

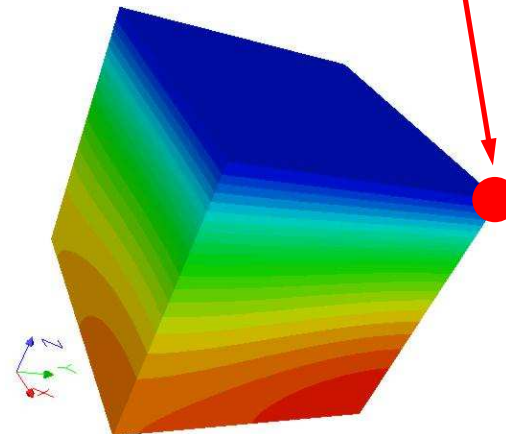
# Running the Program

## Running, Post Processing by ParaView

```
$> cd <$P-L1>/run
$> ./L1-sol
    1      4.504513e+00      Residual at the 1st Iteration
   75      8.377861e-09      Residual at convergence (<10-8)

    32768      9.297409e+02      Result at ●-point

$> ls test.inp
test.inp
```



# UCD Format (1/2)

## Unstructured Cell Data

### 要素の種類

点

線

三角形

四角形

四面体

角錐

三角柱

六面体

二次要素

線2

三角形2

四角形2

四面体2

角錐2

三角柱2

六面体2

### キーワード

pt

line

tri

quad

tet

pyr

prism

hex

line2

tri2

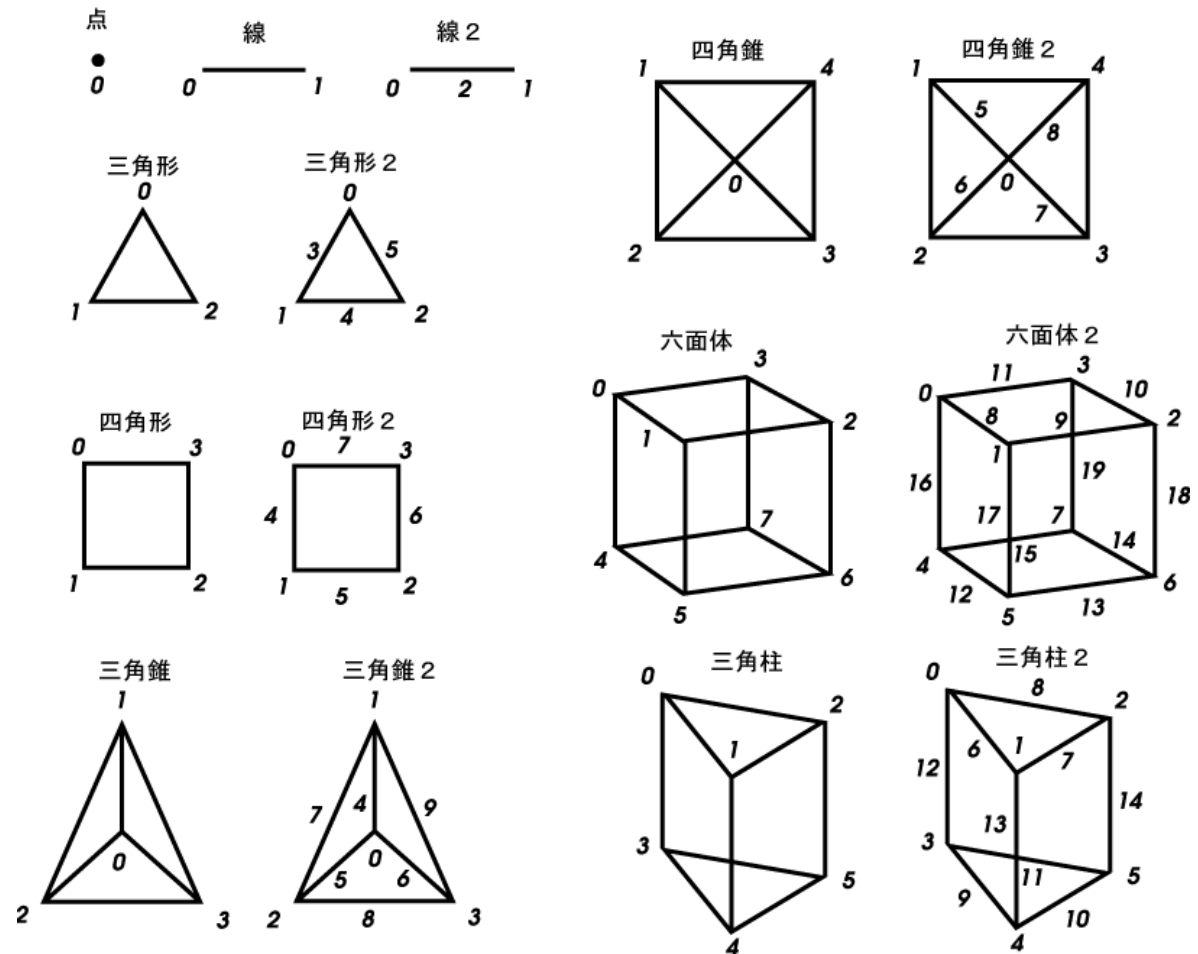
quad2

tet2

pyr2

prism2

hex2



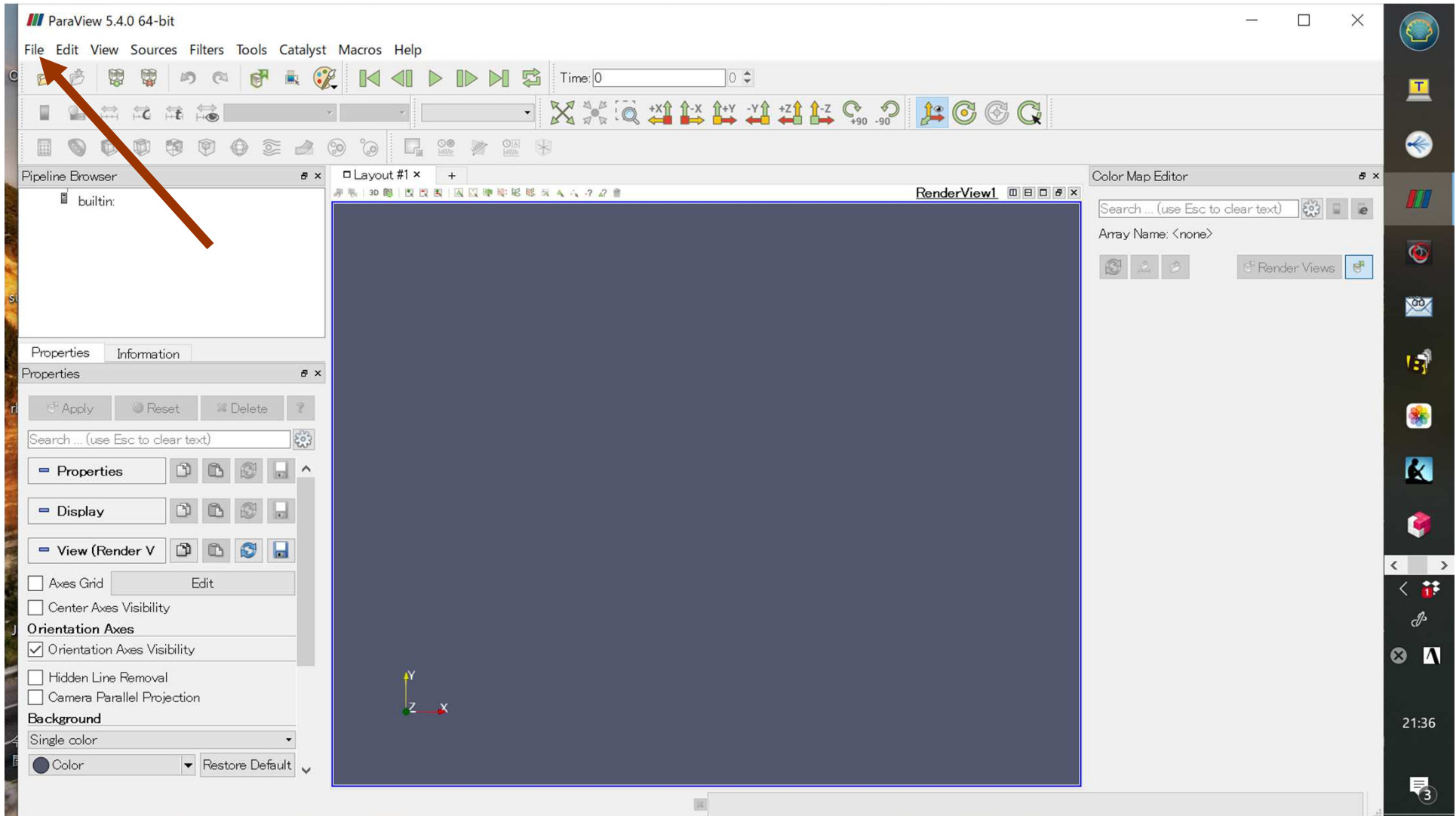
# UCD Format (2/2)

- Originally for AVS, MicroAVS
- Extension of the UCD file is “inp”
- There are two types of formats. Only old type can be read by ParaView.

