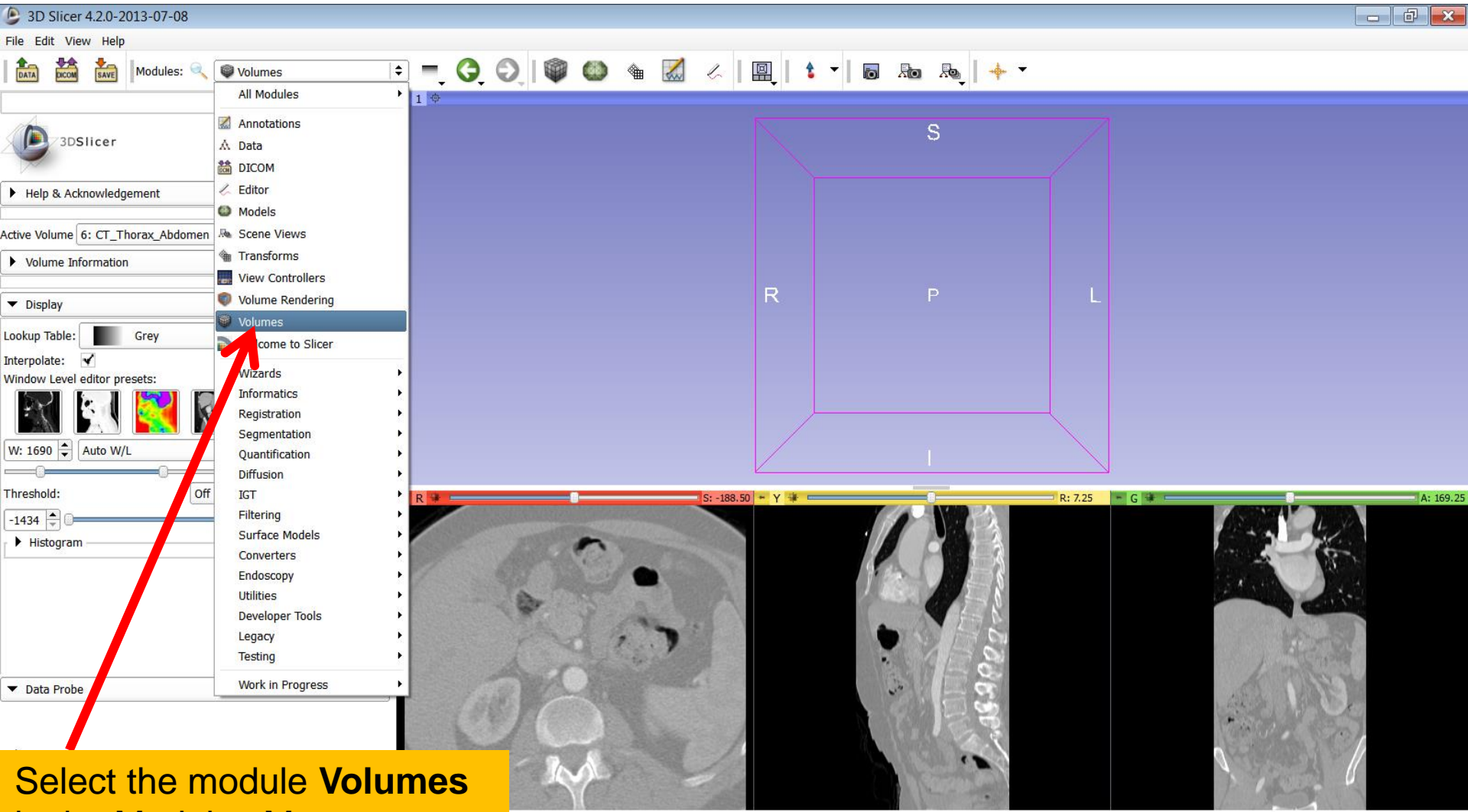
Loading a DICOM volume



Select Conventional Viewer

Slicer displays the axial, coronal and sagittal slices of the DICOM dataset

Loading a DICOM volume



Select the module **Volumes** in the Modules Menu

Loading a DICOM volume

3D Slicer 4.2.0-2013-07-08

File Edit View Help

Modules: Volumes

3DSlicer

Help & Acknowledgement

Active Volume: 6: CT_Thorax_Abdomen

Volume Information

Display

Lookup Table: Grey

Interpolate:

Window Level editor presets:

W: 350 Manual W/L

Threshold: Off

-1434 3480

Histogram

Data Probe

L
F
B

S

L

R: -188.50 Y: 7.25 G: 169.25

Under the Window Level Editor Presets, click on **CT-abdomen**, or adjust manually the Window and Level using the Manual W/L slider

Loading a DICOM volume

3D Slicer 4.2.0-2013-07-08

File Edit View Help

Modules: Volumes

Active Volume: 6: CT_Thorax_Abdomen

Volume Information

Display

Lookup Table: Grey

Interpolate:

Window Level editor presets:

W: 350 Manual W/L L: 40

Threshold: Off

-1434 3480

Histogram

Data Probe

L
F
B

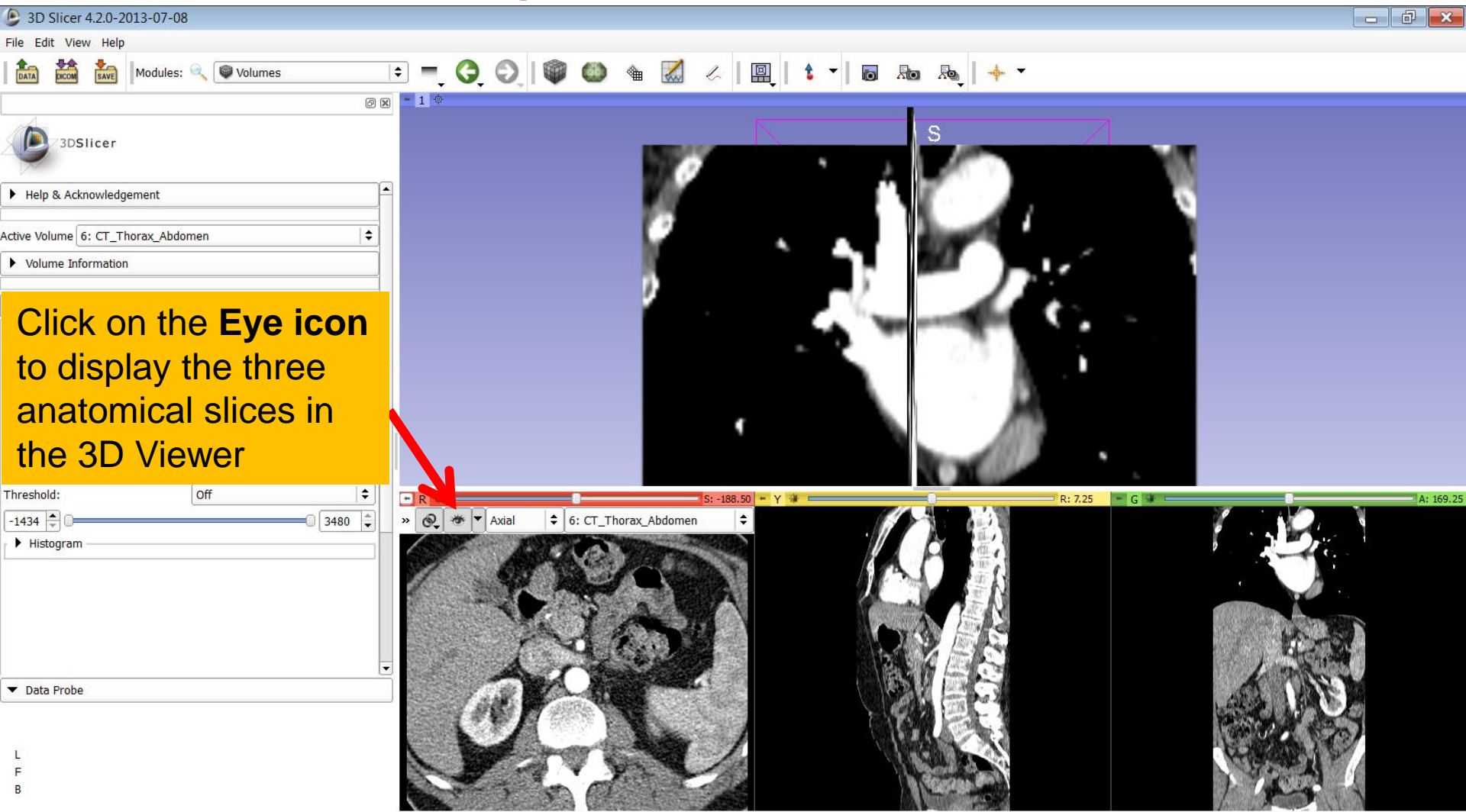
Position the mouse cursor over the red banner in the Red Viewer to display the slice menu. Click on the **Link Icon** to link the three slice controls across all Slice Viewers