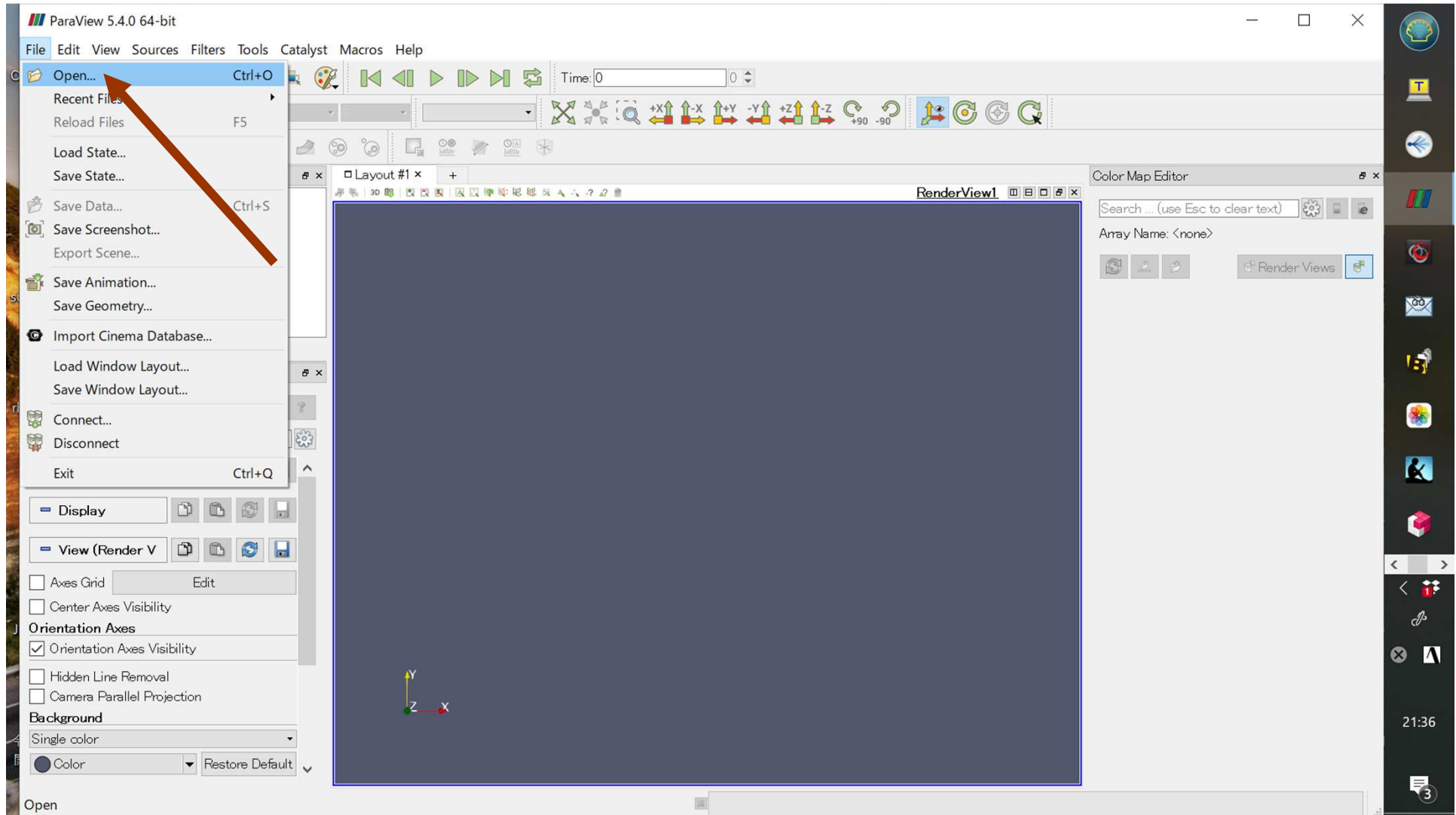
# Example NX=NY=NZ=2, 8 Cell's

27	8	0	1	0						(Vertex#) (Vertex ID)	(Cell#) (X) (Y) (Z)	(DOF#-on-Vertex)	(DOF#-on-Cell)	(DOF#-in-Model)	
1			0.000000E+00		0.000000E+00										
2			1.000000E+00		0.000000E+00										
3			2.000000E+00		0.000000E+00										
4			0.000000E+00		1.000000E+00										
5			1.000000E+00		1.000000E+00										
6			2.000000E+00		1.000000E+00										
7			0.000000E+00		2.000000E+00										
8			1.000000E+00		2.000000E+00										
9			2.000000E+00		2.000000E+00										
10			0.000000E+00		0.000000E+00							1.000000E+00			
11			1.000000E+00		0.000000E+00							1.000000E+00			
12			2.000000E+00		0.000000E+00							1.000000E+00			
13			0.000000E+00		1.000000E+00							1.000000E+00			
14			1.000000E+00		1.000000E+00							1.000000E+00			
15			2.000000E+00		1.000000E+00							1.000000E+00			
16			0.000000E+00		2.000000E+00							1.000000E+00			
17			1.000000E+00		2.000000E+00							1.000000E+00			
18			2.000000E+00		2.000000E+00							1.000000E+00			
19			0.000000E+00		0.000000E+00							2.000000E+00			
20			1.000000E+00		0.000000E+00							2.000000E+00			
21			2.000000E+00		0.000000E+00							2.000000E+00			
22			0.000000E+00		1.000000E+00							2.000000E+00			
23			1.000000E+00		1.000000E+00							2.000000E+00			
24			2.000000E+00		1.000000E+00							2.000000E+00			
25			0.000000E+00		2.000000E+00							2.000000E+00			
26			1.000000E+00		2.000000E+00							2.000000E+00			
27			2.000000E+00		2.000000E+00							2.000000E+00			
1	1 hex		1	2	5	4	10	11	14	13	(Cell ID) (Material ID) (Cell-Type) (Vertices (1-8))				
2	1 hex		2	3	6	5	11	12	15	14					
3	1 hex		4	5	8	7	13	14	17	16					
4	1 hex		5	6	9	8	14	15	18	17					
5	1 hex		10	11	14	13	19	20	23	22					
6	1 hex		11	12	15	14	20	21	24	23					
7	1 hex		13	14	17	16	22	23	26	25					
8	1 hex		14	15	18	17	23	24	27	26					
1		1									(Componet#-on-Cell) (Componenr ID (=1))				
VAL, VAL											(Name of Component) (Unit of Component)				
1			8.071429E+00								(Cell ID) (Value of 1st Component) (Value of 2nd)...				
2			8.500000E+00												
3			8.500000E+00												
4			8.928571E+00												
5			4.214286E+00												
6			4.500000E+00												
7			4.500000E+00												
8			4.785714E+00												

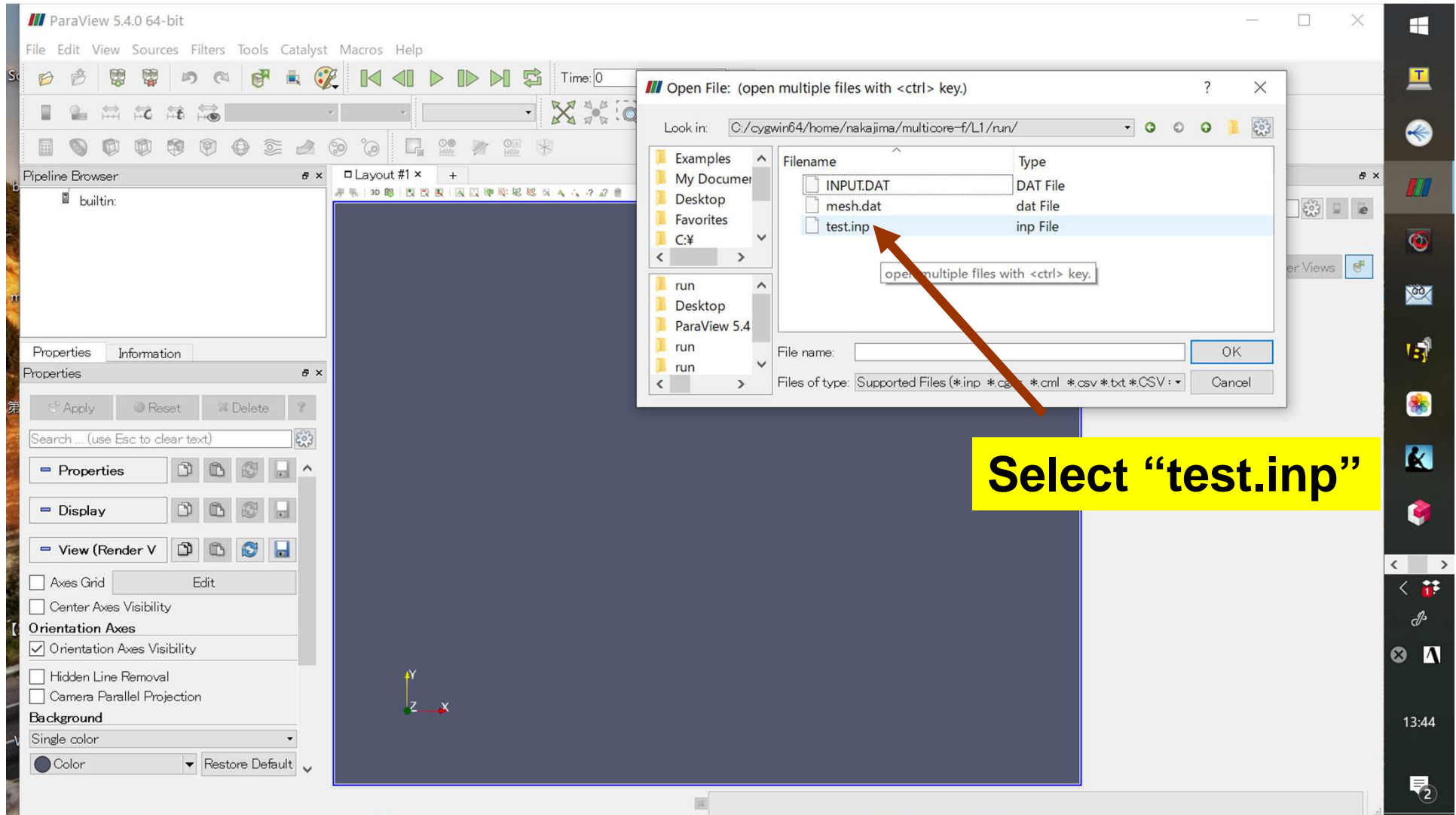
# Open the UCD file (1/3)



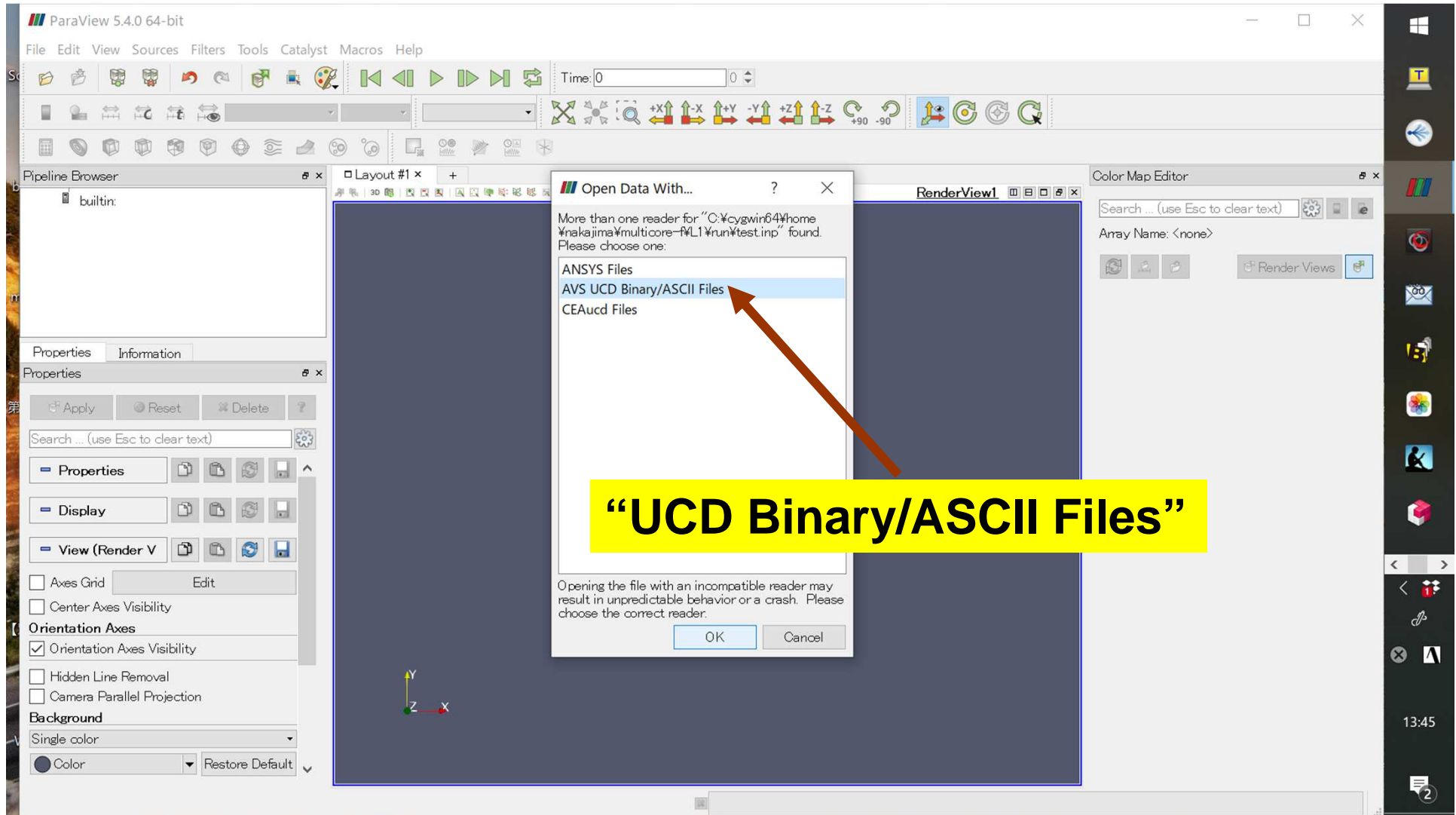
# Open the UCD file (2/3)