Link/Unlink the slice controls (except scales) across all Slice Viewers.

R: -100.50 Y G R: 7.25 A: 169.25

Axial 6: CT_Thorax_Abdomen

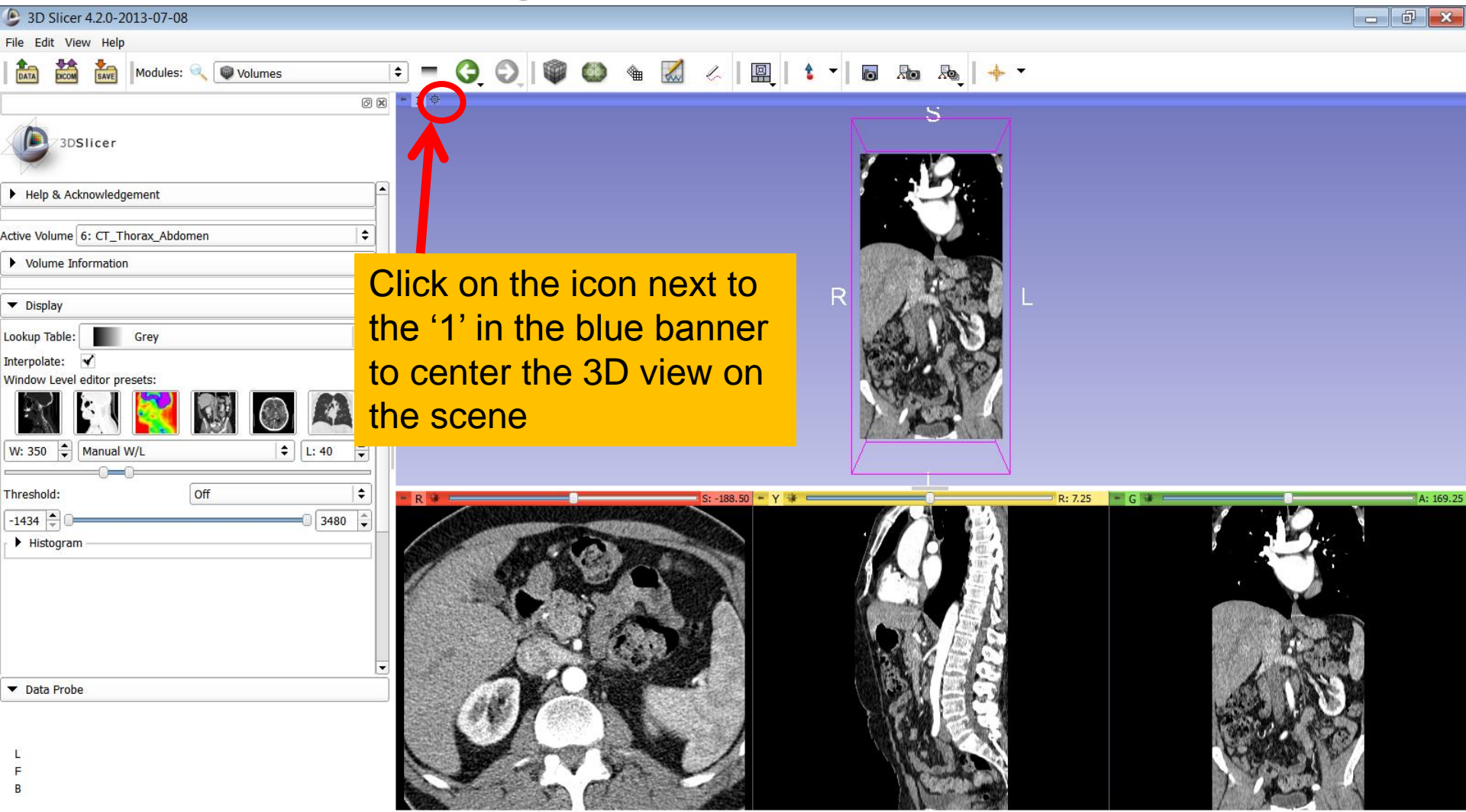
Loading a DICOM volume



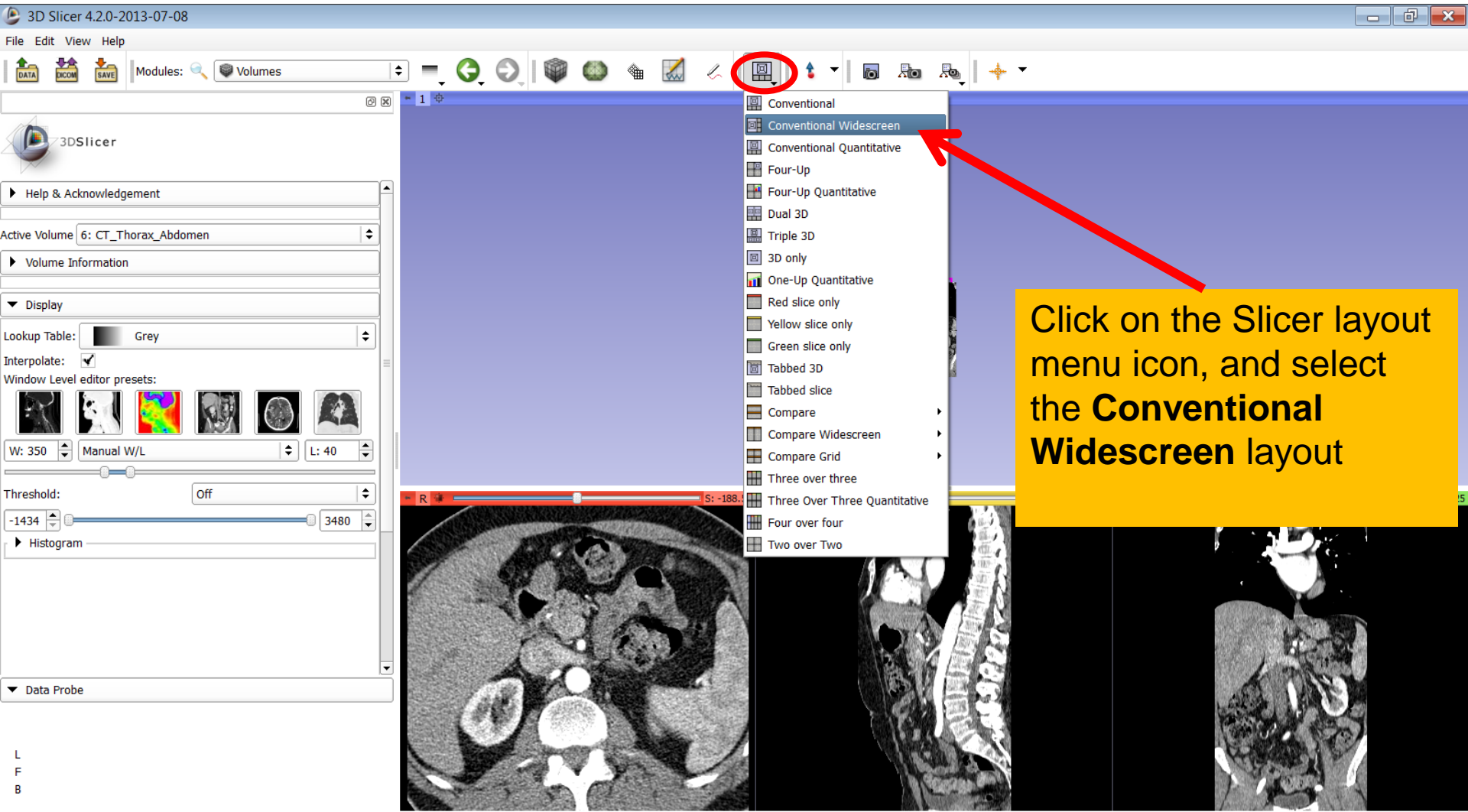
Loading a DICOM volume

The screenshot displays the 3D Slicer software interface. The title bar reads "3D Slicer 4.2.0-2013-07-08". The menu bar includes "File", "Edit", "View", and "Help". The "Modules" dropdown is set to "Volumes". The main 3D viewer shows a CT scan of a thorax and abdomen, with a yellow callout box containing the text: "Use the left-mouse button in the 3D Viewer to rotate the 3D volume". The callout box is a yellow rectangle with a purple border, pointing to the 3D volume. The volume is shown in three views: a sagittal view (top right), an axial view (bottom left), and a coronal view (bottom right). The sagittal view is labeled with "S" (Superior), "I" (Inferior), "A" (Anterior), and "P" (Posterior). The coronal view is labeled with "R" (Right) and "L" (Left). The axial view is labeled with "R" (Right), "Y" (Y-axis), "G" (Green), and "A: 169.25". The left sidebar contains the "3DSlicer" logo and several panels: "Help & Acknowledgement", "Active Volume: 6: CT_Thorax_Abdomen", "Volume Information", "Display", "Lookup Table: Grey", "Interpolate: [checked]", "Window Level editor presets" (with icons for different presets), "W: 350", "Manual W/L", "L: 40", "Threshold: Off", a range from -1434 to 3480, "Histogram", and "Data Probe".