# Open the UCD file (3/3)

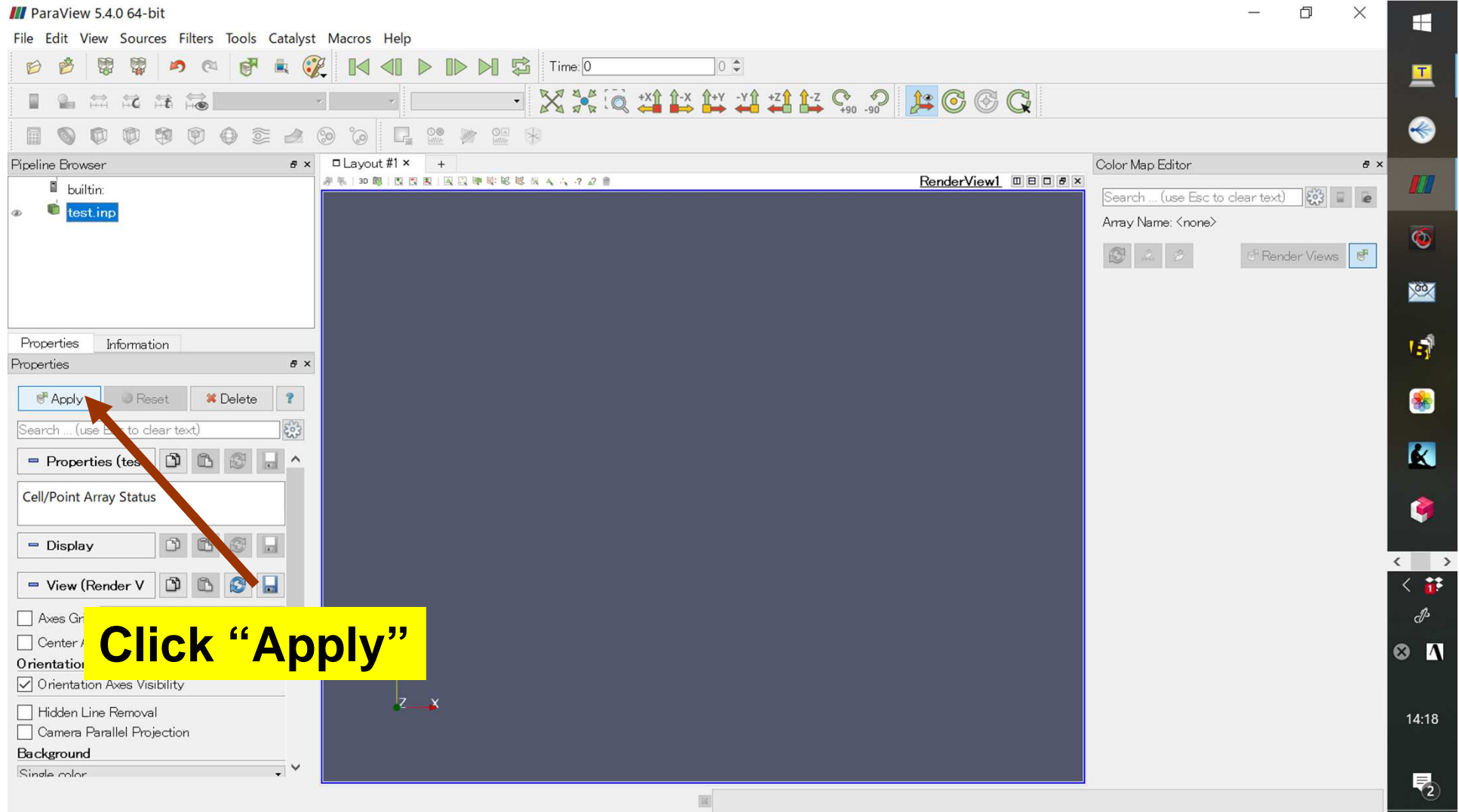


# Select UCD Format

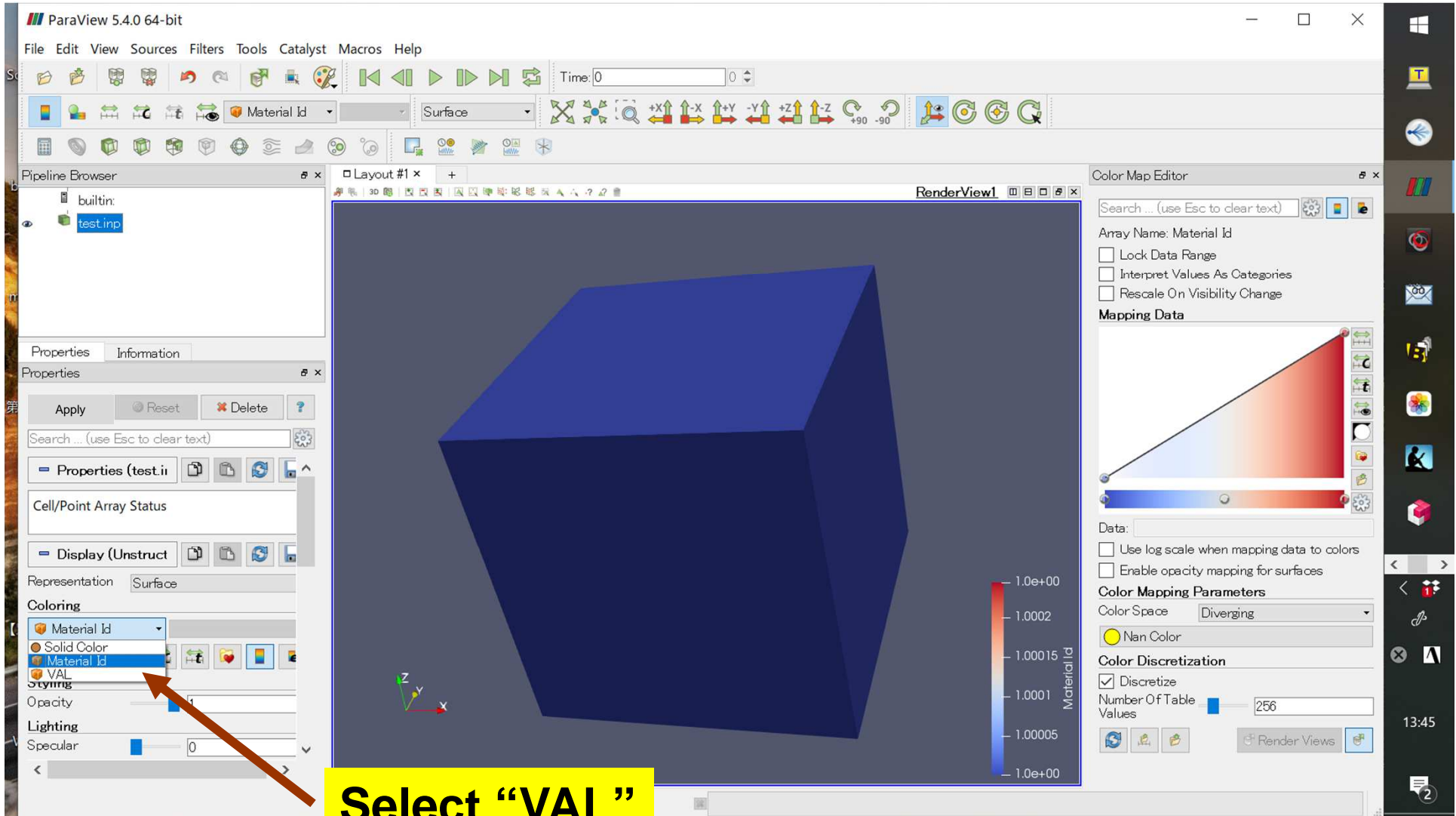




# Click “Apply”



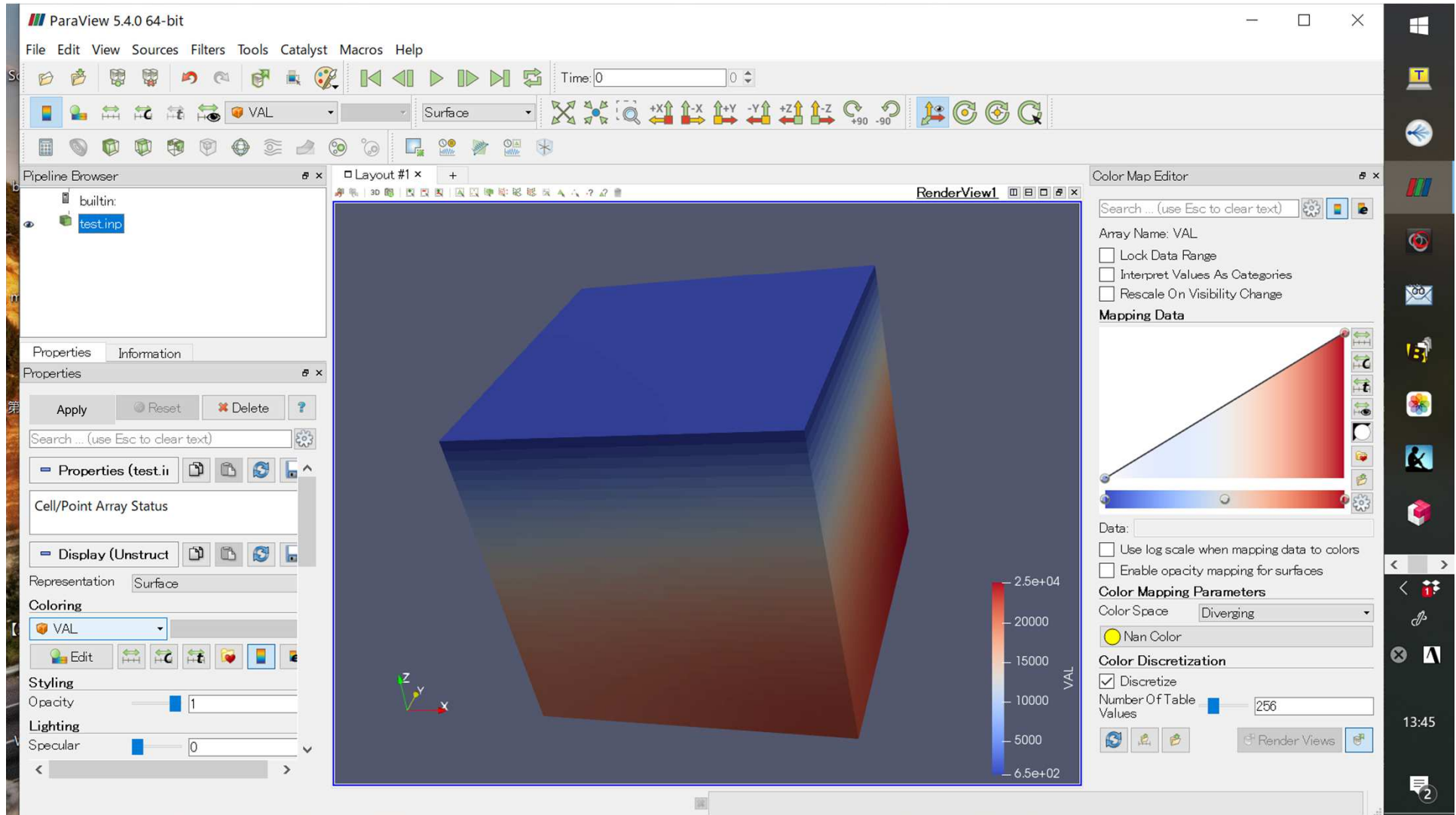
# Pulldown “Coloring” Material ID -> VAL



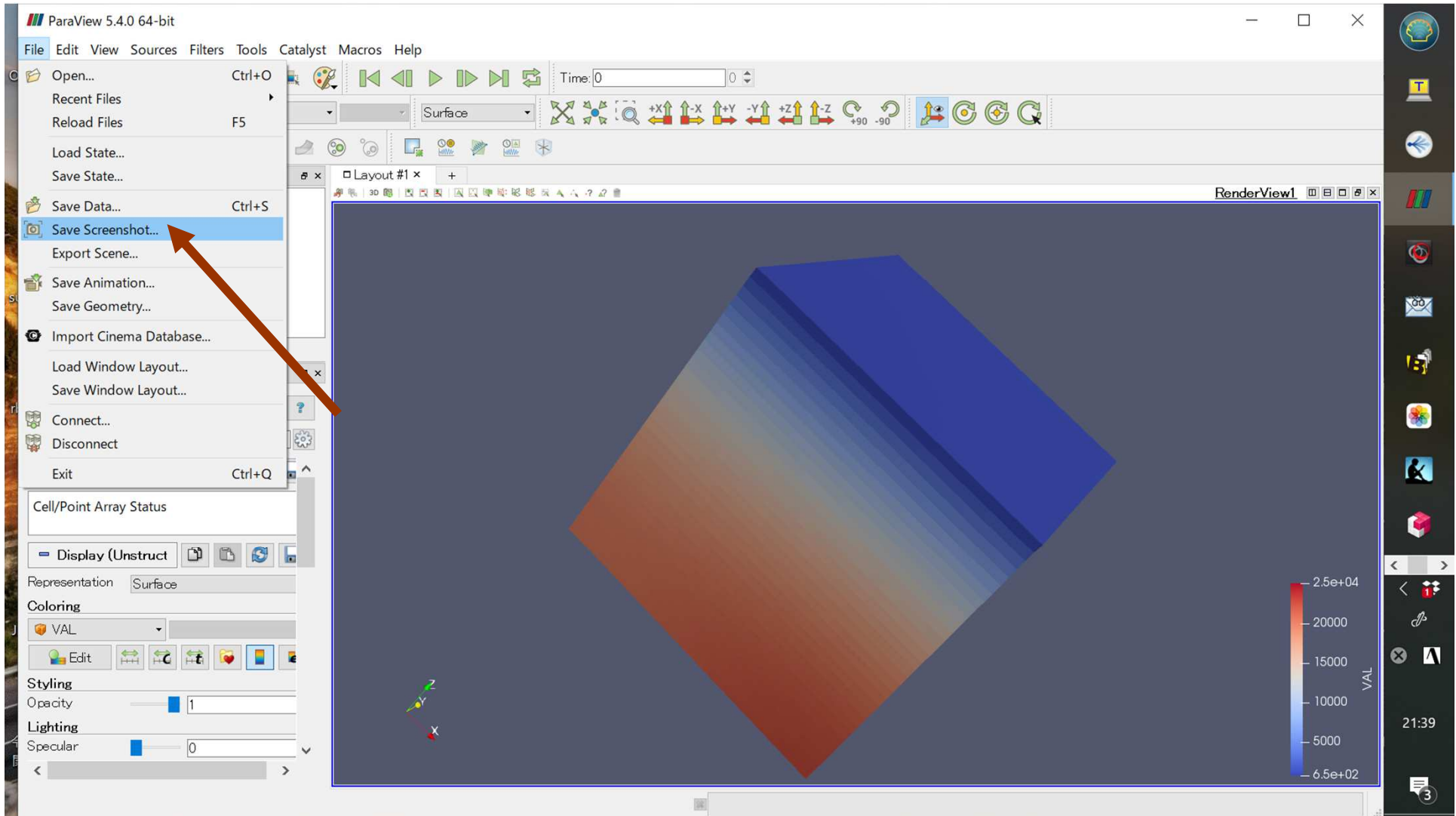
The screenshot displays the ParaView 5.4.0 64-bit software interface. The main window shows a 3D rendering of a blue cube. The 'Coloring' pulldown menu is open, and 'VAL' is selected. A yellow callout box with a red arrow points to the 'VAL' option, with the text 'Select “VAL”' written inside. The 'Color Map Editor' panel on the right shows the 'Material Id' array name and a color map ranging from blue to red. The 'Coloring' pulldown menu options include 'Material Id', 'Solid Color', 'Material Id', 'VAL', and 'Styling'. The 'Color Map Editor' panel includes options for 'Lock Data Range', 'Interpret Values As Categories', 'Rescale On Visibility Change', 'Mapping Data', 'Data', 'Use log scale when mapping data to colors', 'Enable opacity mapping for surfaces', 'Color Mapping Parameters', 'Color Space', 'Nan Color', 'Color Discretization', 'Discretize', 'Number Of Table Values', and 'Render Views'.