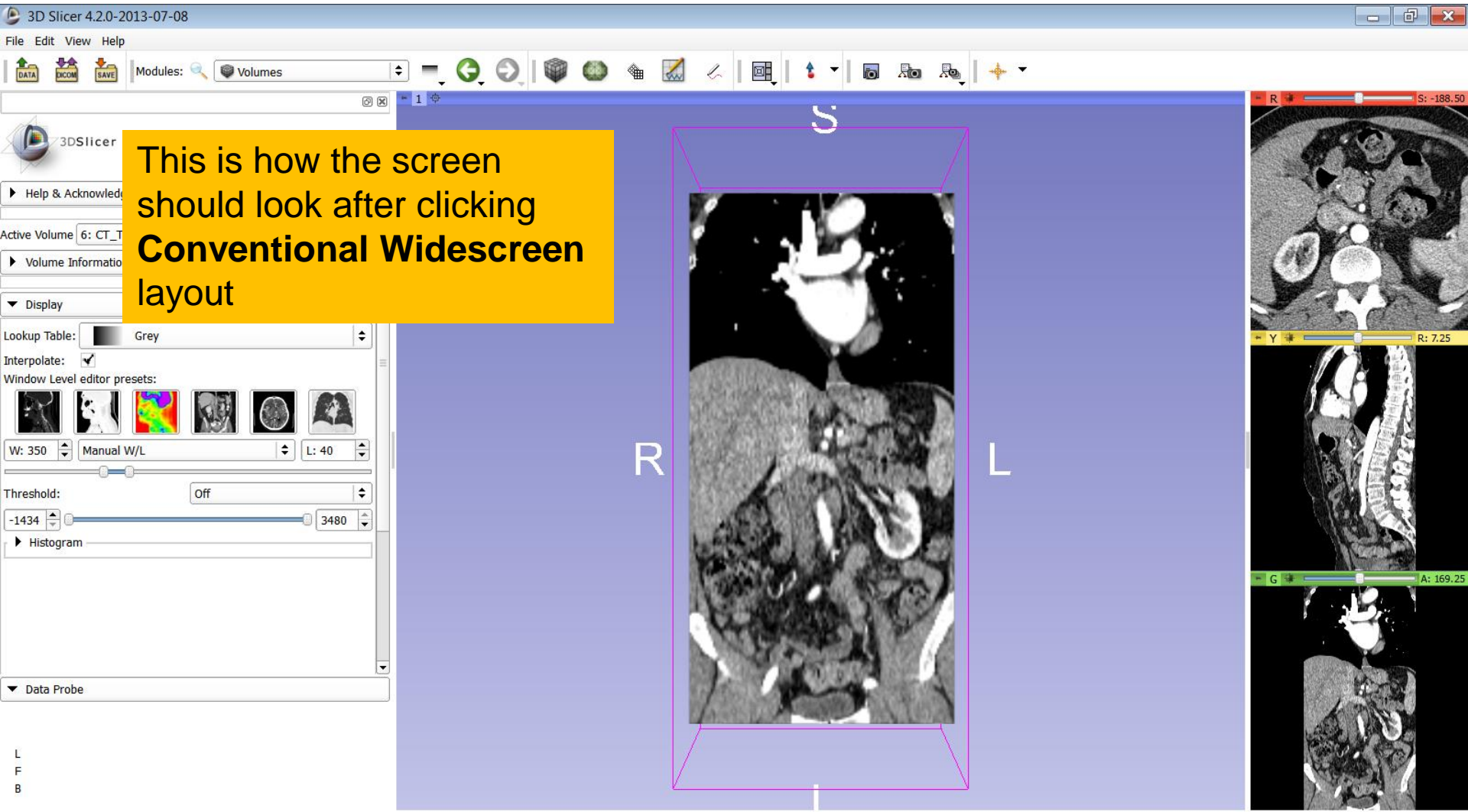
Loading a DICOM volume



Loading a DICOM volume



Loading a DICOM volume



Loading a DICOM volume

The screenshot displays the 3D Slicer interface with a CT volume of the thorax and abdomen. The main view shows a sagittal slice with 'S' at the top, 'R' on the left, and 'I' at the bottom. A purple wireframe box highlights the volume. On the right, three smaller views show axial, sagittal, and coronal slices, with red, yellow, and green sliders respectively. A yellow box with text explains: 'Use the red slice, yellow slice and green slice sliders to slice through the volume in all three anatomical directions'. The left sidebar shows the 'Volumes' module with 'Active Volume: 6: CT_Thorax_Abdomen' and various display settings like 'Lookup Table: Grey', 'Interpolate: checked', and 'Threshold: Off'.

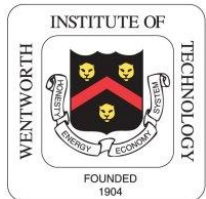
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