**Select “VAL”**

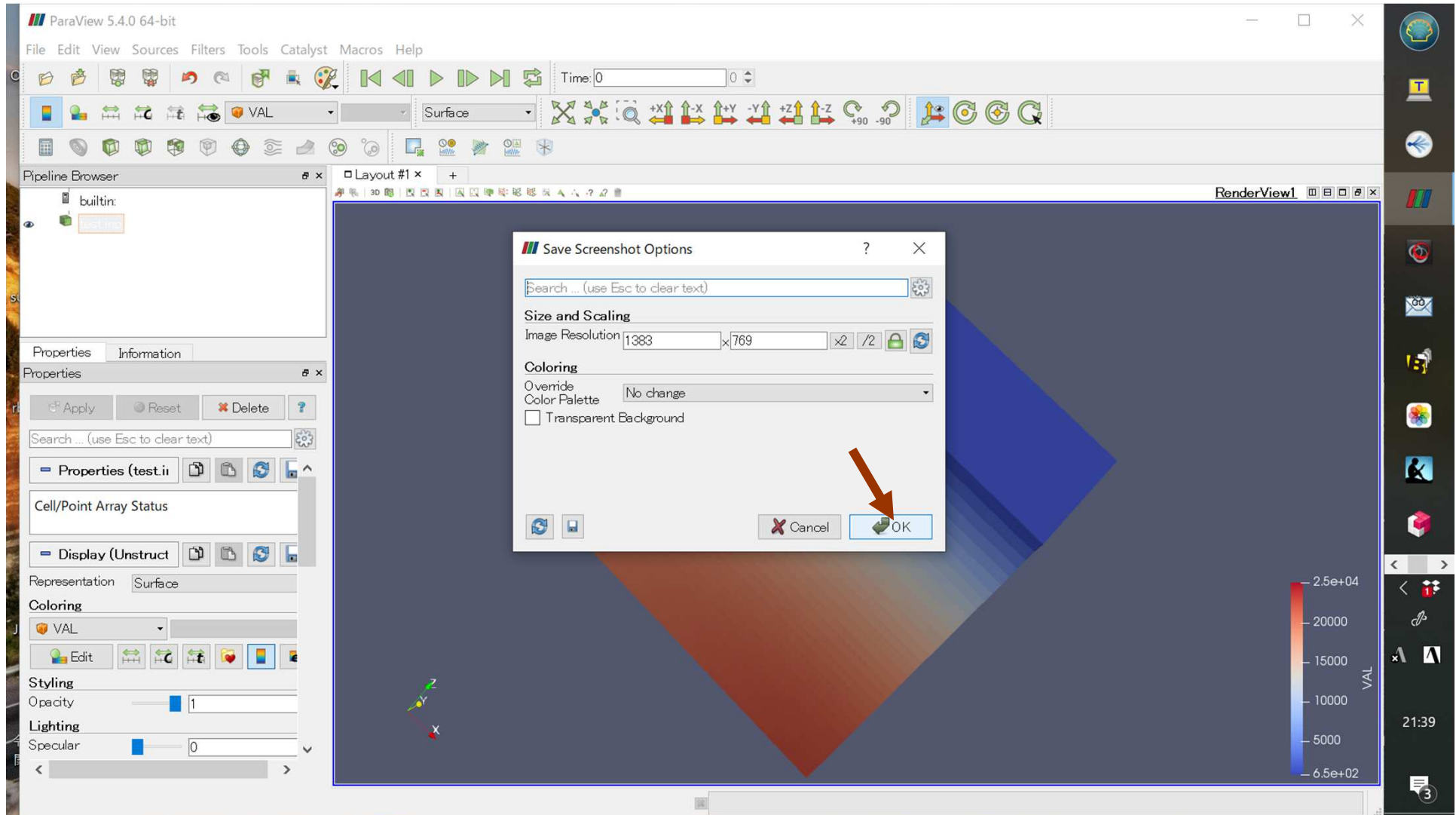
# Distribution of Results



# Save Screenshot (1/4)



# Save Screenshot (2/4)





# Save Screenshot (3/4)

ParaView 5.4.0 64-bit

File Edit View Sources Filters Tools Catalyst Macros Help

Time: 0

VAL

Surface

Pipeline Browser

Layout #1 x

Properties Information

Properties (test.i)

Cell/Point Array Status

Display (Unstruct)

Representation Surface

Coloring

VAL

Styling

Opacity 1

Lighting

Specular 0

Save Screenshot

Look in: C:/Program Files/ParaView 5.4.0-Qt5-OpenGL2-Windows-64b

Filename	Type
bin	Folder
data	Folder
doc	Folder
share	Folder

File name:

Files of type: **JPG image (\*.jpg)**

- ✓ PNG
- ✓ JPG
- ✓ TIFF
- ✓ BMP
- ✓ PPM

OK Cancel

Data:

Use log scale when mapping data to colors

Enable opacity mapping for surfaces

Color Mapping Parameters

Color Space Diverging

Nan Color

Color Discretization

Discretize

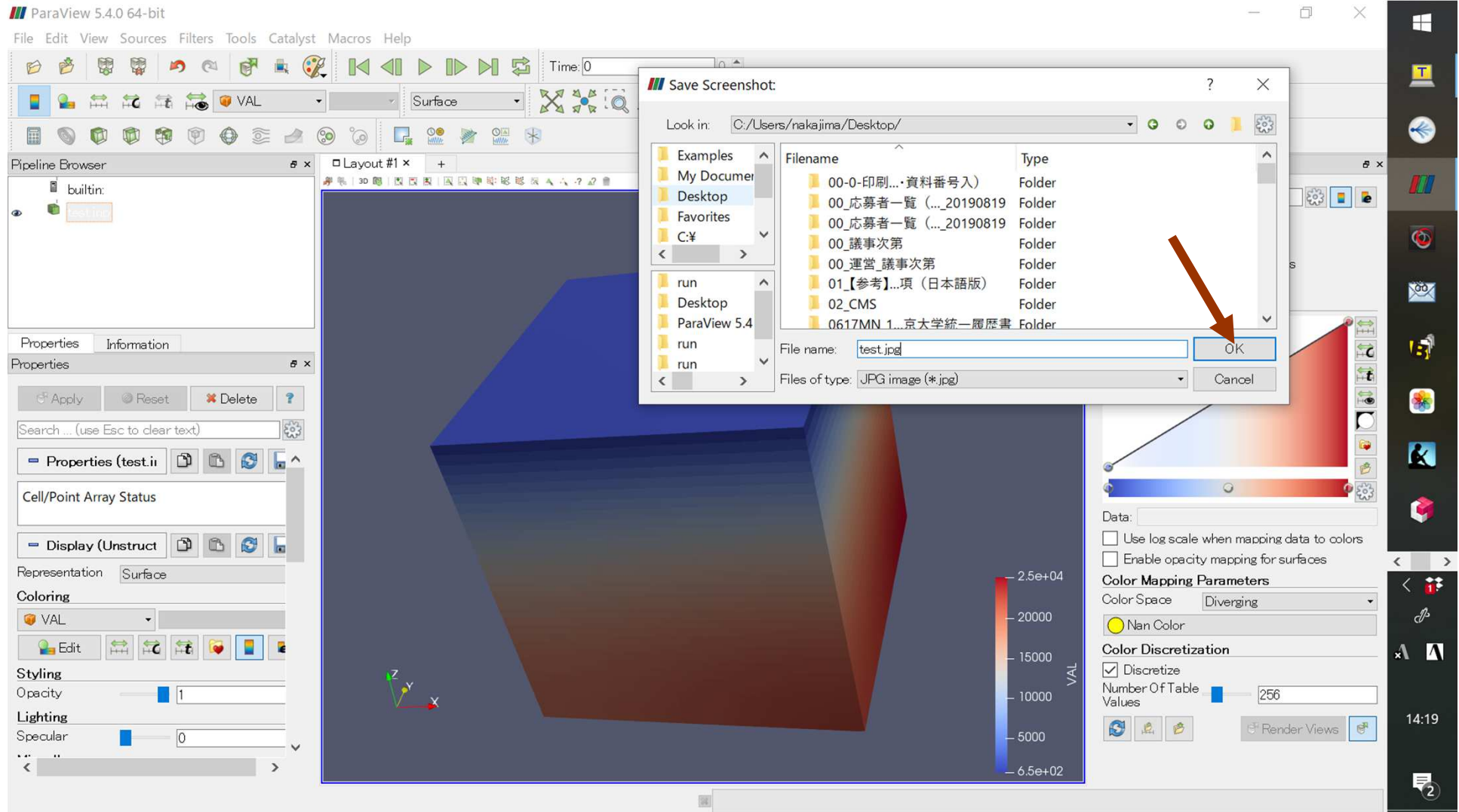
Number Of Table Values 256

Render Views

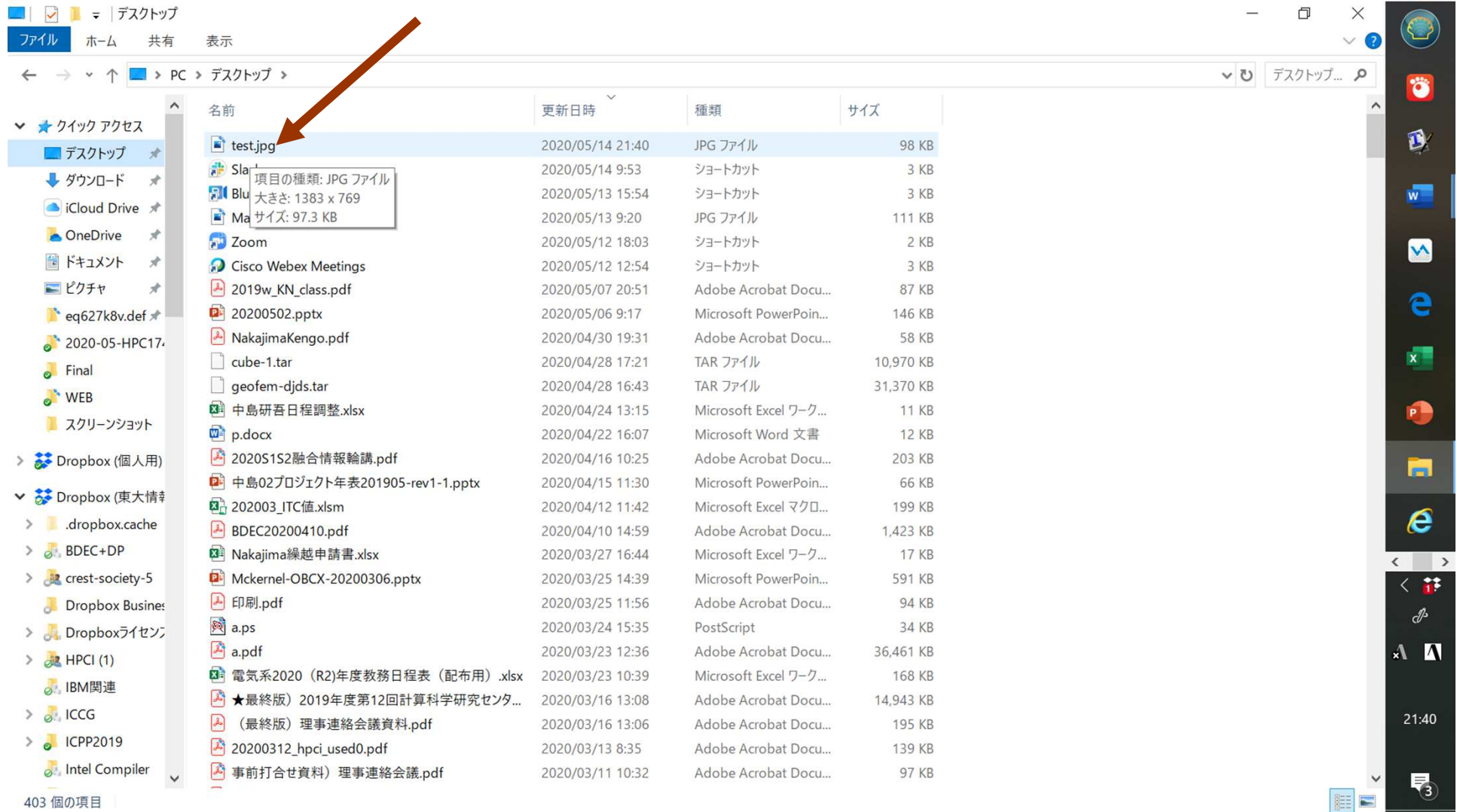
14:18

# Save Screenshot (4/4)

## Name & Location of the File



# Click “test.jpg” (1/2)



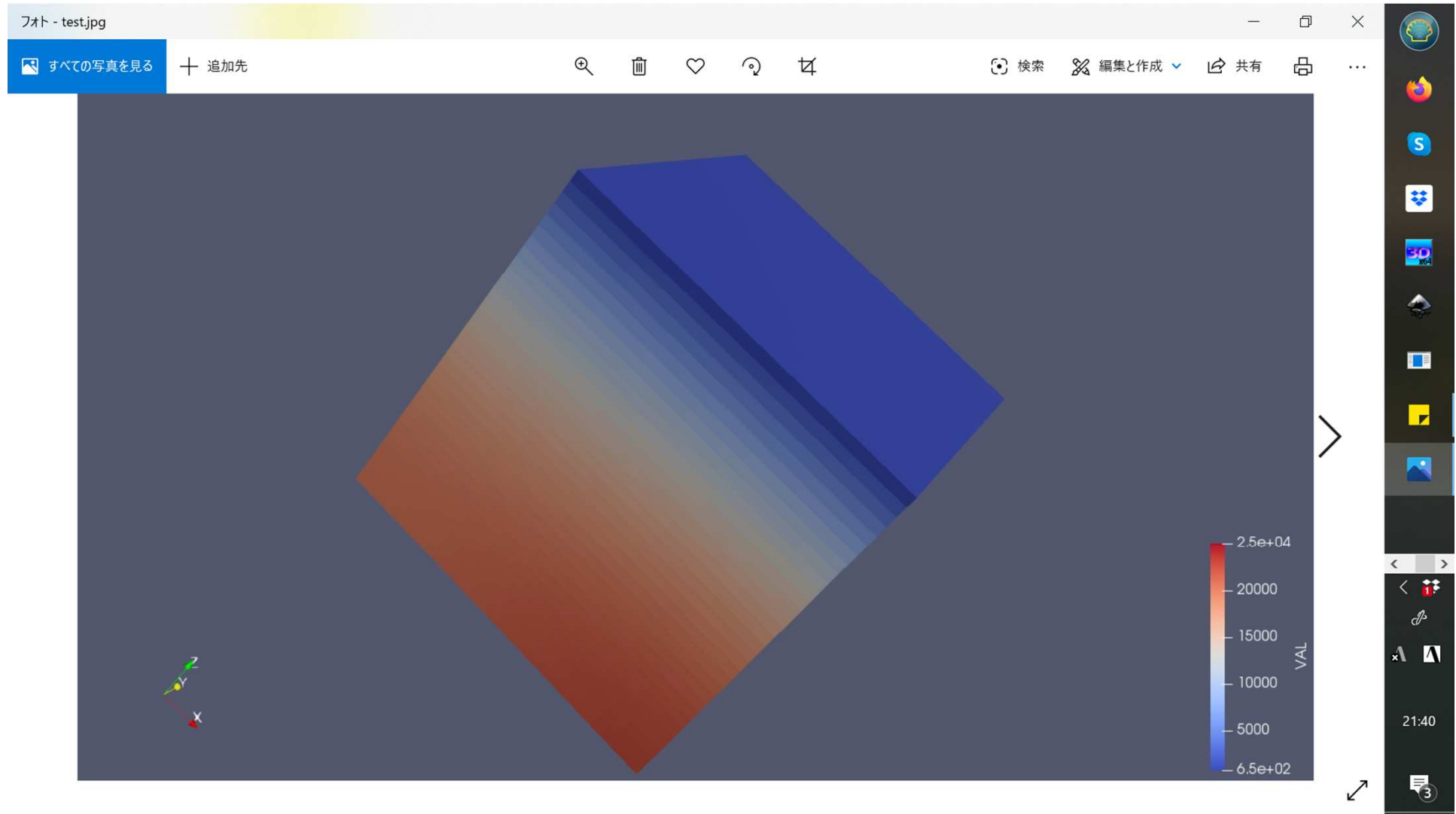
The screenshot shows a Windows File Explorer window titled "デスクトップ" (Desktop). The address bar shows the path "PC > デスクトップ". The left sidebar shows "クイック アクセス" (Quick access) with "デスクトップ" selected. The main pane displays a list of files and folders. The file "test.jpg" is highlighted, and a red arrow points to it. A tooltip is visible over the file name, showing the following information:

- 項目の種類: JPG ファイル
- 大きさ: 1383 x 769
- サイズ: 97.3 KB

名前	更新日時	種類	サイズ
test.jpg	2020/05/14 21:40	JPG ファイル	98 KB
Sla	2020/05/14 9:53	ショートカット	3 KB
Blu	2020/05/13 15:54	ショートカット	3 KB
Ma	2020/05/13 9:20	JPG ファイル	111 KB
Zoom	2020/05/12 18:03	ショートカット	2 KB
Cisco Webex Meetings	2020/05/12 12:54	ショートカット	3 KB
2019w_KN_class.pdf	2020/05/07 20:51	Adobe Acrobat Docu...	87 KB
20200502.pptx	2020/05/06 9:17	Microsoft PowerPoin...	146 KB
NakajimaKengo.pdf	2020/04/30 19:31	Adobe Acrobat Docu...	58 KB
cube-1.tar	2020/04/28 17:21	TAR ファイル	10,970 KB
geofem-djds.tar	2020/04/28 16:43	TAR ファイル	31,370 KB
中島研吾日程調整.xlsx	2020/04/24 13:15	Microsoft Excel ワーク...	11 KB
p.docx	2020/04/22 16:07	Microsoft Word 文書	12 KB
2020S1S2融合情報輪講.pdf	2020/04/16 10:25	Adobe Acrobat Docu...	203 KB
中島02プロジェクト年表201905-rev1-1.pptx	2020/04/15 11:30	Microsoft PowerPoin...	66 KB
202003_ITC値.xlsm	2020/04/12 11:42	Microsoft Excel マクロ...	199 KB
BDEC20200410.pdf	2020/04/10 14:59	Adobe Acrobat Docu...	1,423 KB
Nakajima繰越申請書.xlsx	2020/03/27 16:44	Microsoft Excel ワーク...	17 KB
Mckernel-OBCX-20200306.pptx	2020/03/25 14:39	Microsoft PowerPoin...	591 KB
印刷.pdf	2020/03/25 11:56	Adobe Acrobat Docu...	94 KB
a.ps	2020/03/24 15:35	PostScript	34 KB
a.pdf	2020/03/23 12:36	Adobe Acrobat Docu...	36,461 KB
電気系2020 (R2)年度教務日程表 (配布用) .xlsx	2020/03/23 10:39	Microsoft Excel ワーク...	168 KB
★最終版) 2019年度第12回計算科学研究センタ...	2020/03/16 13:08	Adobe Acrobat Docu...	14,943 KB
(最終版) 理事連絡会議資料.pdf	2020/03/16 13:06	Adobe Acrobat Docu...	195 KB
20200312_hpci_used0.pdf	2020/03/13 8:35	Adobe Acrobat Docu...	139 KB
事前打合せ資料) 理事連絡会議.pdf	2020/03/11 10:32	Adobe Acrobat Docu...	97 KB



# Click “test.jpg” (2/2)



# Edit Color Map (1/5)

## Click “Choose Preset”

The screenshot displays the ParaView 5.4.0 64-bit interface. The main window shows a 3D visualization of a complex object with a color map applied. The 'Coloring' section in the 'Properties' panel is active, showing the 'VAL' array. A red arrow points to the 'Choose Preset' icon (a small color bar) in the 'Coloring' section. The 'Choose Preset' dialog box is open, showing a list of color maps such as 'Cool to Warm', 'Warm to Cool', 'Rainbow Desa...', 'Cold and Hot', 'Black-Body Ra...', 'X Ray', 'Grayscale', and 'Black-Blue an'. The 'Color Map Editor' panel is also visible, showing the 'Array Name: VAL' and various mapping options.

**Click “Choose Preset”**

# Edit Color Map (2/5)

## “Rainbow Desaturated”

The screenshot displays the ParaView 5.4.0 64-bit interface. The main window shows a 3D rendering of a surface with a color map. The 'Color Map Editor' panel on the right is active, showing the 'Array Name: VAL' and various mapping options. The 'Choose Preset' dialog box is open in the center, listing several color maps. The 'Rainbow Desaturated' preset is selected, and the 'Apply' button is highlighted. Two orange arrows point to the 'Rainbow Desaturated' preset and the 'Apply' button. The 'Color Map Editor' panel shows the 'Mapping Data' section with a color gradient bar and the 'Color Mapping Parameters' section with 'Color Space' set to 'Diverging' and 'Color Discretization' checked. The 'Number Of Table Values' is set to 256. The 'Color Map Editor' panel also shows the 'Data' section with 'Use log scale when mapping data to colors' and 'Enable opacity mapping for surfaces' options. The 'Color Mapping Parameters' section shows 'Color Space' set to 'Diverging' and 'Color Discretization' checked. The 'Color Discretization' section shows 'Discretize' checked and 'Number Of Table Values' set to 256. The 'Color Map Editor' panel also shows the 'Data' section with 'Use log scale when mapping data to colors' and 'Enable opacity mapping for surfaces' options. The 'Color Map Editor' panel also shows the 'Data' section with 'Use log scale when mapping data to colors' and 'Enable opacity mapping for surfaces' options.

ParaView 5.4.0 64-bit

File Edit View Sources Filters Tools Catalyst Macros Help

Time: 0

Pipeline Browser

Layout #1

RenderView1

Color Map Editor

Search ... (use Esc to clear text)

Array Name: VAL

Lock Data Range

Interpret Values As Categories

Rescale On Visibility Change

Mapping Data

Data:

Use log scale when mapping data to colors

Enable opacity mapping for surfaces

Color Mapping Parameters

Color Space: Diverging

Nan Color

Color Discretization

Discretize

Number Of Table Values: 256

Render Views

Properties

Information

Apply Reset Delete

Search ... (use Esc to clear text)

Properties (test.ii)

Cell/Point Array Status

Display (Unstruct)

Representation: Surface

Coloring

VAL

Edit

Styling

Opacity: 1

Lighting

Specular: 0

Tip: <click> to select, <double-click> to apply a preset.

# Edit Color Map (3/5)

## “Rainbow Desaturated”

The screenshot displays the ParaView 5.4.0 64-bit interface. The main window shows a 3D surface plot of a data set named 'VAL'. The surface is colored using a 'Rainbow Desaturated' color map, which transitions from dark blue at the bottom to red at the top. A vertical color bar on the right side of the plot indicates the value range, from  $-6.5 \times 10^2$  to  $2.5 \times 10^4$ .

The Color Map Editor panel is open on the right, showing the following settings:

- Array Name: VAL
- Lock Data Range
- Interpret Values As Categories
- Rescale On Visibility Change
- Mapping Data: A color bar showing the 'Rainbow Desaturated' color map.
- Data: [Empty field]
- Use log scale when mapping data to colors
- Enable opacity mapping for surfaces
- Color Mapping Parameters: Color Space: RGB
- Nan Color: [Yellow circle]
- Color Discretization:  Discretize, Number Of Table Values: 256
- Buttons: [Reset], [Apply], [Render Views]

The Pipeline Browser on the left shows the data source 'test.inp' under the 'builtin:' folder. The Properties panel shows the 'Coloring' section with 'VAL' selected as the color map. The 'Display (Unstruct)' section is also visible.



# Edit Color Map (4/5)

## “Blue to Red Rainbow”

The screenshot displays the ParaView 5.4.0 64-bit interface. The main window shows a 3D rendering of a surface plot with a color map. The 'Color Map Editor' panel is open, showing the 'VAL' array name and the 'Blue to Red Rainbow' color map. The 'Choose Preset' dialog box is also open, showing a list of color maps. The 'Blue to Red Ra...' preset is selected, and the 'Apply' button is highlighted. The 'Color Map Editor' panel shows the 'VAL' array name and the 'Blue to Red Rainbow' color map. The 'Color Mapping Parameters' section shows 'Color Space' set to 'HSV' and 'Color Discretization' checked. The 'Number Of Table Values' is set to 256. The 'Color Map Editor' panel also shows 'Mapping Data' and 'Data' fields.

**Choose Preset Dialog:**

- Search ... (use Esc to clear text)
- Options to load:
  - Colors
  - Opacities
  - Use preset range
- Presets:
  - Grayscale
  - Black, Blue an...
  - Black, Orange ...
  - Linear YGB 12...
  - Linear Green (...)
  - Linear Blue (8...
  - Blue to Red Ra...**
  - Red to Blue Ra...
  - Rainbow Blen...
  - Rainbow Blen...
- Buttons: Apply, Import, Export, Remove, Close
- Tip: <click> to select, <double-click> to apply a preset.

**Color Map Editor Panel:**

- Array Name: VAL
- Lock Data Range
- Interpret Values As Categories
- Rescale On Visibility Change
- Mapping Data: [Color Map Editor]
- Data: [ ]
- Use log scale when mapping data to colors
- Enable opacity mapping for surfaces
- Color Mapping Parameters:
  - Color Space: HSV
  - Nan Color: [ ]
- Color Discretization:
  - Discretize
  - Number Of Table Values: 256
- Buttons: [ ], [ ], [ ], Render Views

# Edit Color Map (5/5)

## “Blue to Red Rainbow”

The screenshot displays the ParaView 5.4.0 64-bit software interface. The main window shows a 3D visualization of a color map, likely representing a scalar field, with a color scale ranging from  $-6.5e+02$  (blue) to  $2.5e+04$  (red). The visualization is a complex, multi-faceted shape, possibly a cube or a similar geometric form, rendered in a perspective view. The color map is applied to the surface of the object, showing a gradient from blue to red.

The interface includes several panels and toolbars:

- File Edit View Sources Filters Tools Catalyst Macros Help**: Main menu bar.
- Time: 0**: Time slider.
- Pipeline Browser**: Shows the data source hierarchy, including 'builtin:' and 'test.inp'.
- Properties**: Panel for editing the selected object's properties, including 'Display (Unstruct)', 'Representation' (Surface), 'Coloring' (VAL), and 'Styling' (Opacity, Specular).
- Color Map Editor**: Panel for editing the color map, including 'Array Name: VAL', 'Mapping Data' (a color gradient bar), 'Color Mapping Parameters' (Color Space: HSV, Nan Color), and 'Color Discretization' (Discretize checked, Number Of Table Values: 256).

The 3D visualization shows a color map applied to a surface, with a color scale ranging from  $-6.5e+02$  (blue) to  $2.5e+04$  (red). The color map is applied to the surface of the object, showing a gradient from blue to red.